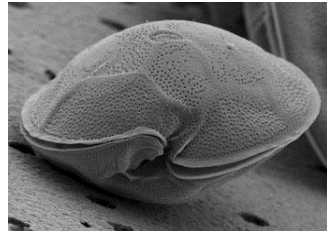




Barbados
Colombia
Cuba
Costa Rica
El Salvador
Guatemala

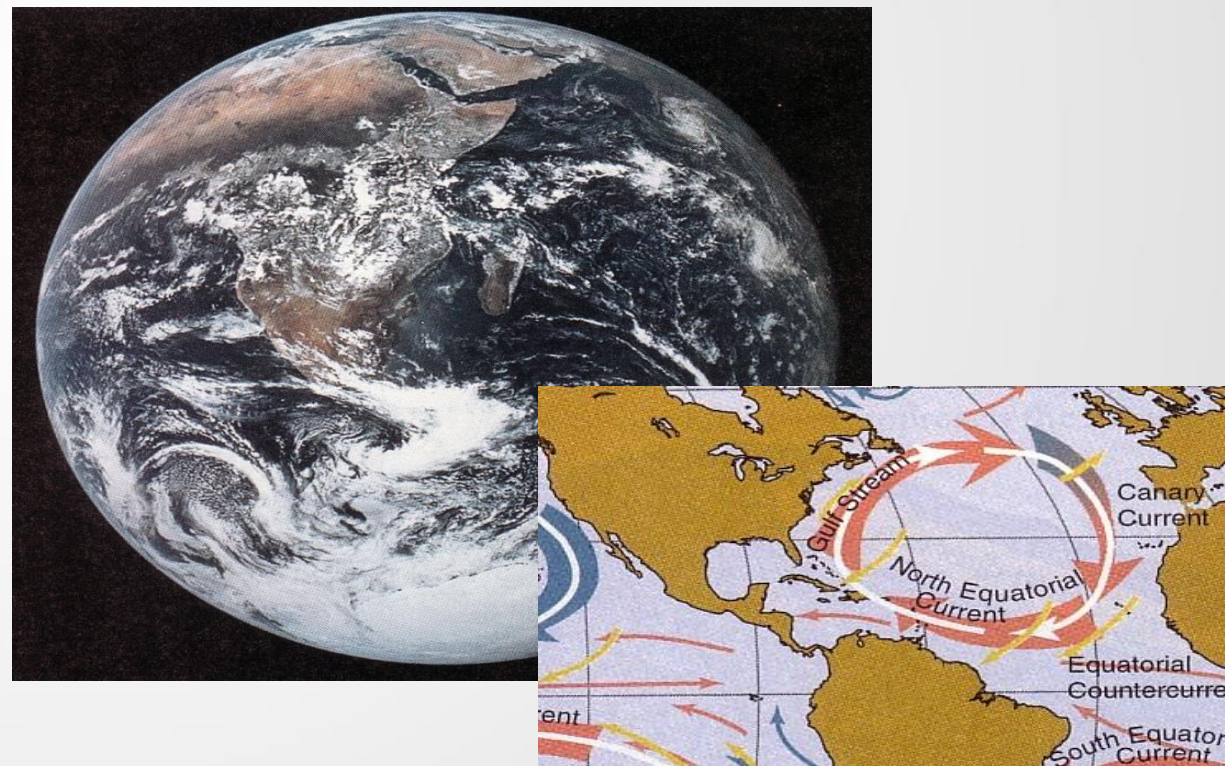
Honduras
Jamaica
Martinica
Mexico
Panamá
Venezuela



ANCA (**A**lgas **N**ocivas del **C**aribe) is a network of the IOCARIBE HAB program.

Main objective:

Improve the understanding of harmful algal blooms in the Caribbean region and adjacent areas and our ability to cope with its impacts.



