

GlobalHAB

A New Program to Promote International Research, Observations,
and Modeling of Harmful Algal Blooms in Aquatic Systems

By Elisa Berdalet, Raphael Kudela,
Ed Urban, Henrik Enevoldsen,
Neil S. Banas, Eileen Bresnan,
Michele Burford, Keith Davidson,
Christopher J. Gobler, Bengt Karlson,
Po Teen Lim, Lincoln Mackenzie,
Marina Montresor, Vera L. Trainer,
Gires Usup, and Kedong Yin



ABSTRACT. From 1998 to 2013, the international community of scientists researching harmful algal blooms (HABs) in marine systems worked through the Intergovernmental Oceanographic Commission (IOC) of UNESCO and the Scientific Committee on Oceanic Research (SCOR) to better understand the ecological and oceanographic controls on these natural events that cause harm to humans and ecosystems. During this period, IOC and SCOR cosponsored the Global Ecology and Oceanography of Harmful Algal Blooms (GEOHAB) program to facilitate progress in HAB research, observations, and modeling. In 2016, building on the foundation provided by GEOHAB, IOC and SCOR launched a new HAB project design to extend research into freshwater systems and address several topics related to the effects of HABs on human society now and in a rapidly changing world.

GENESIS OF GlobalHAB

As described by Kudela et al. (2017, in this issue), GlobalHAB was conceived during the final Open Science Meeting (OSM) of the Global Ecology and Oceanography of Harmful Algal Blooms (GEOHAB) program, held in Paris in April 2013 (GEOHAB, 2014). The main purpose of the OSM was to evaluate and synthesize the outcomes of GEOHAB. Meeting participants agreed that international coordination of HAB science was still needed in order to advance understanding of factors controlling HABs and how they affect humans and aquatic ecosystems. While GEOHAB focused on marine HABs, and more narrowly on their ecological and oceanographic aspects, meeting participants agreed that broadening international coordination to other aspects of HABs would be valuable. The two sponsors of GEOHAB—the Intergovernmental Oceanographic Commission (IOC) of UNESCO and the Scientific Committee on Oceanic Research (SCOR)—agreed to help the HAB science community move in the new directions proposed. In 2015, IOC and SCOR appointed a Scientific Steering Committee (SSC) for the new GlobalHAB program, and it met for the first time in March 2016.

FACING PAGE. Sampling benthic harmful dinoflagellates from coral rubble overgrown by macroalgae in a degraded tropical coral reef ecosystem. *Photo credit: P.T. Lim, University of Malaya*

VALUE ADDED BY INTERNATIONAL ACTIVITIES LIKE GlobalHAB

It is worthwhile to consider the value of the international approach used by GEOHAB and now by GlobalHAB. The new program has many potential benefits:

1. GlobalHAB will serve as a focal point to bring together a larger number of scientists to help address the priority questions identified as part of the program, to develop promising approaches to answering these questions, and to continue developing new questions as the field evolves. GlobalHAB will bridge parts of the HAB science field that are not currently well connected (e.g., marine and freshwater scientists, natural and social scientists).
2. GlobalHAB will provide a mechanism for bringing together a critical mass of resources (expertise, equipment, finances) over an extended period to address difficult observational, modeling, and research challenges.
3. GlobalHAB will provide support for international standardization and intercalibrations for better comparison of the results of observations, modeling, and research worldwide.
4. GlobalHAB will demonstrate the importance of a better understanding of HABs to the public, managers, and policymakers.
5. GlobalHAB will attract financial resources and staffing that will provide

critical infrastructure to support meeting planning, communication, development of scientific publications, and capacity building.

6. GlobalHAB will offer a mechanism for interaction with other national and international organizations and projects, building on the successful collaborations established by GEOHAB.
7. GlobalHAB will endorse and provide an international framework for scientific projects and activities that, by addressing HAB research at national or regional levels, contribute to the implementation of GlobalHAB objectives.

GlobalHAB recognizes that much remains to be learned about HABs in order to help protect marine ecosystems and human health and that there are advantages to bringing marine and freshwater HAB scientists together to work on issues of common interest. Therefore, following on from GEOHAB, the general mission of GlobalHAB is to foster international cooperative research on HABs; its overall goal is to improve understanding and prediction of HABs in aquatic ecosystems and also to improve management and mitigation of their impacts. To achieve this goal, GlobalHAB will:

- Address the scientific and societal challenges of HABs, including their environmental, human health, and economic impacts, in a rapidly changing world.
- Consolidate linkages with broader scientific fields and regional and international initiatives relevant to HABs.
- Foster the development and adoption of advanced, cost-effective technologies.
- Promote training, capacity building, and communication of HAB research to society.
- Serve as a liaison between the HAB-related scientific community, stakeholders, and policymakers toward informing science-based decision-making.