

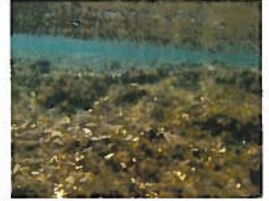
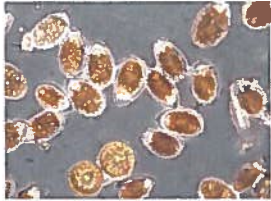


9th - 12th April 2018

## REGIONAL WORKSHOP ON MONITORING AND MANAGEMENT STRATEGIES FOR BENTHIC HABs

### List of documents

- Workshop background and objectives
- Organizers
  1. International Atomic Energy Agency (IAEA)
  2. RAMOGE Agreement
  3. IOC Global HAB
  4. Monaco Ocean Week (MOW)
- Biographies
- Training Program
- List of participants, experts, organizers



9th - 12th April 2018

## REGIONAL WORKSHOP ON MONITORING AND MANAGEMENT STRATEGIES FOR BENTHIC HABs

### Workshop background and objectives

The world's health, wellbeing and economy are highly dependent on marine resources. The goods and services that oceans and seas provide, such as food, energy, leisure/tourism and economic development are indispensable to coastal communities, particularly those of small island developing states where fish and shellfish may be the main, if not unique, source of protein. Through high biomass and/or toxin production, certain species of microalgae may severely threaten marine ecosystem services. They are regularly responsible of human intoxications, mass mortalities of marine organisms, aquaculture and beach closures. To prevent or mitigate the adverse impacts of harmful algal blooms (HABs), surveillance programmes have been developed to continually monitor planktonic and benthic HABs in the environment, as well as toxins in seafood and associated human diseases.

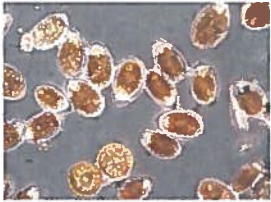
Currently strategies to control the impact of planktonic toxic species events are well defined with specific guidelines to control biotoxins in shellfish. The situation is very different for HABs in benthic systems (BHABs). BHAB species of the dinoflagellate genus *Gambierdiscus* are associated with the most common non-bacterial fish poisoning globally, namely ciguatera fish poisoning, and the effects of *Ostreopsis* blooms remain a major socio-economic concern, especially in the Mediterranean.

The objectives of this workshop are, through lectures and group exercises, to improve the skills of the participants in establishing a monitoring programme for toxic BHABs in a **risk assessment perspective**. The workshop will focus on 3 major topics: benthic species surveillance, monitoring of marine resources and seafood, and epidemiology.

The workshop organised by the **IAEA** and **RAMOGE** in partnership with **IOC-SCOR Global HAB** and **NOAA**, is taking place during the **Monaco Ocean Week** at the **Oceanographic Museum of Monaco**. It is open to scientists and coastal managers from 30 countries participating in **IAEA Technical Cooperation projects from Asia-Pacific (RAS7026), Africa (RAF7014), Latin America and the Caribbean (RLA7022)**. These include Algeria, Bangladesh, Brazil, Chile, Colombia, Costa Rica, Cuba, El Salvador, Fiji, Guatemala, Indonesia, Kuwait, Malaysia, Marshall Islands, Mauritius, Mexico, Nicaragua, Pakistan, Panama, Philippines, Seychelles, Thailand, Tunisia, Uruguay, Venezuela, Viet Nam.



Musée océanographique de Monaco



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# REGIONAL WORKSHOP ON MONITORING AND MANAGEMENT STRATEGIES FOR BENTHIC HABs

## IAEA presentation



The IAEA Environment Laboratories, located in Monaco and Seibersdorf, Austria, work with Member States to develop science-based strategies for the sustainable management of terrestrial, marine and atmospheric resources. Together, they apply nuclear and isotopic science to understand and mitigate the environmental impacts of radionuclides, trace metals and organic contaminants (PCBs, hydrocarbons), as well as to study climate change impacts, habitat destruction and biodiversity loss. This includes for example measuring and monitoring contaminants in the oceans, such as mercury, or plastics, as well as biotoxins associated with harmful algal blooms, and studying how these are transferred to marine animals.