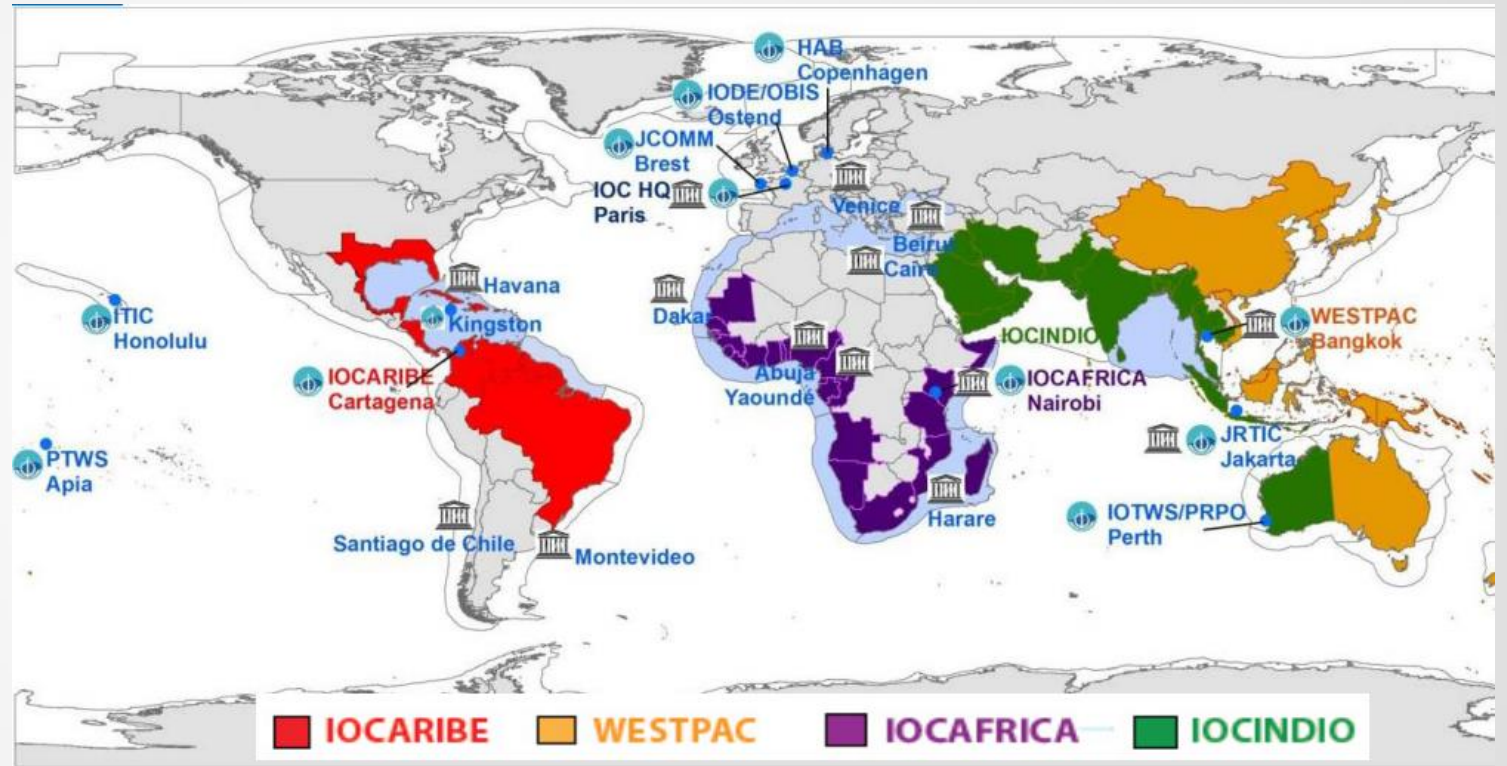
IOCARIBE



Mission:

IOCARIBE is a regional subsidiary body of IOC, it is the Sub-Commission for the Caribbean and Adjacent Regions.

