REPORTS AND STUDIES

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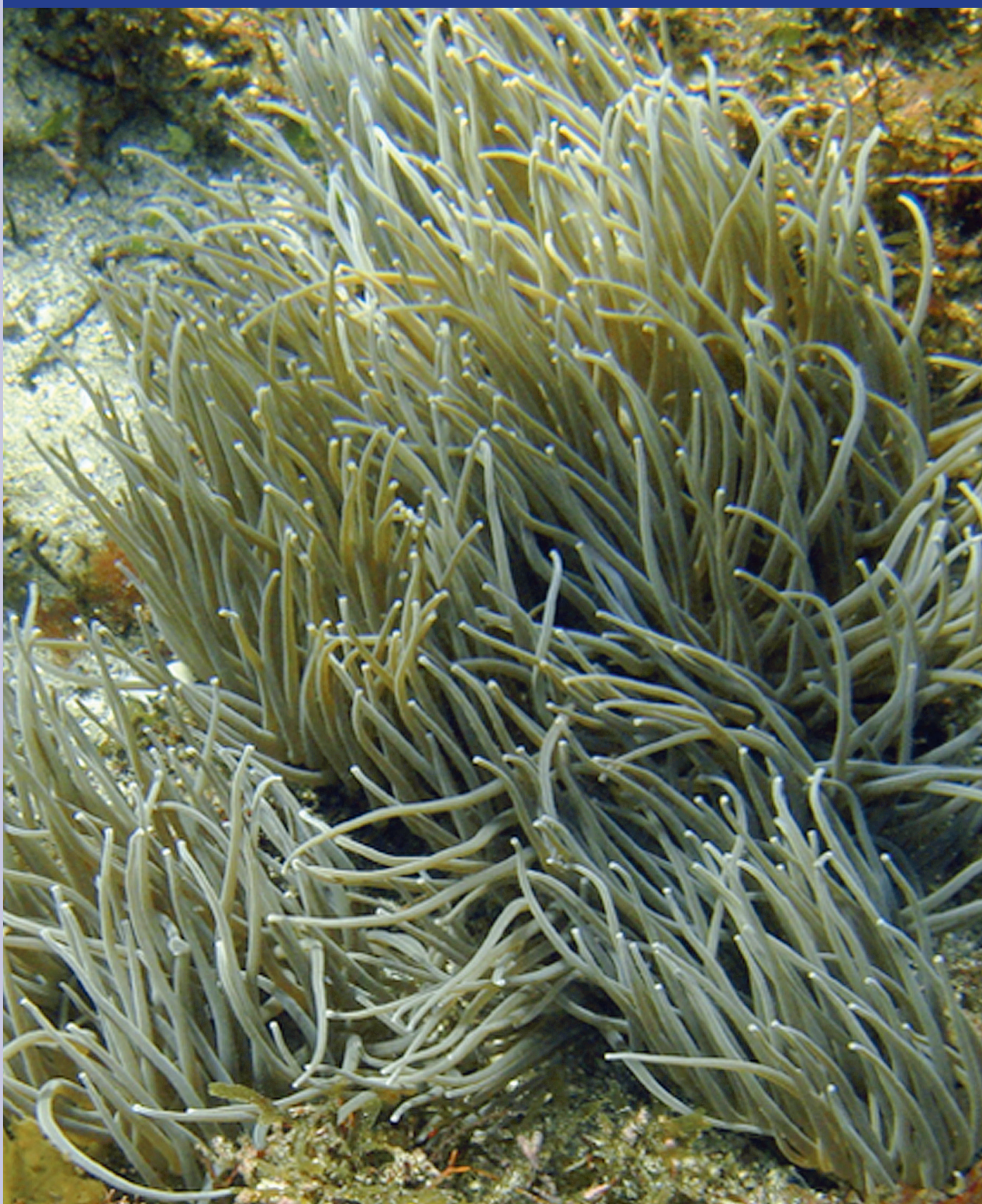
GESAMP

Group of Experts on the Scientific Aspects of Marine Environmental Protection

REPORT OF THE THIRTY-SEVENTH SESSION OF GESAMP Bangkok, 15-19 February 2010



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GESAMP
Group of Experts on the
Scientific Aspects of Marine
Environmental Protection

IMO FAO UNESCO-IOC WMO UNIDO IAEA UN UNEP

REPORT OF THE THIRTY-SEVENTH SESSION OF GESAMP

Sponsored by the UNEP - Division of Early Warning and Assessment (DEWA) and Coordinating Body on the Seas of East Asia (COBSEA), Bangkok, Thailand, 15 to 19 February 2010

Notes

GESAMP is an advisory body consisting of specialized experts nominated by the Sponsoring Agencies (IMO, FAO, UNESCO-IOC, UNIDO, WMO, IAEA, UN, UNEP). Its principal task is to provide scientific advice concerning the prevention, reduction and control of the degradation of the marine environment to the Sponsoring Agencies.

This study is available in English only from any of the Sponsoring Agencies.

The report contains views expressed or endorsed by members of GESAMP who act in their individual capacities; their views may not necessarily correspond with those of the Sponsoring Agencies.

Information about GESAMP and its reports and studies can be found at:

http://gesamp.org

ISSN 1020-4873

Front cover: Snakelocks anemone, Anemonia sulcata, © Tim Bowmer, 2010

For bibliographic purposes this document should be cited as:

GESAMP (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection). 2010. Report of the thirty-seventh session of GESAMP, Bangkok, 14-19 February 2010. Rep. Stud. GESAMP No. 81, 74 pp.

Printing: UNON, Publishing Services Section, Nairobi, ISO 14001:2004 - certified.

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EXECUTIVE SUMMARY

1 Introduction: The Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) held its thirty-seventh session hosted by the UNEP Co-ordinating Body on the Seas of East Asia (COBSEA) in Bangkok, Thailand, from 15 to 19 February 2010. GESAMP was established in 1969 by a number of United Nations Organizations as a Joint Group to encourage the independent, interdisciplinary consideration of marine pollution and environmental protection problems with a view to avoiding duplication of efforts within the United Nations system. The main topics considered at this session are described below.

2 The revitalization of GESAMP: Since late 2005, GESAMP has received welcome support from the Swedish International Development Co-operation Agency with the main aim of increasing the participation of developing country experts in the activities of GESAMP. In addition, the Swedish Maritime Administration has seconded, since late 2006, a staff member to act as the GESAMP Officer. This support, together with the establishment of the GESAMP Office at IMO, in October 2007, as a co-sponsoring arrangement between the Sponsoring Organizations of GESAMP, has enabled GESAMP to revitalize itself by reconnecting with the international marine science community and by expanding its advisory activities.

3 Evaluation of the hazards of harmful substances carried by ships (WG 1): This Working Group evaluates, at the request of IMO, the hazards to the environment and human health of bulk liquid chemicals carried by ships. Initiated in 1971, the GESAMP hazard evaluation procedure was revised in 1998 and by 2007 all 800 hazard profiles had been revised according to the new GHS compatible procedure (GESAMP Reports & Studies No. 64, 2002). The hazard profile contains a unique fingerprint of each substance, providing information on 14 separate, human health, environmental and physico-chemical, hazard criteria. GESAMP considers that there is merit in the use of these hazard profiles in a wider context than bulk maritime transport and agreed that the compendium of hazard profiles, known as the 'GESAMP Composite List' should be prominently placed on the GESAMP website, together with additional guidance which is to be developed on their use outside of their normal context.

4 Review of applications for 'active substances' to be used in ballast water management systems (WG 34): WG 34 met on three occasions in the intersessional period to evaluate the risks for the environment, the crew, and the public at large as well as the ships' safety of 13 proposed ballast water management systems. It also held a second 'Stock-taking' Workshop to discuss the evaluation methodology it applies and the further development of a Human Exposure Scenario on board ships. GESAMP agreed to make available on the GESAMP website the findings of each WG 34 session after the IMO Marine Environment Protection Committee has endorsed these, thereby improving transparency. GESAMP also recommended the convening of a third 'Stock-taking' Workshop to complete the risk assessment methodology in full, as planned, and to establish a 'watching brief' on the potential impact on the environment as a whole when ballast water management technologies are applied on ships in the future, in particular, if substantial quantities of chlorinated ballast water are discharged in coastal waters.

5 Development of an ecosystem approach to offshore mariculture (WG 36): In light of FAO's decision to withdraw its support for this Working Group, due to lack of funds, GESAMP, reluctantly, closed the Working Group. It was agreed to support the former Working Group members' plan to prepare a paper for publication in the scientific literature under their own title, based on the findings of their first and only meeting in 2007.

6 Metals (formerly mercury) Working Group (WG 37): Following the withdrawal in 2009 of UNIDO's support for this Working Group, GESAMP welcomed two proposals by UNEP resulting in the re-direction of the activities of WG 37 as follows: A GESAMP Task Team is established under WG 37 to fill the identified scientific data and information gaps on anthropogenic sources, releases and possible measures to control the releases of ***mercury***. This work would assist UNEP with the preparation, by 2013, of a binding international agreement to protect the environment from releases of mercury and its compounds. The Task Team should deliver a preliminary report by August 2010 and a final report by 2011; A second GESAMP Task Team under WG 37 is established to close listed scientific information gaps on ***lead and cadmium*** for integration, by August 2010, into UNEP's publication "Reviews of scientific information on lead and cadmium" and to inform its discussions on the need for global action in relation to these metals. GESAMP stressed that the Task Team should give ample attention in its work to the deposition from the atmosphere of lead and cadmium, as well as the mobility of lead in the environment.

7 Atmospheric input of chemicals to the ocean (WG 38): In recognition of the growing interest concerning the impact of the atmospheric input of both natural and anthropogenic substances on ocean chemistry, biology and biochemistry, as well as climate, GESAMP reviewed the activities of WG 38. GESAMP noted that WG 38 had met in January 2010 to review and complete three separate papers for publication in peer-reviewed scientific journals in the period of March – April 2010, as follows: (1) Impacts of atmospheric nutrient deposition on marine productivity: roles of nitrogen, phosphorus, and iron; (2) Impacts of anthropogenic SOx, NOx and NH3 on acidification of coastal waters and shipping lanes; and (3) Atmospheric organic material and the nutrients it carries to the ocean. Being thus close to the completion of its current terms of reference, WG 38 was continued at the proposal of WMO and charged, subject to the availability of funds, with providing a more detailed

description of the atmospheric transport and deposition processes of iron and phosphorus to the ocean.

8 Establishment of trends in global pollution in coastal environments (WG 39): GESAMP reviewed a further refined proposal by IAEA since GESAMP 36 for this new Working Group, which would use retrospective ecosystem analysis, based on available environmental archives and time-series data. The proposal outlined five specific tasks for a programme with a timeline of four years in total. As only limited support had been confirmed, GESAMP approved terms of reference for a first phase of the project, i.e., the conduct of a bibliographic review (task 1); and a critical review of existing methodologies on suitable environmental archives, dating methods, pollution indicators, analytical techniques and trend analysis (task 2). Follow-up activities could then be agreed in light of the outcome of this first phase and additional financing.

9 Contribution to the United Nations 'Regular Process': The UN General Assembly decided, in 2009, to establish the UN Regular Process, describing its first five-year assessment cycle and agreed to prepare recommendations on the modalities for implementation of the Process to its next session in the fall of 2010. GESAMP agreed, in light of this development and building on the substantive contributions it made to the 'Assessment of Assessments' phase of the Regular Process, to maintain its offer for delivery of specific functions in the Regular Process itself. Consequently, the offer it made in 2009 was reviewed and updated (See Annex VIII).

10 Contribution to the GEF Transboundary Waters Assessment Programme: In 2009, the GEF Transboundary Waters Assessment Programme (TWAP) was launched, aimed at the development of a scientifically sound methodology for assessing the status and changing conditions of the world's major shared freshwater- and marine water bodies, and which will, inter alia, feed into the UN Regular Process. UNEP and UNESCO-IOC, as the lead agencies of TWAP, had invited GESAMP in November 2009 to make a contribution to two of the five planned TWAP-modules, i.e., addressing assessments of the 'Open Oceans' and the 'Large Marine Ecosystems (LMEs)'. Acting upon the recommendation of the Executive Committee that GESAMP should become involved in TWAP, GESAMP discussed how it could make a relevant contribution and noted with gratitude UNESCO-IOC's offer to support the participation of one GESAMP representative in the second TWAP-workshop of the 'Open Oceans' and 'LMEs' modules, to be held in Norway in June 2010. GESAMP noted however that funding for participation in this Programme remained a severe problem.

11 Identification of new and emerging issues regarding the degradation of the marine environment: Confirming that the 'radar function' on new and emerging issues was still a important core element of its mission, GESAMP clarified the steps necessary towards the identification of such issues and the route for bringing them to the attention of the Sponsoring Organizations and potential funding bodies. This would range from the provision of an initial short written summary by the members clarifying the issue of concern; the appointment of a correspondence group to prepare a scoping paper for discussion at a future session of GESAMP; an in-depth elaboration through a workshop to define the science agenda; and, finally, if deemed necessary, the setting up of a GESAMP working group to provide a full assessment of the issue.

12 GESAMP noted the rapid expansion of coastal energy generating stations, industrial cooling units and desalination plants in many developing countries, most of which rely on electrolytic chlorination to prevent fouling. In assessing the potential environmental impact of electrolytic antifouling systems with reference to national and regional discharge standards, attention was drawn to substances of concern such as Total Residual Oxidants (TRO) as well as halogenated disinfection by-products, which occur when chlorine interacts with organic matter,. It was pointed out that the ballast water management system applications currently being submitted for approval by IMO provide a unique source of analytical data on such by-products and that GESAMP should consider how to develop and publish this resource.

13 GESAMP discussed in detail progress with four new and emerging issues identified for further review at GESAMP 36:

(1) The go-ahead was given for a Workshop on *micro-plastics* as a vector in the transport of persistent and toxic substances, in view of the ubiquity and prevalence of plastic waste in the marine environment. This Workshop, to be held at UNESCO-IOC Headquarters in Paris from 28 to 30 June 2010, will review the topic, provide a report for possible publication in GESAMP's Reports & Studies series and, if deemed necessary, will develop terms of reference for a possible GESAMP working group;

(2) GESAMP, on the basis of a revised scoping paper agreed, subject to the availability of funding, to initiate a workshop on *endocrine disruption as a result of hypoxia in the marine environment* to build support for this topic;

(3) GESAMP agreed that a scoping paper should be developed in the intersessional period on *bio-magnification in top predators and its ecological and social implications* to provide sufficient background on the key issues involved, the feasibility and especially to identify potential partners for future activities in this field; and

(4) GESAMP agreed to continue its correspondence group on *Environmental Quality Standards* (EQS) to further explore the possibility of global standards and to expand the GESAMP website section on EQS.

14 Special session on the "link and collaboration between GESAMP and the Regional Bodies to Protect the Marine Environment in East Asia on Marine Assessment Methodologies": Several regional marine assessment activities and status reports were introduced and discussed at this session, including: the

"Programme for the Assessment and Control of Marine Pollution under the Mediterranean Action Plan" (MAP/MEDPOL); the "North West Pacific Action Plan State of the Marine Environment Report (2007)"; the "East Asian Seas State of the Marine Environment Report (2009)"; and the "COBSEA Knowledgebase". Possible fields of co-operation between GESAMP and the Regional Seas Programmes on their assessment activities, identified at GESAMP 34 in 2007 (e.g., economic valuation of ecosystem services, compiling available information, advice for key policy decisions on controversial issues or standards and peer review) were still considered to be very relevant, but if there were new fields of interest, they could be easily added (e.g., giving specific scientific advice on request of regional bodies and assistance with quality assurance of data).

15 Other issues: GESAMP accepted requests for peer review in 2010 of: (1) a study on establishing equivalency of emerging, alternative (non-chemical) ballast water management systems; and (2) the next OSPAR decadal marine assessment. GESAMP also agreed to assist with the development of a draft regional policy/strategy on the sustainable and ecosystem based management of coastal erosion in the East Asian Seas region. Coastal erosion had been identified as an emerging issue for that region.

16 A final observation: GESAMP, currently with its 15 members, its five working groups, involvement in the UN Regular Process, TWAP, a new and emerging issues forum developing as outlined above, peer review tasks and other commitments for advice, may have reached the limits of its current capacity and institutional arrangements. GESAMP has come a long way since the 'Strategic Vision' was published (summary contained in GESAMP Reports & Studies No. 74, 2005) and increased support is necessary to ensure that the steps recommended therein can be completed and to guarantee the timely delivery and quality of its products.

RÉSUMÉ ANALYTIQUE

1 Introduction : Le Groupe mixte d'experts chargé d'étudier les aspects scientifiques de la protection de l'environnement marin (GESAMP) a tenu sa trente-septième session du 15 au 19 février 2010 à Bangkok (Thaïlande), sous l'égide de l'Organe de coordination pour les mers d'Asie de l'Est (COBSEA) du PNUE. Le GESAMP a été créé conjointement en 1969 par plusieurs organismes des Nations Unies pour promouvoir l'examen indépendant et interdisciplinaire des problèmes de pollution marine et de protection de l'environnement en vue d'éviter les doubles emplois au sein du système des Nations Unies. Les principaux points abordés lors de cette session sont présentés ci-après.

2 Revitalisation du GESAMP: Depuis fin 2005, le GESAMP reçoit un appui fort bienvenu de l'Agence suédoise de coopération internationale au développement (ASDI), principalement pour accroître la participation d'experts issus de pays en développement aux activités du Groupe. Par ailleurs, l'Administration maritime suédoise a détaché un membre de son personnel pour remplir les fonctions d'agent du GESAMP. Celui-ci est en place depuis fin 2006. Conjugué à la mise sur pied, en octobre 2007, du Bureau du GESAMP, qui est hébergé par l'OMI dans le cadre d'un arrangement entre les organismes de parrainage, cet appui a permis au Groupe de se revitaliser en rétablissant le contact avec la communauté internationale des spécialistes des sciences de la mer et en élargissant ses activités de prestation de services consultatifs.

3 Évaluation des risques que présentent les substances nocives transportées par mer (Groupe de travail 1): Ce Groupe de travail évalue, à la demande de l'OMI, les risques pour l'environnement et la santé humaine présentés par les substances chimiques transportées en vrac par voie maritime. Instaurée en 1971, la procédure d'évaluation des risques du GESAMP a été révisée en 1998. En 2007, la révision des 800 profils de risque conformément à la nouvelle procédure compatible avec le Système général harmonisé (GESAMP Report and Studies No. 64, 2002) était achevée. Chaque profil de risque contient une fiche signalétique de la substance à laquelle il se rapporte, fournissant des informations sur 14 critères de danger d'ordre sanitaire, environnemental et physico-chimique. Estimant qu'il y aurait des avantages à les utiliser dans un contexte plus large que celui du seul transport en vrac par mer, le GESAMP a convenu de placer ces profils de risque, qui sont rassemblés dans ce qu'on appelle la « liste composite du GESAMP », bien en évidence sur son site web, avec des orientations supplémentaires que l'on se propose d'établir concernant leur utilisation en dehors de leur contexte normal.

4 Examen des demandes concernant les « substances actives » à utiliser dans les systèmes de gestion des eaux de ballast (Groupe de travail 34) : Le groupe de travail 34 s'est réuni trois fois au cours de la période intersessions pour évaluer les risques pour l'environnement, l'équipage et le public en général, ainsi que pour la sécurité des navires, présentés par 13 systèmes de gestion des eaux de ballast envisagés. Il a également tenu un deuxième atelier d'« établissement de bilan » pour examiner la méthode d'évaluation qu'il a adoptée et la poursuite de l'élaboration d'un scénario sur l'exposition humaine à bord des navires. Le GESAMP a convenu d'afficher sur son site web les résultats de chaque réunion du groupe de travail 34, une fois qu'ils ont été approuvés par le Comité de protection du milieu marin de l'OMI, afin d'améliorer la transparence. Il a en outre recommandé l'organisation d'un troisième atelier d'« établissement de bilan » pour achever entièrement la méthode d'évaluation des risques, comme prévu au programme, et établir un « mandat de surveillance » de l'impact écologique global des technologies de gestion des eaux de ballast lorsqu'elles seront mises en service, en particulier au cas où des quantités importantes d'eaux de ballast contenant du chlore seraient déversées dans les eaux côtières.

5 Élaboration d'une approche écosystémique de la mariculture au large des côtes (Groupe de travail 36) : Par suite de la décision de la FAO de retirer son soutien à ce groupe de travail, le GESAMP a, faute de ressources financières, dissous le groupe à contrecœur. Il a été convenu d'appuyer le projet des anciens membres du groupe d'élaborer, sur la base des résultats de leur première et seule réunion en 2007, un article scientifique destiné à être publié à titre privé.

6 Groupe de travail sur les métaux (Groupe de travail 37, anciennement Groupe de travail sur le mercure) : Comme l'ONUDI a retiré son soutien à ce groupe de travail en 2009, le GESAMP a approuvé deux propositions du PNUE tendant à réorienter les activités de ce dernier comme suit : une équipe spéciale chargée de combler les lacunes en matière de données et d'informations scientifiques sur les sources et rejets anthropiques de mercure ainsi que sur les mesures de lutte envisageables est créée afin de faire avancer le PNUE dans l'élaboration, d'ici à 2013, d'un accord international juridiquement contraignant de protection de l'environnement contre les rejets de mercure et de ses composés. Cette équipe doit produire un rapport préliminaire au plus tard en août 2010 et un rapport final d'ici à 2011. Une deuxième équipe spéciale se chargera de compléter d'ici août 2010 les informations scientifiques manquantes sur le plomb et le cadmium pour publication dans les études des informations scientifiques sur le plomb et le cadmium du PNUE, qui compte également les utiliser pour éclairer les débats sur la nécessité de prendre des mesures au niveau mondial concernant ces métaux. Le GESAMP a mis l'accent sur le fait que l'équipe devrait, à cet égard, accorder beaucoup d'attention à la question des dépôts atmosphériques de plomb et de cadmium ainsi qu'à celle de la mobilité du plomb dans l'environnement.

7 Apports atmosphériques de produits chimiques dans l'océan (Groupe de travail 38) : Vu l'intérêt croissant que l'on porte aux effets exercés par

les apports atmosphériques de substances naturelles et anthropiques sur la chimie, la biologie et la biochimie ainsi que le climat océaniques, le GESAMP s'est penché sur les activités du groupe de travail 38. Il a noté que celui-ci s'était réuni en janvier 2010 pour examiner et finaliser trois articles destinés à être publiés en mars-avril 2010 dans des revues scientifiques pratiquant l'examen collégial. Les trois articles en question sont les suivants :

1) Impacts des dépôts atmosphériques de nutriments sur la productivité marine : rôles de l'azote, du phosphore et du fer;

2) Impacts des apports anthropiques de SOx, de NOx et de NH3 sur l'acidification des eaux côtières et des couloirs de navigation; et

3) Les matières organiques présentes dans l'atmosphère et les dépôts par voie éolienne de nutriments dans les océans. Le groupe de travail, qui était donc près d'achever sa mission, a été reconduit à la suggestion de l'OMM et chargé, sous réserve de la disponibilité de fonds, de fournir une description plus détaillée des processus de transport et de dépôt par voie éolienne de fer et de phosphore dans l'océan.

7 Évolution mondiale de la pollution des écosystèmes côtiers (Groupe de travail 39) : Le GESAMP a examiné une proposition, élaborée de manière plus approfondie par l'AIEA depuis la trente-sixième session du GESAMP, concernant ce nouveau groupe de travail qui utiliserait l'analyse rétrospective des écosystèmes à partir des archives environnementales et des données chronologiques disponibles. Cinq tâches spécifiques s'inscrivant dans le cadre d'un programme d'une durée totale de quatre ans y étaient définies. Comme il ne pouvait compter que sur un soutien limité, le GESAMP n'a approuvé que la première phase du projet, à savoir une étude bibliographique (tâche No. 1) et une analyse critique des méthodes d'archivage environnemental, méthodes de datation, indicateurs de pollution, techniques analytiques et méthodes d'analyse des tendances existants (tâche No. 2). En fonction des résultats de cette première phase et de la disponibilité d'un financement supplémentaire, on pourrait ensuite se mettre d'accord sur la suite.

8 Contribution au mécanisme de notification et d'évaluation systématiques à l'échelle mondiale de l'état du milieu marin : En 2009, l'Assemblée générale des Nations Unies a décidé de créer le mécanisme de notification et d'évaluation systématiques à l'échelle mondiale de l'état du milieu marin, en en précisant le premier cycle quinquennal. Elle a convenu de présenter des recommandations sur les modalités de la mise en œuvre de ce mécanisme à sa prochaine session, en automne 2010. En conséquence, et compte tenu de ses contributions opérationnelles à la phase « évaluation des évaluations » dudit mécanisme, le GESAMP s'est mis d'accord pour maintenir son offre d'assumer certaines fonctions spécifiques au sein de celui-ci. Il a donc réexaminé et actualisé l'offre qu'il a faite en 2009 (voir l'annexe VIII).

9 Contribution au Programme d'évaluation des eaux transfrontalières du FEM : Le Programme d'évaluation des eaux transfrontalières a été lancé en 2009 par le FEM dans le but d'élaborer une méthodologie scientifiquement valable d'évaluation de l'état et de l'évolution des conditions ambiantes des principales étendues d'eau douce et marines du globe qui sont partagées par plusieurs pays.

10 Il alimentera notamment le mécanisme de notification et d'évaluation systématiques à l'échelle mondiale de l'état du milieu marin. Le PNUE et l'UNESCO-COI, qui sont les organismes chefs de file, avaient, en novembre 2009, invité le GESAMP à contribuer à deux des cinq modules prévus, à savoir ceux concernant la haute mer et les grands écosystèmes marins. À la recommandation de son Comité exécutif, qui était en faveur de son implication dans ce programme, le GESAMP s'est penché sur la question de savoir comment y contribuer utilement et a noté avec gratitude l'offre de l'UNESCO-COI de financer la participation d'un représentant du Groupe au deuxième atelier des modules « haute mer » et « grands écosystèmes marins » qui se tiendra en Norvège en juin 2010. Il a toutefois fait observer que la question des ressources financières nécessaires pour participer au programme restait un grand problème.

11 Identification des problèmes nouveaux et naissants de dégradation du milieu marin : Confirmant que la détection précoce des problèmes nouveaux et naissants continuait d'être un élément fondamental de sa mission, le GESAMP a donné des précisions sur la procédure à suivre pour identifier ces problèmes et les porter à l'attention des organismes de parrainage et des bailleurs de fonds potentiels. Celle-ci commence par la présentation d'un bref résumé initial du sujet de préoccupation rédigé par les membres; un groupe de correspondance est ensuite désigné pour élaborer un document de cadrage, lequel sera examiné à une session ultérieure du Groupe; puis la question est examinée en profondeur au cours d'un atelier`, en vue de définir le programme scientifique; enfin, un groupe de travail est, au besoin, mis sur pied pour mener une évaluation complète.

12 Le GESAMP a pris note de la prolifération rapide de centrales électriques, d'unités de froid industriel et d'usines de dessalement - dont la plupart font appel à la chloration électrolytique pour prévenir l'encrassement - dans les régions côtières de nombreux pays en développement. L'attention a été attirée sur la nécessité de tenir compte des oxydants résiduels totaux (ORT) et des sous-produits halogénés de la désinfection, ainsi que des autres substances préoccupantes produits par l'interaction du chlore avec des matières organiques, lors de l'évaluation de l'impact écologique potentiel des systèmes électrolytiques de protection contre l'encrassement par rapport aux normes nationales et régionales recommandées en matière de rejets. On a fait observer que les demandes d'homologation de systèmes de gestion des eaux de ballast soumises à l'OMI constituent à cet égard une source exceptionnelle de données analytiques que le GESAMP devrait envisager de développer et de porter à la connaissance du public.

13 Le GESAMP s'est penché en détail sur l'avancement des travaux relatifs à quatre problèmes nouveaux et naissants identifiés lors de sa trente-sixième session.

1) Vu l'omniprésence des déchets plastiques dans le milieu marin, il a donné le feu vert à la tenue d'un atelier sur les micro-plastiques en tant que vecteurs de substances toxiques persistantes. Cet atelier, qui doit se tenir du 28 au 30 juin 2010 au siège de l'UNESCO, à Paris, examinera le sujet, produira un rapport destiné à être éventuellement publié dans la série « Reports and Studies » du GESAMP et, au besoin, définira un cadre de référence pour une étude par un groupe de travail du GESAMP;

2) sur la base d'un document de cadrage révisé, le GESAMP a convenu d'organiser un atelier sur les perturbations endocriniennes causées par l'hypoxie en milieu marin pour développer le soutien à l'étude de ce sujet;

3) le GESAMP s'est accordé à dire qu'il convient d'établir un document de cadrage sur la bioamplification chez les grands prédateurs et ses implications écologiques et sociales au cours de la période intersessions afin de pouvoir disposer d'informations suffisantes sur les principaux enjeux de la question ainsi que la faisabilité des activités envisagées dans ce domaine et, surtout, d'identifier des partenaires potentiels pour l'exécution de ces dernières;

4) le GESAMP a convenu de reconduire son groupe de correspondance sur les normes de qualité de l'environnement pour étudier plus avant la possibilité d'établir des normes mondiales et d'étendre la section Normes de qualité de l'environnement de son site web.

14 Session extraordinaire sur les liens et la collaboration entre le GESAMP et les organismes régionaux de protection du milieu marin de l'Asie de l'Est dans le domaine des méthodes d'évaluation de l'état du milieu marin : Plusieurs rapports et bilans d'étape régionaux des activités d'évaluation du milieu marin ont été présentés et examinés au cours de cette session, dont ceux concernant : le programme d'évaluation et de maîtrise de la pollution (MEDPOL) entrepris dans le cadre du Plan d'action pour la Méditerranée; l'état du milieu marin dans le Pacifique Nord-Ouest (2007); l'état du milieu marin dans les mers d'Asie de l'Est (2009); et la base de connaissances du COBSEA. Du point de vue des activités d'évaluation, les axes de coopération possibles entre le GESAMP et les programmes pour les mers régionales que le Groupe a identifiés à sa trente-quatrième session en 2007 (par exemple, l'évaluation économique des services rendus par les écosystèmes, la compilation des informations disponibles, la fourniture de conseils pour la prise de décisions politiques importantes concernant des questions ou des normes controversées, et l'examen collégial) étaient toujours considérés comme très pertinents, mais si de nouveaux domaines d'intérêt se faisaient jour, on pourrait facilement les y ajouter (par exemple, la fourniture sur demande de conseils scientifiques aux organismes régionaux et l'assistance en matière de fiabilité des données).