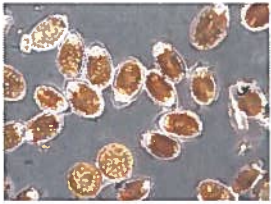
The IAEA, through its Technical Cooperation programme, supports projects across the world to share expertise and develop capacity within Member States to apply nuclear techniques to help protect people and the environment as well as contribute to sustainable development and trade.

The IAEA provides technical assistance with partners such as the National Oceanic and Atmospheric Administration (NOAA) and the Intergovernmental Oceanographic Commission of UNESCO.

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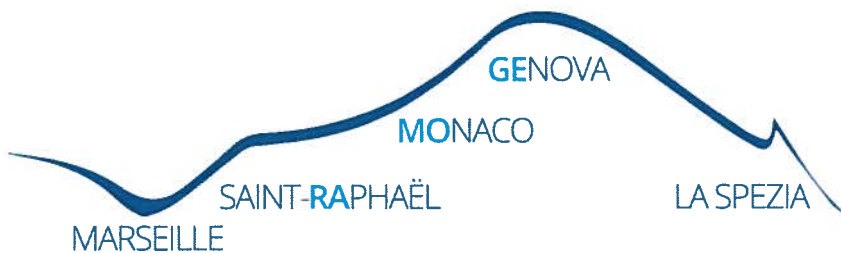
9th - 12th April 2018

# REGIONAL WORKSHOP ON MONITORING AND MANAGEMENT STRATEGIES FOR BENTHIC HABs

## RAMOGE AGREEMENT



Signed in 1976 the RAMOGE Agreement has for mission to protect the Mediterranean coastal waters. It falls within the framework of the Barcelona Convention and the Action Plan for the Mediterranean Sea. The Agreement owes its name to the first syllables of the three cities which limited its area of competence: Saint-Raphael in the West, Monaco and Genoa in the East. From 1981, the area of competence extends from Marseille to La Spezia, to take into account Provence-Alpes-Côte-d'Azur and Liguria's Regions.



The RAMOGE Agreement allows France, Monaco and Italy to establish an experimental zone of fight against pollution and conservation of the marine environment.

It symbolizes a new approach of conservation of the marine environment and introduces the notion of cooperation and sub-regional solidarity, both on the scientific, technical, legal and administrative level. It allows the three States to identify together the actions to lead an integrated coastal zone management.

The Agreement plays also an important role in fighting against accidental marine pollution. Since 1993, an Intervention Plan to fight against accidental pollution, the RAMOGEPOL Plan, was set up to coordinate the procedures and the means of each country.

The RAMOGE Agreement also leads awareness-raising activities with the users of the sea as well as with the general public to encourage them to respectful behavior of the marine environment and the biodiversity.



The Agreement activities focus on preserving the marine and coastal environment. These activities have benefitted various specific issues such as:

- inventory on certain patrimonial species,
- explorations in ecologically or biologically significant marine areas (EBSA),
- activities to reduce marine litter,
- reflection to prevent the impact of the climate change,
- implementation of monitoring the water quality,

to recommend the protection of biodiversity.

Concerning monitoring, the RAMOGE Agreement, affected since 2005 by the *Ostreopsis Ovata* blooms on its coasts, has developed experience in this matter, working on the monitoring protocols and on the management of the blooms.

Based on this experience, the RAMOGE experts have been requested to hold in association with IAEA, the *Regional Workshop on Monitoring and Management Strategies for Benthic HABs* to share their experience.