It is responsible for the promotion, development and co-ordination of IOC marine scientific research programmes, taking into account the specific interests and needs of the Member States.



IOCARIBE



IOCARIBE Member States have recommended the implementation of several programmes.

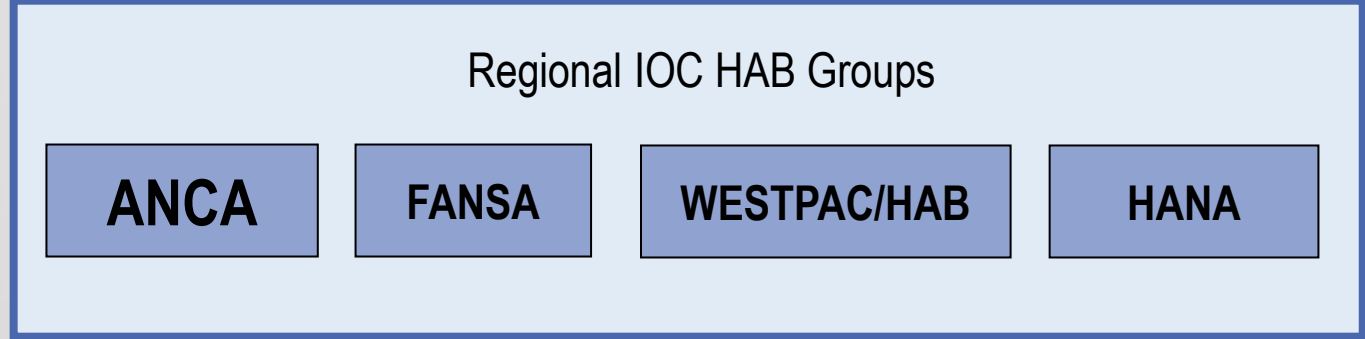
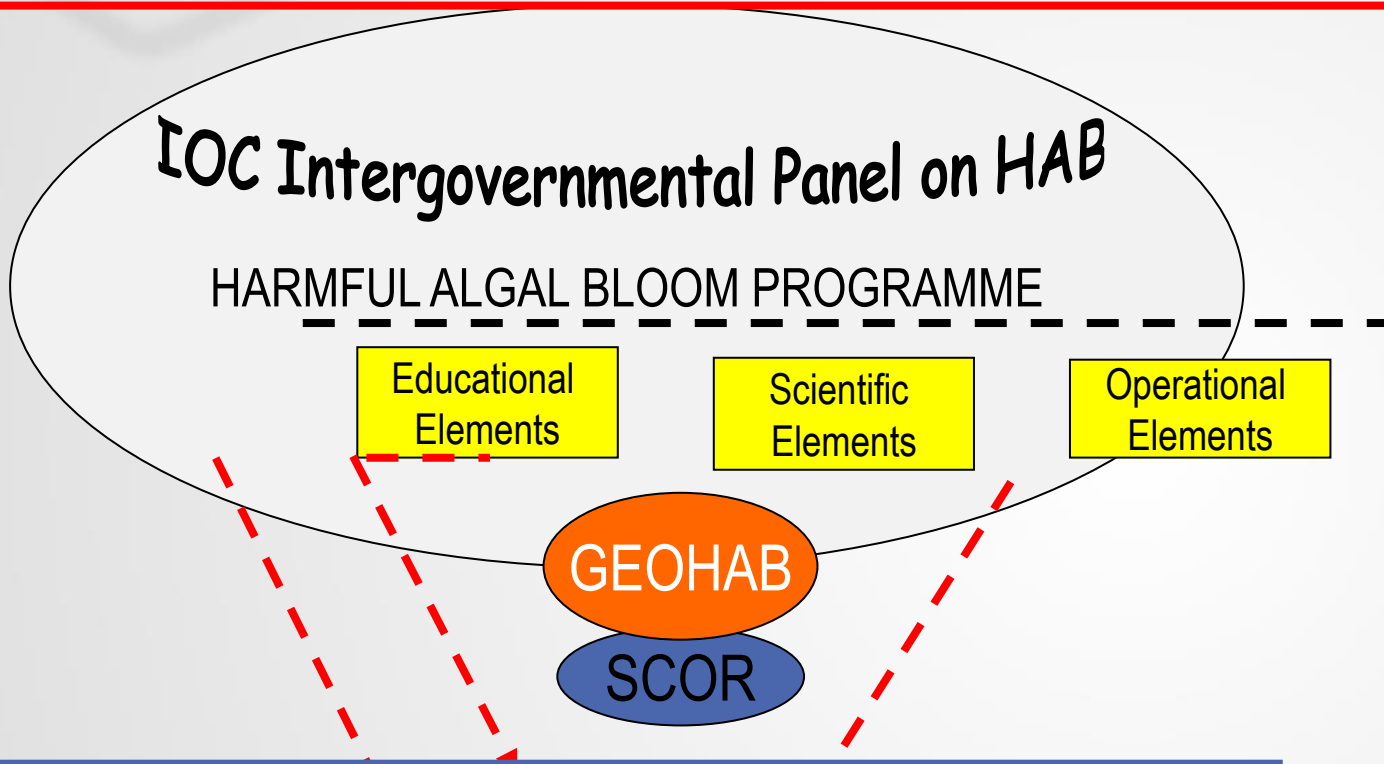
- Development of observational and numerical modeling systems.
- Tsunami alerts.
- Bathymetric charting.
- Oceanographic data management, and
- **Harmful Algal Blooms (ANCA).**