15 Autres questions : Le GESAMP a accepté les demandes d'examen collégial faites en 2010 pour : 1) une étude pour établir l'équivalence de nouveaux systèmes (non chimiques) de gestion des eaux de ballast; et 2) la prochaine évaluation décennale du milieu marin de l'OSPAR. Le GESAMP a également accepté d'aider à l'élaboration d'un projet de politique/stratégie régionale de gestion durable et écosystémique de l'érosion côtière en Asie orientale. L'érosion des côtes a été identifiée comme un des problèmes naissants de cette région.

16 Remarque finale : Avec ses 15 membres et cinq groupes de travail, le GESAMP, qui participe en outre au mécanisme de notification et d'évaluation systématiques à l'échelle mondiale de l'état du milieu marin de l'ONU, au Programme d'évaluation des eaux transfrontalières, à un forum sur les problèmes nouveaux et naissants qui est en train de se constituer comme indiqué plus haut, à des examens collégiaux et à d'autres tâches consultatives auxquelles il s'est engagé, semble avoir atteint les limites de ses capacités et arrangements institutionnels actuels. Le Groupe a beaucoup progressé depuis la publication de la « Vision stratégique » (qui est résumée dans Reports and Studies No. 74, 2005) et un soutien accru est nécessaire pour garantir l'accomplissement des démarches recommandées dans cette dernière et la production en temps utile ainsi que la qualité des résultats escomptés.

RESUMEN EJECUTIVO

1 Introducción: El Grupo Mixto de Expertos sobre los Aspectos Científicos de la Protección del Medio Marino (GESAMP) celebró su 37ª reunión con el auspicio del Órgano Coordinador del Programa de los Mares de Asia Oriental del PNUMA (COBSEA) en Bangkok (Tailandia), del 15 al 19 de febrero de 2010. El GESAMP fue establecido en 1969 por varias organizaciones de las Naciones Unidas como grupo mixto con el propósito de estimular un examen independiente e interdisciplinario de los problemas de la contaminación marina y la protección del medio ambiente con miras a evitar la duplicación de tareas dentro del sistema de las Naciones Unidas. A continuación se describen los principales temas que se examinaron en esa reunión.

2 Revitalización del GESAMP: Desde fines de 2005, el GESAMP ha recibido el oportuno apoyo del Organismo Sueco de Desarrollo Internacional con el objeto principal de aumentar la participación de expertos de países en desarrollo en las actividades del GESAMP. Además, desde fines de 2006 la Administración Marítima de Suecia ha adscrito a un funcionario como el Oficial del GESAMP. Ese apoyo, junto con el establecimiento de la Oficina del GESAMP en la Organización Marítima Internacional (OMI) en octubre de 2007, en virtud de un acuerdo de coauspicio entre las organizaciones patrocinadoras del GESAMP, ha permitido la revitalización del GESAMP permitiendo su reconexión con la comunidad científica marina internacional y la ampliación de sus actividades de asesoramiento.

3 Evaluación de los peligros de las sustancias perjudiciales transportadas por buques (Grupo de Trabajo 1): A petición de la OMI este Grupo de Trabajo evalúa los peligros para el medio ambiente y la salud humana de los productos químicos líquidos a granel transportados por buques. El procedimiento de evaluación de los peligros del GESAMP, iniciado en 1971, se revisó en 1998 y en 2007 se habían revisado los 800 perfiles de peligrosidad de conformidad con el nuevo procedimiento compatible con el Sistema Mundialmente Armonizado de Clasificación y Etiquetado de Productos Químicos (Informes y Estudios del GESAMP, No. 64, 2002). El perfil de peligrosidad contiene una huella única de cada sustancia y brinda información acerca de 14 criterios distintos sobre sus riesgos fisicoquímicos, ambientales y para la salud humana. El GESAMP considera que el empleo de estos perfiles de peligrosidad podría ser útil en un contexto más amplio que el del transporte marítimo a granel y acordó que el compendio de los perfiles de peligrosidad, conocido como la "lista refundida del GESAMP", se incluyera prominentemente en el sitio web del GESAMP, junto con orientación adicional que se va a elaborar sobre su uso en un contexto distinto del habitual.

4 Examen de las aplicaciones de "sustancias activas" que se utilizarán en los sistemas de gestión del agua de lastre (Grupo de Trabajo 34): El Grupo de Trabajo 34 se reunió tres veces durante el período entre reuniones para evaluar los riesgos para el medio ambiente, las tripulaciones y el público en general, así como para la seguridad de los buques, de 13 sistemas de gestión del agua de lastre propuestos. También celebró un segundo seminario para hacer un balance sobre la metodología de evaluación que utiliza y la evolución posterior de una hipótesis de exposición humana a bordo de buques. El GESAMP acordó incluir las conclusiones de cada reunión del Grupo de Trabajo 34 en su sitio web una vez que el Comité de Protección del Medio Marino de la OMI las hubiera hecho suyas, mejorando así la transparencia. El GESAMP también recomendó que se organizara un tercer seminario para completar la metodología de evaluación del riesgo, de conformidad con lo planificado, y vigilar las posibles repercusiones en el medio ambiente en su conjunto de la aplicación de las tecnologías de gestión del agua de lastre en los buques en el futuro, en particular cuando se descargan cantidades importantes de agua de lastre en aguas costeras.

5 Elaboración de un enfoque basado en los ecosistemas para la maricultura frente a las costas (Grupo de Trabajo 36): En vista de la decisión de la Organización de las Naciones Unidas para la Agricultura y la Alimentación (FAO) de retirar su apoyo a este Grupo de Trabajo debido a la falta de financiación, muy a su pesar el GESAMP puso fin a la labor del Grupo de Trabajo. Se acordó respaldar el plan de los ex miembros del Grupo de Trabajo de preparar un documento para su aparición en una publicación científica en su propio nombre sobre la base de las conclusiones de la primera y única reunión que celebró el Grupo en 2007.

6 Grupo de Trabajo sobre metales (anteriormente sobre el mercurio) (Grupo de Trabajo 37): Tras el retiro del apoyo de la Organización de las Naciones Unidas para el Desarrollo Industrial (ONUDI) a este Grupo de Trabajo, el GESAMP acogió con satisfacción dos propuestas del PNUMA que se tradujeron en la siguiente nueva orientación de las actividades del Grupo de Trabajo 37. Se establece un equipo de tareas del GESAMP que depende del Grupo de Trabajo 37 para zanjar las brechas detectadas de datos e información científicos sobre fuentes antropógenas, liberaciones y posibles medidas para controlar las liberaciones de mercurio. Esta tarea ayudaría al PNUMA en la preparación, para 2013, de un acuerdo internacional vinculante para proteger el medio ambiente de las liberaciones de mercurio y sus compuestos. El equipo de tareas debería emitir un informe preliminar antes de agosto de 2010 y un informe final en 2011. Se establece un segundo equipo de tareas del GESAMP que depende del Grupo de Trabajo 37 para zanjar las brechas de información científica sobre el plomo y el cadmio para su integración, en agosto de 2010, en la publicación del PNUMA sobre exámenes de la información científica sobre el plomo y el cadmio, y para servir de base a las deliberaciones acerca de la necesidad de adoptar medidas mundiales respecto de estos metales. El GESAMP subrayó que en su labor el equipo de tareas debería prestar atención especial a la deposición de plomo y cadmio de la atmósfera y a la movilidad del plomo en el medio ambiente.

7 Aportación de productos químicos atmosféricos al océano (Grupo de Trabajo 38): Habida cuenta del creciente interés acerca de los efectos de la aportación atmosférica de sustancias tanto naturales como antropógenas en la química, la biología y la bioquímica de los océanos, así como en el clima, el GESAMP examinó las actividades del Grupo de Trabajo 38. Observó que este se había reunido en enero de 2010 para analizar y finalizar tres documentos para su publicación en revistas científicas revisadas por expertos en el período de marzo y abril de 2010, a saber:

1) Efectos de la deposición de nutrientes atmosféricos en la productividad marina: papeles del nitrógeno, el fósforo y el hierro;

2) Efectos de los SOx, NOx y NH3 antropógenos en la acidificación de las aguas costeras y las vías marítimas; y

3) Material orgánico atmosférico y los nutrientes que lleva al océano. Así pues, por estar tan cerca de completar su mandato actual y atendiendo a la propuesta de la Organización Meteorológica Mundial (OMM), se mantuvo el Grupo de Trabajo 38 y se le encomendó, con sujeción a la disponibilidad de financiación, que suministrara una descripción más pormenorizada de los procesos de transporte atmosférico y deposición de hierro y fósforo en el océano.

8 Determinación de las tendencias de contaminación mundial en el medio ambiente costero (Grupo de Trabajo 39): El GESAMP examinó una propuesta perfeccionada por el Organismo Internacional de Energía Atómica (OIEA) desde la 36ª reunión del GESAMP para este nuevo Grupo de Trabajo, que utilizaría un análisis retrospectivo de los ecosistemas sobre la base de archivos ambientales disponibles y series cronológicas de datos. La propuesta describió cinco tareas específicas para un programa de cuatro años de duración. En razón de que sólo se había confirmado apoyo limitado, el GESAMP aprobó el mandato para la primera fase del proyecto, es decir, la realización de un examen de la bibliografía (tarea 1) y una revisión crítica de las metodologías actuales sobre archivos ambientales, métodos de datación, indicadores de contaminación, técnicas analíticas y análisis de tendencias que podrían utilizarse (tarea 2). Posteriormente podrían acordarse las actividades siguientes en vista del resultado de la primera fase, y de la financiación adicional.

9 Contribución al Proceso ordinario de las Naciones Unidas: En 2009 la Asamblea General de las Naciones Unidas decidió establecer un Proceso ordinario, detalló su primer ciclo quinquenal de evaluación y acordó preparar recomendaciones sobre las modalidades de aplicación del Proceso para el siguiente período de sesiones cuarto trimestre de 2010. En vista de esto y sobre la base de las contribuciones sustantivas que aportó en la fase de "evaluación de evaluaciones" del Proceso ordinario, el GESAMP acordó mantener su ofrecimiento de desempeñar funciones específicas en el Proceso. En consecuencia, se examinó y actualizó el ofrecimiento hecho en 2009 (véase en el anexo VIII).

10 Contribución al programa para la evaluación de las aguas transfronterizas del FMAM: En 2009 se puso en marcha el programa para la evaluación de las aguas transfronterizas del FMAM, que tiene por objeto elaborar una metodología científicamente racional para evaluar el estado y las condiciones cambiantes de las principales masas de agua dulce y de mar compartidas, y que, entre otras cosas, se incorporará en el Proceso ordinario de las Naciones Unidas. El Programa de las Naciones Unidas para el Medio Ambiente (PNUMA) y la Comisión Oceanográfica Intergubernamental de la Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (COI de la UNESCO), en su calidad de organismos principales del programa para la evaluación de las aguas transfronterizas, habían invitado al GESAMP en noviembre de 2009 a hacer una contribución a dos de los cinco módulos del programa, a saber, la evaluación del mar abierto y la evaluación de los grandes ecosistemas marinos. De conformidad con la recomendación del Comité Ejecutivo de que el GESAMP participara en el programa para la evaluación de las aguas transfronterizas, el GESAMP analizó la forma en que podía hacer una contribución pertinente y observó con agradecimiento el ofrecimiento de la COI de la UNESCO de respaldar la participación de un representante del GESAMP en el segundo seminario del programa sobre los módulos de mar abierto y grandes ecosistemas marinos que se celebraría en junio de 2010 en Noruega. No obstante, el GESAMP observó que la financiación para la participación en ese programa seguía siendo un problema grave.

11 Determinación de cuestiones nuevas e incipientes en relación con la degradación del medio ambiente marino: Confirmando que la "función de radar" respecto de cuestiones nuevas e incipientes seguía siendo un elemento básico de su misión, el GESAMP aclaró los pasos necesarios para la determinación de dichas cuestiones y la forma de señalarlas a la atención de las organizaciones patrocinadoras y los posibles órganos de financiación. Esos pasos consistirían en el suministro de un breve resumen por escrito por los miembros en que se aclaraba la cuestión de que se trataba, el nombramiento de un grupo de trabajo por correspondencia con el objeto de que preparara un documento de antecedentes para su análisis en una reunión futura del GESAMP, su profundización en un seminario destinado a definir el programa científico y, por último, de ser necesario, el establecimiento de un grupo de trabajo del GESAMP para realizar una evaluación plena de la cuestión.

12 El GESAMP señaló la rápida ampliación de las centrales eléctricas, los aparatos de refrigeración industriales y las plantas de desalinización en las zonas costeras, la mayoría de los cuales se basan en la cloración electrolítica para prevenir las incrustaciones. Al evaluar los posibles efectos en el medio ambiente de los sistemas antiincrustantes electrolíticos con referencia a las normas nacionales y regionales de descarga recomendadas, se mencionaron las sustancias motivo de preocupación, como los oxidantes residuales totales y los subproductos de la desinfección con halógenos que se producen cuando el cloro interactúa con materia orgánica. Se destacó que las aplicaciones de los

sistemas de gestión del agua de lastre que se estaban presentando a la OMI para su aprobación incluían una sola fuente de datos analíticos sobre esos subproductos y que el GESAMP debería considerar la forma de desarrollar y divulgar este recurso.

13 El GESAMP analizó detenidamente el progreso en relación con cuatro cuestiones nuevas e incipientes que el GESAMP, en su 36ª reunión, había determinado se siguieran examinando.

1) Se aprobó la realización de un seminario sobre microplásticos como vector en el transporte de sustancias persistentes y tóxicas, en vista de la ubicuidad y prevalencia de los desechos plásticos en el medio ambiente marino. En ese seminario, que se realizará en la sede de la COI de la UNESCO en París del 28 al 30 de junio de 2010, se examinará el tema, se preparará un informe para su posible publicación en la serie de informes y estudios del GESAMP y, de considerarse necesario, se elaborará el mandato para un posible grupo de trabajo del GESAMP.

2) El GESAMP, sobre la base de un documento de antecedentes revisado, acordó, con sujeción a la disponibilidad de financiación, emprender un taller sobre perturbaciones endocrinas como resultado de la hipoxia en el medio ambiente marino para generar apoyo en relación con este tema.

3) El GESAMP convino en que debería prepararse un documento de antecedentes en el período entre reuniones sobre biomagnificación en los superpredadores y sus repercusiones ecológicas y sociales para suministrar información suficiente sobre las principales cuestiones en relación con este tema y su viabilidad y, especialmente, para determinar posibles asociados en actividades futuras en esta esfera.

4) El GESAMP acordó mantener el grupo de trabajo por correspondencia sobre Normas de calidad ambiental para que siguiera analizando la posibilidad de establecer normas mundiales, y ampliar la sección sobre normas de calidad ambiental en el sitio web del GESAMP.

14 Reunión especial sobre "el vínculo y la colaboración entre el GESAMP y los órganos regionales de protección del medio ambiente marino en Asia oriental sobre metodologías de evaluación del estado del medio marino": En la reunión se presentaron y debatieron varias actividades regionales de evaluación del medio marino e informes sobre su estado, entre ellos el Programa para la evaluación y control de la contaminación marina en el marco del Plan de Acción para el Mediterráneo (MAP/MEDPOL), el Informe sobre el estado del medio ambiente marino del Plan de Acción para el Pacífico Noroccidental (2007), el Informe sobre el estado del medio ambiente marino de Mares de Asia Oriental (2009) y la Base de conocimientos de COBSEA. Los posibles ámbitos de cooperación entre el GESAMP y los programas regionales sobre los mares en sus actividades de evaluación determinados en la 34ª reunión del GESAMP 34 en 2007 (por ejemplo, valoración económica de los servicios de los ecosistemas, recopilación de la información disponible, asesoramiento sobre cuestiones normativas o normas clave, y examen por expertos) seguían considerándose muy pertinentes, aunque nuevas esferas de interés podían añadirse fácilmente (por ejemplo, asesoramiento científico específico a pedido de los órganos regionales y asistencia en relación con el control de calidad de los datos).

15 Otros asuntos: El GESAMP aceptó peticiones para el examen por expertos en 2010 de:

1) un estudio sobre la determinación de la equivalencia de los sistemas incipientes y alternativos (no químicos) de gestión del agua de lastre; y

2) la próxima evaluación marina decenal de la Comisión para la Protección del Medio Marino del Atlántico Nordeste (OSPAR). El GESAMP también acordó prestar asistencia para la elaboración de un proyecto de estrategia/política regional sobre la gestión sostenible y basada en los ecosistemas de la erosión costera en la región de los Mares de Asia Oriental. Se ha determinado que la erosión costera era una cuestión incipiente en esa región.

16 Observación final: El GESAMP, que actualmente cuenta con 15 miembros y cinco grupos de trabajo, y participa en el Proceso ordinario de las Naciones Unidas, el programa para la evaluación de las aguas transfronterizas del FMAM, un foro de cuestiones nuevas e incipientes, que se desarrolla como se describió supra, tareas de examen por expertos y otros compromisos de asesoramiento, podría haber llegado al límite de su capacidad y arreglos institucionales. El GESAMP ha desarrollado una importante labor desde que se publicó la "Visión Estratégica" (resumen expuesto en el No. 74 de los Informes y Estudios del GESAMP), y será necesario mayor apoyo para garantizar la finalización de las etapas allí recomendadas y lograr la obtención oportuna y de calidad de sus productos.

УСТАНОВОЧНОЕ РЕЗЮМЕ

1 Введение: Объединенная группа экспертов по научным аспектам защиты морской среды (ГЕСАМП) провела свою тридцать седьмую сессию, организованную Координационным органом по морям Восточной Азии ЮНЕП (КОМВА) в Бангкоке, Таиланд, 15-19 февраля 2010 года. ГЕСАМП была учреждена в 1969 году рядом организаций системы Организации Объединенных Наций в качестве объединенной группы для содействия независимому междисциплинарному рассмотрению проблем загрязнения морской среды и охраны окружающей среды во избежание дублирования усилий в рамках системы Организации Объединенных Наций. Основные вопросы, рассмотренные на этой сессии, отражены ниже.

2 Модернизация ГЕСАМП: с конца 2005 года ГЕСАМП получала поддержку со стороны Шведского международного агентства по сотрудничеству в целях развития, основной целью которой являлось расширение участия экспертов из развивающихся стран в мероприятиях ГЕСАМП. Кроме того, Шведская морская администрация в конце 2006 года направила своего сотрудника работать в качестве члена ГЕСАМП. Эта поддержка вместе с созданием Бюро ГЕСАМП в ИМО в октябре 2007 года в качестве совместно спонсируемого мероприятия организаторов - спонсоров ГЕСАМП позволила ГЕСАМП реорганизовать свою деятельность, обеспечив связь с международным морским сообществом, а также посредством расширения своих консультативных мероприятий.

3 Оценка рисков, вызываемых опасными веществами, перевозимыми судами (РГ-1): эта Рабочая группа по просьбе ИМО оценивает угрозы для окружающей среды и здоровья человека, вызываемые жидкими химическими веществами, перевозимыми судами в цистернах. Созданная в 1971 году процедура ГЕСАМП по оценке опасности была пересмотрена в 1998 году, и к 2007 году все 800 характеристик риска были пересмотрены в соответствии с новой сопоставимой процедурой ГОС (ГЕСАМП, доклады и исследования № 64, 2002 год). В характеристике риска приводятся уникальные признаки каждого вещества, обеспечивая информацию по 14 критериям опасности, связанным со здоровьем человека, окружающей средой и психохимическими параметрами. ГЕСАМП считает целесообразным использование этих характеристик риска в более широком контексте, нежели морские перевозки в цистернах, и полагает, что перечень характеристик риска, известный как сводный перечень ГЕСАМП, следует конкретно разместить на веб-сайте ГЕСАМП вместе с дополнительными указаниями, которые должны быть разработаны относительно их использования вне их обычного контекста.

4 Обзор видов применения "активных субстанций", которые должны использоваться в системах регулирования балластных вод (РГ-34): РГ-34 провела три совещания в межсессионный период в целях оценки рисков для окружающей среды, команды и широкой публики, а также безопасности судов, вызываемых 13 предлагаемыми системами регулирования балластных вод. Она также провела обзорный семинар-практикум для обсуждения методики оценки, которую она применяет, а также для дальнейшей разработки сценария воздействия на людей на судах. ГЕСАМП постановила разместить на веб-сайте ГЕСАМП итоги работы каждой сессии РГ-34 после того, как они будут одобрены Комитетом по охране морской среды ИМО, повысив таким образом транспарентность. ГЕСАМП также рекомендовала провести третий обзорный семинар для окончательной доработки методики оценки рисков в целом, как это планировалось, а также в целях создания органа, которому будет поручено рассматривать потенциальное воздействие на окружающую среду в целом в тех случаях, когда в будущем будут применяться технологии регулирования балластных вод на судах, в частности, когда значительные объемы хлорированных балластных вод освобождаются в прибрежных водах.

5 Разработка экосистемного подхода к прибрежной марикультуре (РГ-36): в свете решения ФАО отменить свою поддержку Рабочей группе ввиду недостатка средств ГЕСАМП с сожалением закрыла Рабочую группу. Было принято решение оказать поддержку плану бывших членов Рабочей группы по подготовке для публикации документа в рамках научной литературы под ее оригинальным названием на основе результатов работы ее первого и единственного совещания в 2007 году.

6 Рабочая группа по металлам (ранее по ртути) (РГ-37): после отмены в 2009 году поддержки Рабочей группы со стороны ЮНИДО ГЕСАМП приветствовала два предложения ЮНЕП, которые привели к перенаправлению деятельности РГ-37 следующим образом: в рамках РГ-37 была создана Целевая группа ГЕСАМП для восполнения пробелов в выявленных научных данных и информации относительно антропогенных источников, выбросов и возможных мер для борьбы с выбросами ртути. Эта деятельность будет содействовать ЮНЕП в подготовке к 2013 году юридически обязательного международного соглашения по охране окружающей среды от выбросов ртути и ее соединений. Целевая группа должна подготовить предварительный доклад к августу 2010 года и окончательный доклад к 2011 году; вторая Целевая группа ГЕСАМП в рамках РГ-37 учреждена для восполнения пробелов в перечисленной научной информации относительно свинца и кадмия для включения в августе 2010 года в публикацию ЮНЕП "Обзор научной информации по свинцу и кадмию" и для предоставления информации при обсуждениях относительно необходимости

глобальной деятельности, связанной с этими металлами. ГЕСАМП подчеркнула, что Целевой группе в своей работе следует уделять внимание выпадению из атмосферы свинца и кадмия, а также мобильности свинца в окружающей среде.

7 Атмосферное воздействие химических веществ на океаны (РГ-38): признавая растущий интерес, касающийся воздействия атмосферных выпадений как природных, так и антропогенных веществ, влияющих на химию, биологию и биохимию океанов, а также на климат, ГЕСАМП рассмотрела мероприятия РГ-38. ГЕСАМП отметила, что РГ-38 провела в январе 2010 года обзор и завершила подготовку трех отдельных документов для публикации в экспертных научных журналах в период с марта по апрель 2010 года следующим образом:

1) воздействие выпадания атмосферных питательных веществ на морскую производительность: роль азота, фосфора и железа;

2) воздействие атмосферных SOX, NOX и NH3 на закисление прибрежных вод и судоходных трасс; и

3) атмосферные органические материалы и питательные элементы, которые они выносят в океан. Почти завершая свои нынешние полномочия, РГ-38 продолжила по предложению ВМО работу и выставила счет, в зависимости от наличия средств, за предоставление более детального описания процессов атмосферного переноса и выпадания железа и фосфора в океан.

8 Установление тенденций в глобальном загрязнении прибрежной среды (РГ-39): ГЕСАМП рассмотрела дополнительно уточненное после ГЕСАМП-36 предложение МАГАТЭ о создании новой рабочей группы, которая будет применять ретроспективный экосистемный анализ, основываясь на имеющихся архивных экологических и временных данных. В этом предложении отражены пять конкретных задач программы, срок которой в общей сложности определен в четыре года. Поскольку была подтверждена лишь ограниченная поддержка, ГЕСАМП утвердила круг ведения для первого этапа проекта, т.е. проведение библиографического обзора (задача 1); и критический обзор существующих методик относительно имеющихся экологических архивов, методов датирования, показателей загрязнения, аналитических методов и анализа тенденций (задача 2). Последующие мероприятия затем могли бы быть согласованы с учетом итогов работы первого этапа и дополнительного финансирования.

9 Вклад регулярного процесса Организации Объединенных Наций: Генеральная Ассамблея Организации Объединенных Наций в 2009 году постановила создать регулярный процесс Организации Объединенных Наций, предусматривающий первый пятилетний цикл оценки, и согласилась подготовить рекомендации относительно методов осуществления процесса до своей следующей сессии осенью 2010 года. ГЕСАМП постановила с учетом этой деятельности, а также основываясь на значительном вкладе, который она внесла в осуществление этапа “оценки оценок” регулярного процесса, поддержать свое предложение о выполнении конкретных функций в рамках самого регулярного процесса. Соответственно, предложение, которое она внесла в 2009 году, было пересмотрено и обновлено (см. приложение VIII).

10 Вклад Программы оценки трансграничных вод ФГОС: в 2009 году была инициирована Программа оценки трансграничных вод (ПОТВ) ФГОС, направленная на разработку научно достоверной методики оценки состояния и меняющихся условий в основных мировых совместных пресноводных и морских водоемах, и которая, в частности, будет включена в регулярный процесс Организации Объединенных Наций. ЮНЕП и ЮНЕСКО-МОК в качестве ведущих учреждений ПОТВ в ноябре 2009 года предложили ГЕСАМП внести вклад в подготовку двух из пяти планируемых модулей ПОТВ, т.е. рассмотреть оценки по “открытым океанам” и “крупным морским экосистемам (КМЭ)”. Действуя по рекомендации Исполнительного комитета, касающегося того, что ГЕСАМП следует принять участие в ПОТВ, ГЕСАМП обсудила, каким образом она могла бы внести соответствующий вклад, и с благодарностью отметила предложение ЮНЕСКО-МОК поддержать участие одного представителя ГЕСАМП во втором семинаре-практикуме ПОТВ по модулям “открытые океаны” и “КМЭ”, который состоится в Норвегии в июне 2010 года. Тем не менее, ГЕСАМП отметила, что финансирование участия в этой программе по-прежнему остается серьезной проблемой.

11 Выявление новых и возникающих вопросов, касающихся деградации морской среды: подтверждая, что “радарная функция”, касающаяся новых и возникающих вопросов, по-прежнему является одним из важнейших элементов ее миссии, ГЕСАМП уточнила меры, необходимые для определения таких вопросов, и методы доведения их до сведения спонсирующих организаций и потенциальных финансирующих органов. Сюда могут входить представление: первоначального краткого письменного резюме, составленного членами для уточнения вызывающего обеспокоенность вопроса; назначение корреспондентской группы для подготовки аналитического документа в целях его обсуждения на следующей сессии ГЕСАМП; глубокий анализ семинара-практикума для определения научной повестки дня; и, наконец, в случае необходимости, создание рабочей группы ГЕСАМП для проведения полной оценки вопроса.

12 ГЕСАМП отметила быстрое распространение прибрежных энергетических станций, промышленных охлаждающих предприятий, а

также предприятий по опреснению воды во многих развивающихся странах, большинство из которых в целях предупреждения неисправности зависит от электролитического хлорирования. В ходе оценки потенциального воздействия на окружающую среду систем электролитической очистки по сравнению с рекомендованными национальными и региональными стандартами выбросов было обращено внимание на такие вещества, вызывающие обеспокоенность, как общие остаточные окислители (ООО), а также галоидированные побочные продукты дезинфекции, которые возникают, когда хлор взаимодействует с органическим веществом. Было указано, что виды применения в системах регулирования балластных вод, в настоящее время представленные на утверждение ИМО, обеспечивают уникальный источник аналитических данных о таких побочных продуктах и что ГЕСАМП следует рассмотреть вопрос о том, как следует подготовить и опубликовать этот ресурс.

13 ГЕСАМП детально обсудила прогресс в отношении четырех новых и возникающих вопросов, определенных в ходе дальнейшего обзора на ГЕСАМП-36:

1) было одобрено проведение семинара-практикума по микропластикам в качестве переносчиков стойких и токсичных веществ, учитывая повсеместность и преобладание пластиковых отходов в морской среде. Этот семинар-практикум, который должен проходить в штаб-квартире ЮНЕСКО-МОК в Париже 28-30 июня 2010 года, рассмотрит этот вопрос, подготовит доклад для возможной публикации серии докладов и исследований ГЕСАМП и, в случае необходимости, выработает круг ведения возможной рабочей группы ГЕСАМП;

2) на основе пересмотренного обзорного документа ГЕСАМП постановила в случае наличия средств провести семинар-практикум по эндокринным нарушениям в результате гипоксии в морской среде в поддержку этой темы;

3) ГЕСАМП постановила, что в межсессионный период следует подготовить документ о биомагнификации у высших хищников и об экологических и социальных последствиях, с тем чтобы обеспечить достаточную основу по связанным с этим ключевым вопросам, оценить осуществимость и, в частности, определить потенциальных партнеров для будущей деятельности в этой области; и

4) ГЕСАМП постановила сохранить свою корреспондентскую группу по стандартам качества окружающей среды (СКОС) для дальнейшего изучения осуществимости применения глобальных стандартов и расширения веб-сайта ГЕСАМП, касающегося СКОС.

14 Специальная сессия, касающаяся "связи и сотрудничества между ГЕСАМП и региональными органами по охране морской среды в Восточной Азии, а также по методикам оценки морской среды": на этой сессии был представлен и обсужден ряд мероприятий по оценке морской среды и докладов о ее состоянии, включая: "Программу по оценке и борьбе с загрязнением морской среды в рамках Средиземноморского плана действий" (МАП/МЕДПОЛ); "Доклад о состоянии морской среды "Плана действий по северо-западной части Тихого океана (2007 год)"; "Доклад о состоянии морской среды морей Восточной Азии (2009 год); и "Базу данных КОМВА". Возможные области сотрудничества между ГЕСАМП и программами по региональным морям относительно мероприятий по оценке были определены на ГЕСАМП-34 в 2007 году (например, экономическая оценка экосистемных услуг, компилирующая имеющуюся информацию и рекомендация по ключевым вопросам политики относительно противоречивых вопросов или стандартов, и экспертная оценка), что по-прежнему считается чрезвычайно целесообразным, однако, если появятся новые области, представляющие интерес, они легко могут быть добавлены (например, предоставление конкретных научных рекомендаций по просьбе региональных органов и оказание помощи с надлежащим подтверждением данных).

