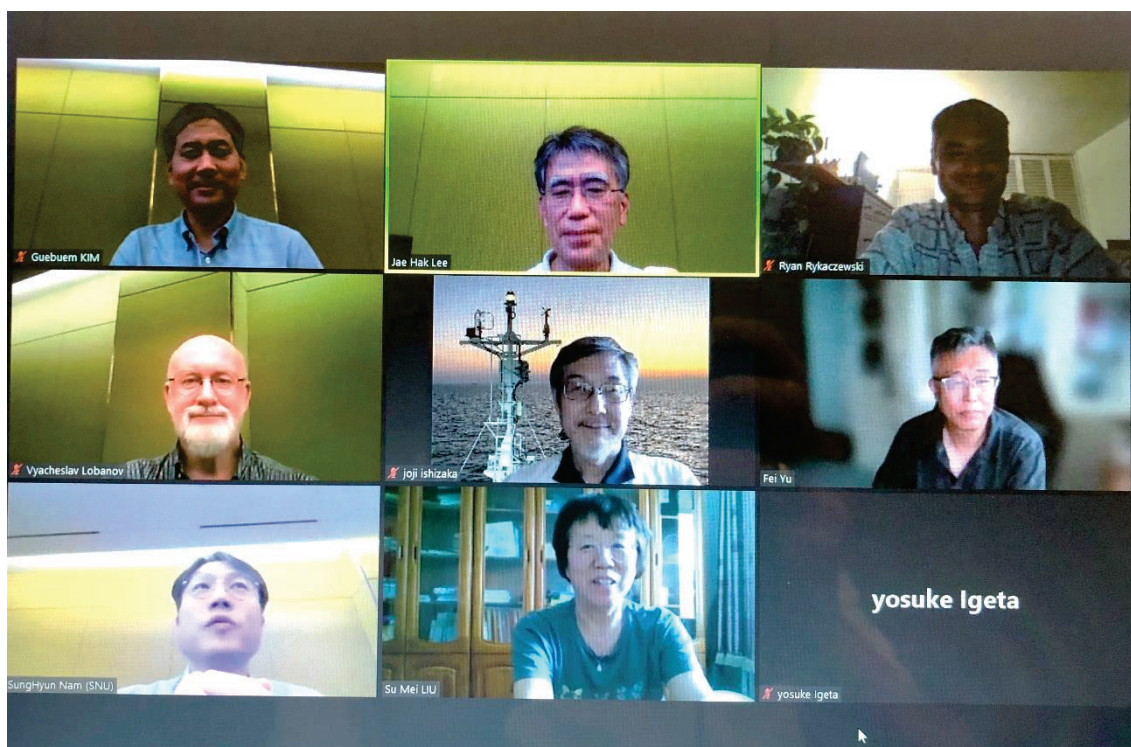


2022 Report of the Advisory Panel for a *Circulation Research in East Asian Marginal Seas/PICES Program*

AGENDA ITEM 1

Opening remarks

The meeting of the Advisory Panel for a *Circulation Research in East Asian Marginal Seas/PICES Program* (AP-CREAMS) was opened by Dr. Jae-Hak Lee, Co-Chair of AP-CREAMS, on September 25, 2022 at 2:00 pm (in Busan, Korea (and Zoom online link)). There were 11 participants in the meeting. AP-CREAMS members in attendance were Dr. Vyacheslav Lobanov, Dr. Jae-Hak Lee, Prof. SungHyun Nam, Prof. Guebuem Kim, Dr. Joji Ishizaka (online), Prof. Fei Yu (online), Dr. Yosuke Igeta (online), Prof. Su Mei Liu (online), and Ryan Rykaczewski (online); observers were Drs. Tatsuki Oshima (FA, Japan) and Alexander Bychkov (PICES) (*AP-CREAMS Endnote 1*). Participants adopted the meeting agenda without change (*AP-CREAMS Endnote 2*). SungHyun Nam was nominated as a rapporteur.



