

Report of the Marine Environmental Quality Committee

The meetings of the Marine Environmental Quality Committee (MEQ) were held on Sunday, September 24 (18:00–20:00) and Wednesday, September 27, (14:00–20:00), 2017 in Vladivostok, Russia. All countries except USA sent members to the meetings. A total of 22 participants attended (*MEQ Endnote 1*). MEQ Chair, Dr. Chuanlin Huo called the meeting to order and welcomed all participants. MEQ members and observers were asked to introduce themselves and to provide a brief statement about their interests and expertise. The highlights of day 2 were proposals and election of an MEQ Vice-Chair.

MEQ Experts Groups (S-HAB, WG 30, WG 31, AP-NIS) reported their progress and requests, GESAMP observer, Dr. Peter Kershaw, introduced collaboration with PICES. Based on a review of the main achievements of MEQ in 2017, ideas/proposals for new topics and direction, and items with financial implications for 2018 were discussed. The details were reported as follows.

September 24, 2017

AGENDA ITEM 1

Welcome and adoption of agenda

Dr. Chuanlin Huo, welcomed MEQ members and guests to the meeting and proceeded to review the agenda with members. It was adopted without revisions (*MEQ Endnote 2*).

Prof. Seongjin Hong (Korea) is a new member of MEQ. Ms. Andrea White is a new member of MEQ Committee, replacing Ms. Darlene Smith, and representing Canada.

AGENDA ITEM 2

Implementation of PICES-2016 decisions

Not discussed.

AGENDA ITEM 3

Review of the main achievements of MEQ in 2017

Dr. Huo introduced the main work and achievements of MEQ in 2017. At PICES-2017 MEQ sponsored or co-sponsored the following topic sessions and workshops:

- *MEQ Contributed Paper Session*
Convenor: Chuanlin Huo (China);
A total of 4 talks and 7 posters were presented.
- *MEQ Topic Session (S2): Microplastics in marine environments: Fate and effects*
Co-sponsor: GESAMP, NOWPAP;
Convenors: Wonjoon Shim (Korea), Hideshige Takada (Japan), Peter Kershaw (GESAMP), Lev Neretin (NOWPAP);
A total of 15 talks and 7 posters were presented.
- *MEQ Workshop (W4): Long-term changes in HAB occurrences in PICES nations; the Eastern vs. Western Pacific*
Convenors: Mark Wells (USA), Polina Kameneva (Russia);
A total of 11 talks and 2 posters were presented.

AGENDA ITEM 4

Reports from MEQ Expert Groups

Both Co-Chairs of S-HAB would be absent from the second MEQ meeting, so their report was moved to the first day MEQ meeting.

Section on *Ecology of Harmful Algal Blooms in the North Pacific (S-HAB)*

Co-Chair, Dr. Douding Lu (China) reported on S-HAB work and progress in 2017, as well as a proposal for 2018. S-HAB discussed the replacement of Co-Chair, Dr. Vera Trainer, whose term is up, but nothing concrete has been determined.

Highlights of S-HAB activities in 2017:

- Dr. Mark Wells attended IPHAB-XIII in May 2017 in Paris; he was elected Chair of an editorial board for a Best Practices Manual for Climate Change;
- S-HAB members are contributing to HABMAP for the GlobalHAB status report;
- *Ex officio* member of the GlobalHAB SSC, Dr. Vera Trainer, was a co-author of a paper on “GlobalHAB: A new program to promote international research, observations, and Modeling of Harmful Algal Blooms in Aquatic Systems” in [Oceanography 30: 70–81](#));
- Final report of the MarWeB project was published in [PICES Scientific Report No. 52](#); Drs. Trainer, Wells and Charles Trick contributed chapters to the report;
- A summary article entitled “*PICES.MAFF MarWeb project collaborates with the United Nations in the development of Marine Protected Areas in Guatemala*” by Vera Trainer, William Cochlan, Julian Herndon, and Charles Trick was published in PICES Press (Summer 2017, [Vol. 25, No. 2](#), pp. 31–34);
- A Topic Session ([S8/HD Paper](#)) on “*Marine ecosystem health and human well-being: A social ecological systems approach*” was co-convened by Mark Wells, Keith Criddle, Mitsutaku and Ian Perry at PICES-2017. Charles Trick (S-HAB) and Suhender I Sachoemar (Indonesia) were invited speakers;
- [PICES Scientific Report No. 53](#) (Conditions Promoting Extreme *Pseudo-nitzschia* Events in the Eastern Pacific but not the Western Pacific) was published.