Member Countries

- Antigua y Barbuda
- Aruba
- Bahamas
- Barbados
- Belize
- Brazil
- Colombia
- Costa Rica
- Cuba
- Dominica

- Dominican Republic
- France
- Grenada
- Guatemala
- Guyana
- Haiti
- Honduras
- Jamaica
- Mexico
- Netherlands Antilles

- Nicaragua
- Panama
- St. Kitts & Nevis
- St. Lucia
- St. Vincent
- Suriname
- Trinidad and Tobago
- United Kingdom
- United States of America
- Venezuela



ANCA

Caribbean Network: Algas Nocivas en el Caribe y Regiones Adyacentes
Harmful Algae in the Caribbean and Adjacent Regions

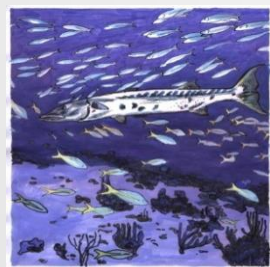
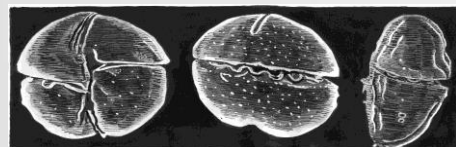


Harmful Algae News

AN IOC NEWSLETTER ON TOXIC ALGAE AND ALGAL BLOOMS
No. 68 - October 2021 · www.ioc-unesco.org/hab

ANCA: Specific objectives

- Collect and analyze information that allows making decisions related to HABs in the Caribbean region.
- Identify and characterize the microalgae responsible for the intoxications (PSP, DSP, ASP, NSP, Ciguatera), as well as the toxins vector species in the Caribbean and adjacent areas.
- Train HAB researchers for the region, taking advantage of the existing knowledge in the Caribbean and the international cooperation.