Participants (pictured only) of the AP-CREAMS annual meeting (on-offline hybrid) on September 25, 2022. Upper left to lower right: Guebuem Kim (Korea), Jae-Hak Lee (Korea), Ryan Rykaczewski (USA), Vyacheslav Lobanov (Russia), Joji Ishizaka (Japan), Fei Yu (China), SungHyun Nam (Korea), Su Mei Liu (China), Yosuke Igeta (Japan).

AGENDA ITEM 2

Completion of previous business

2.1. Development of the AP-CREAMS web page

Prof. Nam gave an update on the current status of the AP-CREAMS webpage development. It is under construction and will be completed after considering comments from AP-CREAMS members. It will provide data, metadata, and information on broader Asian Marginal Seas (AMS) science (considering broader demand by the IOC/WESTPAC AMS program) and both national and international programs as well as general background and tools. Dr. Lobanov commented on updating/managing of the data and separating demands for PICES and IOC/WESTPAC. A new name of CREAMS as “Creative Research in East Asian Marginal Seas” was suggested for the broader use to include biology, ecosystem, and human dimension beyond physics and chemistry. Another suggestion was to include the geographic area east of Taiwan into one of the sub-regions (Kuroshio region).

2.2. CREAMS database proposal

Dr. Ishizaka opened the discussion about the CREAMS database to be shared. The inventory can be provided through the AP-CREAMS webpage in collaboration with TCODE. He showed the inventory file where many CTD metadata available from JODC (Japan Oceanographic Data Center) were included, and where he will add other information such as nutrients, carbon, biology, and others. Comments were made on more information about the limited geographic area where the data were collected, and other data beyond the CTD such as current-meters, biogeochemistry, surface drifters, and ocean turbulence. The inventory file will be updated by AP-CREAMS members as needed.

AGENDA ITEM 3

Past and future cruises and coordination

Russia

Dr. Lobanov introduced recent POI activities targeting the EAST-1 area. The R/V *Professor Gagarinskiy* (Ga77) and R/V *Akademik Lavrentyev* (La97) were used to collect the CTD and mooring data and chemical samples in the Tartarsky Strait and Peter the Great Bay from October 1 to November 10, 2021 and from December 7 to 28, 2021, respectively. Many early career scientists joined the cruises and contributed to observations along climate monitoring sections, including the Primorye Current mooring (October 6 to December 19, 2021 at a water depth of 80 m), chemical properties (methane, radioisotopes, tritium, beryllium, and radium), and got a better understanding on the cyclonic gyre structure in the fall–winter season and upwelling at the Peter the Great Bay. He described the main POI monitoring projects in 2021–2022.

Japan

Dr. Igeta introduced recent monitoring activities by the physical oceanography group of the Fisheries Resources Institute FRA. The CTD data collected in the EAST-1 area off the Japanese coast are transmitted to a temperature and salinity database (GTSP) after quality control and further checked by experts and shared via the website link (<http://jsnfri.fra.affrc.go.jp/Physical/temperature/index.html>). He also provided an update on-going efforts for the monitoring line (SI-line) using a microstructure profiler (VMP-250), mooring system (ADCP), and Seaglider with three completed cruises and two planned cruises within the 2022 business year, and a plan of five cruises for the 2023 business year.

Korea

Prof. Kim introduced recent cruises conducted as a Korea-EAST program (2016–2022) which supports 2–3 cruises per year, including two international cruises between Russia and Korea (2018 and 2019). He showed a case of the 2022 July cruise in the Yellow and East China seas and provided an update on the

national funding situation to continue the cruise in the region (there was a failure to secure the funds to conduct the Korea-EAST program supported by the Ministry of Oceans and Fisheries, Republic of Korea, but there may be leverage for a new program funded by National Research Foundation and National Institute of Fisheries Science).

