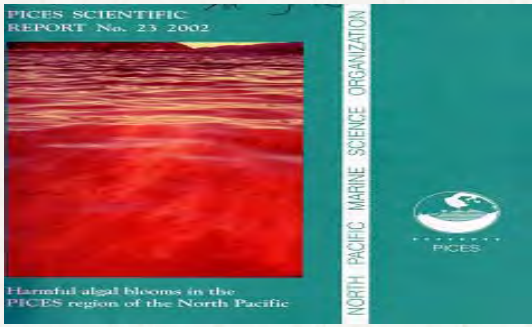
Overview of HAB-S

Aug. 16, 2010

HAB Section,
PICES



Introduction

- Harmful Algal Blooms Section (HAB-S)
- Parent Committee: MEQ
- Duration: 2003 - present
- Co-Chair: Vera Trainer and Changkyu Lee
- Members: 18 from member countries

Terms of Reference for HAB Section

1. To develop and implement annual bloom reporting procedures that can be consistent with ICES procedures and therefore incorporated into HAEDAT.

2. To exchange national reports of HAB incidents and development in order to inform HAB Section members of new toxins, new developments, and new approaches. Both toxin producing and nontoxic (but harmful) algal species should be included.

Terms of Reference for HAB Section (2007~)

3. To focus on specific needs for scientific advice among PICES member countries by identifying topics of interest, and providing syntheses of the available scientific information on those selected topics. Example topics for discussion and syntheses might include:

   a. Mitigation practices to reduce the impact of HABs

   b. Numerical model development of harmful algal bloom initiation and transport for predictions and forecasts

   c. Relationship between oceanographic processes and HAB

   d. Organism identification using molecular biological techniques

   e. Discussion of possible changes to certain monitoring techniques

   f. Species introductions including issues of anthropogenic sources (e.g. ballast water) or natural systems (e.g. species range extension)

Terms of Reference for HAB Section (2007~)

4. Together with TCODE, to develop a metadatabase that describes HAB monitoring and research efforts in each PICES member country.

5. Support the harmonization of methods for identifying HAB species. This could include intercalibration workshops co-sponsored by PICES and ICES.

6. Development of early warning systems for the detection of HABs. This could include discussion of ocean observing systems and techniques.

7. To educate the community (managers, students) about HAB organisms. - An in-depth study of selected HAB species (top ten) could include information about physiology, taxonomy, etc.

Overview of HAB-S activities (2003~2009)

- Annual HAB reporting and incorporation into HAE-DAT
  - HAB reporting from member countries
  - Data collection and discussions for HAE-DAT
    * HAB-S meeting for 1 or 1/2 day (2003~)

Overview of HAB-S activities (2003~2009)

Joint PICES-ICES HAE-DAT(Harmful Algal Event Database)

- To make monitoring and research effective, predictive and mitigative

- Benefit from building common data resources among PICES member couries

- Central tasks are:
  - ascertain the data base process
  - identify the difficulties in delivery
  - assess web-based window
  - further modification to encompass Pacific ocean

Overview of activities (2003~2009)

- HAE-DAT database establishment

- Indirect input of HAB data using old ICES format (2003~2005)

- Apply new ISO country codes (http://www.iode.org/NOS/CSCOR) by on-line data input system (2006~)

* PICES-ICES joint database (PICES HAB-S,ICES-WGHABD,IOC)

Overview of HAB-S activities (2003~2009)

Research advice/discussion on selected HAB topics

- MEQ topic session (2006~)

- New HAB trend and potential links with anthropogenic influence (2006)
- The relative contributions of off-shore and in-shore sources to HAB development and persistence in the PICES region (2007)
- Species succession and long-term data set analysis pertaining to HAB (2008)
- Mitigation of HAB (2009)
- Conceptual and numerical models of HAB dynamics (2010)

Overview of activities (2003~2009)

- MEQ workshop (2003~)

MEQ Lab. Demo.: ***Cyst-forming HAB species in 18th PICES, 2009***

Date/Time : October 23 / 09:00 – 18:00
Invited speaker: Dr. Matsuoka
Co-organizers: Dr. Changkyu Lee and Dr. Charles Trick
Attendee: 19 scientists from Korea (5), USA (5), Japan (4), Russia (3), Canada (1), Spain (1)

Overview of HAB-S activities (2003~2009)

- MEQ workshop(2003~)

- Developing a North Pacific HAB data resource-I~II (2003~2004)

- Review of selected harmful algae in the PICES region (2005~)
  - *Pseudo-nitzschia & Alexandrium* (2005)
  - *Dinophysis & Cochlodinium* (2006)
  - *Heterosigma akashiwo* & other harmful raphidophytes (2007)
  - *Prorocentrum & Dinophysis* (2008)
  - Cyst-forming HAB Species (2009)
  - New techn. and methods in HAB research and monitoring (2010)