15 Прочие вопросы: ГЕСАМП подтвердила просьбы об экспертных оценках в 2010 году относительно:

1) исследования по определению эквивалентности появления альтернативных (нехимических) систем регулирования балластных вод; и

2) следующей десятилетней оценки морской среды ОСПАР. ГЕСАМП также постановила помочь в разработке проекта региональной политики/стратегии устойчивой, основанной на экосистемном подходе борьбы с прибрежной эрозией в регионе Восточно-Азиатских морей. Для этого региона прибрежная эрозия была определена в качестве возникающего вопроса.

16 Заключительное примечание: в настоящее время ГЕСАМП со своими 15 членами, 5 рабочими группами, участием в регулярном процессе Организации Объединенных Наций, ПОТВ, новыми и возникающими вопросами, отраженными выше, 2 экспертными группами и другими обязательствами о вынесении рекомендаций, пожалуй, достигла пределов имеющихся возможностей и выполнения организационных мероприятий. ГЕСАМП проделала огромную работу после опубликования "Стратегической перспективы" (резюме приводится в ГЕСАМП, доклады и исследования, № 74, 2005 год), и ей необходимо расширить поддержку для обеспечения выполнения рекомендованных мер, с тем чтобы она могла гарантировать своевременное и качественное выполнение своих функций, которые от нее ожидаются.

1 INTRODUCTION

1.1 The Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) held its 37th session from 15 to 19 February 2010 in Bangkok, Thailand. The session was held under the Chairmanship of Mr. Tim Bowmer, with Mr. Lawrence Awosika serving as the Vice-Chairman. In order to strengthen the cooperation between GESAMP and the Regional Seas Programmes, the Coordinating Body of the East Asian Seas (COBSEA) hosted this GESAMP session; this was made possible through the kind support of the Division of Early Warning and Assessment (DEWA) of UNEP. The meeting was preceded by the GESAMP Executive Committee (ExCom) meeting on 14 February 2010.

Adoption of the agenda

1.2 The meeting approved the agenda prepared on the basis of previous GESAMP sessions. The agenda for the 37th session is attached as Annex 1 to this report.

2 REPORT OF THE CHAIRMAN OF GESAMP

Status of the GESAMP fundraising strategy

Introduction

2.1 The fundraising strategy of GESAMP was originally developed in 2007 and has two main components:

1 strengthening the contribution from the existing Sponsoring Organizations; and
2 the identification and approach of potential external sponsors.

2.2 These two components are equally important and are being pursued in parallel. GESAMP has focussed primarily on building and maintaining networks within the Sponsoring Organizations with less emphasis until now on other potential funding organisations.

2.3 It should be emphasized that the signature of the Memorandum of Understanding (MoU) by the Sponsoring Organizations of GESAMP is essential for GESAMP to continue to grow and develop and provides an important message to potential external sponsors. Without the MoU to support the new GESAMP, fundraising efforts will be considerably weakened.

2.4 GESAMP achieves stability and continuity through its Working Groups. Those related to International Conventions are usually long-lived and provide a tailor made and cost-effective service to the Sponsoring Organizations. Both of the Convention Working Groups led by IMO (WG 1 and WG 34) are self-financing through a fee charged to industry for the evaluation of chemical substances and ballast water treatment systems which they carry out. A third potential 'Convention' working group under discussion with the UNEP Division of Technology, Industry and Economics in Geneva would be a welcome addition in this respect.

The directory of funding opportunities and partnerships

2.5 The Directory of funding opportunities and partnerships is a document prepared by the GESAMP Office, but this list of potential contacts needs to be updated urgently. It contains a large number of potential contacts and GESAMP needs to focus its limited resources on a selected short-list of three to four leads.

2.6 It is proposed that the GESAMP Officer prepares an updated Directory for distribution to the members of ExCom.

Strengthening the contributions from the current Sponsoring Organizations

2.7 For GESAMP to ensure effective interagency co-operation, it is important that the Sponsoring Organizations claim their ownership and actively contribute to the activities of GESAMP. For some time now, only a small minority of agencies contribute to the running costs of GESAMP, some contribute to their own and others' Working Groups, while other agencies are not active at all.

2.8 As agreed in the initial fundraising strategy, the Chairman of GESAMP completed a round of visits to the eight agencies currently sponsoring GESAMP between December 2007 and August 2009 and has started on a second round (see below). These visits were successful in presenting the new GESAMP to a wider audience among its sponsors and in preparing the ground for the signature of the MoU. This has sent an important message to the agencies that their interest and contributions are needed; it also serves to provide support for the Technical Secretaries in their work to promote the services of GESAMP within their organizations:

1 Without structural support, GESAMP cannot continue to move forward and develop.

The Sponsoring Organizations will therefore be asked to show their support for GESAMP by accepting a financial paragraph in the latest version of the MoU; and

2 The MoU will also be used to determine that Sponsoring Organizations must sponsor at least two members for each GESAMP session. At present, nearly half the membership (all developing country members) is sponsored by the Swedish International Development Co-operation Agency (Sida).

2.9 GESAMP has made a rapid leap forward since 2007 thanks to Sida funding and the support by the Swedish Maritime Administration in providing a Junior Professional Officer for the last three years. However, this dependence on one major sponsor needs urgent attention and diversification in funding is the only safe option.

Types of funding

2.10 Fundraising is a long-term process which should involve a responsible officer to co-ordinate, the members and the Technical Secretaries of GESAMP. Fundraising initiatives taken on behalf of the new GESAMP will have to be followed up through successive Chairmen and Vice-Chairmen. It is difficult to see how this can be successfully pursued without permanently dedicated staff and GESAMP calls on the Sponsoring Organizations to consolidate its institutional arrangements.

2.11 Sponsoring (funding of GESAMP) occurs now on four levels:

Type 1: Structural funding from the Sponsoring Organizations;
Type 2: External, multi-purpose funding;
Type 3: External funding for specific themes, e.g., a project or a cluster of activities; and
Type 4: External assistance for ad hoc expenses, facilitation of meetings, etc.

2.12 Type 2 funding (external, multipurpose) is currently received from Sida, without which the new GESAMP would not have been possible. Sida funding runs out at the end of 2010. However IMO, through its Technical Cooperation Division, has re-applied to Sida requesting further support for GESAMP. A decision by Sida has been delayed due to the current economic climate but the possibility of receiving a further grant for 3-4 years looks reasonable. It should be borne in mind that Sida funding is restricted to specific activities and supports only the participation of developing country scientists. Using the Sida funding effectively therefore depends on finding contra-financing to support developed country participants in GESAMPs activities.

Identification and approaching of potential external sponsors

2.13 Since early 2009, the Chairman has focussed on Type 3 funding (thematic/project) and, as agreed in the fundraising strategy and with the help of the whole GESAMP organization, will continue to track down potential sponsors.

2.14 In addition to this, it is time to consider sources of Type 2, external multi-purpose funding. Finding a second country or organization with a similar agenda and interest in ocean affairs now therefore assumes a much more important position. However, it requires an approach which is probably best routed through the agencies themselves.

2.15 The following short-list was proposed as an initial focus:

UN agencies and other intergovernmental organizations:

1 **The European Union:** Directorates General for Environment, Research, MARE and External Affairs should all be approached for Type 2 funding.
2 **GEF:** Contact to be made regarding TWAP and marine environmental assessments.

National governments and agencies:

1 **Japan:** There are contacts with the Ministry of Environment in Japan, through GESAMP members and WG members. In addition, the Japan International Development Agency (JICA), as well as the Nippon Foundation were mentioned as potential funding sources. Japan has strong ties with IMO, UNEP, FAO, UN-DOALOS, plus several other sponsors of GESAMP.
2 **Norway:** Recent enquiries in Sweden indicated that an approach to Norway would not affect the Sida funding for GESAMP and it was felt that this could be a potentially strong lead to develop with the assistance of IMO in particular.

Preparing a budget projection

2.16 As a tool for both the internal discussions on cost-sharing of GESAMP activities and for approaching potential external sponsors, a budget projection needs to be prepared, preferably before discussions are started with potential partners.

2.17 The Chairman suggested that budget projections should be prepared covering a 3-year period, and that these are updated annually. The budget projections should contain:

1 block-planning charts for the Working Groups; and
2 estimates on reports, consultants, meetings, etc., including the cost and timing of these activities.

Action requested of GESAMP

2.18 GESAMP noted this report with appreciation and discussed the opportunities the fundraising strategy offered and the action required for its implementation.

Meetings attended by the Chairman, Vice-Chairman and members of GESAMP

2.19 **UNIDO**, Vienna, 29 July 2009: Environmental Management Branch, Technical Cooperation. Division: A first working visit was made by the Chairman and the GESAMP Officer regarding future co-operation. UNIDO indicated its desire to support GESAMP WG 39 together with IAEA. A meeting was held with the Senior Legal Advisor of UNIDO regarding the MoU.

2.20 **IAEA**, Vienna 29 July 2009: A courtesy visit was made by the Chairman and the GESAMP Officer to Dr. Werner Burkart, Deputy Director General of IAEA, Department of Nuclear Sciences and Applications, during which the IAEA proposal to GESAMP to initiate the IAEA-led WG 39 on coastal zone chemical pollution trends based on radio-chronological dating of sediment/coral cores was discussed. This would fit in well with the UNESCO-IOC- and UNEP-led Transboundary Waters Assessment Programme (TWAP) on the identification of 'indicators'. Progress with the GESAMP MoU was discussed and GESAMP was encouraged to maintain the strong contacts with IAEA's Marine Environment Laboratories in Monaco.

2.21 **UNEP Division of Technology, Industry and Economics (DTIE), Chemicals Branch,** Geneva, 5 and 28 August, 2009: Working visits by the Chairman, the GESAMP Officer and the Chairperson of WG 37 Mrs Helen Keenan were made to discuss possibilities for cooperation between GESAMP's WG 37 on Mercury and the preparation by UNEP of a global treaty on mercury by 2013, which UNEP's Governing Council approved in February 2008. This negotiating process contains a series of five conferences, and UNEP sees a need to fill data gaps and provide updates on mercury in the marine environment. Additionally, further advice is needed on lead and cadmium in the marine environment with a view to opening the door for inclusion in the mercury convention of the future. UNEP and GESAMP agreed to explore how GESAMP could best meet UNEP's needs regarding both the above issues.

2.22 **GEF 5th International Waters Conference**, Cairns, Australia, 26 to 29 October 2009: One of the members of GESAMP, Mr Mike Huber attended on GESAMP's behalf, in particular, to discuss GESAMP's contribution to TWAP with the UNEP representatives present.

2.23 **PICES,** North Pacific Marine Science Organisation, 23 October to 1 November 2009, Jeju, Republic of Korea: One member of GESAMP, Mr Peter Kershaw attended this annual meeting on "Understanding ecosystem dynamics and pursuing ecosystem approaches to management" and gave a presentation on behalf of GESAMP.

2.24 Tenth **Meeting of the UN Informal Consultative Process (ICP) on Oceans and the Law of the Sea**, New York, 17 to 19 June 2009: The Vice-Chairman, Mr Larry Awosika attended this meeting. A review of the ICP achievements and shortcomings in its first nine meetings was conducted and GESAMP's contribution to the ICP, especially through its association to its Sponsoring Organizations, was highlighted.

2.25 **IAEA**, Marine Environment Laboratories, Monaco, 10 November 2009: A working visit was made by the Chairman to IAEA-Marine Environment Laboratories to meet its new Director Mrs Maria Betti and to discuss progress in setting up of GESAMP WG 39 on long-term pollution trends. It was noted that the Terms of References might need some refinement. IAEA were positive that finance would be available in 2010 and indicated their intention to approach UNIDO regarding co-sponsorship. Progress on the GESAMP MoU was discussed. The suitability of applying for funding for GESAMP from the Rainier II Foundation was discussed: the main topics are climate change related, in particular biodiversity, polar research and drinking water in developing countries.

2.26 **Swedish Maritime Authority (SMA) and Swedish International Development Co-operation Agency (Sida)**, 2 February 2010, Norrkoping, Sweden: A working visit was made by the Chairman to the SMA. Progress with the current Sida funding (2006 to 2008 with an extension to 2010) was discussed. In addition, the seconded Junior Professional Officer post provided by SMA to IMO for the GESAMP Office was reviewed briefly with SMA's Director of Human Resources. Sida had entered sponsorship of GESAMP because of its independent scientific advisory function, to assist GESAMP to make itself inclusive, i.e. by allowing developing country scientists to take ownership of international processes. GESAMP fits well with Sweden's Global Development Programme, which also provides funding to IMO, UNEP and FAO. In this regard, Sida informed that a decision on a second period of funding for GESAMP Funding as part of a larger IMO application had been delayed.

Box 1. Activities of the Sponsoring agencies of GESAMP in the intersessional period (see Annex IV for further details)

IMO

- London Convention/London Protocol: regulation of ocean fertilization under the LC/LP, CO2 sequestration in sub-seabed geological formations; co-operation between UNEP GPA and the LC/LP on sub-sea disposal of tailing and associated wastes, destruction of marine habitat and marine litter
- Anti-Fouling Systems Convention: implementation including guidance on best management practises for removal of anti-fouling coatings from ships, including TBT hull paints
- Ballast Water Management Convention: implementation, including guidance to ensure safe handling and storage of chemicals to treat ballast water; towards harmonization of testing BWM systems and emerging BWM systems
- Ship recycling: the "Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (2009)", is aimed at ensuring that ships, when being recycled do not pose any unnecessary risk to human health and safety or to the environment
- International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) and the Protocol on Preparedness Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol)
- MARPOL 73/78 activities: Annex I (Oil), transfer of oil cargo, definitions of oil residues and oily bilge waters; carriage and use of heavy grade oil in the Antarctic area; Annex V (Garbage), draft amendments addressing general prohibition on discharge of garbage into the sea; waste minimization; loss of fishing gear; port reception facilities; management of cargo residues, etc; Annex VI, Prevention of Air pollution from ships, Efforts to reduce Greenhouse Gas emissions from ships in international trade through technical and market-based measures

IOC of UNESCO

- The UN Regular Process for global reporting and assessment of the state of the marine environment, including socio-ecomomic aspects
- Transboundary Waters Assessment Programme (TWAP), see also this report
- Ocean Acidification: an IOC and SOLAS (Surface Ocean - Lower Atmosphere Study) project prepared a summary for policymakers
- Joint action with ICES on nutrient standards
- Joint action with ICES and IMO on Ballast and other Ship Vectors
- Ocean Fertilization: an IOC and SOLAS project prepared a summary for policymakers
- Nitrogen: Nutrient over-enrichment of coastal ecosystems - work plan for an integrated focus on coastal research.

UNEP

- Marine and Coastal Ecosystem Branch (MCEB): UNEP established this Branch to steer and coordinate its marine and coastal programme and activities
- The Regional Seas Programme (RSP) carried out a wide range of activities in the intersessional period
- Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA): the GPA Coordination Office continued to provide assistance to countries in assessing how the conservation of marine and coastal ecosystems contributes to poverty alleviation and the achievement of the Millennium Development Goals and supporting countries in their efforts to mainstream coastal and marine resources management into national planning and budgetary frameworks
- UNEP World Conservation Monitoring Centre (WCMC) & UNEP Coral Reef Unit (CRU): In 2009, the WCMC's One Ocean Programme has also included the Secretariat of the International Coral Reef Initiative (ICRI), the Coordinating Unit of the International Coral Reef Action Network (ICRAN), and the UNEP Coral Reef Unit (CRU) to form a Centre of Excellence with respect to coral
- UNEP - Division of Early Warning and Assessment (DEWA): responsible, together with the IOC of UNESCO for the Regular Process and the Transboundary Waters Assessment Programme, TWAP
- The Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the Joint CMS/ASCOBANS aims to conserve terrestrial, marine and avian migratory species throughout their range
- UNEP/Global Resources Information Database (GRID)-Arendal: The Marine Programme of UNEP/GRID-Arendal aims to work in partnership with developing coastal states and Small Island Developing States to build capacity for an improved understanding of marine ecosystems and to promote the responsible management and sustainable use of the marine environment

Box 1. Activities of the Sponsoring agencies of GESAMP in the intersessional period (see Annex IV for further details) ...continued

UNIDO

- Coastal Tourism Project to demonstrate best practices & strategies to reduce the degradation of marine and coastal environments of trans-boundary significance, and to enhance sustainable tourism practices
- Large Marine Ecosystem projects: focused on the Guinea Current and the Gulf of Mexico

IAEA

- Climate Change and economic aspects related to Ocean Acidification
- Capacity building & networking: focal point for the certification of reference materials, marine radioactive and non-radioactive pollution monitoring and assessment, as well as for training and methodological development and harmonisation

UN-DOALOS

- Provided information on relevant policy developments and reported on GESAMP activities, in particular, in the context of the report of the Secretary-General on oceans and the law of the sea, and through relevant intergovernmental meetings
- Meeting of a Group of Experts on the revision of the UN Guide on the implementation of UNCLOS provisions on marine scientific research
- World Oceans Day designated on 8 June as from 2009, as resolved by the General Assembly in paragraph 171 of its resolution 63/111 on oceans and the law of the sea FAO and WMO did not submit information for this meeting.

3 REPORT OF THE ADMINISTRATIVE SECRETARY OF GESAMP

Activities and achievements of the Sponsoring Organizations of GESAMP since 2009

3.1 The Administrative Secretary of GESAMP, Mr Miguel Palomares (IMO) introduced an overview of the activities and achievements of the Sponsoring Organizations, with the aim of providing a context of their involvement and interest in the activities GESAMP undertakes (GESAMP 37/3). The highlights of these achievements are reported in detail in Box 1 below and Annex IV of this report.

3.2 In discussing this overview, it was noted that:

1 information on the activities of the International Geosphere-Biosphere Programme should be reflected in the report;
2 this overview could be used by members as an additional source for identifying new and emerging issues of interest to the agencies (see item 7 of the agenda);
3 the UNEP Yearbook which UNEP publishes annually, could be used as a platform to announce new and emerging issues; and
4 scientific reports of agencies could be peer-reviewed by GESAMP, if there was a need for such review and if GESAMP had the capacity to do it.

Activities of the GESAMP Office

3.3 The GESAMP Office, established at IMO as a co-sponsorship arrangement among the current sponsors of GESAMP, is currently staffed by one GESAMP Officer on secondment from the Swedish Maritime Administration (SMA). Mr Martin Soderberg's secondment contract expired in November 2009 and he was succeeded, in January 2010, by Mr Andreas Odhage, under a similar arrangement with SMA until at least January 2011. In addition, IMO provides the time of the Administrative Secretary and its Technical Secretary (extended support to the Office, in addition to the normal duties of the Technical Secretary) as an in-kind contribution. Furthermore, IMO provides office space and equipment, storage, etc. as well as secretarial support.

3.4 The main activities of the GESAMP office, in its third year of operation, were reported and GESAMP took note of these developments.

Outcome of the meeting of the Executive Committee of GESAMP (ExCom)

3.5 Mr Palomares presented an overview of the main decisions which ExCom had reached at its session held on Sunday, 14 February 2010, as shown in paragraphs 3.6 to 3.15 below.

3.6 Noting that the tenure of members of GESAMP was limited to a maximum of four years, ExCom agreed to establish the function of 'GESAMP Member Emeritus' for the purpose of retaining the institutional memory of GESAMP for instance with reference to issues of the development of marine environmental assessments such as the UN Regular Process. The description, role and function of a 'Member Emeritus' would be included in the GESAMP Rules of Procedure. ExCom also agreed to offer the honorary title of 'GESAMP Member Emeritus' to Mr Michael Huber, in recognition of his long, substantial and distinguished services to GESAMP.

3.7 ExCom discussed an overview of the financial and in-kind support which the current eight Sponsoring Organizations of GESAMP would provide to the activities of GESAMP in 2010 and agreed that the continuous commitment of these Organizations to GESAMP was vital and that regular contacts with the right people within these Organizations offered the key to ensuring such commitment.

3.8 ExCom noted with appreciation that the Swedish International Development Co-operation Agency (Sida) had authorized IMO to continue using the support for GESAMP still available from the Sida grant for the period 2006-2009, i.e., USD 260,000 in net terms, until the end of 2010. This is in view of the fact that Sida had, due to a major reorganization, not yet reached a decision on IMO's application in October 2009 for continuation of the support for the next three years. ExCom conveyed the gratitude of the Sponsoring Organizations to Sida and SMA for the substantive support that they had given to GESAMP's activities and for their positive interest in giving independent scientific advice for protection and sustainable use of the marine environment the attention it deserved.

3.9 ExCom reviewed the status of the 2007 funding strategy of GESAMP, which consists of two components, namely: (1) strengthening the contributions from the existing Sponsoring Organizations; and (2) the identification of potential external sponsors. ExCom agreed that:

1 GESAMP should develop a generic proposal containing a number of ideas to improve the chances of obtaining external financing;
2 the GESAMP Office should develop a standard letter introducing GESAMP to potential sponsors and presenting GESAMP as an organization worth investing in;
3 as successful fundraising requires continuous attention and specific skills, part-time support should be found to fulfil this task, for when the current Chairman of

GESAMP has completed his term in office; and

4 all Technical Secretaries would forward their contacts for approaching the right persons within the following EU Directorates: DG Research; Environment MARE and External Affairs when seeking support for GESAMP, as outlined by the Chairman in his report.

3.10 ExCom reviewed a new version of the draft Memorandum of Understanding (MoU) of GESAMP, which had been reformatted in October 2009, at the advice of UNEP, in accordance with the new UN standards for multi-donor trust funds, and using templates developed by the UN Development Group. ExCom reviewed the comments received from the Sponsoring Organizations on this draft and in particular the proposal that recognition of sponsorship of GESAMP would be conditional on making financial and in-kind contributions to the activities of GESAMP. After discussion, ExCom:

1 recognized that not all agencies could make such a commitment and, reluctantly, agreed that it may be necessary to adopt a two-tier sponsorship, i.e., contributing and non-contributing Sponsoring Organizations;
2 accepted, in principle, the new format and structure of the MoU as drafted; and
3 considered various other proposals for additional changes to the draft MoU and agreed that these should be put in a consultation document to be agreed in ExCom by correspondence so that a final draft text could be put to the Sponsoring Organizations for approval by 31 May 2010.

3.11 ExCom considered with interest the draft proposal by UNEP to support GESAMP WG 37 on mercury and its compounds (GESAMP 37/5/4) and noted the potential interest of IMO as a co-sponsor from the perspective of dumping of wastes at sea under the London Protocol. The proposal by UNEP together with the outcome of GESAMP's discussion on it would be submitted to the Scientific Group under the Protocol for its meeting from 19 to 23 April 2010 to gauge the potential for financial support from the Parties to the Protocol.

3.12 ExCom noted the status of discussions on the UN Regular Process and the convening by UN-DOALOS of the second session of the Ad Hoc Working Group of the Whole under the UN General Assembly from 30 August to 3 September 2010 in New York. Assuming that GESAMP's position in 2009 on its possible roles in the Regular Process was still valid and would be confirmed by GESAMP at this session, ExCom recommended that GESAMP should be represented in New York and that UN-DOALOS should be contacted with this intention.

3.13 ExCom confirmed its earlier agreement in December 2009, that GESAMP, invited by UNESCO-IOC and UNEP, should play a role in the Transboundary Waters Assessment Programme (TWAP). It regretted that it had not been possible for GESAMP to participate in the first session of the open oceans module and the LMEs module of TWAP held from 1 to 5 February 2010, due to lack of funding from the agencies and having received the clear indication from Sida that its funds could not be used for this purpose. ExCom agreed that the agencies should make every effort to support the participation of two GESAMP representatives to attend the second session of the abovementioned TWAP modules being planned in Norway in June 2010.

3.14 ExCom noted that IAEA was the next Sponsoring Organization in line to organize GESAMP 38 in 2011. The IAEA Technical Secretary to GESAMP indicated that it was willing to consider hosting this session in Monaco, in the week from 9 to 13 May 2011. The GESAMP Office should provide information on the hosting requirements to facilitate a confirmation by IAEA as soon as possible.

3.15 Finally, ExCom agreed that its next session in conjunction with GESAMP 38 should be planned for a full rather than a half day.

3.16 GESAMP, wholeheartedly, endorsed the decision by ExCom to offer Mr. Michael Huber the honorary title of 'GESAMP Member Emeritus', which Mr. Huber accepted with appreciation.

3.17 Mr. Palomares announced that he would retire from IMO on 31 December 2010 and, therefore, step down as Administrative Secretary of GESAMP. GESAMP expressed its deep appreciation for the strong support he had given to the cause of GESAMP and his excellent leadership shown since January 2007.

4 GESAMP OFFICE MATTERS

Website & virtual office

4.1 In the second half of 2009 the website was moved to a new host company. This was necessary to bring the service into an environment that would give the GESAMP Office control over the administration of the website and associated services. The move to a new host and technical platform has led to alterations to the design of the website. GESAMP now has a website service provider that takes care of website hosting as well as technical development and upgrades. In addition an integrated and English-speaking service desk is provided.

4.2 Work will continue to upload all of the pages and fora from the previous website in order to have full functionality for the Pool of Experts, the GESAMP intranet, the Environmental Quality Standards section and the publications archive.

4.3 Following a trial of a specific virtual office platform, it was concluded that while the user group is small, the individual users are spread over the world and that this requires a different approach. The GESAMP Office therefore looked for a more suitable solution and the choice fell on Google as the provider of the GESAMP virtual office. The virtual office was launched in November 2009 and is available to all Working Groups, Task Teams and Correspondence Groups if they so wish.

Pool of Experts

4.4 At its 36th meeting, GESAMP agreed that a membership committee should be established to expand and maintain the Pool of Experts. At present there are 173 expert nominations in the Pool representing institutions in some 45 different countries. From that total, 59 nominations (~34%) have been validated and can be used by GESAMP for its activities. Of those validated experts, roughly 86% are men and 14% are women. It is recognized that increasing the number of experts in the Pool is necessary but that this will take considerable time and effort as well as the support from a functioning website and database. IMO has recently offered the temporary assistance of a Technical Officer to help the membership committee to expand the Pool.

4.5 The members of GESAMP considered that ways of communicating with Pool members need to be developed and were concerned that the expectations of Pool members should be realistically managed. The Pool should be seen as a vehicle through which to contact small groups of experts in a wide variety of fields who could act as conduits for GESAMP, so avoiding a large Pool of unscreened experts. GESAMP recognized that there were immediate needs to recruit the following expertise for working groups and task teams: ecotoxicology, toxicology and occupational health and safety as well as coastal erosion and maritime engineering.

4.6 With regards to improving the communication with the Pool, the following was agreed:

1 Those joining the Pool receive a standard electronic response but it was felt that a personal response would be more welcoming;
2 It was agreed that the new GESAMP newsletter should be distributed to the entire Pool and the newsletter could be used to update Pool members of upcoming GESAMP activities requiring fresh expertise;
3 After a certain period of e.g. 2 years, Pool members should be contacted by E-mail and request to update their CVs;
4 Under no circumstance would GESAMP provide feedback on the reasons for non-selection to any activity of GESAMP.

5 PLANNING OF GESAMP ACTIVITIES

This section contains the progress reports of the Working Groups of GESAMP as delivered by their Chairpersons. Each section is followed by a brief record of GESAMP's deliberations with regard to decisions or approval of proposed actions required by the Working Groups in order to fulfill their terms of reference.

5.1. Evaluation of the hazards of harmful substances carried by ships (WG 1)

Introduction and background

5.1.1 At the request of IMO, the GESAMP Working Group on the Evaluation of Hazards of Substances carried by Ships (EHS Working Group, or WG 1) evaluates the hazards to the marine environment and human health of bulk liquid chemicals carried by ships and has provided support to IMO in this field for nearly 40 years to assist with the implementation of MARPOL Annex II and the International Bulk Chemicals Code. No session of WG 1 was held since the 36th session of GESAMP; the 47th session of WG 1 will be convened from 26 to 30 July 2010.

5.1.2 At its 36th meeting, GESAMP recommended that WG 1, which maintains over 800 hazard profiles of bulk liquid chemicals carried by ships, should take steps to promote this valuable resource more widely and to raise the visibility of the Working Group.

5.1.3 The GESAMP hazard profiles contain a unique fingerprint of each substance, providing information on 14 separate human health, environmental and physico-chemical hazard criteria. The profile consists of an alphanumeric notation designed to communicate hazard while maintaining confidentiality of the data. It is also compatible with the UN Globally Harmonized System (GHS) for chemicals classification. As such, these 800 hazard profiles are unique in that they have all been revised in the last twelve years, are peer reviewed by an international expert group based on data provided by industry, and are backed up by a well-maintained electronic and paper database allowing each profile to be reconstructed should it be queried by third parties. IMO publishes the hazard profiles almost annually as the GESAMP Composite list and they are placed on the IMO website for the use of Administrations, the shipping industry, and chemicals manufacturers.

Proposal

5.1.4 WG 1 proposed in document GESAMP 37/5/2 to give the Composite list with supporting explanatory text a permanent home on the GESAMP website and to make it available to a much wider audience. GESAMP Reports and Studies No. 64, entitled "The Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships", which contains the working methods of WG 1, carries a disclaimer which informs the user that the hazard profiles are only intended for use in bulk maritime transport. While the members of WG 1 were convinced that the profiles have always had a wider application since their inception some 40 years ago, this needs some further consideration.

5.1.5 The environmental hazard criteria contained in Columns A and B of the profile (bioaccumulation, biodegradation and aquatic toxicity, respectively) could be useful in a much wider pollution prevention setting than maritime transport only. The hazard profiles also provide standardised human health information in the form of acute toxicity in Columns C and D (oral, dermal, inhalation toxicity as well as skin and eye irritation and corrosion), as well as long term health effects (where known). As such this information could be useful in many working environments in which chemicals are handled. Finally, the physico-chemical behaviour information contained in Column E2 may have some application in accidental spill situations, while Column E3 was always intended to provide direct advice to local authorities related to restricting public access to amenities following a chemical spill on the coast. The hazard profiles are all based on GESAMP Reports and Studies No. 64 and in that sense for these to be usable in other contexts further interpretational information may be required. Some additional text may be needed to provide explanation on the proposed web pages.

5.1.6 GESAMP noted that WG 1 also made a contribution to the work of WG 34, the outcome of which is described in paragraph 5.2.10 below.