AGENDA ITEM 4

Capacity building activities

4.1 Report on Summer School on Ocean Turbulence in China 2022

Prof. Yu reported on the Summer School on Ocean Turbulence held from August 22 to 26 and hosted by the Institute of Oceanology, Chinese Academy of Sciences. A total of 25 early career scientists from 10 countries, including the PICES member countries, participated in the summer school. Lectures included an introduction to turbulence and ocean turbulence, how to deploy a microstructure profiler (VMP), how to process the VMP data, and an introduction to ocean turbulent processes.

4.2 Proposals for the next capacity building activity

No new capacity building activities were suggested.

AGENDA ITEM 5

Cooperation with other active programs/organizations in the region

5.1. IMBeR Continental Margins WG

Prof. Liu introduced the IMBeR Continental Margins working group that is to undertake integration and synthesis activities in the continental margin and to highlight priority issues for marginal seas. She described the working group activities in three perspectives: 1) knowledge and understanding, 2) development, innovation, and risk, and 3) governance and management, and introduced a topic on Chinese Marginal Seas “assessment of ecosystem and options for ensuring sustainable uses” as a case study. She also introduced six tasks: 1) The ecosystem and physicochemical environmental change in the last 50 years, 2) Impacts of mariculture on the eco-environment and options for sustainable sea food supply, 3) Sustainable pollution prevention strategies in coastal zones, 4) Occurrence, ecological impact, and risks of emerging pollutants, including microplastics in marginal seas, 5) Scientific measures to ensure sustainable development of marginal seas, and 6) Comparison of the Chinese Marginal Seas with other marginal seas.

Dr. Ishizaka supplemented information on ocean color-based plant species identification and carbon flux in the Indo-Pacific Oceans as a study group of IMBeR, and described some satellite ocean observing programs utilizing the KHOA GOCI II, ESA Sentinel 2, and JAXA GCOM-C data.

5.2. WESTPAC (AMS, CSK II, UNDOS)

Prof. Nam briefly mentioned that the AP-CREAMS webpage may be useful for the WESTPAC Asian Marginal Seas (AMS) program although nothing was updated recently.

Dr. Lobanov mentioned that the Second Cooperative Study of the Kuroshio and its Adjacent Regions (CSK II) program as a significant IOC/WESTPAC program includes some influence of the Kuroshio. Prof. Nam provided an update of the recent funding situation on the Korean national program to support the CSK II.

AGENDA ITEM 6

Presentation from the FUTURE SSC

Dr. Lobanov, as an SSC liaison to AP-CREAMS, gave an update on the FUTURE program to get feedback from the members. He introduced FUTURE Product Matrix and new version of FUTURE schematics as an integration of all diverse PICES activities, consisting of Climate System, Processes, Human System, and Marine Ecosystem. The next FUTURE Open Science Meeting, delayed due to COVID-19 and related uncertainties, and will be either take place in Hawaii in spring 2024 or at PICES-2023 or PICES-2024. He discussed the future of the FUTURE program in consideration of the increasing demand for integration of FUTURE with UNDOS-relevant activities in PICES, and workshops/sessions related to/sponsored by FUTURE at PICES-2022 (*i.e.*, W3 (SmartNet: Promoting PICES and ICES Leadership in the UN Decade of Ocean Science for Sustainable Development), W4 (Establishing a North Pacific ECOP node of the global ECOP program to increase inter-regional early career engagement and partnerships during the Ocean Decade), W8 (Science Communication Training Workshop 2022: How to Create Memorable PICES Science Stories), W10 (Openly Discoverable, Accessible, and Reusable Data and Information in the U.N. Decade), S1 (Sustainability of Marine Ecosystems through global knowledge networks during the UN Decade of Ocean Science), S2 (Marine Ecosystem Services – Connecting Science to Decision Making) S3 (Realizing scalable artificial intelligence in marine science), S6 (Using eDNA to assess and manage Non-indigenous species in the North Pacific), and S7 (Forecasting and projecting climate variability and change on northern hemisphere marine ecosystems using coupled next generation biophysical model)).