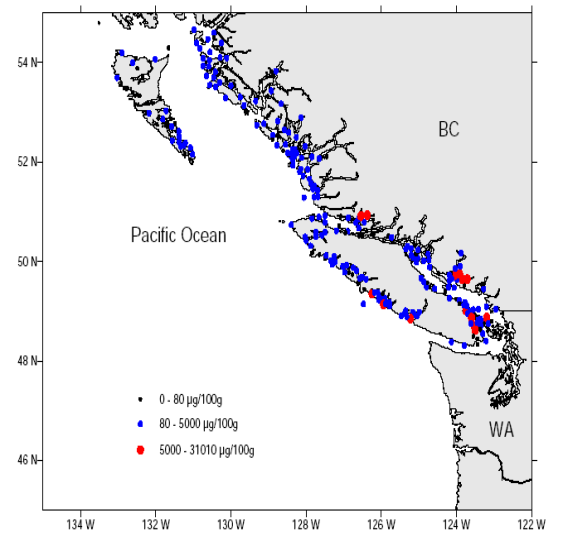
➡ HAB-S is planning to publish a PICES scientific report, *"Review of selected harmful algae in the PICES region"*

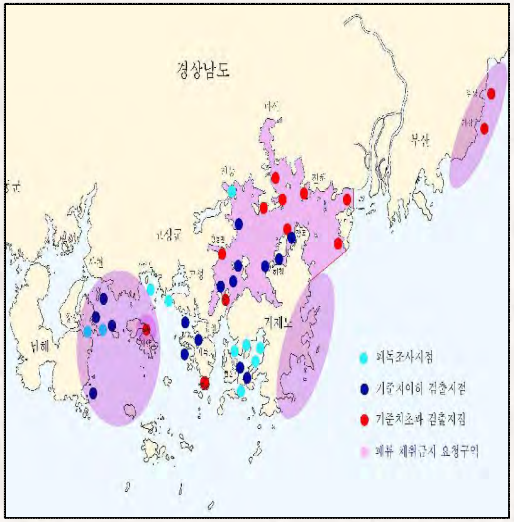
Linkages between HAB-S activities and FUTURE program

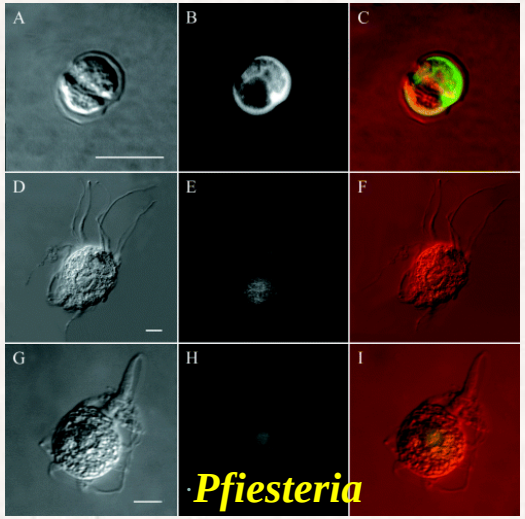
- HAB trend and species succession (link to AICE)

  - HAB events, scale, duration, causative species, fisheries damage
  - Environmental factors: nutrient, hydrography, meteorology
  - Newly emerging HAB species, succession to toxic/harmful species

  * HAB/eutrophication is directly related with anthropogenic influence in near shore







Linkages between HAB-S activities and FUTURE program

- Running of comprehensive HAB database in the North Pacific region (link to AICE and SOFE)

  - Periodic updating of HAB information: HAB event, species, location, environmental parameters, toxin, damages, mitigation

  - Applicable for the development of HAB prediction model

  - Establish HAB meta-database together with TCODE in future

* Useful tools for understanding present HAB status, outlook and forecast of HAB in the North Pacific region for government, research institute, manager, fisherman, etc

Potential linkages to FUTURE program

- Identifying sensitive HAB organisms or key species and how they reflect on anthropogenic forcing in near coast
- How do human activities affect on fisheries and coastal ecosystems and how might they change in the future
- How do ecosystems respond to natural and anthropogenic forcing
- What factors might be mediating changes in the biological processes

Potential linkages to FUTURE program

- Non-indigenous HAB species as stressors (AICE)

  - Occurrence of non-indigenous HAB species in near shore
  - Conditions/species range for extension/proliferation, vector of introduction (ballast water, natural system)
  - Development of monitoring techniques (e.g. molecular probe assay)
  - Impact on fisheries and ecosystem

  * HAB-S needs collaboration with WG21