S-HAB requests:

- 1-day S-HAB workshop on “*Emerging blooms of toxic dinoflagellates in the Pacific: comparative analysis of their prevalence and ecological impacts in the eastern and western regions*” at PICES-2018 and travel support for one GlobalHAB (potentially from Europe) invited speaker and one invited speaker from the western Pacific (if not funded by NOWPAP);
- 1-day S-HAB meeting at PICES-2018;
- Travel support for GlobalHAB SSC *ex-officio* member, Dr. Vera Trainer, to attend a GlobalHAB meeting in March 2018 (location TBD);
- Travel support for Dr. Mark Wells to attend a GlobalHAB Best Practices Manual Editorial Board meeting, March 2018, Naples, Italy;
- S-HAB requests Dr. Polina Kameneva (Russia) be added to its membership.

September 27, 2017

AGENDA ITEM 5

Election of Vice-Chair of MEQ

Executive Secretary, Mr. Robin Brown, conducted the election for Vice-Chair of MEQ. Dr. Thomas Therriault (Canada) was elected as Vice-Chair, replacing Ms. Darlene Smith (Canada).

AGENDA ITEM 6

Reports from MEQ Expert Groups (continued)

All Expert Groups under MEQ attended the MEQ committee meeting during PICES-2017, and a Co-Chair from each group made brief reports on their work and progress in 2017.

Working Group on *Assessment of Marine Environmental Quality of Radiation around the North Pacific* (WG 30)

WG 30 Co-Chair, Dr. Yusheng Zhang presented highlights on activities:

- 2016 summary report on the Workshop on “*Distribution and risk analysis of radionuclides in the North Pacific*” (in progress);
- Country Reports of member countries for the WG 30 Final Report (in progress);
- WG 30 brochure (in revision);
- Proposal for a new Working Group on the Distribution and Environmental Evolution of Radionuclides in the North Pacific (**MEQ Endnote 3**);
- Collaborated with the WG-RiO5 of SCOR, publishing a paper in peer-reviewed literature: Buesseler, K.; Dai, M.; Aoyama, M.; Benitez-Nelson, C.; Charmasson, S.; Higley, K.; Maderich, V.; Masqué, P.; Morris, P. J.; Oughton, D.; Smith, J. N. Fukushima Daiichi Derived Radionuclides in the Ocean: Transport, Fate, and Impacts. [*Annual Review of Marine Science* 2017, 9: 173–203](#).

Working Group on *Emerging Topics in Marine Pollution* (WG 31)

Co-chair Won Joon Shim reported achievement of WG 31 in 2017, with highlights below:

- Special issue in peer-reviewed scientific journals
- 1) Fifteen peer-reviewed papers were published in the special issue of “Ocean Spills and Accidents” in [*Archives of Environmental Contamination and Toxicology* 73\(1\): 1–169](#) on July 1, 2017
- 2) Sixteen peer-reviewed papers were published in the special issue of “Ocean Indicators of Pollution” in [*Archives of Environmental Contamination and Toxicology* 73\(2\): 171–347](#) on August 2, 2017
- 3) Special issue for “Hydrocarbons in Marine Environments” was cancelled with limited number of the submitted articles.
- WG 31 draft final report (in progress)
- Proposal for a new Study Group on *Marine Microplastics* (**MEQ Endnote 4**).