AGENDA ITEM 7

Proposals for workshops/topic session at PICES-2023

7.1. Workshop

A workshop on “*Changing social-ecological-environmental system of the North East Asian Marginal Seas: New challenges for integrative marine science*” was proposed for PICES-2023 by Dr. Lobanov, Prof. Nam, Prof. Mitsutaku Makino (HD Chair), Dr. Takafumi Yoshida (*ex-officio* representing NOWPAP), and probably others from China, Canada, and USA (*AP-CREAMS Endnote 3*). Dr. Lobanov asked all members to think about the CREAMS 30-years’ anniversary workshop to propose for PICES-2024 to link to CREAMS publication in a special issue.

7.2. Other proposals

The NOWPAP training course on satellite information was postponed, and there is no other suggestion/proposal.

AGENDA ITEM 8

Proposals for AP-CREAMS publications

AP-CREAMS publications in the form of a journal special issue may be linked to the 30-years’ anniversary workshop.

AGENDA ITEM 9

Other matters

There is a good news. Dr. Ishizaka was awarded the Uda Prize from the Oceanographic Society of Japan. Members congratulated him, and he appreciated the past support by AP-CREAMS.

AGENDA ITEM 10

Next AP-CREAMS meeting

The next AP-CREAMS meeting will be an inter-sessional meeting to be held in May or June of 2023 in Qingdao, China; otherwise it will be online meeting. For this year's inter-sessional meeting, see *AP-CREAMS Endnote 4*.

AGENDA ITEM 11

Summary and closing

Dr. Lee summarized the meeting and adjourned it on September 25 at 10 minutes before 6:00pm.

AP-CREAMS Endnote 1**AP-CREAMS participation list**Members

Joji Ishizaka (Japan, Co-Chair)
 Jae-Hak Lee (Korea, Co-Chair)
 Vyacheslav Lobanov (Russia, Co-Chair)
 Fei Yu (China, Co-Chair)
 Sumei Liu (China)
 Yosuke Igeta (Japan)
 Guebuem Kim (Korea)
 SungHyun Nam (Korea)
 Ryan Rykaczewski (USA)

Members unable to attend

China: Dongfeng Xu
 Japan: Jing Zhang
 Korea: Hee-Dong Jeong
 Russia: Pavel Ya. Tishchenko, Yury Zuenko

Observers

Alexander Bychkov (Past PICES Executive Secretary)
 Tatsuki Oshima (Japan)

AP-CREAMS Endnote 2**AP-CREAMS meeting agenda**

On-/offline hybrid meeting, September 25, 2022

1. Opening remarks, introduction of the participants, adoption of the agenda, rapporteur (AP co-chairmen)
2. Completion of previous business
 - 2.1. Development of AP-CREAMS web page (SH Nam)
 - 2.2. CREAMS database proposal (J Ishizaka)
3. Past and future cruises and coordination (V Lobanov, Y Igeta, G Kim)
4. Capacity building activities
 - 4.1. Report on Summer School on Ocean Turbulence in China 2022 (F Yu)
 - 4.2. Proposals for next CB activity
 - 4.1. WESTPAC (AMS, UNDOS, NEAR-GOOS, CSK-2)
5. Cooperation with other active programs/organizations in the region
 - 5.1. IMBeR Continental Margins WG (SM Liu)
 - 5.2. WESTPAC (AMS, CSK II UNDOS) (SH Nam)
6. Presentation from FUTURE SSC (V Lobanov)
7. Proposals for workshops/topic session at PICES-2023
 - 7.1. Workshop (Lobanov)
 - 7.2. Other proposals

8. Proposals for AP-CREAMS publications
9. Other matters
10. Next AP-CREAMS meeting
11. Summary and closing

AP-CREAMS Endnote 3

**Proposal for a Workshop on
“*Changing social-ecological-environmental system of the North East Asian Marginal Seas:
New challenges for integrative marine science*”
at PICES-2023**