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**[www.ramoge.org](http://www.ramoge.org)**

**Twitter: [@ramoge\\_21](https://twitter.com/ramoge_21)**

**Facebook: [Ramoge](https://www.facebook.com/Ramoge)**



9th - 12th April 2018

## REGIONAL WORKSHOP ON MONITORING AND MANAGEMENT STRATEGIES FOR BENTHIC HABs

## IOC Global HAB



The Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), is a body with functional autonomy within UNESCO, is the only competent organization for marine science within the UN system.

The purpose of the Commission is to promote international cooperation and to coordinate programs in research, services and capacity-building, in order to learn more about the nature and resources of the ocean and coastal areas and to apply that knowledge for the improvement of management, sustainable development, the protection of the marine environment, and the decision-making processes of its Member States.

In addition, IOC is recognized through the United Nations Convention on the Law of the Sea (UNCLOS) as the competent international organization in the fields of Marine Scientific Research and Transfer of Marine Technology.

Within its Ocean Science activities the IOC has for more than 25 years coordinated international activities on Harmful Algal Blooms through its Intergovernmental Panel on Harmful Algal Blooms (IPHAB) and a number of expert groups and initiatives including research programmes jointly with SCOR; GEOHAB and now GlobalHAB.

[http://hab.ioc-unesco.org/index.php?option=com\\_content&view=featured&Itemid=100001](http://hab.ioc-unesco.org/index.php?option=com_content&view=featured&Itemid=100001)  
[www.globalhab.info](http://www.globalhab.info)



Musée océanographique de Monaco



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## REGIONAL WORKSHOP ON MONITORING AND MANAGEMENT STRATEGIES FOR BENTHIC HABs

## Monaco Ocean Week

The Principality's commitment to the preservation of marine ecosystems is inscribed in its history since the creation of the Oceanographic Institute in 1911 by Prince Albert I of Monaco until the creation in 2006 of the Prince Albert II Foundation.

Today the Principality is a platform for action, research and innovation for the protection of the oceans. It is in this spirit that the Prince's Government, the Prince Albert II Foundation, the Oceanographic Institute, the Monaco Scientific Center and the Monaco Yacht Club initiated Monaco Ocean Week (MOW) in order to unite the forces in this direction and to raise public awareness of the actions taken to safeguard the marine environment.

Thus the main actors in the field of environment reaffirm their involvement to protect the oceans. In 2017, the first edition of Monaco Ocean Week brought together nearly 1,000 participants around thirty events. The 2nd edition, which is held from 8 to 14 April 2018, is intended to deepen the reflection on the conservation of the marine environment.

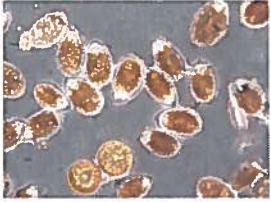
For nearly a week, Monaco Ocean Week will be an opportunity for Monegasque institutions, international organizations based in the Principality and foreign experts to share their experiences. Workshops, symposiums, awards ceremonies, exhibitions, documentary film screenings, awareness workshops ... will be organized in emblematic places of the Principality and offered to professionals and the general public



The program of the week is available from the following link:  
<https://www.monacooceanweek.org/en/program/>



Musée océanographique de Monaco



*9th - 12th April 2018*

## REGIONAL WORKSHOP ON MONITORING AND MANAGEMENT STRATEGIES FOR BENTHIC HABs

# Biographies

## EXPERTS



### **Nathalie ARNICH**

Nathalie ARNICH is a toxicologist PhD with 15 years of experience in health risk assessment associated with contaminants in food. Since 2003, she has been working at AFSSA (the French Food Safety Agency) that became ANSES on 1<sup>st</sup> July 2010 (the French Agency for Food, Environmental and Occupational Health & Safety) located near Paris. She is currently Deputy Head of the unit on food risk assessment. From May 2012 to July 2013, Dr Arnich joined Health Canada (Food Directorate, Ottawa) as a senior toxicologist evaluator. Regarding more specifically marine biotoxines, Dr Arnich has worked on toxicological profiles for Paralytic Shellfish Poisoning toxins (PSTs), Diarrhetic Shellfish Poisoning toxins (OA-group toxins), Yessotoxins, Spirolides, Gymnodimines, Pinnatoxins, BMAA, on lipophilic phycotoxins in shellfish to provide recommendations for the French official monitoring, on a state of knowledge on ciguatoxins in sharks.