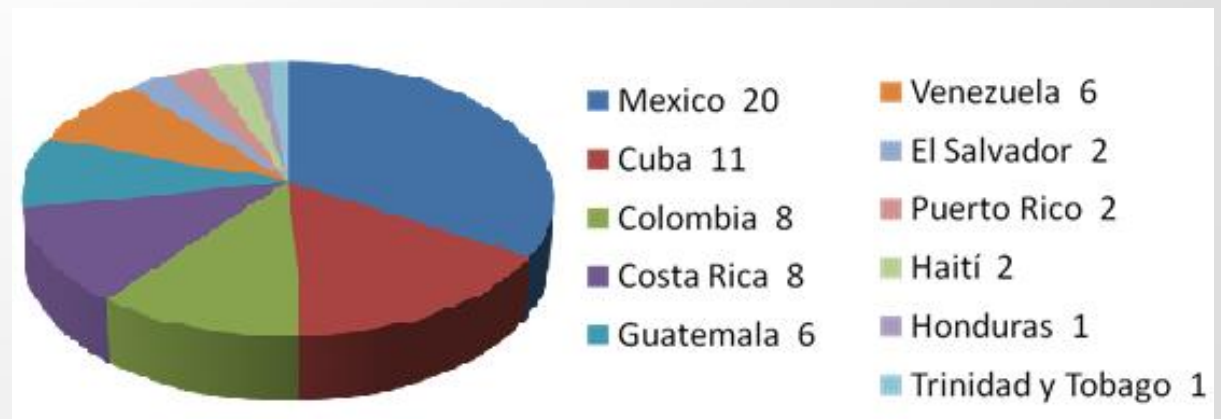
Origin of ANCA (1996):

Initiative of Cuban researchers due to the problems of marine poisoning and death of people in the Caribbean countries.

Year	Country	# Intoxicated	# Deaths
1977	Venezuela	257	10
1979	México	?	3
1987	Guatemala	187	26
1987	México	99	3
1994-1997	Cuba	1144	10

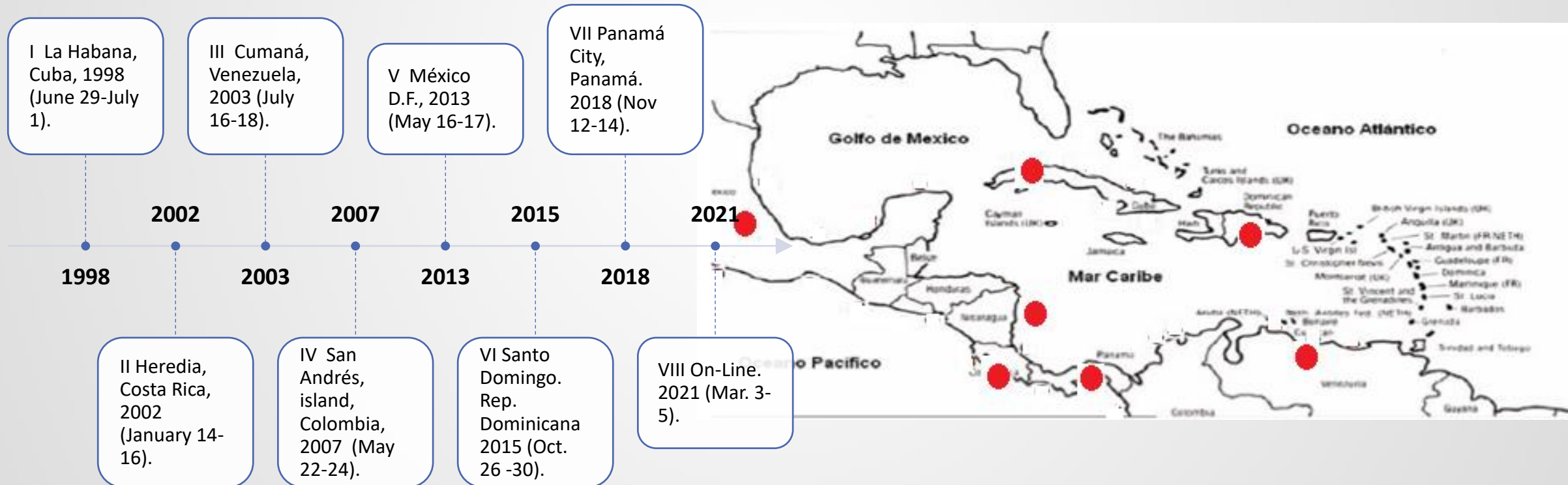
Key factor: Between 1996 and 2012

67 researchers from the Caribbean region benefited from IOC training courses (in Vigo and Copenhagen) on taxonomy and biotoxins determination.