Convenors: Vyacheslav Lobanov (Russia), SungHyun Nam (Korea), Mitsutaki Makino (Japan), Takafumi Yoshida (Japan), TBD (China)

The western North Pacific, one of the areas of the global ocean most affected by climate change and anthropogenic activities, consists of several marginal seas. Many international programs initiated in this area including CREAMS (Circulation Research of East Asian Marginal Seas) have contributed to significant advances in understanding of physics and biogeochemistry of North East Asian Marginal Seas. The UN Decade however requires comprehensive research programs connecting science and communities for sustainable seas. We expect this workshop would provide a forum to discuss all aspects of marine science (physical, chemical, biological oceanography and fishery science) focusing on the North East Asian Marginal Seas and its changing social-ecological-environmental system. It is especially important to identify links between marine sciences and socio-economic requirements in the area to develop an integrative program for future research in this region to correspond the UN Decade targets. Presentations covering success of integrative marine science approach in other regions of the World Ocean are welcomed. The workshop outcome should clarify a vision of international comprehensive marine research in the North East Asian region that meets the current needs of society.

AP-CREAMS Endnote 4

**Report of the Inter-sessional Meeting of the Advisory Panel for
*Circulation Research in East Asian Marginal Seas (AP-CREAMS)***

***June 10, 2022
(on-line)***

1. Opening remarks, welcome from PICES

The meeting was opened on-line by Drs. Vyacheslav Lobanov, Co-Chair of AP-CREAMS, and Sanae Chiba, PICES Deputy Executive Secretary, at 11:00 am (UTC+10), June 10, 2022. Participants gave self-introductions and adopted the meeting agenda.

2. Completion of previous business

2.1 Status of the CREAMS-related chapter 19 of the PICES NPESR-3

Dr. Lobanov reported on the status of the PICES North Pacific Ecosystem Status Report version 3 (NPESR-3). The report of EAST-I area (19) was finished with the help of some of the AP members and is under review now. After final preparation it will be available online, as well as other regional chapters of

the NPESR-3. The summary report of the NPESR-3 (a synthesis paper) is already published (https://meetings.pices.int/publications/special-publications/NPESR/2021/PICES_SP7_NPESR3_2021_SM_FNL.pdf).

2.2 *CREAMS web site proposal*

On behalf of Prof. SungHyun Nam, Prof. Guebuem Kim reported the status of the CREAMS web site proposal. Prof. Kim is preparing the homepage, and it will be presented at the coming AP meeting during PICES-2022 in September; however, the funding for the development and maintenance is unknown. It will be also needed to discuss a content of the web site.

2.3 *CREAMS database proposal*

Dr. Joji Ishizaka reported the situation of the CREAMS database proposal. He discussed with Dr. Toru Suzuki, member and former Chair of TCODE, on the possibility of collaboration. He also introduced the PACIFICA database (<http://pacific.pices.jp/table/>) which includes a cruise and data inventory as well as data. The CREAMS database may be simpler, with data inventory, although the data were expected to store in National databases. Collection of the list of cruises can be started, and Dr. Ishizaka will distribute the format among members. He will check further the possibility of collaboration with TCODE before the next meeting.

2.4 *Summer School on Ocean Turbulence in China in 2022*

Prof. Yu Fei reported the situation of the Summer School on Ocean Turbulence, which will be held on August 22–26, 2022 online (<https://meetings.pices.int/images/HomePage/2022-15-AP-CREAMS-SummerSchool.pdf>). Presently there are 18 trainees, and it is possible to have more. Dr. Chiba noted that the announcement is on the PICES homepage and that AP members should advertise to encourage attendance. The expected number of participants is around 30; however, as the training will be online it could have unlimited number of trainees. The deadline for application is June 30.