Action taken by GESAMP

5.1.7 After discussion, GESAMP agreed that:

1 there is merit for the use of the hazard profiles in a wider context than solely for Administrations, the shipping industry and chemicals manufacturers;
2 the hazard profiles, known as the GESAMP Composite list should be prominently placed on the GESAMP Web-site, together with the disclaimer; and
3 guidance on the usage of the hazard profiles out of their transport-by-ship context should be added; and
4 the IMO Legal Office should be informed

about this decision with regard to liability issues.

5.2 Review of applications for 'active substances' to be used in ballast water management systems (WG 34)

Introduction and history

5.2.1 The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) was adopted at IMO on 13 February 2004, in response to the increasing concern of the international community with regard to the transfer of invasive species in ships' ballast water. To date, 21 of the required minimum of 30 countries are party to the BWM Convention, so it is not yet in force.

5.2.2 Within this framework an approval system has been set up for those ballast water management systems which make use of an active substance or preparation to comply with the Convention that consists of a two-step approach, establishing a Basic Approval and a Final Approval. The level of approval is granted by MEPC based on the advice of the Ballast Water Working Group of GESAMP (WG 34).

5.2.3 The more general outline, scope, and aims of the BWM Convention have been addressed in the report to GESAMP 35 (see document GESAMP 35/5/1) and are only be referred to briefly here. The Terms of Reference of WG 34 have been added as Annex V to this report.

5.2.4 The main activities of WG 34 in the reporting period (GESAMP 37/5/1) concentrated on the evaluation of several Ballast Water Management Systems (BWMS) and the further development of the methodology of the Group, which has been accepted by MEPC as a 'living' document. This means that the methodology will be a discussion item at working group meetings and changes and improvements will be made as regularly as appropriate.

'Active Substances'

5.2.5 'Active Substances' are defined by the Convention as "substances or organisms, including a virus or a fungus, that have a general or specific action on or against harmful aquatic organisms and pathogens" and the approval of systems using such substances is described in resolution MEPC.169(57) adopted in 2008. However, not only 'Active Substances' are evaluated in WG 34; but all other substances considered relevant are taken into account in the evaluation. The Procedure for approval of BWMS that make use of Active Substances (G9) is contained in resolution MEPC.169(57) under the BWM Convention also distinguishes 'Relevant Chemicals' and 'Other Chemicals'.

5.2.6 Therefore, WG 34's task is to evaluate the risks of BWMS to the crew, the safety of the ship, the public at large, and the environment in a consistent and transparent manner, which in turn helps Administrations to deliver a concise dossier containing all the necessary data. The methodology as developed by WG 34 in the course of its work serves as guidance in the evaluation.

5.2.7 WG 34 was convened three times since GESAMP 36 to evaluate proposed BWMS and also held a stock-taking workshop to discuss the further development of the methodology. During these meetings, 13 BWMS were evaluated, eight of which received a recommendation for Basic Approval and three a recommendation for Final Approval. One system was not recommended for Final Approval because, among other deficiencies, it could not be demonstrated that the system would have no unacceptable effects on the receiving aquatic environment, while another system was not recommended for Basic Approval. During its meeting in July 2009, MEPC endorsed the recommendations of WG 34 in all cases and gave approval accordingly. Decisions on recommendations of WG 34 on the applications evaluated during this reporting period are all still pending as the next MEPC will be held in March 2010. Basic Approval was recommended to BWMS from the following IMO members: China, Denmark, Germany (twice), Norway and the Republic of Korea (three times). Final Approval was recommended to BWMS from Japan, Republic of Korea and South Africa. An overview of the systems evaluated in these meetings is presented in Annex 2 to document GESAMP 37/5/1.

Methodology for information gathering and its conduct of work

5.2.8 The evaluation methodology of WG 34 is a living document based on ongoing and increasing experience in the evaluation of BWMS. The work on the further development of the methodology that was started in 2009 was continued successfully with the second stock-taking Workshop (26 – 28 October 2009) to raise the internal consistency and the transparency of the evaluations. External experts have been invited to help in the further development of the methodology.

5.2.9 The main focus of the stock-taking Workshop was on the further development of the Human Exposure Scenario (HES) on board ships and its unit (task-based) operations for which an additional expert has been invited with an outstanding expertise in the assessment of human exposure. Another topic was the further development of the environmental exposure scenario using the model MAM-PEC for

which additional insight has been gained on the amount of ballast water exchanged in specific ports. A reasonable worst case assumption was agreed upon of 100,000 m^3/d of discharged ballast water, meaning that earlier assumptions appear to be too high. Further topics were the development of a database with the main characteristics, as discussed above with the aid of external experts, including:

- the further development of a Human Exposure Scenario (HES),
- the application and parameterisation of an environmental exposure model (MAMPEC) and
- the consistency in the application of assessment factors to acute and chronic ecotoxicity tests.

It is the intention of the Working Group to incorporate the results of the workshop into the methodology.

5.2.10 In the WG 34 report to GESAMP 36, the co-operation between GESAMP WG 34 and WG 1 was already reported. For 17 active substances and relevant chemicals, some of which are disinfection by-products (DPB) it was considered helpful to gather and select a standard set of data on the physico-chemical characteristics, the environmental fate and toxicological hazards for human health and the environment. This would ensure that the same data would be used for the evaluation and risk assessment of all applications. Although many useful data have been collected the data base is not yet complete and requires additional work, before WG 34 can offer a complete methodology to the Administrations and the Applicants.

5.2.11 The reports of the last three sessions of WG 34 have already been approved by GESAMP before forwarding the final reports to MEPC 60, which meets from 22 to 26 March 2010. The 13th meeting of WG 34 has been scheduled from 24 to 28 May 2010. Depending on the number of applications to be evaluated, additional meetings may need to be scheduled.

Risk Assessment Methodology used by WG 34

5.2.12 The Chairman of WG 34 presented the risk assessment process to GESAMP as used for the evaluation of BWMS under the BWM Convention. Based on a preliminary evaluation of the data requirements and its quality, a risk assessment is carried out for human health, and the environment. In addition, the ship's safety in the form of the corrosion properties of BWMS is considered. The risk assessment is performed using well-known methods from the evaluation process of biocides as carried out in e.g., the United States and the European Union. The Guidelines and Procedures to the Convention outline the data required to perform a risk assessment. Where needed, WG 34 may propose additional methods to improve the risk assessment. These proposals have first to be approved by MEPC. The Applicant then has to perform additional testing with its BWMS in order to show the acceptability of the systems against environmental criteria such as the short and long term toxicity testing with the whole effluent of the treated ballast water (WET). Such WET-tests are an additional safeguard to protect receiving waters as no residual toxicity of the treated ballast water is allowed at discharge.

5.2.13 The main item still missing from the methodology is the potential short term effect of the discharged ballast water which needs the development of a short term exposure scenario.

Discussion

5.2.14 In discussing the report of WG 34 it was clarified that the BWMS applicant had to ensure the quality of the test data provided, using accepted testing methods and that the entire process from BWMS design through the Basic Approval and Final Approval by MEPC and its type approval by the National Administration towards marketability of the system might take 2,5 to 3 years. The findings of WG 34 should be made available for a wider audience after MEPC has discussed the recommendations contained therein.

5.2.15 It was furthermore suggested that there would be merit in looking at the impact of BMWS technologies on the marine environment as a whole when they become widely applied on ships in the future; particularly if vast amounts of chlorinated ballast water (hypochlorites) are to be discharged by ships in coastal waters. The IMO Technical Secretary suggested that, if GESAMP would endorse this activity as a 'watching brief' the current funds for WG 34 could be used in this respect.

Action by GESAMP

5.2.16 In conclusion, GESAMP agreed:

1 to make available the findings of each WG 34 session on the GESAMP website after MEPC has discussed these;
2 to strongly recommend that WG 34 should involve experts from developing countries in its work;
3 to recommend that the 3rd Stock-taking Workshop should indeed be held to complete the risk assessment methodology in full, as planned;
4 to establish a watching brief on the potential impact on the environment as a whole when BMWS technologies are applied on

ships in the future (see also paragraph 7.6 below); and

5 that there might be other cross-over issues from the current and future work of WG 34 to item 7 of the agenda (new and emerging issues).

5.3 Development of an ecosystem approach to mariculture (WG 36)

5.3.1 Following contacts in late 2009 with the GESAMP Technical Secretary of FAO, Mr Uwe Barg and the Chairman of the Working Group, Mr John Marra, the Chairman of GESAMP learned that due to lack of funding this working group had again been unable to proceed with its task. The members of the Working Group had previously produced a short report on their first and only meeting in 2007 and plan to prepare a paper for publication in the scientific literature from this. GESAMP decided that under the circumstances it was best to close the Working Group with thanks to its members for their patience and dedication. GESAMP requested the Officer to provide Mr Marra and the former Working Group members with any administrative support that they might need to complete the publication under their own title.

5.4 Expanded scientific review of mercury and its compounds and threats to the marine environment (WG 37)

5.4.1 UNEP presented the two meeting documents GESAMP 37/5/4 "Expanded scientific review of mercury and its compounds and threat to the marine environment" and GESAMP 37/5/5 "GESAMP's assistance in filling some of the identified data and information gaps of the reviews of scientific information on lead and cadmium". Information on these issues will be useful for the negotiation of an international agreement to control mercury releases and to inform discussions on the need for global actions in relation to lead and cadmium.

5.4.2 GESAMP agreed to support UNEP's work on these issues and to deliver reports on the requested topics. To execute these tasks, it was agreed that the previously established mercury Working Group (WG 37) should be continued in a new and expanded role. Two task teams under this Working Group would be established on respectively mercury and lead/cadmium. The WG 37 will be chaired by Mrs Helen Keenan who will also coordinate the work in both task teams.

The work on mercury:

5.4.3 Anthropogenic sources, releases and possible measures to control these releases will be covered, but GESAMP was initially uncertain if the whole aquatic environment could effectively be covered, i.e., including freshwater. GESAMP will shortly after the meeting make enquires with their experts to specify the scope of work with the aim of delivering a preliminary report by August 2010 and a final report to be delivered at the latest in March 2011.

The work on lead and cadmium:

5.4.4 The scope of work as suggested (in particular the information gaps listed by UNEP) was considered to be achievable. It was stressed by GESAMP that deposition from the atmosphere of lead and cadmium are important sources of input to the marine environment and that the mobility of lead is an important issue that should be included in the scope of work. A deadline for delivering the work was set for August 2010 in order for this information to be integrated into UNEP's final draft "Reviews of scientific information on lead and cadmium".

5.4.5 GESAMP, as represented by the Chairman of the WG, Mrs Helen Keenan, will participate in the process of finalizing the UNEP Reviews on lead and cadmium to ensure that GESAMP's work is properly reflected, and thus formally becoming a member of the UNEP working group on lead and cadmium. GESAMP will in this respect send a letter to UNEP as requested in the discussion paper (GESAMP 37/5/5).

Funding and support:

5.4.6 UNEP will make a legal agreement (a UNEP Small Scale Funding Agreement) with the University of Strathclyde, UK, representing GESAMP in this matter, to cover the cost of travel to an expert meeting in Geneva this Spring and to contribute to support the work on mercury, lead and cadmium. IAEA offered to sponsor the participation of one expert, while funds from Sida will be used to support experts from developing countries.

5.4.7 The IMO Technical Secretary of GESAMP will submit the Proposal of UNEP together with the conclusions of GESAMP to the next session of the Scientific Groups (19 – 23 April 2010) to seek support from the contracting parties to the London Protocol, assuming they would be interested in reference materials on heavy metals when controlling these in sediments to be dredged and dumped.

5.5 Atmospheric input of chemicals to the ocean (WG 38)

5.5.1 A report of the activities of WG 38 was given by Mr Robert Duce, co-Chairman of the Working Group (document GESAMP

37/5/3). He reminded GESAMP of the Terms of Reference of the Working Group, which are:

1 Assess the need for the development of new model and measurement products for improving our understanding of the impacts of the atmospheric deposition of nitrogen species and dust (iron) to the ocean;
2 Review the present information on the atmospheric deposition of phosphorus species to both the marine and terrestrial environments, considering both natural and anthropogenic sources, and evaluate the impact of atmospheric phosphorus deposition on marine and terrestrial ecosystems. Consider whether such a review of any other substance would be useful; and
3 Work with the WMO Sand and Dust Storm Warning and Assessment System and with the WMO Precipitation Chemistry Data Synthesis and Community Project to evaluate the needs of the marine community and assist in clearly articulating them in the development of these WMO efforts.

5.5.2 The Chairman of WG 38 reminded GESAMP that Term of Reference No. 3 above was satisfied by the development of two letter reports, including recommendations, at the Working Group's first meeting, held in Tucson, Arizona, USA in December 2008. These letter reports were reviewed by GESAMP and were submitted by GESAMP to WMO in April 2009.

5.5.3 In the intersessional period between the first and second meetings of WG 38 Terms of Reference No. 1 and No. 2 were addressed by gathering information for three separate papers that the Working Group began to develop in the areas of phosphorus, nitrogen, iron and organic matter deposition from the atmosphere to the ocean.

5.5.4 The second meeting of WG 38 took place in London at IMO from 12-15 January 2010 and it was supported by WMO, IMO, and Sida. During the meeting Working Group members broke up into three sub-groups, each addressing the drafts of the three papers, which are outlined below. At the completion of the meeting significant progress had been made on finishing the three papers. The titles of these three papers and their current status is as follows:

1. Impacts of atmospheric nutrient deposition on marine productivity: roles of nitrogen, phosphorus, and iron. This paper has now gone through more than six drafts, and it is estimated that it will be submitted for publication to either Nature Geosciences or Geophysical Research Letters before the end of March 2010.
2. Impacts of anthropogenic SOx, NOx and NH_3 on acidification of coastal waters and shipping lanes. This paper has gone through at least three drafts and it is expected that it will be submitted for publication in Geophysical Research Letters by mid-April 2010.
3. Atmospheric organic material and the nutrients it carries to the ocean, which is a much longer and more detailed paper than the other two, should have a comprehensive draft completed by mid-March, with plans to submit it for publication in Global Biogeochemical Cycles by mid-April 2010.

5.5.5 The Chairman of WG 38 described some of the primary results and conclusions of these three papers.

5.5.6 In order to more specifically elaborate the role of chemicals carried by dust which are responsible for marine biological production, WMO proposes the extension of WG 38 activities for another year or two beyond 2010, with the aim of achieving a more detailed description of the atmospheric transport and deposition process of iron- and phosphorus-carried minerals to the ocean. WG 38 would establish a close cooperation with the WMO Sand and Dust Storm Warning and Assessment System (SDS-WAS) in order to exploit the already existing modelling and observational capabilities of the SDS-WAS project, and a meeting in the spring of 2011 would be joint between WG 38 and SDS-WAS. This meeting in the spring of 2011 would have a tentative title "Expert Workshop on Modelling and Observing the Impacts of Dust Transport/Deposition on Marine Productivity".

5.5.7 The proposed specific themes of the joint activities to be discussed at this workshop would be:

- Specifying test-bed regions for studies (Central Atlantic; North Pacific; Indian Ocean; possibly others);
- Employing dust/iron/phosphorus models with resolutions as high as possible;
- Improving quantitative estimates of geographical distribution of mineral fractions;
- Long-term (re-analyses) and case-study assessment of mineral ocean input and marine response provided by dust/Fe/P and ocean modelling and by remote-sensing and in-situ observations; and
- Environmental and climate consequences.

5.5.8 WMO/GESAMP will seek co-sponsorship from other interested partners, such as ESA, NASA and others, and it is hoped that IMO and Sida will continue to support the Working Group's activities as well. This third meeting of WG 38 would likely take place in Malta. GESAMP members approved the continuation of WG 38, subject to the availability of funds.

5.5.9 At both meetings of the Working Group all but two of the members were able to attend - different people for each meeting. For the second meeting both of the two individuals

who could not attend did participate by phone during the meeting.

5.6 Establishment of trends in global pollution in coastal environments (WG 39)

Introduction and background

5.6.1 The main objective of this Working Group is to contribute to the reduction globally of coastal ecosystem stress by providing stakeholders, scientists and society in general with an objective and global assessment of pollution trends during the last century in sensitive coastal ecosystems, through retrospective ecosystem analysis, by using dated environmental archives and time-series data where available. The main tasks to be carried out by the Working Group are i) to establish links with other organizations, ii) to revise existing methodologies on suitable environmental archives, dating methods, pollution indicators, analytical techniques and trend analysis, iii) to review existing data, including data quality, on a regional basis and iv) disseminate the Working Group activities. The main outputs of the Working Group will be reports on the proposed methodology and a synthesis on existing data. IAEA had originally presented this proposal for a new Working Group to GESAMP 35.

Discussion

5.6.2 There were some concerns from GESAMP Members on the reliability of sediment records of pollution. It was stated that ^{210}Pb and ^{137}Cs chronologies provide the temporal frame to interpret the records of sedimentation changes promoted by anthropogenic impact or climatic variations. When combined with historical data, these records are of great interest because they offer a possibility for retrospective studies about environmental changes, beyond the time-scale of any existing monitoring program. However, finding unaltered sedimentary records in the coastal marine environment is a difficult task. Waves, tide and wind currents, benthic fauna and anthropogenic activities (dredging, fishing, aquaculture) in the coastal zone are some of the main factors that contributes to obliterate the sedimentary records in the coastal lagoons, producing anomalous ^{210}Pb profiles that are useless for historical reconstruction. On the other hand, process such as: (a) reduction of sediment load due to river impoundment, (b) increased accretion due to erosion on the continent promoted by land use changes or (c) transport of old sediments (depleted in ^{210}Pb) produced by tillage in agriculture fields, are also factors than produce non-monotonous ^{210}Pb profiles that are difficult to interpret. Another problem reportedly observed in sediment cores collected in low latitude regions is the absence of ^{137}Cs signal which has been explained on the basis of: (a) a low ^{137}Cs atmospheric flux in these regions due to atmospheric circulation patterns; and (b) the greater solubility of ^{137}Cs in seawater.

5.6.3 Clarification was made on the importance of recognizing that in the highly changing conditions of coastal areas due to urbanization and industrialization, it is common to find that sedimentation process would produce atypical ^{210}Pb that must then be examined in a broader perspective and be open to interpretation based on variable sedimentation rates, variable sediment sources (that would provide variable ^{210}Pb supported) and sometimes affected by the fingerprints from meteorological events that could even be used as time-markers. The textural and geochemical characterization of these sediments, will help for a better interpretation of ^{210}Pb profiles, providing a more solid background to decide on their reliability. Nonetheless, ^{210}Pb-derived geochronologies must be always corroborated with additional time markers. Because of the limitations in the use of ^{137}Cs in many areas of the world, it is important to be open to explore the use of alternative tracers such as palynological markers; or other geochemical information such as trace metals and nutrients concentrations, and C and N isotopic composition of the organic matter.

Issues/Comments related to the document circulated (GESAMP/37/5/6):

1. Establish links with International Geosphere-Biosphere Programme (IGBP)-IMAGES: It was commented that contact with this and other programs would allow the group to identify how WG 39 can best contribute-benefit with their interaction.
2. Well-coordinated and documented programs for monitoring coastal sediments are relatively scarce and GESAMP considered that this is an issue that could be improved. After a proper review of information available (tasks 1 and 2) WG 39 could provide recommendations on how to introduce this potentially powerful methodology into coastal sediment monitoring programs.
3. Revise suitable environmental records (archived data): the idea of WG 39 is to evaluate from available information (bibliographic review, Task 1) the environmental archives and methods that have been used so far to provide retrospective data for environmental changes.
4. A review of the existing data has to come, by and large, from scientific literature. WG 39 proposes a time frame of 2 years to complete this task provided sufficient technical and secretarial support is made available.

5. The concept of building a "database of global pollution trends pollution" is not strictly applicable for sedimentary environments at 200 meters and shallower. One GESAMP Member clarified that (a) pollutants such as heavy metals, nutrients, POPs often have a strong affinity for particle surfaces of sediments; (b) the scavenging of these substances by suspended particulate matter and subsequent sedimentation creates a repository of valuable historical information on the temporal trend of pollutants input into aquatic ecosystems. With a valid accumulation rate, those records can provide specific data about sediment accumulation and the anthropogenic fluxes of pollutants. The use of marine sediments to provide information on changing sediment fluxes is well established and the most widely used method for dating recent sediments in marine (or lacustrine) environments is based on the examination of ^{210}Pb profiles, being an ideal tracer for dating aquatic sediments deposited during the last 100 years, a period of time during which appreciable environmental changes occurred due to industrialization. Assuming that the environmental records available correspond to the same timeframe (within 100 years), it should be possible to compare/evaluate the trends observed at each region, with the aim to reach a global view if possible.
6. Records based on 137Cs and Pu-isotopes are of regional significance and cannot be generalized for larger geographical areas. It was stated that these isotopes are used as time markers for the sedimentary record; however, as their sources are in the past 1960s (and 1986 for 137Cs) recent geochronologies might not be able to be reconstructed by using these artificial radionuclides. So, for more longer and detailed chronological records, we expect to find enough information from 210Pb-based studies.

Actions by GESAMP

5.6.4 GESAMP noted with interest that five consecutive tasks with time lines had been identified in this document. However, in light of the fact that the proposal was not fully costed and funded, GESAMP agreed that WG 39 should initially start with executing Task 1 (Bibliographic review, definitions, methodologies) and Task 2 (Critical review of existing methodologies on suitable environmental archives, dating methods, pollution indicators, analytical techniques and trend analysis. Review existing data, including data quality), as proposed, aimed at presenting the outcome for peer review by GESAMP. Follow-up activities could then be discussed and agreed in light of the outcome of this first phase.

6 CONTRIBUTION TO THE UN REGULAR PROCESS/GEF TRANSBOUNDARY WATERS ASSESSMENT PROGRAMME (TWAP)

6.1 In December 2009, the UN General Assembly endorsed the recommendations of its Ad Hoc Working Group of the Whole to establish the UN Regular Process, describing its first assessment cycle and approved the convening of an informal meeting of the Ad Hoc Working Group of the Whole from 30 August to 4 September 2010 to prepare recommendations to the General Assembly on the modalities for implementation of the UN Regular Process (res. A/64/L.18). In the light of this GESAMP was invited to consider proposals/recommendations for its further involvement in the UN Regular Process.

6.2 In January 2009, UNEP received approval from the Global Environment Facility (GEF) to implement together with it's partners, the Transboundary Waters Assessment Programme (TWAP) with funding from GEF. TWAP is aimed at the development of a scientifically sound methodology for assessing the status and changing conditions of the world's major shared freshwater and marine water bodies and will, inter alia, feed into the UN Regular Process. The meeting was informed that UNEP and UNESCO-IOC invited GESAMP to make a contribution to two of the five planned TWAP modules, i.e., the modules addressing assessments of the "Open Oceans" and the "Large Marine Ecosystems (LMEs)" and on 16 December 2009, the Executive Committee of GESAMP advised positively on GESAMP's involvement in TWAP. However, due to the fact that the Swedish Government advised IMO that its support for GESAMP cannot be used for involvement in TWAP and as no funding was available from other sources, GESAMP was regrettably unable to attend the first meetings of the two TWAP modules held from 3 to 5 February 2010 in Paris.

6.3 GESAMP agreed to maintain its offer to assist in the further process of developing TWAP as well as to continue to offer to deliver specific functions in the Regular Process itself. The GESAMP members welcomed the decision by the GESAMP Executive Committee that GESAMP should seek to be represented at the meeting of the Ad Hoc Working Group of the Whole at its next meeting at DOALOS in New York in August-September 2010.

6.4 GESAMP reviewed the Annex of the report of GESAMP's 36th meeting in 2009 on the possible role of GESAMP in the UN Regular Process, with a view to update it before submission to DOALOS/AHWGW. The document was found to be still valid, but it was agreed that it required updating in light of the development of the Regular Process since GESAMP 36. However, to avoid any misconceptions regarding GESAMP's perception of its possible role in the Regular Process, and to stress that this is in line with the views of the Sponsoring Organizations, it was decided that the revised document should maintain a paragraph which specifies which aspects GESAMP considers that it cannot contribute to the Regular Process., the revised document should refer to UNGA Resolution A/64/347 to reflect that GESAMP is fully aware of the status of the Regular Process.

6.5 GESAMP discussed thoroughly the Regular Process and TWAP and how GESAMP could make a relevant contribution to both. GESAMP recognized that efforts under TWAP can become a mechanism to deliver data on open oceans and LMEs to the Regular Process, but that this depends on the further clarification and decisions on the modalities for the Regular Process. It was also noted that one purpose of TWAP is for the GEF to assess its future investment in the Regular Process once the mechanisms have been decided by UNGA.

6.6 The invitation by UNESCO-IOC and UNEP in December 2009 for GESAMP to become a partner in the implementation of TWAP was highly welcomed by GESAMP members. The UNESCO-IOC confirmed that it would support the participation of a GESAMP representative in the second TWAP workshop on 'Open Oceans & LMEs' to be held at UNEP/GRID-Arendal, Norway in June 2010.

7 IDENTIFICATION OF NEW AND EMERGING ISSUES REGARDING THE DEGRADATION OF THE MARINE ENVIRONMENT TO RELEVANCE TO GOVERNMENTS AND SPONSORING ORGANIZATIONS

Introduction

7.1 The GESAMP agenda item entitled "New and Emerging" Issues has a long history and is intended to bring new topics related to the degradation of the marine environment to the attention of the Sponsoring Organizations. GESAMP at its 35th and 36th meetings identified four new topics under this agenda item and with this growing workload felt the need to refine its working practices.

7.2 Members were concerned that effort would be spent on topics which might not receive financial support. However, it was pointed out that GESAMP needed to highlight a range of new and emerging issues to attract the attention of the Sponsoring Organizations and other funding bodies. It was recognised that not all topics would need a working group approach and that some less formal and less time-consuming alternatives were required. Furthermore, the members felt that in preparing for Agenda item 3, the agencies might consider highlighting issues which they deem appropriate for GESAMP to consider informally.

7.3 The members agreed that in order to propose a New and Emerging Issue to GESAMP, a short written summary of the issue was needed to make the issue clear and to encourage discussion. Should the members approve such short papers for further consideration, then the agencies would be requested to indicate any potential conflict with their own activities. A leader would then be appointed by GESAMP to progress the issue and a correspondence group could be initiated as a first step with a mandate to prepare a scoping paper, including scale, feasibility and possibilities for funding. All agreed New and Emerging Issues short papers and scoping papers should feature prominently on the GESAMP website. On the basis of such scoping papers, GESAMP could then decide to communicate the topic to possible funding bodies either as a stand-alone proposal or as part of a broader package and await developments. Alternatively, it could recommend a further step such as a workshop as it has recently done in the case of the micro-plastics and endocrine disruption/hypoxia issues.

7.4 The members agreed that the development of a "radar function" would strengthen the New and Emerging Issues item. Members would be asked as a matter of course to monitor organisations specialised in trend-watching within their own fields of specialisation.

7.5 The members felt that issues of a National or Regional nature, which were adequately covered by advice elsewhere, were unsuitable for consideration as a New and Emerging Issue unless there was some new aspect involved.

New and Emerging issues from GESAMP 37

7.6 One member of GESAMP noted the rapid expansion of coastal energy generating stations, industrial cooling units and desalination plants in many developing countries, most of which rely on electrolytic chlorination to prevent fouling. Attention was drawn to substances of concern such as Total Residual Oxidants (TRO) as well as halogenated disinfection by-products, which occur when chlorine interacts with organic matter. It was pointed out that GESAMP's WG 34 was in possession of a growing body of data on the composition and concentrations of chlorination by-products such as halomethanes, e.g. bromoform and haloacetic acids as well as standardised environmental hazard data, which might be of use to other organisations when assessing the potential environmental impact of electrolytic antifouling systems. Recommended standards for Total Residual Oxidants (TRO) differ nationally and regionally; the World Bank discharge standard being 0.2 mg/L but which allows up to 2mg/L for shorter periods within 24h. GESAMP decided to consider this further under Agenda item 8, scoping activities, in particular environmental quality standards (see below).

8 SCOPING ACTIVITIES

***Correspondence group** on Environmental Quality Standards (EQS) to explore the possibility of global standards and to expand the GESAMP web site section on EQS*

8.1 The GESAMP web pages on Environmental Quality Standards will be expanded to include information on chlorination by-products, as well as links to, recommended standards and it will be used to present summarised data from the published reports of the Ballast Water Working Group (WG 34).

8.2 Environmental Quality Standards (EQSs) are advisory levels that are used to assess the risk of chemical pollutant effects on water quality to the health of aquatic plants and animals. Normally these limits are set for fresh and marine waters and sediments. At GESAMP 36, the concern was raised that such values differ from country to country and that developing countries in particular do not have adequate guidelines.

8.3 A database of available EQS standards was made available on the GESAMP website in the intersessional period with the intention of promoting this as the premier link when searching for EQS.

8.4 To further develop this resource, it was agreed to assess the feasibility of developing global EQS. GESAMP considered that it could develop guidance in this area and agreed on the following priorities: the 12 Annex I listed substances under the Stockholm Convention, followed by the metals Hg, Pb & Cd, being considered under WG 37 and finally other naturally occurring substances. For this latter group, it was suggested that baseline (background) and global (trigger) values (ecotoxicology) might be identified.

8.5 It was agreed to connect selected EQS to ecotoxicological data in order to assist hazard and risk assessment. Whether it is feasible to include mammalian toxicological data needs further consideration. This item will be revisited at each meeting of GESAMP in order to build up this resource. It was also recommended to revisit WHO, UNEP, World Bank and IFC websites to ensure completeness.

8.6 It was agreed that the EQS web pages needed more visibility and that a link should be placed on the dashboard of the GESAMP website. These pages should be equipped with keywords and reciprocal links from the sites referred to.

***Correspondence group** on "Micro-plastics as a vector in transporting persistent and toxic substances" to prepare a workshop to review the subject and develop the terms of reference for an eventual working group.*

8.7 At its 36th meeting, it was decided that "GESAMP should consider whether it has a role to maintain recent initiatives to facilitate a global and ecosystem-based assessment of the potential impact of micro-plastics and associated contaminants on the marine environment". Given the ubiquity and prevalence of micro-plastics in the marine environment, further investigations are needed into the potential mobilization of toxic pollutants potentially absorbed from plastics into marine organisms. The topic being considered here is therefore not about marine litter itself but about the behaviour and effects of plastic pellets and fine plastic fragments.

8.8 A workshop to further investigate this topic was agreed at GESAMP 36 and has been planned for 28 to 30 June 2010 kindly hosted by UNESCO-IOC in Paris. Funding is being sought from three sources: The European Commission (DG-Research), Sida and contributions in kind from PlasticsEurope.