ANCA: Regional Meetings

The work group ANCA IOCARIBE has organized 8 meetings for scientific planning of HABs in the Caribbean and adjacent areas:



Regional Capabilities



In Cuba there is one of the two regional reference centers for the analysis of paralyzing toxins in the Caribbean (CEAC - Center for Environmental Studies of Cienfuegos).



In El Salvador there is the other regional reference center for paralyzing toxins analysis. The University of El Salvador, through LabTox, manages the Reference Center.



Commission for the Epidemiological Surveillance of the Red Tide in Costa Rica (9 members)





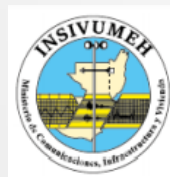
Venezuela developed some regulations for the extraction of bivalve molluscs and they define the permissible concentrations of some, marine biotoxins.



The Universidad Nacional Autónoma de Honduras is studying a freshwater lake due to problems with cyanobacteria.



HAB-Panama Commission, created in 2018.
 Panamá reports research and monitoring of water samples in different regions



National Commission of the Toxic Red Tide

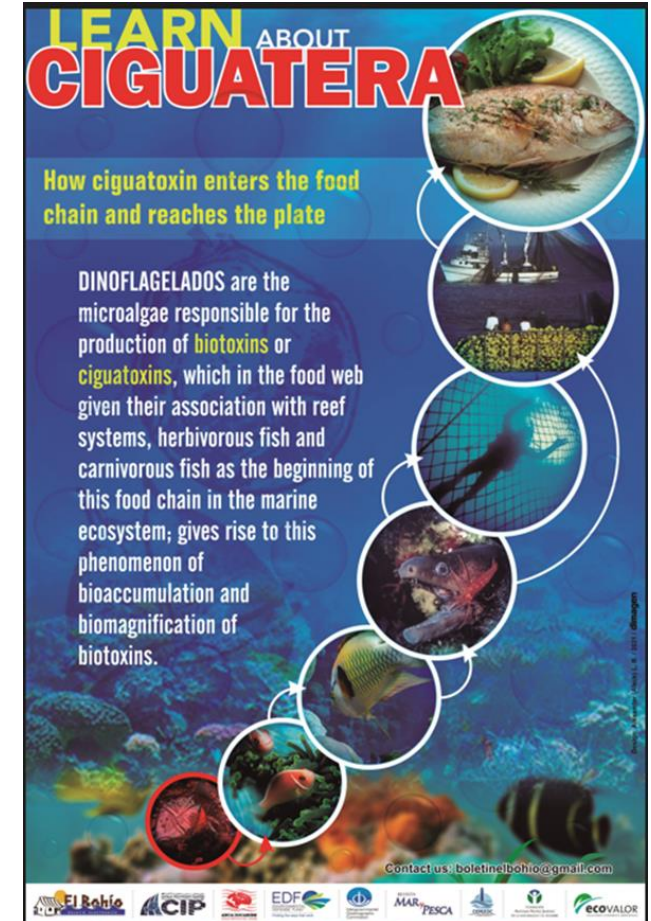


2010- Mexican Society for the Study of HAB (SOMEFAN). <http://somefan.org/>

Latest Activities and Products



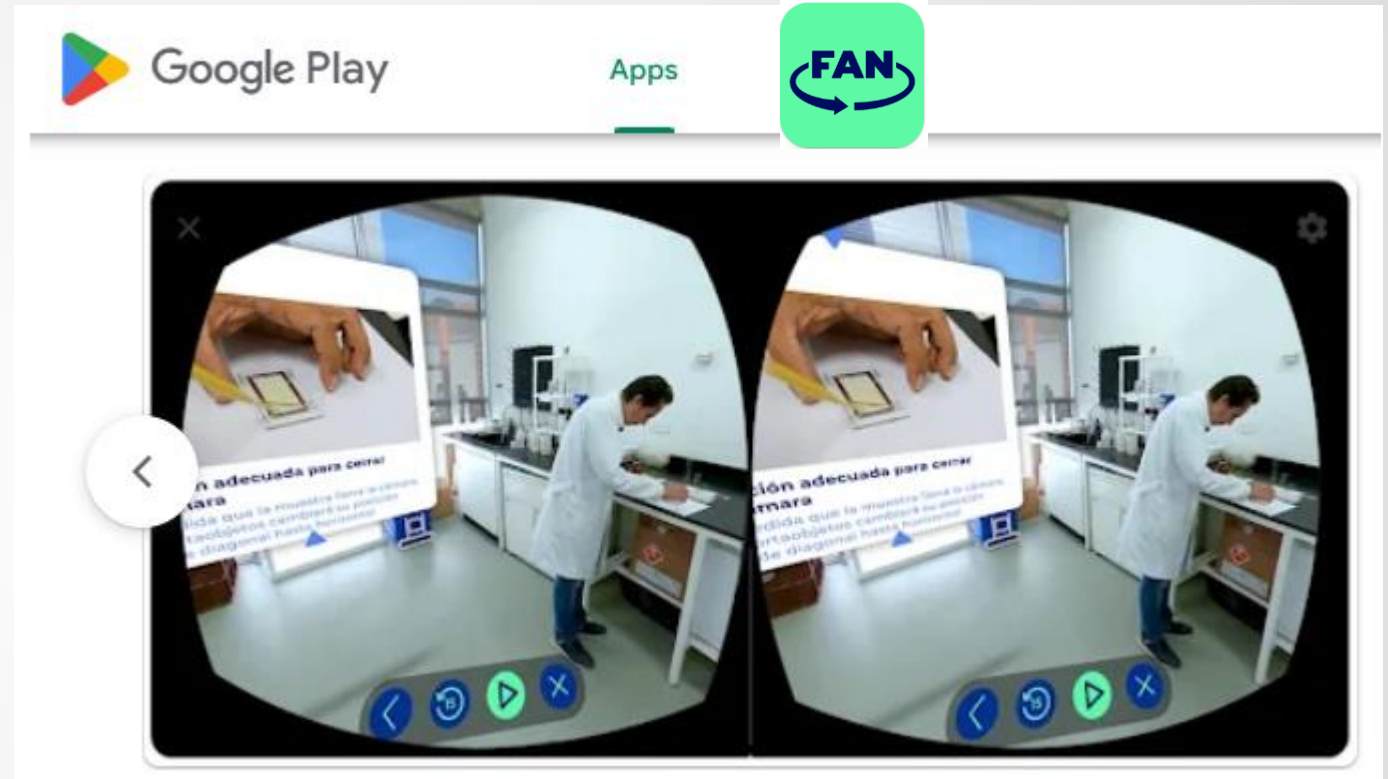
- Series of 4 **informative posters** about the ciguatera.
- In Spanish and English.
- Informative advertising campaign “Let's learn from Ciguatera”.
- Print run over 1,200 copies for each type of poster and language.



SPA CONECTARSE ÚNASE A IOCARIBE

IOC of UNESCO Sub-Commission for the Caribbean and Adjacent Regions

LANZAMIENTO CURSO DE FLORECIMIENTOS ALGALES NOCIVOS (FAN) - REALIDAD VIRTUAL / LAUNCHING HARMFUL ALGAL BLOOMS (HAB) COURSE - VIRTUAL REALITY



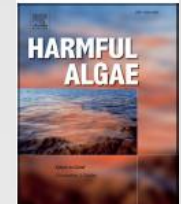
IOCARIBE, Universidad Nacional de Colombia, INVEMAR