2.5 *Training course on satellite information with NOWPAP*

Dr. Ishizaka reported that the NOWPAP training course planned this year is uncertain because of international problems.

2.6 *Special issue on East Asian Marginal Seas*

Prof. Kim reported on a special issue on East Asian Marginal Seas in *Frontiers in Marine Science* (<https://www.frontiersin.org/research-topics/19531/physics-and-biogeochemistry-of-the-east-asian-marginal-seas>). It was edited by SungHyun Nam, Ying Wu, Jeomshik Hwang, Ryan Rykaczewski and Guebuem Kim, and 28 papers were published (half physics and half biogeochemistry). One review paper is still under review.

3. Capacity building activities

3.1 *New proposals*

Presently there is no new proposal. AP members are encouraged to make new activities.

4. Cooperation with other active programs/organizations in the region

4.1 *IMBeR Continental Margin WG*

Prof. SuMei Liu reported on the situation of the IMBeR Continental Margin WG. Its focus is on the assessment of the ecosystem in marginal seas and options for ensuring sustainable uses, including

eutrophication and pollution status, mariculture and its sustainability, and non-biological resources and their sustainable management.

4.2 WESTPAC AMS

Prof. Jing Zhang discussed the Asian Marginal Sea program in WESTPAC. It is chaired by herself and Prof. SungHyun Nam and will continue to 2030. The UN Ocean Decade Kickoff Conference for the Western Pacific and its Adjacent Areas Incubator-5 was held on November 24, 2021 (https://www.youtube.com/watch?v=J33jJlyzbA&ab_channel=DmcrThailand), and more than 100 people made up the on-line audience. It is necessary to collaborate with AP-CREAMS, NEAR-GOOS and CSK-2. It is also necessary to closely interact with fisheries, climate and social sciences groups as well as stake holders. A new proposal for the UN Decade on submarine groundwater discharge is being prepared, but outside international funding is required.

5. Important CREAMS related activity in member countries

5.1 Sea level rise and its decadal changes in the East China Sea

Prof. Dongfeng Xu reported that the sea level rise rate was 3.3mm/yr for Chinese coastal tide gauge stations during 1980–2018. The sea level rise rate of the Zhejiang coastal tide gauge equaled 4.3mm/yr during 2000–2020. The interannual and decadal variation are closely related to the PDO and ENSO in Southern China coastal area, while in Zhejiang coastal region the decadal sea level change has no relation with the PDO. Prediction is demanded by the Zhejiang local government, and the influence of typhoons, *etc.* are being investigated.

6. Future activity of the AP

Dr. Lobanov proposed a workshop on the 30th Anniversary of the CREAMS program for PICES-2023. Prof. Fei suggested a focus on the long-term changes. Participants agreed the proposal should be related to physics and biogeochemistry in Asian Marginal Seas, including long-term changes. Dr. Lobanov also suggested a journal publication associated with the workshop.