Advisory Panel on *Marine Non-indigenous Species* (AP-NIS)

AP-NIS met for the first time at PICES-2017. Since the appointment of membership is incomplete, Dr. Therriault (Canada) agreed to act as interim Chair. He represented the main activities of AP-NIS in its early stage.

AGENDA ITEM 7

Relations with other groups/organizations

Dr. Peter Keshaw (GESAMP) presented activities of GESAMP and discussed cooperation with MEQ and PICES.

AGENDA ITEM 8

Proposals for Topic Sessions and Workshops at PICES-2018, and inter-sessional workshops

MEQ reviewed 13 proposed Topic Sessions and 7 proposed Workshops for PICES-2017 and gave the highest ranking for MEQ sponsorship of Topic Sessions on:

- *Science communication for North Pacific marine science*;
- *The FUTURE of PICES: Next steps in understanding, forecasting and communicating climate impacts on North Pacific marine ecosystems*.

Workshops:

- *Development of a systematic approach to data management in PICES;*
- *Emerging blooms of toxic dinoflagellates in the Pacific: comparative analysis of their prevalence and ecological impacts in the eastern and western regions.*

MEQ reviewed 6 proposals for inter-sessional workshops and gave the highest ranking to:

- NPESR3 Synthesis Workshop;
- *Regional ocean/climate forecasting and its application to HAB predictions in the North Pacific.*

MEQ recommended PICES co-sponsorship of the 10th International Marine Bioinvasions Conference (October 16-18, 2018, Puerto Madryn, Argentina)

AGENDA ITEM 9

MEQ Best Oral Presentation and Poster awards at PICES-2017

Early career scientist, Dr. Garth A. Covernton (Canada) was awarded the MEQ Best Oral Presentation for his report on “*Microplastic concentrations in wild and cultured clams and their environment in British Columbia, Canada*” in MEQ-sponsored Topic Session S2 on “*Microplastics in marine environments: Fate and effects*”.

Early career scientist, Dr. Wen Yu, was awarded MEQ Best Poster on “*Levels of artificial radionuclides in squid from northwestern Pacific after Fukushima accident*” in the MEQ Paper Session.

MEQ Endnote 1

MEQ participation list

Members

Minkyu Choi (Korea)
Seongjin Hong (Korea)
Toyomitsu Horii (Japan)
Chuanlin Huo (China, Chair)
Weol-Ae Lim (Korea)
Olga Lukyanova (Russia)
Hideaki Maki (Japan)
Thomas Therriault (Canada, Vice-Chair)

Members unable to attend

Canada: Andrew Ross, Peter Ross
China: Chunhou Li, Dexing Wu
Japan: Ichiro Imai
Korea: Hae Jin Jeong, Kwang Young Kim, Tae Gyu Park
Russia: Tatyana A. Belan, Elena Maximovna Latkovskaya
USA: Staci Simonich, Durrelle Patricia Smith, Gina Ylitalo

Observers

Jinqi Du (China)
Chika Fujimitsu (Japan)
Jianhua He (China)
Peter Kershaw (GESMAP)
Renyan Liu (China)
Carmel Lowe (Canada)
Wu Men (China)
Yumi Okochi (Japan NUS Co., Ltd.)
Wonjoon Shim (Korea, WG 31)
Zijun Xu (China)
Taichi Yone (Japan NUS Co., Ltd.)
Wen Yu (China)
Tomowo Watanabi (Japan)
Andrea White (Canada)

MEQ Endnote 2**MEQ meeting agenda**

Sunday, September 24, 2017

1. Welcome and adoption of agenda (Chuanlin Huo)
2. Implementation of PICES-2016 decisions (Chuanlin Huo)
3. Review the main achievements of MEQ-2017 (Chuanlin Huo)
4. Report from MEQ Expert Groups and discussion (S-HAB)

Wednesday, September 27, 2017

5. Election of Vice-Chair of MEQ (Secretariat and all members)
6. Reports from MEQ Expert Groups and discussion (S-HAB, WG 30, WG 31, AP-NIS)
7. Relations with other groups/organizations (All)
8. Ranking of proposals for Topic Sessions and Workshops at PICES-2018, and inter-sessional workshops
9. MEQ Best Oral Presentation and Poster awards at PICES-2017 (All)
10. Other business (All)

MEQ Endnote 3

**Proposal for new Working Group on
*The Environmental Evolution and Application of Radionuclides in the North Pacific***

Objectives

To reveal the environmental evolution of radionuclides in North Pacific and new information on oceanographic processes in coastal and open-sea areas obtained from radiotracer applications.