<https://play.google.com/store/apps/details?id=com.nova.florecimientosAlgaesNocivos>

Research papers:

Arteaga-Sogamoso et al.. 2023. Morphology and phylogeny of *Prorocentrum porosum* sp. nov. (Dinophyceae): A new benthic toxic dinoflagellate from the Atlantic and Pacific Oceans. *Harmful Algae* 121:102356.
<https://doi.org/10.1016/j.hal.2022.102356>



Arteaga-Sogamoso et al.. 2022. First record of the dinoflagellate *Prorocentrum borbonicum* in the continental coast of Colombian Caribbean: A new 42 hydroxi-palytoxin producer. *Frontiers in Marine Sciences*.



Morales- Benavides et al. 2022. Prorocentrales epifitos de *Thalassia testudinum* K.D. Koenig, 1805 durante la época de surgencia y relajación, en playa La Maceta Boca del Río, estado Nueva Esparta, Venezuela. *Bol. Inst. Oceanog. Venez.* 61(02).



Arencia-Carballo et al.. 2002. Toxicidad por ciguatera en consumo de Barracuda (*Sphyraena barracuda*) en la costa norte de La Habana, Cuba. *Brazilian Journal of Animal and Environment Research*. 5(2): 2454-2473.
<https://brazilianjournals.com/ojs/index.php/BJAER/issue/view/170>
DOI: <https://doi.org/10.34188/bjaerv5n2-082>.



Arteaga-Sogamoso et al. 2021. Morphological and molecular characterization of *Gambierdiscus caribaeus* (Dinophyceae), with a confirmation of its occurrence in the Colombian Caribbean Tayrona National Natural Park. *Botanica Marina*.
<https://doi.org/10.1515/bot-2020-0070>.



The Caribbean región in The Global HAB Status Report

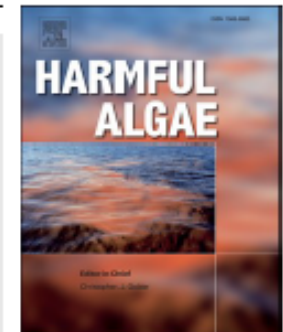
Harmful Algae 102 (2021) 101920



Contents lists available at [ScienceDirect](#)

Harmful Algae

journal homepage: www.elsevier.com/locate/hal



The Latin America and Caribbean HAB status report based on OBIS and HAEDAT maps and databases



UN Ocean Decade - Challenge 6: Increase community resilience to ocean hazards

Enhance multi-hazard early warning services for all geophysical, ecological, biological, weather, climate and anthropogenic related ocean and coastal hazards, and mainstream community preparedness and resilience.

Initiatives on HAB Early Warning Systems.

An important factor for EWS effectiveness lies in the level of citizen participation:

The communities at risk must be an active part of the system, receiving timely information, training, and exchanging knowledge with other stakeholders. For this reason, one of ANCA's priority activities has been the dissemination with different social sectors.

Considering that EWS must integrate data of HAB events, a training on HAIS-HAEDAT was carried out from 22/11/2021 to 6/12/2021. As a result of the training, the ANCA region has 16 editors responsible for updating the HAIS-HAEDAT system.

Country	Editors
Venezuela	Lorelys Valerio and Soraya Silva
Mexico	Rosalba Alonso and José Luis Peña
Panamá	Carlos Seixas and Kathia Broce
Jamaica	Azra Blythe-Mallett

Country	Editors
El Salvador	Oscar Amaya and Rebeca Quintanilla
Cuba	Gustavo Arencibia, Ruby Thomas and Dayana Dellundé
Costa Rica	Maribell Vargas
Colombia	Julian Franco and Edgar Arteaga



Intergovernmental Oceanographic Commission of UNESCO
Harmful Algal Bloom Programme



Colombia



México



Cuba



Guatemala



El Salvador



Costa Rica



España



Venezuela

Thank you