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[www.anses.fr](http://www.anses.fr)



### **Valentina ASNAGHI**

Graduated in Biology (Bio-ecological curriculum), Ph.D. in Environmental-Marine Science at University of Genoa and University of Nice Sophia Antipolis, her research is focused on the structure, dynamics and functioning of benthic ecosystems, with particular reference to microalgae, seaweeds and marine invertebrates, in the framework of the management of marine coastal zones. Since 2006 she is involved in the monitoring of bloom dynamics of the harmful algae *Ostreopsis ovata* along Ligurian coasts, she took part to different research projects on harmful algae (Ramoge GIZC-*Ostreopsis* group, Medios2, PRIN *Ostreopsis*, OvMeter) and she has been co-coordinator of the European project M3-HABs on monitoring, modelling and mitigation of harmful algae blooms.

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### **Elisa BERDALET**

Elisa Berdalet obtained her PhD in Biology from the University of Barcelona (UB) in 1991 and is Scientific Researcher at the Institute of Marine Sciences (Spanish Highest Research Council, CSIC) in Barcelona, acting also as Deputy Director (2009-2018).

Her global objective has been to understand how physico-chemical processes from small scale to mesoscale as well as ecological interactions modulate the structure, dynamics and physiology of microplankton. Research on harmful algal blooms is a major research topic, with a particular emphasis on *Ostreopsis* ecophysiology and the impacts of its outbreaks on human health and ecosystems. She served as Vice-chair of the GEOHAB programme (2010-2015) and is chairing GlobalHAB since its launch in 2016.

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### **Mariachiara CHIANTORE**

Graduated in Biology, PhD in Environmental Sciences (Sea Science), since 2000 Researcher at the University of Genoa, (DiSTAV), from 2014, Associate Professor at DiSTAV. Since the start of her career, She's been studying distribution, structure, biodiversity and functioning of coastal benthic communities, aquaculture and integrated multi trophic aquaculture, echinoculture, ecology of benthic toxic microalgae.

Coordinator or participant of several European projects, among which, M3-HABs (ENPI-CBCMED: Identification Number 37/2371: Risk Monitoring, Modelling and Mitigation of Benthic Harmful Algal Blooms along Mediterranean coast), ENRICH (FP7-BSG-SME-2007-1: GA # 222492), IDREEM (FP7-ENV.2012.6.3-1: GA # 287844), RESURCH (FP7- SME-2013-1: GA # 606042) and BIOCONNECTENCE (FP7-Marie Curie International Incoming Fellowship: GA # 221065).

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[www.unige.it](http://www.unige.it)



### **Henrik ENEVOLDSEN**

Head of IOC Centre on HABs, UNESCO

Henrik Enevoldsen is Head of the IOC Science and Communication Centre on Harmful Algae which is hosted by the University of Copenhagen, Denmark. He has a background in aquatic ecology and has for more than 25 years worked with development and implementation of international research and capacity building on harmful algae, nutrient loading etc. He coordinates several international scientific working groups and regional networks in marine science, including the joint IOC-SCOR international research programme GlobalHAB and the IOC Intergovernmental Panel on Harmful Algal Blooms (IPHAB).

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### **Esther GARRIDO GAMARRO**

Esther Garrido Gamarro is the Food Safety and Quality Officer working for the Products, Trade and Marketing Branch of the Fisheries and Aquaculture Department of the Food and Agriculture Organization of the United Nations in Rome, Italy. She has worked in close collaboration with The FAO Food Safety and Quality Unit for over 6 years, contributing to the provision of scientific advice on food safety issues to support the establishment of international standards for the safety and quality of fishery and aquaculture products. Esther has provided technical support to cooperation programs and projects to upgrade the food safety in many areas of the world by implementing Codex Alimentarius Standards in the fisheries sector. Previous to her experience in FAO, she worked for the private sector in the food industry – in production and quality management, and also in food safety and quality certification for the agro-food department of an international certification body, where she worked with different certification schemes.