8.9 The Observer from SACEP offered to provide data from the Indian plastics industry. The Observer from MEDPOL advised that a strategy on marine litter has been recently developed by MEDPOL for the Mediterranean Region. He also informed the meeting that, in the Marine Strategy Framework Directive (MSFD) of the European Union, a task group of experts (TG 10) has recently completed a report on the key attributes, the indicators, and the criteria to define the Good Environmental Status (GES) of the marine environment in relation to marine litter. COBSEA offered to share experience gained during the Global Marine Litter Initiative in order to assist preparation of the workshop.

8.10 In conclusion, the correspondence group was requested to focus on filling the information gaps in this specific field and to inform the members of GESAMP. A list of participants is being prepared and GESAMP was encouraged to make suggestions for suitable experts.

***Correspondence group** to further develop a scoping paper on endocrine disruption as a result of hypoxia in the marine environment.*

8.11 This topic was first introduced at GESAMP's 35th Meeting when a member provided a thorough exposition of the effects that low levels of oxygen can have on the endocrine systems in marine organisms, noting that hypoxic regions in the world's oceans have increased in the last decades. The Correspondence Group on this issue was set up at GESAMP's 36th Meeting.

8.12 The paper Hypoxia: new insights on an old pressing environmental problem was presented by GESAMP member Mr Rudolf Wu, highlighting that hypoxia and anoxia caused by eutrophication are amongst the most pressing environmental problems in marine systems worldwide.

8.13 It was proposed that a global survey be carried out to examine species composition, % malformation, gonad development and sex ratio of fish in normoxic and hypoxic areas.

8.14 GESAMP agreed to further develop this topic and to build support gradually through the medium of a workshop, the ToR of which would be developed intersessionally. In this way it would be possible to attract funding and connect with the appropriate bodies such as FAO, National Fisheries Authorities, and the World Fish Centre. It was also suggested to involve if possible WHO, the Global Partnership on Nutrient Management, ICES and IUCN.

Correspondence group *on the biomagnification of contaminants in marine top predators and its ecological and human health implications*

8.15 This issue was first proposed at GESAMP's 36th Session, where it was noted that:

> "It is well established that many persistent pollutants can be transferred up food chains, leading to biomagnification at higher trophic levels, in particular in top predators. Many coastal communities are dependent for a high proportion of their protein on the consumption of seafood, and this can result in increased ingestion of POPs. For example, in Arctic communities this has led to indigenous peoples reliant on marine-food sources having relatively high body burdens of POPs, and has caused health concerns for lactating women."

8.16 The following aspects should be considered:

- a global scope including all ocean and coastal regions;
- potential impacts on ecosystems, i.e. non-human populations;
- impact on human health;
- existing regional assessments, such as the Arctic Monitoring and Assessment Programme (AMAP), could be taken into account;
- chemical substances of importance, including mercury, POPs as defined under the Stockholm Convention, persistent toxic substances as defined under other relevant conventions (e.g. tributyltin), and identified PBTs (EU and Canada);
- the distinction between bioaccumulation vs biomagnification should be borne in mind; and
- the practical considerations of what can be achieved plus the identification of partners.

8.17 The issue is considered to be very broad and it is therefore important to develop a manageable programme. GESAMP agreed, when considering the steps outlined at the current meeting, for the development of New and Emerging Issues, that an extended scoping paper should be developed to provide sufficient background on the key issues involved, the feasibility and especially to identify partners.

8.18 The correspondence group should report back to GESAMP in the intersessional period so that this issue can be further explored by all GESAMP members well in advance of its 38th Session in 2011.

9 SIDE EVENT "THE LINK AND COLLABORATION BETWEEN GESAMP AND THE REGIONAL BODIES TO PROTECT THE MARINE ENVIRONMENT IN EAST ASIA ON MARINE ASSESSMENT METHODOLOGIES"

9.1 GESAMP seeks to strengthen its regional contact network as well as its abilities to respond to regionally defined needs in terms of marine and coastal science. A workshop/side event was convened on Thursday 18 February 2010, with the theme: "*The link and collaboration between GESAMP and Regional Bodies to protect the marine environment in East Asia on Marine Assessment Methodologies*". The Workshop was seen as an opportunity to advertise GESAMP and identify potential future partners.

Presentations of various recent scientific programmes of the Regional Seas Programme and "State of the Marine Environment Reports (SOMER)":

Presentation by Mr Michael Angelidis, the Mediterranean Action Plan (MAP/MEDPOL):

9.2 The Mediterranean Action Plan (MAP) is part of the UNEP Regional Seas Programme. It is an effort involving 21 Mediterranean countries and the European Union, to meet challenges of environmental degradation in the sea and coastal areas. Through the Barcelona Convention, established in 1976, and a number of Protocols, the Contracting Parties have prepared a comprehensive technical and legal system targeted at protecting the Mediterranean environment from all sorts of pollution.

9.3 The Programme for the Assessment and Control of Marine Pollution (MED POL) is the scientific and technical component of the MAP. It assists countries to assess and control land-based pollution and fulfil the obligations set by the Convention and its Protocols on Land Based Pollution Sources, Dumping and Hazardous Wastes. MED POL also organizes and carries out capacity building programmes and training, including Data Quality Assurance and Quality Control. MED POL Monitoring activities include:

- Monitoring of pollutants in water, sediment and biota in order to prepare periodical assessments of the state of the marine environment in pollution hot spots and coastal areas;
- Trend monitoring in biota, in order to detect site-specific temporal trends of selected contaminants at hot spots;
- Monitoring of inputs, in order to quantify loads of pollutants discharged from point sources;
- Monitoring of compliance of bathing waters and shellfish growing waters to international regulations;
- Biological effects monitoring with the use of biomarkers in order to assess exposure to, and impacts of, chemical contaminants at the organism level at very early stages;
- Eutrophication pilot studies implemented at specific eutrophication-threatened marine coastal areas.

Based on monitoring data, MED POL prepares periodic scientific thematic assessments and technical reports on the pollution sources and the state of the Mediterranean marine environment. Also, Blue Plan, with the collaboration of MED POL and all MAP Regional Activity Centres, prepared in 2009 a State of Environment and Development Report for the Mediterranean Region.

9.4 In the framework of the application of an Ecosystem Approach for the management of human activities, UNEP/MAP is actually preparing 4 sub-regional assessments on pressures and the ecological status (including pollution and biodiversity), as well as a socioeconomic analysis, to be used as a basis for the development of ecological objectives in the Mediterranean Region. A Mediterranean Quality Status Report based on available monitoring data and additional scientific information is planned to be prepared and presented by the end of 2011.

9.5 In discussion, Mr Angelidis clarified that the number of measurement stations varies from country to country and according to the parameters measured.

Presentation by Mr Vladimir Shulkin of the North West Pacific Action Plan (NOWPAP) – SOMER

9.6 The NOWPAP State of Marine Environment Report (SOMER) has been published in 2007. It was compiled from the information produced by NOWPAP Regional Activity Centers (RACs) as well as using the results from different international projects, programmes and organizations working in the NOWPAP region.

9.7 The main objectives of NOWPAP SOMER were as follows:

- To assess the current state of the marine environment in the North Western Pacific, with focus on recent changes in environ-

mental conditions and on human impacts on the marine environment and coastal areas
- To identify regional concerns and emerging issues
- To identify gap and needs related to these issues and the ways to address them in the region
- To summarize actions and measures suggested by different programs / projects in a way that assists decision makers meet the challenge of addressing environmental concerns and issues at both national and regional levels.

9.8 The NOWPAP SOMER consisted of four main parts:

- Geographical features of the region and human pressure in different countries
- Current environmental issues
- Emerging environmental issues
- Assessment and Recommendations

9.9 Two main recommendations from the NOWPAP SOMER to improve environmental conditions in the region can be summarized as follows: 1) coordination with efforts of other international projects, programmes and organizations to develop a common set of indicators that can be used to assess changes in environmental conditions; and 2) development of integrated management approaches.

9.10 In responding to questions Mr Shulkin and Mr Alexander Tkalin, NOWPAP Coordinator, clarified that NOWPAP does not have a unified methodology for monitoring and assessments among the four member countries and that the SOMER was based mainly on the data provided by the NOWPAP Regional Activity Centres and other sources of information. Countries in the region have their own monitoring and assessment systems but NOWPAP is instrumental in data and information exchange and sharing.

Presentation by Mr Chou Loke Ming of the National University of Singapore on the Co-ordinating Body of the Seas of East Asia (COBSEA) SOMER;

9.11 Dr Chou outlined the background leading to the initiation of the 'East Asian Seas State of the Marine Environment Report' and reported some of its main findings. The process began in mid 2007 and the report was completed in October 2009. Contributions were received from partner agencies and regional experts. Reviews of earlier drafts were conducted by external reviewers, partner agencies, National Focal Points and contributors. The final draft was adopted at the 20th COBSEA meeting in November 2009.

9.12 The seas of the ten COBSEA member countries constitute 30% of the world's sea space that is under national jurisdiction. Over 70% of the region's population of two billion inhabit the coastal area (100km from shore) and exert a high pressure on the coastal and marine environment. The report indicated a steady decline in the region's marine and coastal water quality. Most serious are rising nutrient levels from land-based sources leading to increased risk of harmful algal blooms. Climate-related hazards impose a substantial socio-economic burden and the cost of direct damage by tropical cyclones and flood-related damages increased sharply in recent decades. Coastal habitat loss continues to be a great challenge.

9.13 Trends examined for socio-economic status, exploitation of resources, environmental quality and vulnerability to natural hazards indicate a growing awareness to manage marine environment/resources and adoption of various strategies, and a growing political will to commit resources to address current problems and at least mitigate impacts of future problems.

9.14 The capacity to deal with issues differs widely across the region because of varying socio-economic situations and capacity building remains an urgent issue for countries facing enormous pressures. The state of the marine environment differs among countries because of varying pressures, and capacity development and transfer are needed to strengthen the region's capability to address the common goal of improved sustainability of the coastal and marine environment.

9.15 Many actions are needed to improve the state and outlook of the region's coastal and marine environment and they should not only respond to current threats but also consider future threats and trends.

9.16 During the discussion that followed Mr Chou and Mr Adler clarified that the region does not have a regional monitoring programme. Instead access to data is made through national focal points, scientific reports and previous assessments. There are still important challenges in the region with data generation and reporting and capacity building in these fields is needed. The meeting agreed with a comment that when doing assessments over such large areas, covering so many countries, one must be careful for not generalizing too much, and that it was important to break down the area into smaller assessment units.

COBSEA Knowledgebase

9.17 Dr D. Raju from the Tropical Marine Science Institute, National University of Singapore, gave a presentation on the development of the East Asian Seas Knowledgebase. He informed GESAMP that there are currently several institutions, projects and programmes dealing with coastal and marine management in the East Asian Seas Region, and that valuable project outcomes and lessons learned are produced under such initiatives, at both regional and

national levels. He pointed out that several of these initiatives include information management components, but it remains very difficult to access the large amounts of data and information produced in each country and get a comprehensive picture of the ongoing project and programme activities in the East Asian Seas region. In order to share the information among the coastal communities, the development of the East Asian Seas (EAS) Knowledgebase was initiated to serve as a one-stop-shop for accessing data and information on coastal and marine environment in the region at both regional and national levels. Dr Raju highlighted that the EAS Knowledgebase shares information in the form of resources by themes; metadata on coastal and marine related projects and activities, project reports and lessons learned; country profiles and development trends, and information on environmental data statistics.

9.18 In the discussion that followed it was noted that it would be a challenge to maintain a valuable database that is up to date, especially when countries are not always cooperative in providing or updating data and when there is not always quality control over the data loaded by member countries or institutions. It was noted that there is good knowledge on atmospheric input which can be added to the knowledgebase as this is very important for the region. It was also noted that COBSEA does not have a data and information policy or joint monitoring and assessment regional programmes, but countries can upload and share open data.

The role of GESAMP as a science link/ platform/tool for the Regional Seas Programmes (RSP) and other Regional Bodies.

9.19 Mr Ellik Adler noted that from his experience, there are some difficulties in linking RSPs and GESAMP as sometimes the secretariats of the RSP and other regional bodies, do not know enough about GESAMP and what it could provide to their programmes. He suggested that there was a need for more awareness raising about GESAMP. Secondly, RSPs and GESAMP are often operating at two different levels. Many RSPs have moved forward with new issues that GESAMP has so far not really touched, such as biodiversity, climate change, high seas, and ecosystem approach issues. He thought that there must be adjustments to be made so that these bodies are more relevant to each other and so that GESAMP can address and provide advice on important questions to RSPs.

9.20 During the discussion that followed the meeting noted that there was lack of knowledge regarding the services that GESAMP can provide to RSPs, and this has to be communicated to RSPs and other regional bodies.

9.21 Mr Mike Huber noted that GESAMP does conduct work on issues other than pollution and that it had a track record in ecosystem based approaches (e.g., to mariculture) and it could easily provide advice to RSPs on issues like climate change or biodiversity. The Chairman and Mr Huber reminded the meeting of the agreements that were reached in 2007 in the 34th session of GESAMP in Paris, to which 19 regional bodies were invited. This was published as Reports to GESAMP No 1. Entitled: *"Report from the workshop on the identification of themes of mutual interest between GESAMP and Regional Organizations".* The Paris meeting had agreed on the following possible fields of cooperation:

- Economic valuation of ecosystem services;
- Participation at meetings;
- Compiling available information;
- Advice for key policy decisions, e.g., on controversial issues, or regarding standards;
- Peer review

9.22 The meeting agreed that these areas of cooperation were still relevant and if there were new fields of interest, they could be easily added. Such fields could be: giving topical scientific advice, compiling regional and international information, peer reviews and assistance to countries with quality assurance issues.

9.23 The NOWPAP Co-ordinator highlighted that GESAMP is well known in their region and that GESAMP reports are being used and will continue to be used.

9.24 The Chief Technical Advisor for the Bay of Bengal Large Marine Ecosystem Project (BOBLME), Mr Rudolf Hermes, informed GESAMP that all five possible fields of cooperation with GESAMP appear to be of interest to LME Projects under implementation. He stated that economic valuation is one of the key areas under the socio-economic module of LMEs, that regional meetings are the tools to foster consensus on thematic issues with transboundary relevance, that developing common sets of indicators is a typical requirement for LME projects (ecosystem health to water quality), and that above all, the LME design provides for the constitution of a Regional Scientific Advisory Panel (RSAP) to peer review major technical and scientific reports produced as input for the development of Transboundary Diagnostic Analysis (TDA) and Strategic Action Programmes (SAP).

9.25 The meeting agreed GESAMP could support and add to the work of the RSPs and that a close collaboration between the two was important for the future and should be promoted.

Discussion on the link and the role of the Regional Seas Programme and their respective SOMERs to the UN Regular Process

9.26 The chairman of the side-event, Mr Salif Diop reported on the progress made within the UN Regular Process towards strengthening the science in assessment processes. He noted that issues such as the design and features of an assessment, science and policy relationships, stakeholder participation, nomination and selection of experts, data and information management, treatment of uncertainty, peer review, effective communication, capacity building and networking, post-assessment evaluation and institutional arrangements were all of importance for successful assessments of the marine environment.

9.27 In the discussion that followed, participants noted and agreed that it would be very useful if GESAMP could assist the UN Regular Process by developing guidelines for regional assessments and SOMER reports. The Chairman clarified that GESAMP had already done so in the form of GESAMP Reports and Studies No. 54 (1994) entitled 'Guidelines for marine environmental assessments' but that these were in need of renewal in the light of many recent developments. The meeting agreed that while GESAMP could offer its services to the Regular Process, it would probably be better if such advice would be requested formally by either the Regular Process mechanism or by the Regional Seas Programme.

9.28 The Chairman made reference to the updated statement made during this session on the potential role of GESAMP in the Regular Process.

9.29 At the request of Side-Event Chairman Mr Salif Diop, Ms Ampai Harakunarak, of UNEP DGEF Asia Pacific informed the meeting on possible directions for Regional Seas Programmes and GESAMP to access funding of the GEF within it 5th replenishment cycle. As for funding science related projects, this might be available through the IW-Learn mechanism.

10 DATE AND PLACE OF GESAMP 38

10.1 GESAMP accepted the kind offer of IAEA to host the thirty-eighth session of GESAMP at the IAEA Marine Environment Laboratories in Monaco, 9 to 13 May, 2011.

11 FUTURE WORK PROGRAMME

GESAMP Working Groups, correspondence groups and task teams

11.1 Evaluation of the hazards of harmful substances carried by ships

(Working Group 1)

Lead Agency: IMO

Co-sponsors: none

Chairperson: C. T. Bowmer

Members: T. Höfer, D. James, S. le Floch, M. Morrissette, H. Saito, W Jiang, (two vacancies), N. Soutar (consultant)

Product: Report of the Working Group, containing an updated version of the composite list of 800 chemicals; this latter to be posted on the IMO and GESAMP websites.

Planning: The 47th session will be held at IMO in London from 19 – 23 April 2010.

11.2 Review of applications for 'Active Substances' to be used in ballast water management systems

(Working Group 34)

Lead Agency: IMO

Co-sponsors: none

Chairperson: J. Linders

Members: T. Borges, S. Gollasch, S. Hanayama, A. Dock, E. Lemieux, K. Rhie, F. Stuer-Lauridsen, D. Tongue. A. Craven (consultant), J. Crayford (consultant)

Products: Reports of the Working Groups meetings (1 to 3 p.a.), approved by GESAMP, containing recommendations to the IMO/MEPC for the approval or rejection of the submitted ballast water treatment systems; further recommendations on methodology as appropriate from the third stocktaking workshop to GESAMP and/or IMO.

Planning: The recommendations of the 10th, 11th and 12th sessions of WG 34, as approved by GESAMP have been forwarded to MEPC 60 which meets from 22 to 26 March 2010. The 13th meeting of WG 34 has been scheduled from 24 to 28 May 2010. Depending on the number of applications to be evaluated, additional meetings may need to be scheduled.

11.3 Metals (formerly mercury) Working Group

(Working Group 37)

Lead Agency: UNEP

Co-sponsors: IAEA

Chairperson: H. Keenan

Members: B. Alo, J. Davee-Guimaraes, T. Hennessey, M. Horvat, J. Hurley, J. Leaner, R. Mason, J. Oh, A. Songsasen, T. Tamiyasu. The members will be divided into two task teams.

Product: WG 37, in response to recent agreements with UNEP DTIE will produce a series of short reports on mercury as well as lead and cadmium following peer reviewed by GESAMP.

Planning: The deadlines in 2010 and 2011 for the above products have yet to be determined but are influenced amongst other factors by UNEP DTIE's schedule of meetings in support of the development of a new Convention on Mercury. One meeting is planned in 2010 to complete the work, the date of which is to be confirmed.

11.4 Atmospheric input of chemicals to the ocean

(Working Group 38)

Lead Agency: WMO

Co-sponsors: IMO, SOLAS, EU Joint Research Center, University of Arizona, SCOR

Co-Chairpersons: R. Duce, P. Liss

Members: A. Baker, F. Dentener, K. Hunter, M. Kanakidou, N. Kubilay, N. Mahowald, G. Okin, J. Prospero, M. Sarin, V. Surapipith, I. Tegen, M. Uematsu, T. Zhu.

Product: WG 38's 2nd meeting at IMO in London has resulted in three papers for submission for publication in the scientific literature during 2010. These publications [or edited versions] will be gathered together with an Executive Summary and appropriate administrative sections for publication in GESAMP Reports & Studies series.

Planning: WG 38, once it has discharged its initial commitment (as above) will collaborate with the WMO Sand and Dust Storm Warning and Assessment System (SDS-WAS) in order to exploit the already existing modeling and observational capabilities of the SDS-WAS project, and a meeting/workshop in the spring of 2011 is planned which might lead to a GESAMP report.

11.5 Global trends in pollution of coastal ecosystems: retrospective ecosystem assessment

(Working Group 39)

Lead Agency: IAEA

Co-sponsors: to be determined

Chairperson: to be determined in discussion between IAEA and GESAMP

Members: A-C Ruiz Fernandez, M. Sarin, E. Sombrito, S. Mulsow

Product: One or more reports, which if approved by GESAMP, can be published in the GESAMP Reports and Studies Series.

Planning: IAEA indicated that Euro 8,000 p.a. had been made available for a four year period to support this working group. IMO indicated that Sida support would be available for the start-up in 2010 and IAEA announced their intention to invite UNIDO to co-sponsor. On this basis, GESAMP approved the 1st and 2nd tasks of the ToR and requested the parties involved to confirm the finance for ToR tasks 3 to 5 in subsequent years.

11.6 The standing Task Team on the UN Regular Process

The Task Team will continue its work through meetings or correspondence as required to service the needs of the UN Regular Process and at the request of UNEP and UNESCO-IOC. In addition, this Task Team will service the needs of GESAMPs involvement in the GEF, UNESC-IOC and UNEP led Transboundary Waters Assessment Programme (TWAP).

Members: R. Duce, R. Boelens, C.T. Bowmer, L. Awosika, M. Huber

11.7 Correspondence Groups

The following activities will continue in the intersessional period:

1 Correspondence group on Environmental Quality Standards (EQS) to explore the possibility of global standards and to expand the GESAMP web site section on EQS.

Lead: H. Keenan

Members: S. Mulsow, A-C. Ruiz Fernandez, E. Ajao and J. Linders

2 Correspondence group on "Micro-plastics as a vector in transporting persistent and toxic substances" to prepare a workshop to review the subject, leading to a report in The GESAMP Reports and Studies Series or its shorter electronic series "Report to GESAMP" and to develop as necessary the terms of reference for an eventual working group.

Lead: P. Kershaw

Members: C. T. Bowmer, H. Keenan

3 The Correspondence group on Endocrine Disruption and Hypoxia will develop plans to hold a workshop in the course of late 2010 or early 2011, including the identification of the necessary sources of funding.

Lead: R. Wu,

Members: E. Ajao, P. Kershaw, A-C Ruiz Fernandez

4 The Correspondence group on biomagnifications in top predators and its ecological and social implications to develop an

extended scoping paper for comment by GESAMP prior to GESAMP 38.

Lead: A-C Ruiz-Fernandez

Members:, E. Sombrito, G. Wiafe, E. Ajao

11.8 External requests to GESAMP

- GloBallast: peer review of consultants report for IMO on the equivalence of alternative (non-chemical) Ballast Water Treatment Systems. GESAMP will form a peer review team consisting of GESAMP, WG 34 members and external experts.
- Upcoming request - COBSEA – coastal erosion
- Upcoming request - OSPAR (peer review of decadal assessment) – expected 2010

11.9 Other activities

- GESAMP Pool of Experts Membership Committee

Lead: GESAMP Officer

Members: L. Awosika, J. Linders, T. Bowmer,

12 ANY OTHER BUSINESS

Request for peer review of a study on establishing equivalency of emerging ballast water management systems

12.1 The GESAMP Office informed GESAMP that it had received a request on 11 February 2010 from the GEF-UNDP-IMO GloBallast Partnerships Project to peer review a GIA-GloBallast Study on Establishing Equivalency of Emerging Ballast Water Management Systems.

12.2 The Global Industry Alliance (GIA) is supporting a number of activities, one of which is an independent study/review on how to establish equivalency in performance testing and compliance monitoring of emerging alternative (non-chemical) Ballast Water Management Systems. The IMO Ballast Water Management Convention sets a performance standard for ballast water management, which the (chemical) treatment technologies, currently being developed, must meet (see chapter 5.2 of this report). In addition, the BWM Convention also allows for "other methods" than treatment to be used, as long as they can provide the same level of protection to the environment and human health. However, there is currently no mechanism for how to compare the very different types of management options, and how to scientifically prove equivalency in terms of environmental protection. The GIA therefore had commissioned a study to provide an overview of the alternative systems currently being developed and some guidance on the possibilities for establishing equivalency between the alternative methods and those tested to meet the relevant performance standard.

12.3 The 72-page study was performed by two consultants (Professor Peilin Zhou, University of Strathclyde, and Dr Rob Hilliard, independent consultant, Australia) and consists of a desktop review of alternative ballast water management concepts for which sufficient information was available in the public domain and, an assessment of possible approaches to establish equivalency. The GIA, through the GloBallast secretariat, intends to publish the report in the GloBallast Monograph Series after a peer review is carried out to ensure that the study is consistent, logical and scientifically substantiated for publication. GESAMP was requested to conduct the peer review before the end of March 2010 so that the publication could be completed as soon as possible.

12.4 In discussion it was noted that peer review in this field required knowledge of risk assessment, the regulatory context of ballast water management and engineering and that, currently only two members had this knowledge. The UNESCO-IOC Technical Secretary suggested that members of the ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors might be co-opted for this peer review.

12.5 In conclusion, GESAMP accepted the request to conduct the peer review but only by *1 May 2010*, which should be led by the members Tim Bowmer and Jan Linders, and with co-opting of at least two members of the ICES/IOC/IMO WGBOSV. The findings of the peer review should be reported to IMO and GIA/GloBallast and be shared with all members of GESAMP for their information.

Request for GESAMP assistance with the development of a regional policy on coastal erosion

12.6 The COBSEA Co-ordinator requested GESAMP to assist with the development of a draft regional coastal policy on coastal erosion, an issue which had been identified as an emerging issue for the COBSEA region. The policy should contain management approaches at the regional level, which should then serve as guidance

for implementation at the national level. Some funding was available from COBSEA to accompany this request. The observer from SACEP stressed the urgency for guidance on coastal erosion management in the region. GESAMP was informed that, in terms of process, COBSEA envisaged to convene a Workshop of experts from the region for further development of the draft policy to ensure its endorsement by the COBSEA partners.

12.7 It was agreed that COBSEA would submit as soon as possible a finalized terms of reference and timeline for this request for GESAMP approval by correspondence.

Obituary: Dr Louise Delafayette

12.8 GESAMP noted with sadness that Dr Louise Delafayette serving as the UN-DOALOS Technical Secretary of GESAMP in the period 2002 – 2006 had unexpectedly passed away on 27 November 2009 after a serious illness. She was remembered as a dedicated supporter for the cause of GESAMP during her long career in various posts in the field of the protection of the marine environment.

General introduction at GESAMP sessions

12.9 GESAMP agreed that it would be beneficial for new members of GESAMP and for observers preparing to attend future sessions of GESAMP to receive a short introduction on what GESAMP is and does prior to the start of the meeting.

13 ELECTION OF CHAIRPERSONS

13.1 The Group unanimously re-elected Mr Lawrence Awosika as Vice-Chairperson and elected Mr Peter Kershaw as Vice-Chairperson for the forthcoming intersessional period and the thirty-eighth session of GESAMP.

14 CONSIDERATION AND ADOPTION OF THE REPORT OF GESAMP 37

14.1 The report of the thirty-seventh session of GESAMP was considered and approved by the Group on the last day of the session.

15 CLOSURE OF THE SESSION

15.1 The Chairman of GESAMP, Mr Tim Bowmer, closed the thirty-seventh session of GESAMP on Friday, 19 February 2010 at 12:50 hrs.

ANNEX I

AGENDA

37th session of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) to be held at the Amari Watergate Hotel, Bangkok, Thailand, from 14 to 19 February 2010

Sunday, 14 February, 13:00 – 17:00 p.m. (closed sessions)

1 Informal meeting of GESAMP members to introduce new members and to prepare for Agenda Item 7.

2 First meeting of the Executive Committee of GESAMP (ExCom)

Monday, 15 February

Opening of the session

1 Adoption of the agenda

2 Report of the Chairperson of GESAMP

3 Report of the Administrative Secretary of GESAMP

4 GESAMP Office matters

5 Planning of GESAMP activities:

- 1 Evaluation of the hazards of harmful substances carried by ships (WG 1: IMO leading)
- 2 Review of applications for 'active substances' to be used in ballast water management systems (WG 34: IMO leading)
- 3 Development of an ecosystem approach to mariculture (WG 36: FAO leading)
- 4 Expanded scientific review of mercury and its compounds and threats to the marine environment (WG 37: UNEP leading)
- 5 Atmospheric input of chemicals to the ocean (WG 38: WMO leading)

Tuesday, 16 February

6 Establishment of trends in global pollution in coastal environments (WG 39: IAEA leading)

6 Contributions to the UN Regular Process/GEF Transboundary Water Assessment Programme

Wednesday, 17 February, a.m.

7 Identification of new and emerging issues regarding the degradation of the marine environment of relevance to governments and sponsoring organizations

8 Scoping activities

Wednesday, 17 February, p.m.

Excursion in and around historic Bangkok

Thursday, 18 February

9 Side-event on the Regional Seas Programme: best practices, methodology, etc

Friday, 19 February, 09.00 to 12.00 a.m.

10 Date and place of GESAMP 38

11 Future work programme

12 Any other business

13 Election of chairpersons

14 Consideration and adoption of the report of GESAMP 37

Closure of the session

Friday, 19 February, p.m. (closed session)

Second meeting of the Executive Committee of GESAMP (ExCom)

ANNEX II

LIST OF DOCUMENTS

GESAMP 37/1	Admin. Secretary	Provisional Agenda
GESAMP 37/1/1	Admin. Secretary	Annotations to the Provisional Agenda
GESAMP 37/2	The Chairperson	Report of the Chairperson of GESAMP
GESAMP 37/3	Admin. Secretary	Report of the Administrative Secretary of GESAMP
GESAMP 37/4	GESAMP Office	GESAMP Office Matters, Web-site, Virtual Office and Pool of Experts
GESAMP 37/5/1	IMO	Report of the GESAMP Ballast Water Working Group (Working Group 34)
GESAMP 37/5/2	IMO	Report of the Chairman of EHS Working Group (Working Group 1)
GESAMP 37/5/3	WMO	Report of the GESAMP Atmospheric Input of Chemicals to the Ocean Working Group (Working Group 38)
GESAMP 37/5/4	UNEP	Expanded Scientific Review of Mercury and its Compounds and Threats to the Marine Environment
GESAMP 37/5/5	UNEP	Proposal for GESAMP's Assistance in filling some of the Identified Data and Information Gaps of the Reviews of Scientific Information on Lead and Cadmium
GESAMP 37/5/6	IAEA	Global Trends in Pollution of Coastal Ecosystems
GESAMP 37/7/1	R. Wu, GESAMP	Hypoxia: New insights on an old pressing environmental problem
GESAMP 37/7/2	The Chairperson	Identification of New and Emerging Issues Regarding the Degradation of the Marine Environment of Relevance to Governments and Sponsoring Organizations
GESAMP 37/7/3	A.C. Ruiz-Fernandez, E. Sombrito, S. Mulsow, G. Wiafe, GESAMP	Bioaccumulation of Persistent Toxic Substances in Marine Top Predators in Relation to Human Health - A Global Review
GESAMP 37/7/4	H. Keenan, GESAMP	Report on Status of EQS
GESAMP 37/9	UNEP-COBSEA	The Link and Collaboration Between GESAMP and Regional Bodies to Protect the Marine Environment in East Asia on Marine Assessment Methodologies, Draft agenda for the Workshop
GESAMP 37/12	IMO/GloBallast	Establishing Equivalency in the Performance Testing and Compliance Monitoring of Emerging Alternative Ballast Water Management Systems (EABWMS)
GESAMP 37/INF.1	GESAMP Office	Draft List of Participants
GESAMP 37/INF.2	GESAMP Office	Briefing on Activities of the Arctic Monitoring and Assessment Programme (AMAP)

ANNEX III

LIST OF PARTICIPANTS

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ANNEX IV

ACTIVITIES AND ACHIEVEMENT BY THE SPONSORING ORGANIZATIONS OF GESAMP DURING THE INTERSESSIONAL PERIOD

This document provides a summary of the Organizations' achievements since GESAMP 36 (May 2009) from IMO, IOC/UNESCO, UNEP, UNIDO and IAEA.