7. Other matters

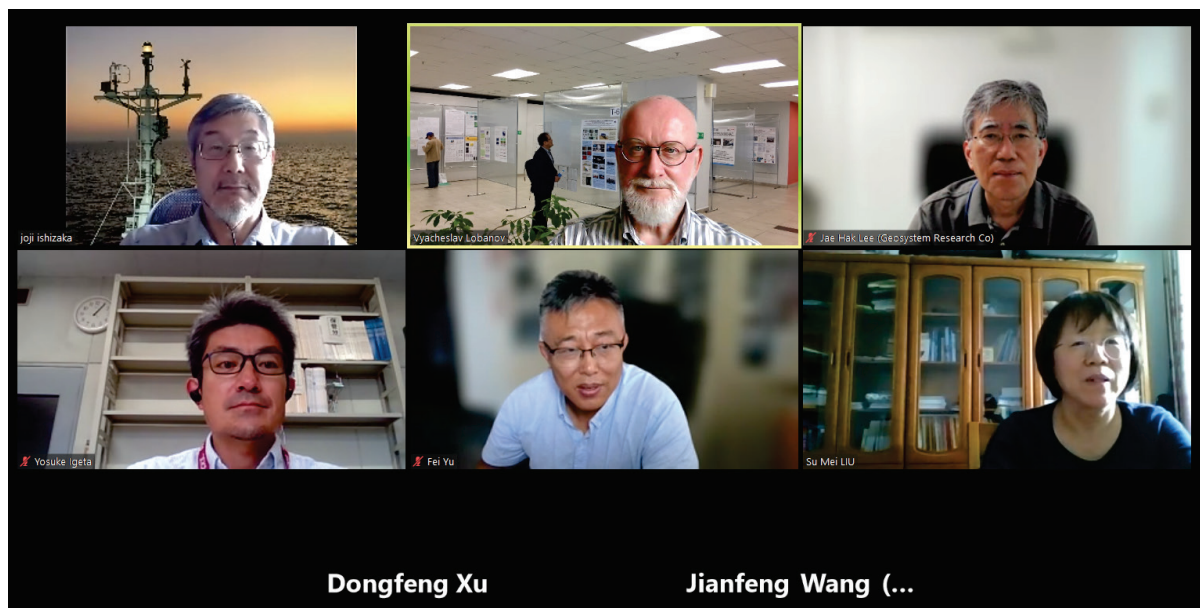
Connection with the human dimension, which is required for UN Ocean Decade, was discussed. Dr. Lobanov suggested having a small workshop in August with Human Dimension group, including Dr. Mitsutaku Makino who is the Chair of the Human Dimension Committee. Participants agree to have the workshop after on-line communication.

8. Next AP-CREAMS meeting

Participants agreed to have one-day meeting during PICES-2022 in Busan. Dr. Ishizaka also suggested having the meeting in hybrid form (face-to-face as well as on-line) to allow for more participation.

9. Summary and closing

Dr. Lobanov summarized the meeting, and closed the meeting at 2:00 pm (UTC+10).



AP-CREAMS inter-sessional meeting participants (pictured only) on June 10, 2022.

AP-CREAMS Endnote 1

AP-CREAMS participation list

Members

Joji Ishizaka (Japan, Co-Chair)
 Jae-Hak Lee (Korea, Co-Chair)
 Vyacheslav Lobanov (Russia, Co-Chair)
 Fei Yu (China, Co-Chair)
 Sumei Liu (China)
 Dongfeng Xu (China)
 Yosuke Igeta (Japan)
 Jing Zhang (Japan)
 Guebuem Kim (Korea)
 SungHyun Nam (Korea)
 Yury Zuenko (Russia)

Observers

Sanae Chiba (PICES)
 Jianfeng Wang (IOCAS)

AP-CREAMS Endnote 2

AP-CREAMS Inter-sessional Meeting agenda

On-line June 10, 2022

1. Opening remarks, welcome from PICES (AP co-chairmen)
2. Completion of previous business
 - 2.1. Status of the CREAMS-related chapter 19 of the PICES NPESR-3 (V Lobanov)
 - 2.2. CREAMS web site proposal (SH Nam)
 - 2.3. CREAMS database proposal (J. Ishizaka)
 - 2.4. Summer School on Ocean Turbulence in China in 2022
 - 2.5. TC on satellite information with NOWPAP
 - 2.6. Special issue on East Asian Marginal Seas

AP-CREAMS – 2022

3. Capacity building activities
 - 3.1. New proposals
4. Cooperation with other active programs/organizations in the region
 - 4.1. IMBeR Continental Margin WG (SM Liu)
 - 4.2. WESTPAC (AMS, CSK II, UNDOS) (J Zhang)
5. Important CREAMS related activity in member countries
 - 5.1. Sea level rise and its decadal changes in East China Sea
6. Future activity of the AP
7. Other matters
8. Next AP-CREAMS meeting
9. Summary and closing