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### **Clémence Mahana iti GATTI**

Dr Clémence Mahana iti GATTI is a research associate at the Louis Malardé Institute of Tahiti, French Polynesia. PhD in Molecular Biology/Physiopathology and member of the research unit on Toxic Micro-algae directed by Dr Mireille Chinain, she specialized in biomedical researches and epidemiological surveillance of Ciguatera Fish Poisoning (CFP). Clémence currently works on different projects: i) the study of chronic sequels in CFP patients, ii) the implementation of a biological samples bank to improve CFP researches (development of diagnosis tools, etc) and iii) the development of practical tools to improve CFP epidemiological surveillance in the South Pacific. Since 2014, she also administers the website [www.ciguatera-online.com](http://www.ciguatera-online.com).

[cgatti@ilm.pf](mailto:cgatti@ilm.pf)

[www.ilm.pf](http://www.ilm.pf)



### **Philippe HESS**

Philippe Hess (Ifremer) is a researcher interested in the biodiversity and ecological role of toxic algae as well as the detection, chemistry, diversity and impact of phycotoxins on the marine environment and human health. Since 2011, he contributes to communicating science to policy stakeholders through the European Science Foundation Marine Board WG "Oceans and Human Health" and has assisted the EU (Food and Veterinary Office) at inspections of EU & third countries. He represents France on the Intergovernmental Panel on Harmful Algal Blooms (IOC-UNESCO), chairs the "Task Team Biotoxin Detection, Management and Regulation", and also more recently contributes to coordinating the Interagency Ciguatera strategy implementation (2017). Current research projects focus on climate change effects on changes in phytoplankton community structure, including key organisms, e.g. *Dinophysis* (CoCliME), *Gambierdiscus* and other emerging micro-algae (Alertox-Net, Caristo-Pf, Emertox, EuroCigua, GlobalCig, IAEA-CRPK41014)

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### **Steve KIBLER**

He attended Long Island University in New York State for a marine biology degree before going to Old Dominion University (Norfolk, Virginia) for a masters degree in Biological Oceanography. He has working as an oceanographer at the National Oceanic and Atmospheric Administration laboratory in Beaufort, North Carolina since 2000. His expertise in the ecology of HAB species with focus on toxic dinoflagellates. His recent projects include development of a regional forecast for *Gambierdiscus* blooms in the Caribbean, and the development of predictive tools for Alexandrium blooms and PSP risk in Alaska.

[steve.kibler@noaa.gov](mailto:steve.kibler@noaa.gov)



### **Rodolphe LEMÉE**

Rodolphe Lemée is a French academic working as professor (teaching and research) on Sorbonne University. He is at the moment assistant director of the Laboratory of Oceanography of Villefranche (UMR 7093, KNOWN CNRS(NATIONAL CENTER FOR SCIENTIFIC RESEARCH)). He works mainly on the impact of the global change on the primary producers and the marine ecosystems. He specialized in the study of the ecology and the diversity of dinoflagellate, that they are planctoniques and benthic. Since 10 years, he tries to optimize the strategies of sampling of dinoflagellate benthic and to better understand their dynamics and their needs in terms of organic and inorganic nutrients. He also tries to better understand the ecological role of toxin of these bodies, in particular for the species such as *Ostreopsis* and *Gambierdiscus*.