IMO

Moving towards regulation of ocean fertilization under the London Convention and Protocol (LC/LP)

When the governing bodies under the London Convention and Protocol adopted resolution LC-LP.1(2008) on the regulation of ocean fertilization in 2008 by which they declared, inter alia, that, "given the present state of knowledge, ocean fertilization activities other than legitimate scientific research should not be allowed", they agreed to further consider a potential legally binding resolution or an amendment to the London Protocol on ocean fertilization in 2009. To prepare for this discussion, eight decision options were developed in February 2009 for further review, ranging from a reconfirmation of the "statement of concern" issued by the Scientific Groups in 2007, to the insertion of a new, stand-alone article on ocean fertilization in the Protocol.

In October 2009 the governing bodies noted that many issues for a new regulation had yet to be resolved and that the draft "Assessment Framework for Scientific Research Involving Ocean Fertilization", being developed by the LC-LP Scientific Groups, would be an important tool for implementing any future regulation. Therefore, priority was given to resolving several issues in relation to this draft framework, so that it could be completed in 2010. There was insufficient time to further examine the eight decision options mentioned earlier with a view to formulating the best approach to address ocean fertilization activities under the London Convention and Protocol. Consequently, the Working Group on Ocean Fertilization was established, with the mandate to continue with this examination in March 2010.

The governing bodies also considered whether the scope for regulation should be widened to cover emerging "marine geo-engineering" proposals, or to stick with ocean fertilization activities, which is a sub-set of marine geo-engineering. It was agreed to keep focusing on the latter, while an exploration of marine geo-engineering and their possible impacts on the marine environment was regarded as desirable and should be planned at the next session of the Scientific Groups in April 2010.

CO2 sequestration in sub-seabed geological formations

In October 2009 the LP Meeting of Contracting Parties reviewed the report of an intersessional correspondence group, which was mandated to continue the discussion in 2008 on CO_2 sequestration in transboundary sub-seabed geological formations and, in particular, on the development of:

(1) a possible amendment to LP Article 6 regarding the prohibition of export of wastes for disposal at sea, or

(2) an interpretative resolution, or

(3) a combination of the two. The Meeting also considered a formal proposal by Norway to amend LP Article 6 and adopted, by a majority vote, resolution LP.3

(4) to – exclusively - enable the export of carbon dioxide streams for the purpose of sequestration in transboundary sub-seabed geological formations. It will take several years before this amendment becomes effective.

The governing bodies also continued their review of reports on experiences with CO_2 sequestration technologies/projects and policies being developed and received reports from Australia, Norway, the United Kingdom and OECD/IEA.

Co-operation between UNEP and the London Convention and Protocol

In 2009 the governing bodies adopted a plan to co-operate with the UNEP Global Plan of Action for the Protection of the Marine Environment from Land-based Activities (GPA) on the following issues:

(1) riverine and sub-sea disposal of tailings and associated wastes from mining operations;

(2) physical alteration/destruction of marine habitats; and

(3) marine litter, provided such activities would not duplicate those carried out elsewhere. The Meetings noted the planned activities in 2010 with regard to co-operation on mine tailings, as the first priority.

"Monitoring and Assessment Project" in relation to sea disposal activities

In 2009 the governing bodies were informed of the progress with the project mentioned in the heading which the Secretariat had launched in October 2009, at the recommendation of the Scientific Groups, by contracting a consultant. The objective of the project is to assess the experiences of Parties with implementation of the LC-LP Generic Guidelines in relation to field monitoring activities. As a first step, an overview docu-

ment would be prepared of the field monitoring activities which Parties had carried out since 1996 and reported to the Secretariat. The consultant would make an inventory and analysis of these reports and identify, if possible:

(1) Why was monitoring done?

(2) What and when was monitoring done?

(3) Where was monitoring done? and

(4) What "Impact Hypothesis" had been used?

This inventory, to be submitted for review by the Scientific Groups in April 2010, would serve as a reference and background document for the planned review of reports by Parties under LP Article 9.4.3 concerning the effectiveness of measures taken to implement the Protocol.

The governing bodies confirmed the intention that once the report of this project was completed, it should also be sent to inform the UN Regular Process, as established by the UN General Assembly at its 64th session.

Visit for further information on the activities under the London Convention and Protocol:
http://www.londonconvention.org

Implementation of the Anti-Fouling Systems Convention: guidance on best management practises for removal of anti-fouling systems

For the last 20 years scientific studies have shown that certain anti-fouling systems used on ships, specifically TBT based anti-fouling paints, pose a substantial risk of toxicity and may have significant chronic impacts at the species, habitat and ecosystem levels. Human health may also be at risk as a result of the consumption of affected seafood. IMO responded to this serious marine environmental issue by adopting the Anti-Fouling Systems (AFS) Convention in October 2001, which has entered into force on 17 September 2008. As a consequence in this new regime, ships would, either have to replace, or overcoat, their existing organotin-based anti-fouling systems in the near future. Having considered a draft guidance document developed by the Scientific Groups under the London Convention and Protocol, the Marine Environment Protection Committee (MEPC 59) in July 2009, approved circular AFS.3/Circ.3 on the "Guidance on the best management practices for removal of anti-fouling systems from ships, including TBT hull paints".

Implementation of the Ballast Water Management Convention: guidance to ensure safe handling and storage of chemicals to treat ballast water; towards harmonization of testing BWM systems and emerging BWM systems (R&D)

Work continued in preparation for the entry into force of the 2004 Ballast Water Management Convention aimed to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' Ballast Water and Sediments. MEPC 59 approved circular BWM.2/Circ.20 "Guidance to ensure safe handling and storage of chemicals and preparations used to treat ballast water and the development of safety procedures for risks to the ship and crew resulting from the treatment process". MEPC 59 also agreed to grant Final Approval to four ballast water management systems, bringing the total number to eight. To date, seven systems have been type approved by the relevant Administrations being now commercially available, further paving the way for the entry into force of the BWM Convention. A review at the same session of the MEPC concluded that ballast water treatment technologies were available and confirmed that sufficient ballast water management systems would be available for ships constructed in 2010. Further information on this issue is available in document: GESAMP 37/5/1.

With a view to promoting the Convention, IMO in January 2010, through the GloBallast Partnership and its Global Industry Alliance (GIA), organized a global Test Facility Forum to discuss harmonization issues with respect to the testing of ballast water management systems, which was followed by a Global R&D Forum on Emerging Ballast Water Management Systems. Both events were hosted by the World Maritime University, in Malmö, Sweden.

Ship recycling

A new international convention on ship recycling was adopted by IMO in 2009 in Hong Kong, China. The "Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships", is aimed at ensuring that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risk to human health and safety or to the environment. Regulations in the new convention will cover: the design, construction, operation and preparation of ships so as to facilitate safe and environmentally sound recycling, without compromising the safety and operational efficiency of ships; the operation of ship recycling facilities in a safe and environmentally sound manner; and the establishment of an appropriate enforcement mechanism for ship recycling, incorporating certification and reporting requirements.

A series of guidelines are currently being developed by MEPC to assist in the convention's implementation. For further information on the Ship Recycling Convention visit http://www.imo.org/.

Implementation of the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) and the Protocol on Preparedness Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol)

Manuals and guidance documents

The following two manuals: the Guidance docu-

ment on the identification and observation of spilled oil; and the revised Manual on oil pollution, Section I – Prevention. These two documents have been submitted to MEPC 60, for approval.

Fourth R&D Forum on HNS in the marine environment

The Fourth IMO R&D Forum on HNS in the marine environment was held in Marseille, France, in conjunction with the INTERSPILL 2009 oil spill conference, in May 2009. The outcomes and recommendations were presented to MEPC 59, and the Committee concurred with these recommendations, notably to: establish an inventory of information, research and development and best practices related to HNS preparedness and response; prepare a list of the top twenty chemicals likely to be transported/spilled at sea to be used in planning for HNS incidents; and invite the International Organization for Standardization (ISO) to consider the development of international standards for certain levels of personal protection equipment (PPE).

Information services and exchange and Training

MEPC 59 recommended that the OPRC-HNS Technical Group use the new REMPEC website as a platform for information-sharing to host the inventory of information, research and development and best practices related to HNS preparedness and response. Moreover, the Committee approved the finalized draft and finalized text of: two introductory IMO model courses on preparedness for and response to HNS pollution incidents in the marine environment (one course is aimed at the operational level, whereas the second is aimed at the management level); and training materials of the OPRC Train-the-Trainer course (updating the 1995 edition and extending its application to hazardous and noxious substances, as well as oil). Once finalized, the training material will be published through the IMO Publishing Service.

Amendments to MARPOL Annex I: transfer of oil cargo, definitions of oil residues (sludge/ thank) and *oily bilge waters; carriage and use of heavy grade oil* in the Antarctic area

MEPC 59 adopted the amendments to MARPOL Annex I aimed at further enhancing the prevention of oil pollution of the marine environment from ships. These amendments are expected to enter into force on 1 January 2011 and consist of an addition of a new Chapter 8 on Prevention of pollution during transfer of oil cargo between oil tankers at sea, adopted by resolution MEPC.186(59); and new definitions for “oil residue (sludge)”, “oil residue (sludge) tank”, “oily bilge water” and “oily bilge water holding tank”, plus consequential amendments to the Supplement to the IOPP certificate and the Oil Record Book, adopted by resolution MEPC.187(59).

On this occasion, the Committee also approved the draft amendments to MARPOL Annex I with a view to formal adoption at MEPC 60 in March 2010. The amendments relate to new regulation 43 whereby a ban on the use and carriage of heavy grade oil in the Antarctic area (defined as the sea area south of latitude 60º S) is imposed.

Review of MARPOL Annex V (Garbage)

MEPC 59 established a correspondence group which should submit an interim report to MEPC 60, and a final report to MEPC 61 (October 2010), and instructed it to develop draft amendments to MARPOL Annex V addressing the following issues: definitions; general prohibition on discharge of garbage into the sea; waste minimization on board; loss of fishing gear; availability of port reception facilities; management of cargo residues, including hold washings; and other technical amendments.

Prevention of Air pollution from ships, MARPOL Annex VI

North American Emissions Control Area proposal agreed in principle

MEPC 59 approved a proposal to designate specific portions of the coastal waters of the United States and Canada as an Emission Control Area (ECA) with a view to formal adoption in March 2010. The ECA would be for the control of emissions of nitrogen oxides (NO_x), sulphur oxides (SO_x), and particulate matter, under the revised MARPOL Annex VI *Prevention of Air Pollution from Ships*, adopted in October 2008 and entering into force on 1 July 2010. Currently, the revised Annex lists two ECAs: the Baltic Sea area and the North Sea, which includes the English Channel.

MARPOL Guidelines: Annex VI and marine fuel oils

MEPC 59 adopted and approved the following Guidelines, which are intended to assist Administrations with the implementation of the revised Annex VI:

1. Guidelines for the development of a volatile organic compound (VOC) management plan;
2. Revised Guidelines for monitoring the worldwide average of sulphur;
3. Revised Guidelines for the sampling of fuel oil for determination of compliance with MARPOL Annex VI;
4. Interim criteria for discharge of wash water from exhaust gas cleaning systems (exhaust scrubbers) received by GESAMP; and
5. Guidelines for the application of the NO_x Technical Code relative to certification and amendments of tier I engines and Definitions for the cost effectiveness formula in regulation 13.7.5 of the revised MARPOL Annex V.

Work on control of greenhouse gas emissions from ships

2009 was a crucial year in the climate change negotiations, culminating at the UN Climate Change Conference (COP 15) in Copenhagen, Denmark, in December where it was expected that a post-2012 treaty to combat climate change would be adopted.

IMO's work on Green House Gas Emissions contains three distinct components aimed at bringing regulation of such emissions from international shipping under the post 2012 global agreement on climate changes : **technical measures** that will mainly be applied to new ships; **operational measures** for all ships – new and existing; and **market-based reduction measures** to provide emission-cutting incentives – all of which, when fully implemented, will deliver the required GHG emission reductions from ships engaged in international trade. MEPC 59, IMO progressed greatly in all the above- mentioned components. It agreed to disseminate a package of interim and **voluntary technical and operational measures** to reduce GHG emissions from international shipping, which will be refined at future sessions starting at MEPC 60. The measures include:

1. interim guidelines on the method of calculation, and voluntary verification, of the Energy Efficiency *Design Index* for new ships, which is intended to stimulate innovation and technical development of all the elements influencing the energy efficiency of a ship from its design phase;
2. guidance on the development of a Ship Energy Efficiency *Management Plan*, for new and existing ships, which incorporates best practices for fuel efficient operation of ships; and
3. guidelines for voluntary use of the Ship Energy Efficiency *Operational Indicator* for new and existing ships, which enables operators to measure the fuel efficiency of the operation of individual ships.

MEPC 59 also agreed a work plan for further consideration, at future meetings, of proposed market-based instruments to provide incentives for the shipping industry. Such instruments would have purposes such as climate change mitigation and adaptation activities, research and development, offsetting of emissions, as well as serving as an incentive for the industry to invest in more fuel-efficient technologies. On this occasion, IMO expressed general preference for the greater part of any funds generated by these market-based instruments to be used for climate change purposes in developing countries through existing or new funding mechanisms under the UNFCCC or other international organizations.

MEPC 59 was notably assisted in its work by the **Second IMO GHG Study 2009**, which is the most comprehensive and authoritative assessment of the level of greenhouse gas emitted by ships, as well as its potential for reduction. The Study also evaluated the different policy options for control of GHG emissions from ships currently under consideration within IMO and other organizations. International shipping is, in the Study, estimated to have emitted 870 million tonnes or about 2.7% of the global anthropogenic emissions of CO2 in 2007.

A significant potential for reduction of GHG through technical and operational measures has been identified. These measures, if implemented together, could increase efficiency and reduce the emission rates by 25% to 75% below the current levels. Many of these measures appear to be cost-effective, although many barriers may discourage their full implementation. This includes both financial barriers, such as the need for additional investments up-front and non-financial barriers in operation of individual ships, often outside the control of the ship-owner but controlled by the charterer, the cargo owner, port authorities or others.

In the absence of global policies to control GHG from international shipping, the emissions may increase by a factor of two to three (between 200 and 300%) by the year 2050 due to an expected continuous growth in both world population and international trade.

Shipping related outcomes of the UN Climate Changes Conference in Copenhagen

The most relevant outcome related to control of emissions from international maritime transport are the two COP decisions to extend the mandates of the two *ad hoc* working groups: AWG-LCA 8 and AWG-KP 10, which deal with the following issues:

1. AWG-LCA, *inter alia*, considers policy approaches and measures to limit and reduce GHG emissions from international maritime transport; and
2. AWG-KP had under its consideration a number of proposed amendments to Article 2.2 of the Kyoto Protocol and also proposals for funding mechanisms using international maritime transport as a source for funding, however, none of the matters related to international shipping were considered in any detail or concluded at the Copenhagen Conference.

Visit for further information on the IMO achievements mentioned in the above section: http://www.imo.org.

IOC of UNESCO

The UN Regular Process for global reporting and assessment of the state of the marine environment, including socio-ecomomic aspects

In 2005 the UN General Assembly, by resolution 60/30, requested UNEP and IOC-UNESCO to serve as the lead agencies to carry out a three years start-up phase, in cooperation with all relevant UN Agencies and Programs of the UN, to conduct the so-called "Assessment of Assessments (AoA)". The AoA was

implemented through an independent and geographically diverse Group of Experts set up in 2006 (which also included GESAMP experts), tasked with a detailed examination of the various existing marine assessments, an evaluation of factors central to the quality of assessments, such as scientific credibility, policy relevance and legitimacy. The Group was also charged with the identification of best practices; thematic, geographic or data gaps, scientific uncertainties, as well as research and capacity-building needs, particularly in the developing world. The final and most critical task of the group was to formulate a series of options and recommendations regarding the institutional arrangements that would need to be put in place to implement the Regular Process. Amongst these, the proposal to establish a coordinating UN secretariat within one or two UN agencies is key to the process.

The published version of the AoA report was launched by IOC and UNEP on 31 August 2009 in New York. (The AoA report and its Summary in 6 UN languages are available at http://www.unga-regular-process.org).

As expected and according to UNGA resolution 63/111, an Ad Hoc Working Group of the Whole (AHWGW) met in New York from 31 August to 4 September 2009, to recommend to the UN General Assembly at its 64th session a course of action regarding the Regular Process, on the basis of the results of the AoA and the options defined by the Group of Experts.

Whilst UN Member States have agreed in principle on the scope of the Regular Process, the UN General Assembly has decided to provide additional time for Member States to agree on the modalities for the implementation of the Regular Process, including the key features, institutional arrangements and financing. This review should be completed by a second meeting of the Ad Hoc Working Group (AHWGW) (in September 2010) hopefully leading to the launch of the Regular Process in 2011.

Transboundary Waters Assessment Programme (TWAP)

UNEP in partnership with IOC and several other organizations, are executing a GEF funded Medium Size Project launching the on Transboundary Water Assessment Programme (TWAP). The project aims to develop: (i) a partnership among organizations; (ii) the methodology for assessment /results tracking for each of the five categories of transboundary water systems (transboundary groundwater; transboundary lakes/reservoirs; transboundary river basins; Large Marine Ecosystems (LMEs); and open ocean areas); and (iii) the arrangements needed to conduct a baseline transboundary waters assessment that may be conducted with GEF funding following completion of TWAP. The periodic assessment would then be sustained in the future through the partnership of agencies and organizations, and would include data series collected by GEF International Waters projects that would be useful to those agencies and to UNEP's GEO process. In addition to the five component working groups a sixth working group will examine and determine interlinkages between water systems, including input/output of one system to another focusing on key transboundary concerns. This WG is also tasked to define a set of indicators interlinked among the five water systems and define a data and information management system for the TWAP

IOC coordinated the Open Ocean and LME Working Groups of TWAP which met 3 to 5 February 2010 in Paris. GESAMP is considered as a crucial partner for TWAP and was invited to attend the Paris meeting and to become an institutional partner of the project. It is expected that the outcomes of the TWAP project would be directly applicable to the needs of the UN Regular Process and its requirement for harmonized assessment methodologies.

Ocean Acidification

The ocean absorbs approximately one-fourth of the CO2 added to the atmosphere from human activities each year, greatly reducing the impact of this greenhouse gas on climate. When CO2 dissolves in seawater, carbonic acid is formed. This phenomenon, called ocean acidification, is decreasing the ability of many marine organisms to build their shells and skeletal structure. Field studies suggest that impacts of acidification on some major marine calcifiers may already be detectable, and naturally high-CO2 marine environments exhibit major shifts in marine ecosystems following trends expected from laboratory experiments. Yet the full impact of ocean acidification and how these impacts may propagate through marine ecosystems and affect fisheries remains largely unknown.

In May 2004, the Scientific Committee on Oceanic Research (SCOR) and the UNESCO-IOC co-hosted an international symposium, "The Ocean in a High-CO2 World", to evaluate what is known about these issues with the aim to piece together what is known about the impacts of ocean acidification on marine ecosystems, and to identify urgent research priorities to understand the mechanisms, magnitude and time scale of these impacts.

Following this first event, the 2nd symposium on "The Ocean in a High-CO2 World" was held on 6-9 October 2008 at the Oceanography Museum of Monaco under the High Patronage of His Serene Highness Prince Albert II. The meeting was organized with the view to assess what is known about ocean acidification impacts on marine chemistry and ecosystems.

In 2009 the sponsors (IOC jointly with SCOR, IAEA and International Geosphere-Biosphere Programme IGBP) published an Ocean Acidification Summary for Policymakers which can be accessed at: http://www.ocean-acidification.net/

Joint action with ICES on nutrient standards

Comparability and traceability of nutrient data in the world's oceans are fundamental issues in marine sci-

ence, and particularly for studies of global change. An IOC-ICES Study Group on Nutrients Standards (SGONS) will undertake specific tasks to develop reference materials for nutrients in seawater (RMNS) and measurement protocols to improve the comparability and traceability of nutrient data in the world's oceans. The oceanography community has been continuing to improve comparability of nutrient data from the world's oceans in many ways, including international intercomparison exercises and development of nutrient reference materials.

IOC and ICES joined, forces, as partners, in the development of nutrients reference materials and intercomparison exercises. The Study Group will develop international standards for nutrients to establish comparability and traceability of nutrient data in the world oceans according to the Terms of Reference given below.

Participants will include scientists working with nutrient scaling systems and field sampling and assessments as well as scientists in the field of primary production. The IOC-ICES Study Group, will meet in Paris, from 23 to 24 March 2010 inter alia to: develop and establish reference materials for nutrients in seawater (RMNS) (primary determinants are nitrate, nitrite, phosphate and silicate), collaborate and encourage National Meteorology Institute of Japan to complete certification of RMNS for primary determinants); develop new sampling and measurement protocols; and carry out an international collaboration exercise to verify the stability of the reference materials and test the proficiency of the new protocols; as well as construct a global nutrient dataset referenced to the new RMNS, as pat of CLIVAR Repeat Hydrography Program.

Joint action with ICES and IMO on Ballast and other Ship Vectors

The ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors (WGBOSV) critically reviews and reports on the status of shipping vector research with an emphasis on new developments in ballast water treatment technology, risk assessment, ballast water sampling devices, and selection of ballast water exchange zones to contribute to guidelines currently in preparation by IMO, and to address areas of specific interest, (e.g., chemical contaminant and microbiology in ballast water and sediment). The WG also discusses and evaluates the sampling strategies under consideration at IMO and provide comment with the aim to prepare a written submission to relevant IMO Committees in response to requested information (see also the IMO section of this annex).

Ocean Fertilization

The IOC Secretariat has jointly with the International SOLAS (Surface Ocean - Lower Atmosphere Study) Project prepared a summary for policymakers on ocean fertilization. The summary is prepared in response to a request from the Parties to the London Convention as well as to serve IOC Member States as decided by the Assembly. The Summary is planned for circulation to IOC Member States in the first quarter of 2010 (see also the IMO section of this annex).

Nitrogen

The IOC has adopted a work plan for an integrated focus on coastal research. Nutrient over-enrichment of coastal ecosystems is a major environmental issue globally, contributing to problems such as harmful algal blooms, dead zone formation, and fishery decline. Yet, quantitative relationships between nutrient loading and ecosystem effects are not well defined. The development of such relationships, concurrent with an improved understanding of the complexity of these relationships is critical to effective management of coastal resources; without such understanding degradation of aquatic systems will almost certainly continue, resulting in increased social, economic, and environmental hardship.

The activity, named Nutrient Export from Watersheds 2, User Scenario Evaluation (NEWS2USE), aims to address the need for more quantitative analysis of impacts of nutrient loading and changing nutrient stoichiometry in coastal ecosystems. It will explore relationships between nutrient inputs, coastal chlorophyll, the occurrence of harmful algal blooms (HABs) and hypoxia, and related effects on coastal fish and fisheries, with the ultimate goal of developing novel datasets and innovative, predictive models, which will be shared with stakeholders.

This activity directly addresses a critical gap in scientific understanding and an important coastal management need. The coastal zone ecosystem stresses on organisms that will be considered by NEWS2USE are HAB, hypoxia and impacts on fish and fisheries (abundance, composition, landings). The scope of NEWS2USE is global; the aim is to investigate relationships between nutrient loading and nutrient transformations in coastal marine ecosystems, develop models that quantitatively describe such relationships, and to identify regions where conditions are prone to the development of HABs and hypoxia and where further in-depth research is needed. The approach comprises short term activities (Phase I- data collection and the establishment of statistical relationships between nutrient loading and harmful algal blooms and hypoxia based on the data that is available at the start of the project), medium term activities (Phase II- the development and use of deterministic models to describe nutrient impacts in coastal marine ecosystems) and long term activities (Phase III:- integration of insights gained in Phases I and II as well as the development of a tool for evaluation and implementation of management options and policies to improve coastal water quality). NEWS2USE is part of IOC's input to the Global Nutrient Management Network (GPNM). The GPNM which is coordinated by UNEP/GPA is a global partnership of scientists, policy makers, private sector, NGOs and international organisations formed to address the growing problem of nutrient over-enrichment.

UNEP

In late 2008, UNEP established a Marine and Coastal Ecosystem Branch (MCEB) to steer and coordinate its marine and coastal programme and activities. During the past year MCEB directed its effort for the development of the UNEP Marine and Coastal Strategy

consistent with the UNEP Medium Term Strategy focusing on priority issues for maintaining marine ecosystems and their services for human well-being. The Strategy focuses on the fragility of marine and coastal ecosystems and the continued stress these ecosystems face in providing services for humanity. The Strategy's vision - prosperous and healthy oceans and coasts where conservation, productivity and resource use are sustainable - will be achieved through a long-term plan that outlines what is needed to improve our marine and coastal environments and ultimately reduce human impact.

The MCEB hosts the Marine Ecosystems Unit (MEU), the GPA, and the Regional Seas Programme (RSP). The MEU undertakes marine environmental and resource management related work through the development and provision of tools, guidelines and implementation of demonstration projects, for example through ecosystem-based adaptation, climate change vulnerability assessments and adaptive marine spatial planning projects.

The Regional Seas Programme (RSP)

The RSP aims to address the accelerating degradation of the world's oceans and coastal areas through the sustainable management and use of the marine and coastal environment, by engaging neighbouring countries in comprehensive and specific actions to protect their shared marine environment:

1. UNEP in collaboration with 19 other international agencies produced a brochure for negotiators on climate change and fisheries and aquaculture which has been distributed at various climate change forums;
2. In the Western Indian Ocean, support was provided to the Nairobi Convention to continue its work on the integration of ecosystem-based management into national development planning in the Eastern Africa region. In partnership with the Ministry of Environment of Israel, the UN Division for Ocean Affairs and the Law of the Sea (DOALOS), the FAO and UNEP, the Secretariat of the Nairobi Convention established and implemented the related regional capacity building activities;
3. In the North-East Atlantic, support has been provided to the OSPAR Commission to produce a series of fact sheets/leaflets that raise the awareness of relevant and emerging marine environmental issues of regional and global importance (e.g. marine litter, marine spatial planning, cooperation with Regional Fisheries bodies, marine science practice, ocean chemistry, selection of threatened species and habitats);
4. UNEP supported the Coral Reef Crime Scene Investigation (CSI) programme under the International Coral Reef Initiative (ICRI). The programme developed special investigative, forensic and rapid ecological under-water assessment techniques, standards and protocols for the collection of data and evidence of (accidental or deliberate) human impact on coral reefs;
5. UNEP maintains a strong partnership with leading marine scientific research organisations and institutions, inter alia, as partner in the interdisciplinary EU deep sea research projects HERMES (Hotspot Ecosystem Research on the Margins of European Seas – until March 2009) and HERMIONE (Hotspot Ecosystem Research and Man's Impact on European Seas – from April 2009). In this context, UNEP and HERMES published in April 2009 a report "The HERMES Story - Shedding light into the deep sea", which highlights the need for concerted action to protect the deep sea against the increasing pressures, threats and impacts from human activities and climate change, and provides inspiration for the development of similar deep-sea research projects in other regions. For further information visit the following links http://www.eu-hermes.net; http://www.eu-hermione.net; and
6. The ongoing collaboration with HERMES was strengthened through a report that supports and guides emerging activities and interests of countries (especially developing countries and SIDS) in the conservation, protection and sustainable management of deep-water biodiversity and ecosystems within and beyond national jurisdiction. Also, the collaboration includes a report that will guide countries and relevant international/intergovernmental organizations in the development and implementation of sound, integrated, ecosystem-based management policies, measures and approaches for the exploration and sustainable use of deep-sea areas and resources within and beyond national jurisdiction.

Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)

UNEP provides the Secretariat to the GPA. Pursuant to the decision of the second Intergovernmental Review Meeting of the GPA (IGR- 2), held in Beijing from 16-20 October 2006, the GPA Coordination Office continued to provide assistance to countries in assessing how the conservation of marine and coastal ecosystems contributes to poverty alleviation and the achievement of the Millennium Development Goals and supporting countries in their efforts to mainstream coastal and marine resources management into national planning and budgetary frameworks.

UNEP organized a series of regional workshops to promote this approach. Workshops were held in Ecuador and the Philippines. During these workshops participants shared experiences and explored the links between the management of coastal and marine resources, poverty reduction and economic growth, based on their country experiences, with a particular focus on policy development.

UNEP provided financial and technical support to a number of governments (Seychelles, Mauritius, Kenya, South Africa, Tanzania, Madagascar, Comoros, Vietnam, Democratic Republic of the Congo, Mozambique and Indonesia) to facilitate integrative national planning and policy development to address land-based sources of coastal and marine pollution and addressing priority issues through implementation of demonstration and pilot projects. These projects were designed to test 'innovative and locally appropriate technology' (e.g., constructed wetlands for wastewater treatment) and new forms of management (i.e., projects jointly management by the government agencies and civil society organizations).

UNEP, through its training course on municipal wastewater management, contributed to improving skills and knowledge needed in project identification, planning and financing at the municipal level in water, sanitation and wastewater management. During 2009, 47 training courses based on the 'UNEP/WSSCC/WHO/UN-HABITAT Guidelines for Municipal Wastewater Management' were organised in 18 countries of the Africa, Caribbean and Pacific region and trained 773 participants.

