



GESAMP

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

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Agenda item 7

SCOPING ACTIVITIES

CG3: Causes and impacts of massive accumulations of the brown macro-algae Sargassum in the nearshore environment of the Caribbean and West Africa

Progress Report

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Summary

1 At GESAMP 44 a Scoping Paper (document GESAMP 44/7/2) was presented which was agreed to be shared among the GESAMP Sponsoring Agencies and the main management and research organizations to obtain a collective view as to whether GESAMP can make a significant and helpful contribution.

2 GESAMP 45 noted the interest expressed in the issue by several Sponsoring Organizations, including IAEA, IOC-UNESCO and FAO, who all had ongoing activities on related matters. It was therefore agreed to keep the correspondence group active since there may be opportunities for further work, but that GESAMP would await input from interested Sponsoring Organizations on the possible contribution by the group.

3 Ongoing initiatives of relevance: (not exhaustive, to be updated and complemented at GESAMP 46):

- .1 Activities under WMO/ WG38 about atmospheric inputs of nitrogen & iron;
- .2 An IAEA Technical Meeting on Sargassum is to be held in Jamaica, from 4 to 8 November, 2019;
- .3 Within the Global Partnership on Nutrient Management (UN Environment) there is potential to link the Sargassum issue to addressing the 'Nitrogen Challenge'. The UN Environment nitrogen campaign and the ongoing work under the GEF-INMS Project, look at the issue from the nitrogen source contribution angle. At this point the science points to multiple interacting causal factors, but the nutrient loading is generally agreed to be key among them;
- .4 The IOC-SCOR GlobalHAB (www.globalhab.info) is planning for an Open Science Meeting on Sargassum to focus at identifying the main research questions to better understand what is driving the Sargassum mass occurrences. GlobalHAB is partnering with the EU project EuroSea in this initiative. GlobalHAB at GESAMP 45 invited for cooperation;

- .5 Activities under the UN Environment Abidjan Convention Secretariat (to be specified);
- .6 Activities under the Sargassum component of a FAO Caribbean fisheries project (to be specified).;
- .7 Recommendation V of the Eighth Meeting of the Scientific and Technical Advisory Committee (STAC) to the Protocol Concerning Specially Protected Areas and Wildlife (SPA) in the Wider Caribbean Region held in Panama, Panama December 2018 endorsed by 20 Contracting Parties and territories at the Tenth Meeting of the Contracting Parties (COP 10) to the SPAW protocol in the Wider Caribbean Region recently held in Roatán, Honduras, 3 June 2019. Contracting parties recommended that:
 - a) An Ad Hoc Working Group on Sargassum to be established, including: Belize, Colombia, Curaçao, the Dominican Republic, France and Grenada, with representation of national Focal Points, as well as a number of seats to be allocated for representation by civil society organizations and independent experts;
 - b) The Working Group is in charge to develop clear objectives and responsibilities for its work; and
 - c) One expected outcome of the working group is to establish coordination and collaboration with relevant regional and global initiatives in order to promote maximum impact of synergies and solutions to the Sargassum outbreaks.
- .8 The Senate of Mexico is organizing a conference 19-20 September on the topic of Sargassum with the idea of bringing together national and international scientists with decision-makers, ambassadors of Caribbean countries and other relevant actors in the field. IOC-SCOR GlobalHAB will be represented;
- .9 The Organisation of Eastern Caribbean States (OECS) Commission in collaboration with the International Cooperation Department, Conseil Régional de Guadeloupe are organizing an expo of First International Conference and Trade Show on Sargassum Management Technologies will take place at the World Trade Center Complex in Guadeloupe from 24-26 October 2019;
- .10 The Environmental Health and Sustainable Development Department (EHSD) Caribbean Public Health Agency (CARPHA) with support from the Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States (GEF-IWEco Project) developed two proposals to conduct the following studies on a regional scale during 2019;
 - a) Assessment of the interventions that can be carried out to maximize the beneficial use of the seaweed while taking into consideration the public health impact and the economic losses that have been reported around the region; and
 - b) Study on toxic chemicals substances will analyze the presence or absence of heavy metal contaminants (Arsenic, Cadmium, Lead, Mercury) and the concentrations in reef fish associated with the sargassum mats.

Way forward

4 As mass occurrences of *Sargassum* pose a major problem to coastal states in the Americas and West Africa and affects fisheries, tourism and other ecosystem services there is a need to enhance capacity to manage and mitigate *Sargassum* mass occurrences and landing.

5 *Sargassum* is increasingly an issue of concern to several sponsoring agencies of GSEAMP and GESAMP therefore provides a framework to address the issue coordinated and jointly.

6 The relatively large number of potentially contributory factors (see GESAMP 44/7/ section 6) each of which has inherent uncertainties in space, time and magnitude - makes the task of fully understanding the causes and drivers of the *Sargassum* events intrinsically complex.

7 To review these factors in depth and to identify research priorities that may lead to better mitigation options it is proposed to join SCOR-IOC GlobalHAB in organizing an Open Science Meeting (OSM) on *Sargassum*.

8 The objective of the OSM would be:

- .1 Identification of research priorities to understand *Sargassum* growth dynamics; and
- .2 to develop improved management and mitigation technologies for *Sargassum* beaching.

9 The OSM would consist of a thorough review of current knowledge on *Sargassum* dynamics to be able to present a plan identifying research and technology development priorities. This will be achieved through expert workshops as part of the OSM. Key questions to be addressed include:

- Does global warming influence the increase in *Sargassum* mass occurrences?
- To which degree does nutrient loading to the sea influence *Sargassum* growth?
- What is the role of physics, winds, storms, and spiraling currents in dispersing *Sargassum* throughout the world's oceans?
- Is there a long-term cyclical pattern?
- The blooming is it incidental or permanent?
- Are there possibly toxic (heavy metals, arsenic) accumulations in *Sargassum*?

10 In terms of spatial extent, a study of the *Sargassum* phenomenon should include, as a minimum:

- Greater Caribbean region from Trinidad & Tobago to the Gulf of Mexico;
- West African coastal waters from Senegal to Gabon;
- Coastal waters off northern Brazil; and
- North Equatorial Recirculation Region (NERR).

11 However, any analysis will need to take account of boundary conditions, such as: the outflows of major rivers (e.g. Amazon), the advection of Saharan dust, and variability in Atlantic climatology. In terms of temporal scales, there would be merit in examining historical records for previous occurrences, to place the recent examples in context in relation to potential underlying causes.

12 The results could be published as a white paper and possible peer reviewed review papers.

13 The OSM may also help identify need and focus of further training workshops to enhance the general knowledge on both the biology of *Sargassum* and in particular on management and mitigation possibilities. This can potentially be pursued by the respective sponsoring agencies individually or as joint activities. The need for, feasibility of preparing a manual/guide on *Sargassum* management can also potentially be clarified through the OSM and in dialogue among the involved agencies and taking into consideration ongoing initiatives (e.g. FAO is developing a manual).

14 The CG3 could be expanded with relevant partners and function as the joint organizing committee for the OSM.

Action requested of GESAMP

15 GESAMP is invited to consider the information provided and take action as appropriate.

References

GESAMP 44/7/2, SCOPING ACTIVITIES : Causes and impacts of massive accumulations of the brown macro-algae *Sargassum* in the nearshore environment of the Caribbean and West Africa (and reference herein).