[lemee@obs-vlfr.fr](mailto:lemee@obs-vlfr.fr)

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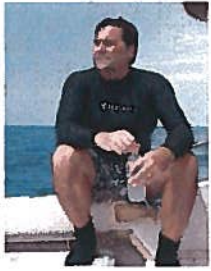


### **Luisa PASSERON MANGIALAJO**

Luisa Mangialajo is Assistant Professor at Université Nice Sophia Antipolis. Her research is focussed on the ecology of phytobenthos, especially of shallow communities dominated by macroalgae. Her present projects concern the study of biotic interactions, such as herbivory and facilitation of emergent phenomena (benthic dinoflagellates blooms, i.e. *Ostreopsis*). She is involved in conservation and ecological restoration of marine forests projects. From the methodological point of view, she develops new tools of microalgal sampling (i.e. the Benthic Dinoflagellate integrator, BEDI) and of marine forests ecological restoration (i.e. herbivorous Fish Deterrent for the conservation and restoration).

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### **Michael PARSONS**

Michael Parsons has been conducting ciguatera research since 1999 in Hawaii and the Florida Keys. His expertise lies primarily in the field of benthic microalgae ecology and food web dynamics. Parsons constructed a population dynamics model for *Gambierdiscus* in Hawaiian coastal waters and is currently refining a ciguatoxin flux model for the Florida Keys and US Virgin Islands. He has authored or co-authored fifteen publications and thirty presentations about ciguatera. Through various funding opportunities, Parsons has had the fortune to work with many researchers around the globe to better understand the dynamics of benthic harmful algae and strives to continue these research collaborations.



### **Rhett Simon TABBADA**

Mr. Rhett Simon Tabbada is a Senior Science Research Specialist at the Philippine Nuclear Research Institute (PNRI), and one of the researchers of the International Atomic Energy Agency (IAEA) Collaborating Center on Harmful Algal Bloom (HAB) Studies. He is currently the Designated Team Member of the IAEA RAS/7/026 Project entitled: Supporting the Use of Receptor Binding Assay (RBA) to Reduce the Adverse Impacts of Harmful Algal Toxins on Seafood Safety. Mr. Tabbada is a chemist by profession. His expertise is in the field of nuclear applications, specifically on the applications of RBA on HAB, environmental, and health studies. He is also working on the research activities of the institute which deals on instrumental chemical analysis.

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### **Patricia A. TESTER**

Detecting the transport of a *Karenia brevis* bloom from Florida to the North Carolina coast in 1987 was the genesis of Pat's career in the study of harmful algae. She completed her 30+ year career with the National Oceanic and Atmospheric Administration as a Chief of the Plankton Ecology & Physiology Branch and continues to work in the field as a consultant to NOAA, UNESCO-IAEA and serves universities as an adjunct faculty member. Since 2002, Pat has focused on benthic HABs, especially *Gambierdiscus*. She and her colleagues were awarded the Tyge Christensen Prize for their 2009 monograph designating an epitype for *G. toxicus*, revising the species description and adding four new species to the genus. Her subsequent efforts in developing statistically robust sampling methods for BHABs and PCR-qPCR assays for *Gambierdiscus* species provide opportunities for targeted monitoring strategies. Pat established Ocean Tester, LLC in 2013 to promote research partnerships and facilitate marine education. She lives at the edge of a tidal marsh on the coast of North Carolina and is never far away from the sea.

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### **Angelika TRITSCHER**

Dr Angelika Tritscher (World Health Organization, WHO) is a toxicologist with extensive research and applied experience in toxicology and human health risk assessment. With over 25 years experience in food safety she worked first in the private sector in corporate quality and safety assurance and joined WHO in 2003. In the Department of Food Safety and Zoonoses she is heading the unit tasked with risk assessment and management, with oversight of the scientific advice programme, which forms the basis for international food safety standards as developed by the Codex Alimentarius Commission, all Codex activities, including the Codex Trust Fund, as well as the International Food Safety Authorities Network (INFOSAN). Dr Tritscher is a board certified toxicologist, a member of several national and international professional toxicology societies and has published over 50 peer-reviewed papers and book chapters. Her main research interests are in the area of toxicology and human health risk assessment, food safety and the influence of the environment on human health.