UNEP World Conservation Monitoring Centre (WCMC) & UNEP Coral Reef Unit (CRU)

A. One Ocean Programme

UNEP-WCMC has been addressing marine and coastal biodiversity issues for over twenty years, from the polar regions to the tropics, and from coastlines to the shallow and deep seas through the "One Ocean Programme" – so titled and designed to reflect the interconnected nature of the world's oceans and coastlines, the biodiversity it supports and value of this biodiversity to people. The Programme focuses on the following themes: deep/high Seas, marine ecosystems (e.g., coral reefs, mangroves, sea grasses, etc.), marine protected areas, coastal livelihoods (capacity development) and support to UN marine and coastal work.

In 2009, the One Ocean Programme has also included the Secretariat of the International Coral Reef Initiative (ICRI), the Coordinating Unit of the International Coral Reef Action Network (ICRAN), and the UNEP Coral Reef Unit (CRU) to form a Centre of Excellence with respect to coral reefs –the greatest concentration of coral reef expertise within the UN system. Current and recent projects of note are:

1. Assessment of Assessments of the UN Regular Process for Global Reporting and Assessment of the State of the Marine Environment;
2. Prototype Clearing House Mechanisms in support of the UN Regular Process;
3. Report: Deep-water sponge grounds: Reservoirs of Biodiversity and Architects of the Deep Sea;
4. Development of a probabilistic online tool 'Artificial Intelligence for Ecosystem Services' for ecosystem services assessment, planning, and valuation;
5. Report: Advancing innovative approaches to understand, protect and value ecosystem services across linked habitats;
6. International Coral Reef Crime Scene Investigation Program;
7. Global Islands Database to bring together existing sources of data and information relevant to island systems, and support analyses to aid management;
8. Ocean scale regional analysis to support identification of ecologically and biologically significant areas in areas beyond national jurisdiction;
9. Global Coral Disease Database to collate information on the global distribution of coral diseases and contribute to the understanding of coral disease prevalence;
10. Marine and Coastal GeoWiki to improve access to, and interoperability between core marine and coastal datasets;
11. Coral Reefs, Communities and Climate Change: Managing for Resilience; and
12. Following and addressing emerging marine environmental issues, including the impact of climate change induced changes in water chemistry ('ocean acidification') and the pros/cons of potential geoengineering solutions (e.g. 'ocean fertilization') to reduce atmospheric CO_2 concentrations; and marine diseases.

More information is available at the website http://www.unep-wcmc.org/oneocean/

UNEP-WCMC and the IUCN World Commission on Protected Areas (WCPA) are collaborating to reintegrate Protect Planet Ocean with the World Database on Protected Areas (WDPA). The overall objective is to improve upon the global data contained within the WDPA through better engagement with the user community, and the wide dissemination of information to drive forward better protection.

UNEP - Division of Early Warning and Assessment (DEWA)

A. The regular process for global reporting and assessment of the state of the marine environment including socio-economic aspects.

DEWA has together with IOC-UNESCO served as lead-agencies to carry out the Assessment of the Assessments phase of the UN Regular Process. A short description of the AoA phase is given earlier in this annex.

B. Development of methodologies and arrangement for GEF Transboundary Waters Assessment Programme (TWAP).

UNEP together with IOC and other partners is executing and implementing the GEF funded project to develop methodologies for the Transboundary Waters Assessment Programme (TWAP). A short description of TWAP is given earlier in this annex.

Secretariat of the Convention on Migratory Species and the Joint CMS/ASCOBANS Secretariat

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) aims to conserve terrestrial, marine and avian migratory species throughout their range. It has 113 Parties (as of 1 January 2010). At the 9th Meeting of the Conference of Parties (Rome, Italy, 1-5 December 2008), a number of Resolutions relevant to the marine environment were passed, e.g., Resolution 9.9 Migratory Marine Species, 9.18 By-Catch and 9.19 Adverse Anthropogenic Marine/Ocean Noise Impacts on Cetaceans and other Biota. The Scientific Council of CMS is therein requested to give particular attention to a variety of marine issues. Its next meeting will take place in June 2010. Details can be found at: http://www.cms.int/bodies/COP/cop9/Report_COP9/Res&Recs_adopted_by_COP9_E.htm.

Given the nature of migratory species, the Convention covers marine habitats worldwide. One of the main operational instruments of the Convention is the establishment of intergovernmental Agreements concerning the conservation of individual species or groups of related species. To date, four regional instruments for conservation of cetaceans have been concluded under CMS; two of them legally binding (ACCOBAMS – www.accobams.org; ASCOBANS – www.ascobans.org), having also their own scientific bodies, and two in the form of non-binding Memoranda of Understanding. There are also two non-binding instruments on the protection of sirenians, as well as a binding treaty and a non-binding MoU for seals. Details on all these can be found at http://www.cms.int/species/index.htm.

The 6th Meeting of Parties to the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) took place in September 2009. Bycatch and underwater noise were identified as priority topics for the Agreement in the new triennium, with particular emphasis on noise stemming from construction of offshore energy producing platforms. The next meeting of the ASCOBANS Advisory Committee will take place in April 2010.

UNEP/Global Resources Information Database (GRID)-Arendal

The Marine Programme of UNEP/GRID-Arendal aims to work in partnership with developing coastal states and Small Island Developing States to build capacity for an improved understanding of marine ecosystems and to promote the responsible management and sustainable use of the marine environment.

Current and recent projects include:

1. *The UNEP Shelf Programme*: Coordinated by UNEP/GRID-Arendal, and established to assist developing States and Small Island Developing States (SIDS) in completing the activities required to delineate the outer limits of their continental shelf, as defined by Article 76 of UNCLOS. The UNEP Shelf programme has been actively engaged with over 60 States worldwide.
2. *One Stop Data Shop*: The UNEP Shelf Programme has developed a One Stop Data Shop (OSDS), a global geospatial and metadata inventory of public marine geophysical and geological data. Plans are underway to further develop this service to create the Global Marine Resource Information Database (GmRID), with initial focus on deep benthic ocean environments;
3. *A Prototype Clearing House Mechanism for the UNGA Regular Process*: UNEP/GRID-Arendal and UNEP-WCMC collaborated on a UNEP-funded project to develop a prototype Clearing House Mechanism in support of the Lead Agencies (UNEP and UNESCO-IOC) in the work towards a Regular Process for global assessment and reporting on the state of the marine environment, including socio-economic factors. http://development.unep wcmc.org/mura/rpchm/index.cfm;
4. *Global Outlook on Marine Benthic Habitats*: The objective of this project is to contribute to the conservation of marine biodiversity by utilizing geomorphological data to identify and characterize global marine benthic habitats. Linking these habitats to marine ecosystems provides a mechanism for mapping the ecological geography of the ocean floor. The goal of the project is to produce an atlas of marine geomorphology that can be used to support the identification of a representative system of Marine Protected Areas - especially in the high seas area where there is currently a scarcity of data and information;
5. *Global Assessment of Methane Gas Hydrates*: This project is currently under development. It aims to provide a multi-thematic overview of the key aspects of the current methane hydrate debate for both the land-based Arctic deposits and those in the marine environment;
6. *Transboundary Waters Assessment Programme (TWAP) Programme*: UNEP/GRID-Arendal is an institutional partner in this global project aiming to develop strong partnerships among organisations; methodologies for the assessment/results tracking for each of the five categories of transboundary water systems (transboundary groundwater; transboundary lakes/reservoirs; transboundary river basins; Large Marine Ecosystems (LMEs); and open ocean areas); and the arrangements needed to conduct a baseline transboundary waters assessment that may be conducted following completion of project; and
7. *Building Capacity for Ocean Management*: A

capacity building programme is being developed in close partnership with UNEP's Marine and Coastal Ecosystem Branch and other partners, aiming to enhancing capacity at a national level for the sustainable management of natural marine resources.

Recent products include:

1. *Blue Carbon*: The Role of Healthy Oceans in Binding Carbon. A Rapid Response Assessment (RRA) report launched in October 2009. Compiled by experts at UNEP/GRID-Arendal and UNEP in collaboration with the UN Food and Agricultural Organization (FAO) and the UNESCO-IOC International Oceanographic Commissions and other institutions, the report highlights the critical role of the oceans and ocean ecosystems as another piece of the jigsaw contributing to maintaining our climate and in assisting policy makers to mainstream an oceans agenda into national and international climate change initiatives. This report is available for download at: http://www.grida.no/publications/rr/blue-carbon/;
2. *Continental Shelf: The Last Maritime zone.* A comprehensive overview report on the status of the process of establishing the limits of the continental shelf beyond 200 M. Written and illustrated by the UNEP Shelf Programme and communications/cartography experts of UNEP/GRID-Arendal this report is available online at: http://www.grida.no/publications/shelf-last-zone/;
3. *Earthwire Marine*: Provided by UNEP/GRID-Arendal, EarthWire Marine collects news from a wide range of media sources on the Internet, press releases and news from research organisations, environmental organizations and the public sector, and across a series of topics, all related to the marine environment. On the site you can sign up for a daily e-mail update or get an RSS newsfeed. http://earthwire.org/marine; and
4. Wastewater: The UNEP/GRID-Arendal RRA Team is working in collaboration with UNEP GPA, and the UN Water Wastewater Task Team to produce the next Rapid Response Assessment. This next report in the series will focus on the issue of wastewater and how wastewater is managed. The intention of the report will be to improve understanding of and help develop a case for increased and sustained investment in wastewater management by highlighting what benefits can be gained through improving wastewater management. It is planned that the RRA will be launched on World Water Day in March 2010.

More information is available at http://www.grida.no/marine/news.aspx. The latest maps and graphics relating to the marine environment can be found in the online library at http://maps.grida.no/.

UNIDO

Coastal Tourism Project

Since GESAMP 36, UNIDO held the inception workshop on Coastal Tourism. Further to this meeting, on the basis of the outcomes of WSSD (2002) and the thematic group on coastal, marine and freshwater ecosystems of the New Partnership for Africa's Development (NEPAD), a Coastal Tourism Project has been developed. The project's main aim is to demonstrate best practices and strategies to reduce the degradation of marine and coastal environments of transboundary significance, and to enhance sustainable tourism practices. There are nine countries, from East and West Africa involved in the project

The key objectives are: (1) to capture Best Available Practices and Technologies (BAPs and BAT) for contaminant reduction and sustainable collaborative tourism investments ; (2) to develop and implement mechanisms for sustainable governance and management that measurably reduce degradation of coastal ecosystems from land-based tourism sources of pollution and contamination; (3) to assess and deliver training and capacity requirements emphasizing an integrated approach to sustainable reduction in coastal ecosystem degradation within the tourism sector; (4) to develop and implement information capture, information processing and management mechanisms to promote information dissemination and sharing.

Large Marine Ecosystem projects

UNIDO continues the implementation of the Guinea Current Large Marine Ecosystem where it has:

1. completed a Transboundary Diagnostic Analysis ratified by all 16 riparian countries, identifying the root causes at regional and national levels leading to environmental degradation in the GCLME region;
2. finalized a Strategic Action Programme ratified by all 16 GCLME countries. The process for the development of National Action Plans has been launched and will result in the 16 GCLME countries producing National Action Plans in line with the Strategic Action Programme by mid 2010;
3. created the Interim Guinea Current Commission as the mechanism to drive and coordinate regional cooperation on the management of the GCLME; and
4. feasibility studies and detailed project design studies for all nine demonstration projects have been completed and implementation of the demonstration projects is on-going. Dissemination of information on Best Environmental Practice (BEP) and Best Available Technology (BAT) as applied in the demonstration projects will be a main activity in 2010.

In addition, the implementation of a LME project in the Gulf of Mexico has been started. The Gulf of Mexico Large Marine Ecosystem is shared by Cuba, Mexico and the United States. It is one of the most productive marine ecosystems in the world and an important global reservoir of biodiversity. However, this high productivity is at risk from a range of anthropogenic threats that include excessive fishing, which is the primary force driving biomass changes in the Gulf, destruction of critical coastal and marine habitats, and nutrient-enrichment resulting in a so-called "dead zone" of over 18,000 km2 – one of the largest hypoxic zones in the world. Additionally, this Large Marine Ecosystem is the focus of extensive oil and gas production, as well as a rapidly increasing tourism industry. The project aims to respond to these threats through an ecosystem-based management framework, allowing the countries of the Gulf to strengthen the Gulf's living resources, and address land-based and marine pollution, including the reduction of nutrient loads that contribute to the hypoxic zones in the region.

IAEA

Climate Change and economic aspects related to Ocean Acidification

It should be noted that 'ocean acidification', is likely to adversely affect many marine organisms, particularly corals and shell builders, such as oysters, mussels, and molluscs. Thus ocean acidification may affect entire marine food webs, impacting natural biodiversity and aquaculture, and the Intergovernmental Panel on Climate Change (IPCC) has recently highlighted this critical issue during COP 15.

Ocean acidification may also affect toxicity of pollutants, such as heavy metals, thereby affecting seafood safety. The isotope, calcium-45 has provided a key tool to measure rates of calcification, such as in corals whose reefs provide fish habitat and breeding grounds, defence against storms and erosion, and the foundation of a multi-billion dollar tourism industry. In 2009 IAEA has used isotope studies and numerical models to better understand and project how ocean acidification will alter marine resources in the 21st century. For example, IAEA has conducted a series of applied radioecological studies under expected levels of high CO_2 and low pH, using calcium-45 and other isotopes to help unravel effects of ocean acidification on commercially important organisms such as fish larvae and molluscs and key species in marine foodwebs in polar and temperate waters. Some of these results were incorporated in the *Scientific Synthesis of the Impacts of Ocean Acidification on Marine Biodiversity* prepared for the UNFCCC meeting in Copenhagen.

To enhance the socio-economic relevance of this scientific information, environmental economic studies were begun in order to assess the potential future economic impacts of ocean acidification on seafoods.

Capacity building and networking

Through its mandate, the Marine Environment Laboratories (MEL) have traditionally been a focal point of many collaborative initiatives for the following core areas of expertise: certification of reference materials, marine radioactive and non-radioactive pollution monitoring and assessment, as well as for training and methodological development and harmonisation. To continue underpinning developments in Member States these core areas have expanded during the past decade to include a wide range of radiotracer applications to marine studies, such as climate and environmental change, submarine groundwater discharge, harmful algal blooms (HABs), seafood safety and advanced analytical techniques. The marine environmental problems faced by Member States require an integrated, multi-disciplinary and collaborative approach, this having lead to increasingly complex regional and inter-regional technical co-operation projects. At present MEL supports 34 IAEA Technical Cooperation (TC) projects with more than 100 Member States involved.

With the view to increase its effectiveness, MEL has started to formalise its collaborations with its regional networks and other networks of excellence in the following areas: marine radioecology, marine pollution, advanced analytical techniques, analytical quality support, applications of radiotracer techniques, monitoring and assessment, climate and environmental change, ocean acidification and databases.

Several regional and inter-regional training courses were developed by MEL in collaboration with the Member States and were hosted both at MEL and in Member State laboratories. These courses were aimed at highly specialised individuals and covered the following topics: the applications of ecological risk assessment methodologies to the evaluation of impacts of radionuclides and other contaminants on marine organisms of relevance to fisheries, aquaculture and biodiversity; analytical techniques and data QA/QC of trace metals, organochlorine pesticides, PCBs and organotin compounds; targeting sampling, radiometric, radiochemical, radioecological and other analytical techniques applied to pollution and climate change studies.

UN-DOALOS

The Division for Ocean Affairs and the Law of the Sea (DOALOS), Office of Legal Affairs, United Nations, acts as the Secretariat of the 1982 United Nations Convention on the Law of the Sea (UNCLOS). Currently, it supports GESAMP and its activities within the mandate of the Division as provided through the relevant General Assembly resolutions on oceans and the law of the sea. In that regard it provides information on relevant policy developments and also reports on GESAMP activities, in particular, in the context of the report of the Secretary-General on oceans and the law of the sea. Additional support can be provided when mandated by the General Assembly through its annual resolution on oceans and the law of the sea.

Recent developments in the context of the work of DOALOS since April 2009 are listed below:

Secretary-General's reports

The Secretary-General issues a number of reports, including annual comprehensive reports on oceans and the law of the sea which provide an overview of the main developments in the field of ocean affairs and the law of the sea. Those reports regularly provides information on the activities of GESAMP, including for example, on its various contributions to the "Assessment of Assessments", the start-up phase to the Regular Process for global reporting and assessment of the state of the marine environment, including socio-economic aspects. The reports have also highlighted the process of revitalization undergone by GESAMP.

In addition, the Secretary-General also issues a number of special reports, in particular on sustainable fisheries, and also regarding marine biological diversity beyond areas of national jurisdiction. Other reports are referred to below.

All the above mentioned reports, including those produced during 2009 – 2010, and additional information are available on the DOALOS website at: http://www.un.org/Depts/los/index.htm.

Recent intergovernmental meetings of relevance to the GESAMP

Informal consultations on the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. States Parties meet annually in order to consider, inter alia, the implementation of the Agreement at global, regional and subregional levels. The eighth round of informal consultations (16 to19 March 2009) held a two-day segment entitled "Continuing dialogue" to promote participation in the Agreement. The report of the meeting is available on DOALOS's website (ICSP8/UNFSA/REP/INF.6).

On 16 – 17 March 2010, States Parties held their ninth round of consultations to consider, in particular, the overview of the status and trends of the fish stocks addressed in the updated comprehensive report prepared by the Secretary-General in cooperation with the Food and Agriculture Organization of the United Nations, (A/CONF.210/2010/1); and preparations and recommendations for consideration by the resumed Review Conference, which is to take place in New York, 24-28 May 2010.

United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea. The 10th meeting of the Consultative Process met from 17 to 19 June 2009 and focused its discussion on "The implementation of the outcomes of the Consultative Process, including a review of its achievements and shortcomings in its first nine meetings". Discussions were facilitated by the report of the Secretary-General on oceans and the law of the sea (A/64/66). It is noted that most of the sponsoring organizations of GESAMP contributed to the report. The outcome of the meeting is available in document A/64/131.

At its 11th meeting, to be held in New York from 21-25 June 2010, the Consultative Process will focus its discussions on "Capacity-Building in ocean affairs and the law of the sea, including marine science." Contributions to the "Initial and unedited reporting material on capacity-building in ocean affairs and the law of the sea, including marine science" sent by various intergovernmental organizations, including those which are sponsoring organizations of GESAMP have been posted on DOALOS' s website, as appropriate. A Preparatory Meeting for the eleventh meeting of the Consultative Process was held in New York on 18 March 2010 and adopted a format and annotated provisional agenda for the meeting, including areas of concentration for the topic of focus which include

(a) assessing the need for capacity-building in ocean affairs and the law of the sea, including marine science;

(b) overview of capacity-building activities/initiatives in ocean affairs and the law of the sea, including marine science and transfer of technology;

(c) challenges for achieving effective capacity-building in ocean affairs and the law of the sea, including marine science and transfer of technology; and

(d) new approaches, best practices and opportunities for improved capacity-building in oceans and the law of the sea.

General Assembly Ad Hoc Working Group of the Whole to recommend a course of action on the Regular Process. The meeting was held at United Nations Headquarters in New York from 31 August to 4 September 2009. The following supporting documentation was available to the meeting: (a) the report on the results of the "Assessment of Assessments" (A/64/88, annex), and (b) the format, provisional agenda and annotated provisional agenda, including the proposed organization of work. The report on the "Assessment of Assessments", prepared by the Group of Experts, was also made available to the meeting.

The recommendations, which were adopted by the Ad Hoc Working Group (A/64/347, Annex) addressed: (a) the framework of the Regular Process which would consist of an overall objective, capacity-building and technology transfer, definition of the scope of the Regular Process and a number of principles; (b) the first cycle of the Regular Process which would cover five years, from 2010 to 2014 including objectives for a phased approach; and (c) the way forward for the Regular Process identifying the need for a second meeting of the Ad Hoc Working Group of the Whole (31 August – 3 September 2010) and for financial resources for the first cycle of the Regular Process. The Ad Hoc Working Group of the Whole,

postponed further consideration of issues relating to the modalities for the implementation of the Regular Process, including the key features and institutional arrangements and financing, and the specification of the objective and scope of the first cycle of the Regular Process as well as key questions to be answered and primary target audiences, in order to ensure that assessments are relevant for decision-makers.

In its resolution 64/71, the General Assembly reiterated, inter alia, the need to strengthen the regular scientific assessment of the state of the marine environment and endorsed the recommendations adopted by the Ad Hoc Working Group of the Whole. It requested that the Secretary-General convene an informal meeting of the Ad Hoc Working Group of the Whole from 30 August to 3 September 2010. It also requested the Secretary-General to invite the Chairs of regional group to constitute a group of experts, ensuring adequate expertise and geographical distribution, comprised of a maximum of 25 experts and no more than five experts per regional group, for a period up to and including the August meeting of the Ad Hoc Working Group of the Whole. The group of experts will respond and make suggestions on the issues listed in paragraph 60 of document A/64/88 (on building blocks) at the next meeting of the Ad Hoc Working Group of the Whole, including the possibility of conducting preparatory work, as appropriate, and subject to the availability of funds, taking into account the views and observations submitted by States.

The General Assembly established a Trust Fund for the purpose of supporting the operations of the first five-year cycle of the regular process, including for the provision of assistance to the Group of Experts referred to in paragraph 180 of resolution 64/71, from developing countries, in particular least developed countries, small island developing States and landlocked developing States, attending the meeting of the Ad Hoc Working Group of the Whole in 2010, as well as a special scholarship fund to support training programmes for developing countries. It also requested the Division to provide support for the Regular Process with regard to specific activities identified in the resolution (convening the next meeting of the Working Group, constitution of the group of experts, preparation of a report on the views of States, administration of the established Trust Fund etc.) in cooperation, as appropriate, with relevant United Nations specialized agencies and programmes.

Ad hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. The third meeting of the Working Group took place in New York from 1-5 February 2010. The following supporting documentation was available to the Working Group: (a) provisional agenda (A/AC.276/L.3); (b) draft format and annotated provisional agenda and organization of work (A/AC.276/L.4); and (c) report of the Secretary-General on oceans and the law of the sea (A/64/66/Add.2). The outcome of the meeting consisted of the recommendations adopted by the Working Group for transmittal to the sixty-fifth session of the General Assembly and a Co-Chairperson's summary of discussions on key issues, ideas and proposals raised during the deliberations under the various agenda items (see A/AC.276/3). The Working Group adopted recommendations on the following areas: (a) strengthening the information base; (b) capacity-building and technology transfer; (c) cooperation and coordination in implementation; (d) cooperation and coordination for integrated ocean management and ecosystem approaches; (e) environmental impact assessments; (f) area-based management tools, in particular marine protected areas; (g) marine genetic resources; and (h) way forward.

Other areas of interest

Meeting of a Group of Experts on the revision of the UN Guide on the implementation of UNCLOS provisions on marine scientific research. Following a meeting of a Group of Experts (NY, 20-24 April 2009), the 1991 United Nations publication "Marine Scientific Research: A Guide to the Implementation of the Relevant Provisions of the United Nations Convention on the Law of the Sea" has been revised. The revised Guide focuses, as in the case of the 1991 Guide, on the implementation of the Convention's core provisions on marine scientific research, particularly the consent procedure. Part I of the revised Guide discusses the provisions of the Convention on marine scientific research. Part II provides some information on States' practice and on some of the challenges facing developing coastal States, in particular. Part III identifies some best practices and provides some practical guidance for the implementation of the relevant provisions of the Convention. The annexes include standard forms to facilitate the process of granting consent for marine scientific research projects. The revised Guide is expected to be released as a United Nations publication in 2010.

World Oceans Day. In paragraph 171 of its resolution 63/111 on oceans and the law of the sea, the General Assembly resolved that, as from 2009, the United Nations will designate 8 June as World Oceans Day. On 8 June 2009, the United Nations observed for the first time the United Nations World Oceans Day. The theme of the inaugural observance of the World Oceans Day by the United Nations in 2009 was "Our Oceans, Our Responsibility. The theme for World Oceans day 2010 is "Our oceans: opportunities and challenges".

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ANNEX V

TERMS OF REFERENCES FOR CURRENT GESAMP WORKING GROUPS

The Terms of Reference for each of the currently active Working Groups are reproduced below, with the information on administrative arrangements, background and context, etc.

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Working Group 1: GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships (EHS)

The terms of reference of the GESAMP EHS Working Group, as given by GESAMP at its 6th session in Geneva (1974) and amended at its 8th session in Rome (1976) are:

To examine and evaluate data and to provide such other advice as may be requested, particularly by IMO, for evaluating the environmental hazards of harmful substances carried by ships, in accordance with the rationale approved by GESAMP for this purpose.

At that time, the rationale for hazard evaluation specified for the Working Group was laid down in GESAMP IV/19/ Supp. 1; this was replaced in 1982 by GESAMP Reports and Studies No. 17, which was in turn superseded by GESAMP Reports and Studies No. 35 in 1989. As approved by GESAMP at its 28th session in 1998, the procedure described in GESAMP Reports and Studies No. 64 (2001), replaces all previous versions. The terms of reference remain the same.

*

Working Group 34: Review of applications for 'Active Substances' to be used in Ballast Water Management Systems

Terms of Reference approved intersessionally by GESAMP, November 2005, are:

1 Consideration of development of necessary methodologies and information requirements in accordance with G9* for consideration by MEPC 56.

2 For Basic Approval, the Group should review the comprehensive proposal submitted by the Member of the Organization along with any additional data submitted as well as other relevant information available to the Group and report to the Organization. In particular, the Group should undertake:

1 scientific evaluation of the data-set in the proposal for approval (see paragraphs 4.2, 6.1, 8.1.2.3, 8.1.2.4 of G9);
2 scientific evaluation of the assessment report contained in the proposal for approval (see paragraph 4.3.1 of G9);
3 scientific evaluation of the risks to the ship and personnel to include consideration of the storage, handling and application of the active substance (see paragraph 6.3 of G9);
4 scientific evaluation of any further information submitted (see paragraph 8.1.2.6 of G9);
5 scientific review of the risk characterization and analysis contained in the proposal for approval (see paragraph 5.3 of G9);
6 scientific recommendations on whether the proposal has demonstrated a potential for unreasonable risk to the environment, human health, property or resources (see paragraph 8.1.2.8 of G9); and
7 preparation of a Report addressing the above-mentioned aspects for consideration by MEPC (see paragraph 8.1.2.10 of G9).

3 For Final Approval, the Group should review the discharge testing (field) data and confirm that the residual toxicity of the discharge conforms to the evaluation undertaken for Basic Approval and that the previous evaluation of the risks to the ship and personnel including consideration of the storage, handling and application of the active substance remains valid. The evaluation will be reported to MEPC (see paragraph 8.2 of G9).

4 The Group shall keep confidential all data, the disclosure of which would undermine protection of the commercial interests of the applicant, including intellectual property.

*

Working Group 37: Mercury and Its Compounds

Under the direction of GESAMP in general and the Chairperson of the Task Team in particular, the Task Team will:

1. undertake a scientific review of mercury and its compounds, advise GESAMP on relevant issues and problems relating to management of mercury and its compounds in the marine environment;

2. identify areas of existing or potential concern relating to mercury pollution and determine appropriate actions that the Task Team might undertake (with and without funding requirements);

* G9 stands equivalent for MEPC 53/2/1 annex, as amended: Procedure for approval of ballast water management systems that make use of Active Substances (G9).

3. respond to requests for advice from GESAMP or other appropriate intergovernmental bodies;
4. undertake studies, with corresponding reporting, as requested by GESAMP or as deemed appropriate by the Task Team itself;
5. provide an annual report to GESAMP on its activities and views in relation to its mandate; and
6. liaise with other groups (such as MATFRP and AMAP) as deemed necessary.

Objectives for the Task Team Assisting in filling some of the Identified Data and Information Gaps of the Reviews of Scientific Information on Lead and Cadmium are:

1. to become a member of an already existing UNEP working group on lead and cadmium;
2. to produce two short reports on lead and cadmium that will help UNEP to fill data and information gaps identified in **the Reviews of scientific information on lead and cadmium**; and
3. to participate in the process of finalization of the Reviews with a view to informing discussions on the need for global action in relation to lead and cadmium.

*

Working Group 38: Atmospheric Input of Chemicals to the Ocean

Terms of Reference approved intersessionally by GESAMP, February 2008, are

- Assess the need for the development of new model and measurement products for improving our understanding of the impacts of the atmospheric deposition of nitrogen species and dust (iron) to the ocean;
- Review the present information on the atmospheric deposition of phosphorus species to both the marine and terrestrial environments, considering both natural and anthropogenic sources, and evaluate the impact of atmospheric phosphorus deposition on marine and terrestrial ecosystems. Consider whether such a review of any other substance would be useful.
- Work with the WMO Sand and Dust Storm Warning and Assessment System and with the WMO Precipitation Chemistry Data Synthesis and Community Project to evaluate the needs of the marine community and assist in clearly articulating them in the development of these WMO efforts
- To address these issues, individuals with the following expertise are required as members of the working group: atmospheric chemistry, marine biogeochemistry, air/sea chemical exchange, atmospheric dust and iron, nitrogen, and phosphorus measurement and modelling, general atmospheric transport modelling, precipitation chemistry measurement and modelling.

*

Working Group 39: Global Trends in Pollution of Coastal Ecosystems

Terms of Reference partly approved by GESAMP at the 37th session, February 2010, are:

- Bibliographic Review, definitions, methodologies
    1. Categorize all bibliographical review on environmental pollution temporal records, both sediment column and spatial temporal series by LME, evaluate quality of data.
    2. Generate a table with the information classified by contaminant origin (organic, inorganic), toxicity, and geographical distribution.
    3. Generate a database with the sources and link to data on SQL format or similar (example MORS)
- Critical review of existing methodologies on suitable environmental archives, dating methods, pollution indicators, analytical techniques and trend analysis. Review existing data, including data quality
    1. Distribute by coordinator a working hypothesis for the methodology to critically evaluate the database gathered in Task 1.
    2. Distribute by coordinator specific tasks to WG and GoE participating in the meeting.
    3. Generate a draft and Report on the evaluation, methodologies, and quality of data.

***

ANNEX VI

TEMPLATE FOR TERMS OF REFERENCE FOR GESAMP WORKING GROUPS

BACKGROUND & CONTEXT

- **The subject:** Brief general background on subject of the study?
- **The issue/problem:** Why is the subject of concern or interest to the international community from the perspective of marine environmental protection?
- **The need:** why is a GESAMP study needed? (e.g., synthesis of scattered information, assessment of environmental status/impacts, development of new methodologies, establishment of standards or guidelines, identify requirements for research, monitoring, management, and/or policy development.