Terms of Reference

1. Obtain the distribution and variation trend of natural and anthropogenic radionuclide in North Pacific.
2. Provide insights and improve our understanding of ocean processes and contaminant transport and fate.
3. Identify gaps in scientific knowledge in relation to radioactivity in the marine environment.
4. Bring together academic, nuclear industry and national laboratory expertise for an international symposium on radionuclides in the ocean.
5. Encourage bi-lateral and multi-lateral communication and collaboration of PICES member states.
6. Contribute to the FUTURE program by providing relevant understanding.

Membership

TBD

MEQ Endnote 4

Proposal for new Study Group on *Marine Microplastics* (SG-MMP)

Parent Committee: Science Board

Duration: 1 year

Proposed Chair: Wonjoon Shim

Description

Along with microplastic topic sessions in 2014 and 2017 PICES Annual Meeting, there has been a growing need to establish an expert group on microplastic pollution in the North Pacific region which is considered one of the ‘hot spots’ on the globe. While SG-MMP will focus on impacts of microplastics and their associated chemicals on marine environment and biota, linkages will be established with other efforts that describe socio-economic impacts of microplastic pollution.

The purpose of the proposed SG-MMP is to identify major microplastic issues in the North Pacific including marginal coastal seas and to identify knowledge gaps. The Study Group will establish a list of priority research needs in PICES member countries as well as world society by avoiding duplication of the other international and regional working groups and programs on microplastics. This will help to fill urgent knowledge gaps through further expert group involvement and activity in PICES. Input from regional and international bodies such as ICES (International Council for the Exploration of the Sea), GESAMP (Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection) and NOWPAP (Northwest Pacific Action Plan), will increase efficiencies and the scientific value of the SG-MMP outcome.

The establishment of SG-MMP is consistent with the FUTURE Science Plan component 3 (How do human activities affect coastal ecosystems and how are societies affected by changes in these ecosystems?), and contribute insight into the structure, function and resilience of ecosystems as in components 1 and 2. This will provide a critical evaluation of highly complex microplastics, clarify priority concerns in the North Pacific, and provide a platform to evaluate the relative importance of microplastics compared to other stressors.

Linkages to the FUTURE Science Plan

Component 3: How do human activities affect coastal ecosystems and how are societies affected by changes in these ecosystems?

Terms of Reference

1. Identify knowledge gaps and establish research priority for impacts of microplastics and their associated chemicals on marine environment and biota
2. Identify interactions within PICES scientific committees and expert groups that will complement the Study Group
3. Explore potential partnerships with other professional or multilateral organizations (e.g., ICES, GESAMP, NOWPAP) which could lead to joint activities (working group, sessions, publications), improve efficiencies and strengthen scientific outcomes.
4. Develop recommendations for a possible PICES WG on marine microplastics.

Proposed membership

Canada:

Peter Ross (Vancouver Aquarium)
Sarah Dudas (University of Victoria)

Japan:

Hideshige Takada (Tokyo University of Agriculture and Technology)
Keiichi Uchida (Tokyo University of Marine Science and Technology)

China:

Daoji Li (East China Normal Univ.)
Chengjun Sun (First Institute of Oceanography)

Korea:

Wonjoon Shim (Korea Institute of Ocean Science and Technology)
Seung-Kyu Kim (Incheon University)

USA:

Chelsea Rochman (currently at University of Toronto)
Jennifer Lynch (National Institute of Standards and Technology)