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[www.who.int](http://www.who.int)

## ORGANIZERS

### IAEA



**Marie-Yasmine DECHRAOUI BOTTEIN**

M-Y Dechraoui Bottein is an environmental toxicologist interested in the control and prevention of the impacts of biotoxins on marine environments, food safety, and human health. She has 20+ years of research and applied experience, working at the NOAA Coastal Environmental Health and Biomolecular Research (USA), and since 2012 at the International Atomic Energy Agency (IAEA) in Monaco. At the IAEA-Environment Laboratories, she leads a research program on marine biotoxins and harmful algal blooms and is Technical Officer for several national, regional and inter-regional technical cooperation projects. Dr Bottein represents the IAEA on the IOC-UNESCO Intergovernmental Panel on Harmful Algal Blooms, and contributes to coordinating the implementation of the Interagency Global Ciguatera Strategy. She has published over 40 peer-reviewed papers and book chapters. Current research projects focus on biotoxin bioaccumulation and biotransformation, multiple contaminant kinetics, receptor binding assay validation, and ciguatera risk assessment.

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**Abdul Ghani SHAKHASHIRO**

Thirty years of experience in environmental radioactivity, radiopharmaceutical, and nuclear industry. For eight years was responsible for the office of Analytical Quality Control Services (AQCS) at Seibersdorf Laboratories of the International Atomic Energy Agency in Austria working on preparation and production of certified reference materials characterized for organic, trace elements and radionuclides. Mr Shakhashiro was organizing worldwide proficiency tests which attracted more than 400 laboratories worldwide to evaluate and improve analytical performance. Since 2014 he is a programme manager at the IAEA Technical Cooperation Department in Vienna, Austria. He published more than 30 scientific papers and reports in international journals.

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**Sarah JONES COUTURE**

Sarah Jones Couture is communications consultant at the IAEA Environment Laboratories. She works with the researchers and scientists to communicate their work to Member States, the general public and other stakeholders.

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### RAMOGE



**Anne VISSIO**

Executive Secretary

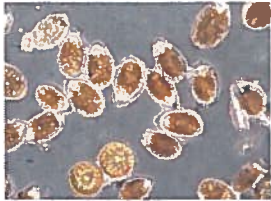
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**Alexandra RUE**

RAMOGE Agreement

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9th - 12th April 2018

# REGIONAL WORKSHOP ON MONITORING AND MANAGEMENT STRATEGIES FOR BENTHIC HABs

## Training program

Monday April 9 – Oceanographic Museum of Monaco - Conference room

Session	Time	Topic	Presenter name (affiliation)
	8:30-9:00	Registration	
Session I Overview presentation: BHAB status	9:00	Opening session – Welcome, Logistics	<b>D. Osborn</b> Dir IAEA <b>A Vissio</b> , RAMOGE secretary Environment Laboratories <b>A Shkhashiro</b> , IAEA Project Management Officer (PMO) <b>M-Y Dechraoui Bottein</b> , IAEA Technical Officer (TO)
	9:30	BHABs species, occurrence and monitoring	<b>P. Tester</b> (NOAA ret.)
	10:30	Toxins of BHABs (chemistry and analysis in seawater, algae and fish)	<b>P. Hess</b> (IFREMER)
	11:00	From Dino to Dinner: examining the transfer of BHAB toxins through the foodweb.	<b>M. Parsons</b> (Florida Univ.)
	11:30	Ciguatera Fish Poisoning: Example of epidemiological surveillance and risk management strategy in French Polynesia	<b>C. Gatti</b> (ILM)
	12:00	Regulatory aspect - Management	<b>N. Arnich</b> (ANSES)
	12:30	Methods used for sampling and measuring parameters - Sampling data analysis, counting	<b>R. Lemée</b> (Sorbonne Univ.)
<b>Lunch Break Buffet (on-site)</b>			
Session II Case study	14:00	Presentation from selected participants following questionnaire recommendation (15 min presentations of case study, ~6)	All
	16:30	Identification and listing of the subgroup for the 3 CS working groups	<b>RS. Tabbada</b> (PNRI) <b>M-Y. Bottein</b> (IAEA)