TERMS OF REFERENCE

- Specific, concrete, point-by-point tasks to be carried out by the WG, and/or specific information to be included in the report.
- Defined scope: what will and won't be done?
- Not open-ended: focus on a specific product to be produced (usually a report).
- If additional tasks are envisioned they may be identified as future work for the WG, but TOR should focus on specific task being proposed.
- Identify expertise required for the WG

WORK PLAN

- Work methods (usually meetings and intersessional work/correspondence;
- Provisional timeline, including:
    1. Meeting dates
    2. Milestones (drafts, reviews, revisions, etc.)
    3. Deliverables and delivery date (usually publication of a report)
- Provisions for peer review
- Provisions for publication, dissemination and outreach (PR)

ADMINISTRATIVE ARRANGEMENTS

- Sponsors
- Budget & funding
- WG Chairperson(s) & members if available at time of proposal
- Technical secretary for the WG

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ANNEX VII

SCOPING PAPER

HYPOXIA: NEW INSIGHTS ON AN OLD PRESSING ENVIRONMENTAL PROBLEM

Submitted by Rudolf Wu

Introduction

1 Hypoxia is defined as dissolved oxygen (DO) levels between 0 mg O2 /L (anoxia) and 2.8 mg O2/L (Diaz & Rosenberg 1995). Hypoxia may be a natural phenomenon. Formation of haloclines and thermoclines may lead to vertical stratification in water column (Rosenberg et al. 1991, Pihl et al. 1992, Hoback & Barnhart 1996) where decomposition of organic matters in the bottom water may exhaust DO in bottom waters (Diaz 2001). More often, however, excessive anthropogenic input of nutrients and organic matters into water bodies may lead to eutrophication and hence oxygen depletion (Diaz 2001, Wu 2002, Diaz & Rosenberg 2008).

2 Recently, hypoxia and anoxia caused by eutrophication are amongst the most pressing environmental problems in marine systems worldwide. Hypoxic areas in the World's oceans, (called the "dead zones"), range from localized areas to more than 25,000 square miles, are now commonly found in the coastal waters in North and South America, Africa, Europe, India, South-east Asia, Japan, China, Australia and New Zealand (UNEP, 2006). The size of the "dead zone" in Gulf of Mexico, for example, is about the same size as the whole New Jersey state. A recent study by Diaz & Rosenberg (2008) showed that, the number of dead zones has approximately doubled every decade since the 1960s. Currently, some 400 marine systems have been reported as eutrophication-associated dead zones, and their distribution closely matches the global human footprint (Fig. 1, next page).

Hypoxia causes global changes in marine communities

3 It has been well documented that hypoxia has already resulted in serious ecological problems over large areas, including mass mortalities of fish and benthos, major changes in species composition, decreases in species richness and diversities, alteration of food web, changes in ecosystem structure and function over large coastal areas (Pihl et al. 1991, Pihl et al. 1992, Pihl 1994, Diaz & Rosenberg 1995, Petersen & Pihl 1995, Wu 1999; Gray et al., 2002). Sensitive species have been permanently or periodically removed in many places (Wu 1982, Diaz & Rosenberg 1995). Indeed, many ecosystems that are now severely stressed by hypoxia appear to be on the verge of change or collapse (i.e. loss of fisheries, loss of biodiversity and alteration of food webs), and improvement is only found in a very small fraction (4%) of the 400-plus hypoxic systems (Diaz & Rosenberg 2008).

4 Besides causing direct mortality, hypoxia may also reduce growth, alter behaviours of fishes, and change their prey items, thereby reducing their abundance and diversity **(**Breitburg 2002**)**. Reductions in the biomass and landing of fish have been reported in many hypoxic areas (Dyer *et al.*, 1983; Rosenberg and Loo 1988; Pihl *et al.*, 1991; Baden *et al.*, 1990; Breitburg 1992; Lekve *et al.*, 1999). Petersen and Pihl (1995) demonstrated a significant relation-

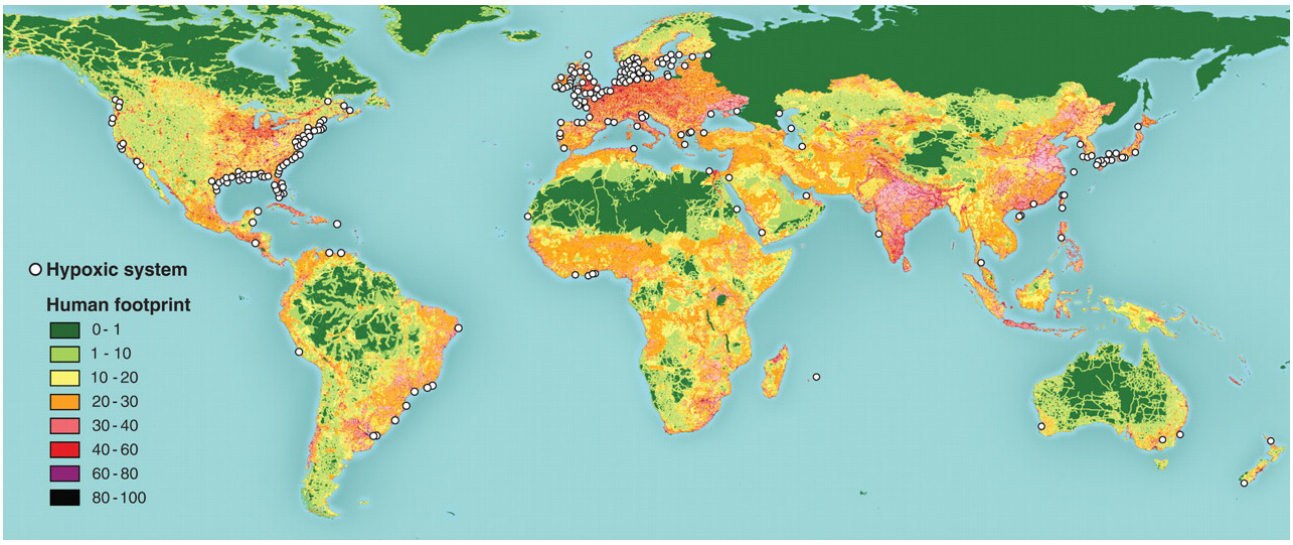

Fig. 1. Global distribution of over 400 systems that have been reported as eutrophication-associated dead zones and the global human footprint. Adapted from (Diaz & Rosenberg 2008).

ship between biomass (catch per unit effort) of plaice and dab and oxygen concentration in the bottom water of Kattegat, Sweden. Hypoxia might also favour the selection of small benthic species with a shorter life cycle, and such long-term changes in prey species, coupled with a lower level of oxygen in bottom waters, have been related to a shift in dominance from demersal to pelagic fish in the Kattegat, Sweden (Pihl 1994).

5 The observed decline in natural fish populations may also be caused by reproductive impairments resulting from chronic hypoxia, although it would be difficult to decipher the exact cause, or to attribute the observed population decline and community changes to hypoxia *per se,* since hypoxia in the natural environment is often associated with other confounding factors such as pollution and overfishing.

Current trend

6 The problem of hypoxia in the marine environment is likely to be exacerbated in the coming years. The rapid growth in human population and the increase in the use of fertilizers and deforestation will increase the nutrient input into the coastal waters, especially in developing countries where sewage treatment may not be able to cope with the rapid population growth (Nixon 1990, Wu 1999). Furthermore, global warming caused by the emission of green house gases will warm up the surface water more rapidly and augment the formation of thermo clines. Climate change may decrease oxygen levels in ocean waters through increasing stratification, altering the rainfall patterns and increasing discharges of fresh water and land nutrients into coastal ecosystems (Diaz & Rosenberg 2008).

New insights

7 Convincing scientific evidence produced recently further showed that hypoxia is an endocrine disruptor and also a teratogen. Just like many endocrine disrupting chemicals (EDCs), hypoxia has been shown to affect levels of sex hormones in fish, leading to reproductive impairment, alternation of sex determination and resulting a male biased F1 generation. Furthermore, hypoxia has been demonstrated to be tertatogenic, and can cause malformation in fish. The adverse environmental effects, the trend, the spatial scale of occurrence of hypoxia make it likely to be one of the most pressing problems (if not the most pressing problem) in the marine environment globally.

Hypoxia impairs fish reproduction

8 Hypoxia has caused global decline in fish populations and extinction of certain fish species in marine systems (Wu 1982, Pihl et al. 1991, Dauer 1993, Diaz & Rosenberg 1995, Diaz 2001, Wu 2002). Ample scientific evidence shows that hypoxia can affect fish populations via impairment of growth and reproductive success, which arguably, are the two most important factors in determining species fitness and survival. Hypoxia may affect the reproductive success and output of fish by affecting their reproductive behaviour, gonadal development, gametogenesis, sex determination, gametes quality, fertility and larval survival.

Hypoxia impairs gonadal development

9 Both laboratory and field evidence showed that chronic exposure to hypoxia can retard gametogenesis and gonad development in fish. In carp, Gonadal Somatic Index (GSI) was reduced following exposure to hypoxia (Wu et al. 2003), and hypoxic fish failed to produce mature oocytes or less yolk deposition was found in eggs. Similarly, a significant decrease in testicular growth and viable sperm were found in hypoxic males. Subsequent laboratory and field studies also showed delayed gonadal development, reduced GSI, retardation of sperm and egg development in zebra fish (Shang et al. 2006), Atlantic croaker (Thomas et al. 2006, 2007) and Gulf killifish (Landry et al. 2007).

Hypoxia reduces spawning success, fertility, gametes quality and offspring survival

10 The spawning success of cod in the central Baltic was hindered by hypoxic water (Cardinale & Modin 1999). Hypoxia reduced sperm motility, spawning success, fertilization success, hatching and survival of offspring in carp. Overall, the survival of eggs to larvae decreased from 92.3% in the normoxic fish to only 4.4% in the hypoxic fish (Wu et al. 2003).

Hypoxia alters reproductive behaviour

11 Both field and laboratory studies have shown that hypoxia could disrupt reproductive behaviours (including courtship, mate choice and nest care) in many fish species, including marine gobies (Jones & Reynolds 1999a, b), mosquito fish (Kramer 1987) naked goby (Breitburg 1992), sand gobies and three-spine stickleback (Reebs et al. 1984, Jones & Reynolds 1999a, Lissaker et al. 2003) and carp (Wang, 2008), which may in turn, affect reproductive success.

Hypoxia disrupt sex hormones

12 Disrupting effects of hypoxia on sex hormones [estradiol (E2), testosterone (T), and 11-Ketotestosterone (11-KT)] and vitellogenin (Vtg) have been well documented in various fish species, including carp, zebrafish, Gulf killifish, Pacu and Atlantic croakers (Dabrowski et al. 2003; Wu et al. 2003; Thomas et al. 2006,

Thomas et al. 2007; Shang et al. 2006; Landry et al. 2007). A dose-response relationship between hormonal changes and level of hypoxia was further demonstrated in the Atlantic croakers (Thomas et al. 2007).

13 With a few exceptions, decreases in T, E2 and 11-KT were generally observed in hypoxic fishes, regardless of species, indicating that hypoxia reduces the production of sex hormones in fishes. Importantly, decreases in the level of sex hormones were clearly associated with reproductive impairments in all these species. Importantly, studies further show that the disruption of sex hormone levels was not caused by a general shutdown of metabolism n response to adverse environmental conditions. Just like the action of EDCs, hypoxia specifically affects certain genes controlling sex hormone production, thereby leading to disruption of sex hormones (Wu, 2009).

Hypoxia delays embryonic development

14 Many studies showed that embryonic development of different fish species (salmon, brown trout, nase, zebra fish) is retarded under hypoxia (Berntsen *et al*. 1990; Padilla and Roth, 2001; Shang and Wu, 2004; Roussel 2007), which often lead to a lower quality of the offspring, demonstrated that exposure to hypoxia during development can have carry-over effects on later parts of the life cycle, and may reduce the fitness of adults in the natural habitat, although supporting field evidence is still not available. The ecological consequence of delayed hatching caused by hypoxia is not known.

Hypoxia causes malformation

15 It is well known that hypoxia can cause deformities in fish (Keckeis *et al.,* 1996; Strand *et al.,* 2004; Shang and Wu, 2004). It is also interesting to note that a higher occurrence of malformed fish larvae has been generally reported in polluted areas (Au 2004), although the observed increase in malformed larvae may not necessarily be attributable to hypoxia because polluted areas are often also contaminated with a variety of chemicals including teratogens and endocrine disrupting chemicals.

Hypoxia affects sex differentiation, sex determination and sex ratio

16 The balance of sex steroid hormones is important in determining sex differentiation (Kime 1998). A specific ratio of T/E2 is required for sexual differentiation, and alteration of this ratio can impair gonadal development (Hileman, 1994). Shang *et al*. (2006) showed that chronic exposure to hypoxia can affect T/E2 ratio and hence affect sex differentiation and alter sex determination during development, resulting in a male-biased population in the F1 generation. A biased sex ratio may reduce the chance of reproductive encounter and cause a decline in natural populations. Field studies carried out in Gulf of Mexico also offered evidence that hypoxia may affect sex determination and sex ratio of fish under naturally occurring hypoxia (Thomas per. Com).

Environmental implications and overall conclusion

17 The above scientific evidence clearly show that hypoxia can impair reproduction, alter reproductive behaviors, affect quality of sperm and egg, reduce fertilization success, delay development, reduce hatching success and increase the incidence of malformation in fish. Laboratory results (and limited field studies) further showed that hypoxia may alter sex differentiation and sex determination, leading to a male biased F1 generation.

18 Arguably, reproductive success is the key factor determining the sustainability of natural populations. The reproductive impairment and adverse effects on reproduction and development caused by hypoxia suggest that hypoxia poses a significant threat to the sustainability of natural fish populations. Given the fact that hypoxia commonly occurs over very large areas worldwide and the problem is likely to be exacerbated in the future, the threat posed by hypoxia on marine systems is significant and imminent. Despite this, supporting field evidence is scarce.

19 Since genes and hormones controlling reproduction are highly conservative, it is likely that hypoxia may also impair reproduction of higher vertebrates in a similar way. Indeed, results of scattered scientific studies in higher vertebrates also lend support to this postulation.

Proposed study

20 The scientific evidence presented above are largely derived from laboratory study and only supported by limited field data. It is proposed that a global survey be carried out to examine species composition, % malformation, gonad development and sex ratio of fish in normoxic and hypoxic areas. Except for % malformation, many national agency collect landing statistics and some routinely determine GSI and sex of major commercial species. Thus, it may be cost effective to carry out the proposed work in collaboration with various national fishery agencies.

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ANNEX VIII

Possible Roles for GESAMP in the United Nations Regular Process

GESAMP has a long-standing interest in the United Nations regular process for global reporting and assessment of the state of the marine environment, including socioeconomic aspects (the "Regular Process"), and since 2001 has participated in many aspects of its development, including the start-up phase, the "Assessment of Assessments" (AoA). GESAMP congratulates the Group of Experts, the Ad Hoc Steering Group, and the Lead Agencies of the AoA for their excellent work in completing the Assessment of Assessments, which GESAMP views as a major step towards establishing the Regular Process.

At this critical juncture for the Regular Process, GESAMP has considered how it may best continue to contribute to the Regular Process in light of the framework which has been proposed as a way forward by the Group of Experts and the recommendations of the Ad Hoc Working Group of the Whole, as reflected in UNGA Resolution A/64/347.

As envisaged by the Group of Experts, the framework of the Regular Process is expected to comprise a number of organizational arrangements such as, a Management and Review Body (MRB), an Expert Panel, a Pool of Experts, and a Secretariat and to provide for some functions, including the preparation of thematic assessments to address specific needs of the Regular Process.

GESAMP considers that it would best participate in the Regular Process by conducting thematic assessments, by having formal linkages with the Regular Process Expert Panel to foster cooperation and coordination, by providing its Pool of Experts and by participating in peer reviews.

Thematic Assessments. The Regular Process is likely to include thematic assessments on specific topics, probably on shorter time frames than the five-year cycle envisaged for integrated global assessments. GESAMP has a long history of producing such assessments and contributed in this way to the Assessment of Assessments with a review of assessment activities relating to pollution in the open ocean. GESAMP considers that, as an established mechanism, it could make a strong contribution to thematic assessments as part of the Regular Process. This could be done on an ad hoc basis, but there would be advantages in establishing a standing institutional arrangement in which GESAMP conducts thematic assessments for the Regular Process which are appropriate to GESAMP's expertise. It would expedite the initiation and execution of assessments, help foster a consistent approach to thematic assessments and promote the alignment of GESAMP's expertise and work plan to the needs of the Regular Process. GESAMP's existing systems for external peer review and approval would streamline delivery, and GESAMP's reputation for high-quality assessments would contribute to the scientific credibility of the Regular Process.

Panel of Experts. A Panel of Experts acting in an individual capacity will lead the generation of assessments for the Regular Process. GESAMP considers that it would be beneficial for the Regular Process Panel of Experts and GESAMP to have effective formal linkages. This would promote coordination and cooperation between the two groups. It would assist GESAMP in aligning its membership and work programme to the needs of the Regular Process and also promote the dissemination and application of the findings and recommendations of the Regular Process through GESAMP's activities.

Pool of Experts. The Regular Process will need access to a broad range of experts, for example to contribute to individual assessments, provide specialist knowledge on specific topics, and serve as peer reviewers. The Assessment of Assessments envisages a Pool of Experts upon which the Regular Process can draw to meet these needs. GESAMP has established a similar Pool of Experts to broaden its expertise and foster geographic and gender balance. This task has required extensive consideration, planning, time, and resources and is not to be undertaken lightly. In GESAMP's view, the Regular Process would benefit from building upon existing expert networks, including by making use of the GESAMP Pool of Experts. The selection criteria and profile of expertise for the GESAMP Pool of Experts align well with those outlined in the Assessment of Assessments, and could easily accommodate the requirements of the Regular Process. GESAMP recognises that the Regular Process may need to draw upon other expert networks to ensure access to the broadest possible range of expertise.

Peer Review. A thorough, transparent peer review process will be essential for the credibility of the Regular Process. GESAMP has a transparent mechanism for reviewing its products and external documents, and considers it appropriate for the Regular Process to draw upon this experience. GESAMP could undertake peer review of the main integrated global assessments or of thematic assessments conducted by other groups. GESAMP performed such a role in the Assessment of Assessments by establishing a task team to review the report of the Group of Experts. The Regular Process could also draw upon the GESAMP Pool of Experts as a source of individual expert peer reviewers. GESAMP stands ready to be part of the Regular Process peer review process.

It is also useful to identify components of the Regular Process in which GESAMP does not consider itself to have an appropriate role. One of these is the Management and Review Body, which is likely to represent decision makers in establishing the objectives and design of the Regular Process to ensure it's policy relevance, as well as undertaking administrative func-

tions such as the approval of budgets and work-plans. GESAMP has no legitimate role in such functions. Similarly, given that it's mandate is to provide independent scientific advice, GESAMP does not consider itself to have an appropriate role in providing or contributing to the Secretariat of the Regular Process.

The Regular Process will clearly require the support of a Secretariat, presumably in the context of an institutional arrangement among UN organizations. The GESAMP Office would provide a focal point for interactions between GESAMP and the Regular Process Secretariat.

In conclusion, GESAMP regards the establishment of the Regular Process as an important and positive step forward towards improved ocean governance. We stand willing to assist the Regular Process in any manner which is within our capabilities and deemed appropriate by the Regular Process.

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ANNEX IX

GESAMP REPORTS AND STUDIES

The following reports and studies have been published so far. They are available from the GESAMP website: www.gesamp.org

1. Report of the seventh session, London, 24-30 April 1975. (1975). Rep. Stud. GESAMP, (1):pag.var. Available also in French, Spanish and Russian

2. Review of harmful substances. (1976). Rep. Stud. GESAMP, (2):80 p.

3. Scientific criteria for the selection of sites for dumping of wastes into the sea. (1975). Rep. Stud. GESAMP, (3):21 p. Available also in French, Spanish and Russian

4. Report of the eighth session, Rome, 21-27 April 1976. (1976). Rep. Stud. GESAMP, (4):pag.var. Available also in French and Russian

5. Principles for developing coastal water quality criteria. (1976). Rep. Stud. GESAMP, (5):23 p.

6. Impact of oil on the marine environment. (1977). Rep. Stud. GESAMP, (6):250 p.

7. Scientific aspects of pollution arising from the exploration and exploitation of the sea-bed. (1977). Rep. Stud. GESAMP, (7):37 p.

8. Report of the ninth session, New York, 7-11 March 1977. (1977). Rep. Stud. GESAMP, (8):33 p. Available also in French and Russian

9. Report of the tenth session, Paris, 29 May - 2 June 1978. (1978). Rep. Stud. GESAMP, (9):pag.var. Available also in French, Spanish and Russian

10. Report of the eleventh session, Dubrovnik, 25-29 February 1980. (1980). Rep. Stud. GESAMP, (10):pag.var. Available also in French and Spanish

11. Marine Pollution implications of coastal area development. (1980). Rep. Stud. GESAMP, (11):114 p.

12. Monitoring biological variables related to marine pollution. (1980). Rep. Stud. GESAMP, (12):22 p. Available also in Russian

13. Interchange of pollutants between the atmosphere and the oceans. (1980). Rep. Stud. GESAMP, (13):55 p.

14. Report of the twelfth session, Geneva, 22-29 October 1981. (1981). Rep. Stud. GESAMP, (14):pag.var. Available also in French, Spanish and Russian

15. The review of the health of the oceans. (1982). Rep. Stud. GESAMP, (15):108 p.

16. Scientific criteria for the selection of waste disposal sites at sea. (1982). Rep. Stud. GESAMP, (16):60 p.

17. The evaluation of the hazards of harmful substances carried by ships. (1982). Rep. Stud. GESAMP, (17):pag.var.

18. Report of the thirteenth session, Geneva, 28 February - 4 March 1983. (1983). Rep. Stud. GESAMP, (18):50 p. Available also in French, Spanish and Russian

19. An oceanographic model for the dispersion of wastes disposed of in the deep sea. (1983). Rep. Stud. GESAMP, (19):182 p.

20. Marine pollution implications of ocean energy development. (1984). Rep. Stud. GESAMP, (20):44 p.

21. Report of the fourteenth session, Vienna, 26-30 March 1984. (1984). Rep. Stud. GESAMP, (21):42 p. Available also in French, Spanish and Russian

22. Review of potentially harmful substances. Cadmium, lead and tin. (1985). Rep. Stud. GESAMP, (22):114 p.

23. Interchange of pollutants between the atmosphere and the oceans (part II). (1985). Rep. Stud. GESAMP, (23):55 p.

24. Thermal discharges in the marine environment. (1984). Rep. Stud. GESAMP, (24):44 p.

25. Report of the fifteenth session, New York, 25-29 March 1985. (1985). Rep. Stud. GESAMP, (25):49 p. Available also in French, Spanish and Russian

26. Atmospheric transport of contaminants into the Mediterranean region. (1985). Rep. Stud. GESAMP, (26):53 p.

27. Report of the sixteenth session, London, 17-21 March 1986. (1986). Rep. Stud. GESAMP, (27):74 p. Available also in French, Spanish and Russian

28. Review of potentially harmful substances. Arsenic, mercury and selenium. (1986). Rep. Stud. GESAMP, (28):172 p.

29. Review of potentially harmful substances. Organosilicon compounds (silanes and siloxanes). (1986). Published as UNEP Reg. Seas Rep. Stud., (78):24 p.

30. Environmental capacity. An approach to marine pollution prevention. (1986). Rep. Stud. GESAMP, (30):49 p.

31. Report of the seventeenth session, Rome, 30 March - 3 April 1987. (1987). Rep. Stud. GESAMP, (31):36 p. Available also in French, Spanish and Russian

32. Land-sea boundary flux of contaminants: contributions from rivers. (1987). Rep. Stud. GESAMP, (32):172 p.

33. Report on the eighteenth session, Paris, 11-15 April 1988. (1988). Rep. Stud. GESAMP, (33):56 p. Available also in French, Spanish and Russian

34. Review of potentially harmful substances. Nutrients. (1990). Rep. Stud. GESAMP, (34):40 p.

35. The evaluation of the hazards of harmful substances carried by ships: Revision of GESAMP Reports and Studies No. 17. (1989). Rep. Stud. GESAMP, (35):pag.var.

36. Pollutant modification of atmospheric and oceanic processes and climate: some aspects of the problem. (1989). Rep. Stud. GESAMP, (36):35 p.

37. Report of the nineteenth session, Athens, 8-12 May 1989. (1989). Rep. Stud. GESAMP, (37):47 p. Available also in French, Spanish and Russian

38. Atmospheric input of trace species to the world ocean. (1989). Rep. Stud. GESAMP, (38):111 p.

39. The state of the marine environment. (1990). Rep. Stud. GESAMP, (39):111 p. Available also in Spanish as Inf.Estud.Progr.Mar.Reg.PNUMA, (115):87 p.

40. Long-term consequences of low-level marine contamination: An analytical approach. (1989). Rep. Stud. GESAMP, (40):14 p.

41. Report of the twentieth session, Geneva, 7-11 May 1990. (1990). Rep. Stud. GESAMP, (41):32 p. Available also in French, Spanish and Russian

42. Review of potentially harmful substances. Choosing priority organochlorines for marine hazard assessment. (1990). Rep. Stud. GESAMP, (42):10 p.

43. Coastal modelling. (1991). Rep. Stud. GESAMP, (43):187 p.

44. Report of the twenty-first session, London, 18-22 February 1991. (1991). Rep. Stud. GESAMP, (44):53 p. Available also in French, Spanish and Russian

45. Global strategies for marine environmental protection. (1991). Rep. Stud. GESAMP, (45):34 p.

46. Review of potentially harmful substances. Carcinogens: their significance as marine pollutants. (1991). Rep. Stud. GESAMP, (46):56 p.

47. Reducing environmental impacts of coastal aquaculture. (1991). Rep. Stud. GESAMP, (47):35 p.

48. Global changes and the air-sea exchange of chemicals. (1991). Rep. Stud. GESAMP, (48):69 p.

49. Report of the twenty-second session, Vienna, 9-13 February 1992. (1992). Rep. Stud. GESAMP, (49):56 p. Available also in French, Spanish and Russian

50. Impact of oil, individual hydrocarbons and related chemicals on the marine environment, including used lubricant oils, oil spill control agents and chemicals used offshore. (1993). Rep. Stud. GESAMP, (50):178 p.

51. Report of the twenty-third session, London, 19-23 April 1993. (1993). Rep. Stud. GESAMP, (51):41 p. Available also in French, Spanish and Russian

52. Anthropogenic influences on sediment discharge to the coastal zone and environmental consequences. (1994). Rep. Stud. GESAMP, (52):67 p.

53. Report of the twenty-fourth session, New York, 21-25 March 1994. (1994). Rep. Stud. GESAMP, (53):56 p. Available also in French, Spanish and Russian

54. Guidelines for marine environmental assessment. (1994). Rep. Stud. GESAMP, (54):28 p.

55. Biological indicators and their use in the measurement of the condition of the marine environment. (1995). Rep. Stud. GESAMP, (55):56 p. Available also in Russian

56. Report of the twenty-fifth session, Rome, 24-28 April 1995. (1995). Rep. Stud. GESAMP, (56):54 p. Available also in French, Spanish and Russian

57. Monitoring of ecological effects of coastal aquaculture wastes. (1996). Rep. Stud. GESAMP, (57):45 p.

58. The invasion of the ctenophore Mnemiopsis leidyi in the Black Sea. (1997). Rep. Stud. GESAMP, (58):84 p.

59. The sea-surface microlayer and its role in global change. (1995). Rep. Stud. GESAMP, (59):76 p.

60. Report of the twenty-sixth session, Paris, 25-29 March 1996. (1996). Rep. Stud. GESAMP, (60):29 p. Available also in French, Spanish and Russian

61. The contributions of science to integrated coastal management. (1996). Rep. Stud. GESAMP, (61):66 p.

62. Marine biodiversity: patterns, threats and development of a strategy for conservation. (1997). Rep. Stud. GESAMP, (62):24 p.

63. Report of the twenty-seventh session, Nairobi, 14-18 April 1997. (1997). Rep. Stud. GESAMP, (63):45 p. Available also in French, Spanish and Russian

64. The revised GESAMP hazard evaluation procedure for chemical substances carried by ships. (2002). Rep. Stud. GESAMP, (64):121 p.

65. Towards safe and effective use of chemicals in coastal aquaculture. (1997). Rep. Stud. GESAMP, (65):40 p.

66. Report of the twenty-eighth session, Geneva, 20-24 April 1998. (1998). Rep. Stud. GESAMP, (66):44 p.

67. Report of the twenty-ninth session, London, 23-26 August 1999. (1999). Rep. Stud. GESAMP, (67):44 p.

68. Planning and management for sustainable coastal aquaculture development. (2001). Rep. Stud. GESAMP, (68):90 p.

69. Report of the thirtieth session, Monaco, 22-26 May 2000. (2000). Rep. Stud. GESAMP, (69):52 p.

70. A sea of troubles. (2001). Rep. Stud. GESAMP, (70):35 p.

71. Protecting the oceans from land-based activities - Land-based sources and activities affecting the quality and uses of the marine, coastal and associated freshwater environment.(2001). Rep. Stud. GESAMP, (71):162p.

72. Report of the thirty-first session, New York, 13-17 August 2001. (2002). Rep. Stud. GESAMP, (72):41 p.

73. Report of the thirty-second session, London, 6-10 May 2002. (in preparation). Rep. Stud. GESAMP, (73)

74. Report of the thirty-third session, Rome, 5-9 May 2003 (2003) Rep. Stud. GESAMP, (74):36 p.

75. Estimations of oil entering the marine environment from sea-based activities (2007), Rep. Stud. GESAMP, (75):96 p.

76. Assessment and communication of risks in coastal aquaculture (2008). Rep. Stud. GESAMP, (76):198 p.

77. Report of the thirty-fourth session, Paris, 8-11 May 2007 (2008), Rep. Stud. GESAMP, (77):83 p.

78. Report of the thirty-fifth session, Accra, 13-16 May 2008 (2009), Rep. Stud. GESAMP, (78):73 p.

79. Pollution in the open oceans: a review of assessments and related studies (2009). Rep. Stud. GESAMP, (79):64 p.

80. Report of the thirty-sixth session, Geneva, 28 April - 1 May 2009 (in preparation), Rep. Stud. GESAMP, (80):XX p (in press).

81. Report of the thirty-seventh session, Bangkok, 15 - 19 February 2010 (2010), Rep. Stud. GESAMP, (81):74 p.

EP #201061971

Science for Sustainable Oceans

ISSN 1020–4873

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