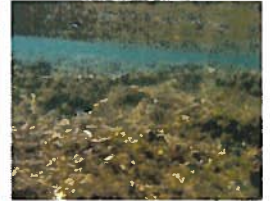


Musée océanographique de Monaco

Tuesday April 10			FoP	Meeting Room
Session III Workshop – group session	9:00 – 12:00	<b>CS1:</b> Benthic HAB monitoring strategy - Risk Assessment	L. Mandjalagio R. Lemée	Hirondelle
	9:00 – 12:00	<b>CS2:</b> Marine resources monitoring -toxin analysis in seafood and the environment - Risk Assessment	E. Garrido P. Hess RS Tabbada	Princess Alice
	9:00 – 12:00	<b>CS3:</b> Epidemiology and Risk Assessment	C. Gatti	Hirondelle
<b>Lunch Break (on-site)</b>				
Session III Workshop – group session (rotation)	13:30 – 17:00	<b>CS1:</b> Benthic HAB monitoring strategy	L. Mandjalagio R. Lemée	Hirondelle
	13:30 – 17:00	<b>CS2:</b> Marine resources monitoring -toxin analysis in seafood and the environment	E. Garrido P.Hess RS Tabbada	Princess Alice
	13:30 – 17:00	<b>CS3:</b> Epidemiology	C. Gatti	Hirondelle
Wednesday April 11th			FoP	Room
Session V Reporting – drafting documents	9:00-11:00	Chapter 1: Benthic HAB monitoring strategy	Pat Tester L. Mandjalagio	Hirondelle
	9:00 – 11:00	Chapter 2: Marine resources monitoring - toxin analysis in seafood and the environment	E. Garrido. P. Hess	Princess Alice
	9:00 – 11:00	Chapter 3: Human intoxication surveillance	C. Gatti N. Arnich	Hirondelle
	11:00 – 11:20	Inter-comparison exercise presentation and distribution of material	R. Lemée	Hirondelle
Session IV Field	11:30	Field demonstration	R. Lemée	
<b>Lunch Break picnic (on-site)</b>				
Session V Reporting – drafting documents	13:30 – 17:00	Compile Chap 1, 2 and 3 and prepare document on “Improving strategy for benthic HAB risk assessment”	All participants and experts	Hirondelle
	17:00	Wrap-up and official closing preparation	All experts + selected participants	Hirondelle

**Thursday April 12 – OPEN TO PUBLIC (with registration) Oceanographic Museum of Monaco - Conference room**

Session VI International Effort	9:00	Opening	Dir Monaco Oceanographic Museum Psd RAMOGE agreement Dir IAEA Environment Laboratories
	9:30	IAEA research, development and capacity building for improved ciguatera management	M-Y. Bottein (IAEA) A. Shakhashiro (IAEA)
	9:55	The IOC-UNESCO and SCOR programme GlobalHAB: International coordination to advance in the understanding and management of benthic harmful algal blooms impacts	H.Enevoldsen (IOC-UNESCO) E. Berdalet (IMS)
	10:20	Development of an Inter-Agency Global Ciguatera Strategy	P. Hess (IFREMER) M-Y. Bottein (IAEA)
	10:45	Contribution of FAO to the implementation of a ciguatera fish poisoning plan of action	E. Garrido (FAO)
	11:10	The WHO Estimates of the Global Burden of Foodborne Disease and Activities for Seafood Safety	A. Tritscher (WHO)
CLOSING	11:30-12:30	Conclusion of the workshop	Organizing Committee and Experts
<b>Closing drink at "Galerie des Pêcheurs" Lunch on your own</b>			
	14:00-15:30	Visit of IAEA laboratory (Participants)	



9th - 12th April 2018

# REGIONAL WORKSHOP ON MONITORING AND MANAGEMENT STRATEGIES FOR BENTHIC HABs

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