

PICES-2011

**Mechanisms of Marine Ecosystem
Reorganization in the North Pacific Ocean**

North Pacific Marine Science Organization



PICES

October 14-23, 2011
Khabarovsk, Russia

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Abstracts for oral presentations are sorted first by session and then by presentation time. Abstracts for posters are sorted by session and then by paper ID number. Presenter name is in bold-face type and underlined. Some abstracts in this collection are not edited and are printed in the condition they were received.

Notes for Guidance

The meeting is hosted by the Russian Federal Agency for Fisheries in cooperation with the government of the Khabarovsk Region and in coordination with the PICES Secretariat. Local arrangements are made by the Pacific Research Fisheries Centre (TINRO-Centre) and the Khabarovsk branch of TINRO-Centre.

Presentations

In order to allow the sessions to run smoothly, and in fairness to other speakers, please note that all presentations are expected to adhere strictly to the time allocated. All authors should designate at least 5 minutes for questions. Authors can download their presentations straight to the computers where the session/workshops will be held.

Important: Please rename your files - time-name.ppt (e.g. 0900-Smith.ppt, 1530-Kim.ppt).

If complications occur due to incompatibilities between PCs and Macs, Macintosh owners may use their own computers to make presentations.

Posters

Posters will be on display from October 18 (a.m.) until the end of the “Wine and Cheese” Poster Session on the evening of October 20, when poster presenters are expected to be available to answer questions. Posters must be removed in the morning of October 21.

Internet access

Internet access via wireless LAN will be available at the Official Conference Hall. A few desktop computers will also be available for participants.

Social activities

October 17, Monday (19:00-22:00)

Welcome Reception

The Welcome Reception for all participants (and registered guests) will be held in the Intourist Hotel (restaurant, 1st floor).

October 18, Tuesday (19:00-22:00)

Sports Event

This year’s Sports Event will be shooting! We have chartered the indoor rifle range in the Army Sport Club for the night. Competition between 2 teams and individuals will be arranged. Some snacks and drinks will be provided. Participation is strictly limited to 80 people, please sign up at the Registration Desk.

October 20, Thursday (18:00-20:30)

Wine & Cheese Poster Session Reception

The Poster Session Reception will be held in the Official Conference Hall, where all the posters are on display. Participants can roam around the poster displays and chat with poster presenters while nibbling on snacks and sipping beer.

Meeting Timetable

Friday, October 14						
09:00 12:30		BIO Workshop (W1), Day1	MEQ Workshop (W3)	POC/MONITOR/ TCODE Workshop (W4) <i>followed by</i> CREAMS-AP Meeting	<i>MEQ WG 21 Meeting</i>	
14:00 18:00	<i>FIS/POC WG25 Meeting (WGFCCIFS)</i>					
Saturday, October 15						
09:00 12:30	MEQ Workshop (W2)	<i>CC-S Meeting</i>	<i>MEQ/FIS WG 24 Meeting</i>	<i>POC WG 27 Meeting</i>	BIO Workshop (W1), Day2	<i>MEQ WG 21 Meeting</i>
14:00 18:00					<i>BIO WG 26 Meeting</i>	<i>MEQ/BIO WG 28 Meeting</i>
18:00 19:30	<i>CPR-AP Meeting</i>					
Sunday, October 16						
09:00 12:30	<i>HAB-S Meeting</i>	<i>BIO WG 23 Meeting</i>	<i>MBM-AP Meeting</i>	<i>AICE-AP Meeting</i>	<i>COVE-AP Meeting</i>	<i>SOFE-AP Meeting</i>
12:30 14:00		SB Lunch Meeting *				
14:00 18:00		Joint AICE-AP/COVE-AP/SOFE-AP Meeting				
18:00 19:30	<i>BIO Meeting</i>	<i>FIS Meeting</i>	<i>MEQ Meeting</i>	<i>POC Meeting</i>	<i>TCODE Meeting</i>	<i>MONITOR Meeting</i>
Monday, October 17						
09:00 10:00	OPENING SESSION					
10:40 18:00	Science Board Symposium (S1)					
18:30 22:00	Welcome Reception					
Tuesday, October 18						
09:00 12:30	MEQ Topic Session (S5)	BIO/POC Topic Session (S2)		FIS Paper Session, Day1		
14:00 18:00	MEQ/FIS Topic Session (S6)			POC Paper Session, Day1		
Wednesday, October 19						
09:00 12:30	FIS Paper Session, Day2	POC Paper Session, Day2	MONITOR/POC/FUTURE Topic Session (S9), Day1		F&A Meeting *	
14:00 18:00	<i>BIO Meeting</i>	<i>FIS Meeting</i>	<i>MEQ Meeting</i>	<i>POC Meeting</i>	<i>TCODE Meeting</i>	<i>MONITOR Meeting</i>
Thursday, October 20						
09:00 12:30	FIS/POC Topic Session (S4)	MEQ/FUTURE Topic Session (S7)		MONITOR/POC/FUTURE Topic Session (S9), Day2		
14:00 18:00				BIO Paper Session, Day1		

18:00 20:30	POSTER SESSION		
Friday, October 21			
09:00 12:30	FIS Topic Session (S3)	POC/FIS Topic Session (S8)	BIO Paper Session, Day2
12:30 13:30	Closing Session		
13:30 18:30	Science Board Meeting *		
Saturday, October 22			
09:00 18:00	Science Board Meeting *	Governing Council Meeting *	
Sunday, October 23			
09:00 17:00	Governing Council Meeting *		

* Closed Session

** Award-winning scientists (Best Oral/Poster presentations) will be announced during the Closing Session

Sessions/Workshops

- S1 Mechanisms of Marine Ecosystem Reorganization in the North Pacific Ocean
- S2 Mechanisms of physical-biological coupling forcing biological “hotspots”
- S3 Population dynamics, trophic interactions and management of cephalopods in the North Pacific ecosystems
- S4 Recent changes of North Pacific climate and marine ecosystems: Implications for dynamics of the dominant species
- S5 Harmful algal blooms in a changing world
- S6 Identification and characterization of environmental interactions of marine aquaculture in the North Pacific
- S7 Land-sea interactions and anthropogenic impacts on biological productivity of North Pacific Ocean coastal ecosystems
- S8 Linking migratory fish behavior to end-to-end models
- S9 How well do our models really work and what data do we need to check and improve them?
- BIO-P BIO Paper Session
- FIS-P FIS Paper Session
- POC-P POC Paper Session
- GP General Poster Session
- W1 MEMIP-IV: Quantitative comparison of ecosystem models applied to North Pacific shelf ecosystems-
-humble pie or glee?
- W2 Remote sensing techniques for HAB detection and monitoring
- W3 Pollutants in a changing ocean: Refining indicator approaches in support of coastal management
- W4 Recent advances in monitoring and understanding of Asian marginal seas: 5 years of CREAMS/
PICES EAST-I Program

Meetings

AICE-AP	Advisory Panel on Anthropogenic Influences on Coastal Ecosystems (<i>belongs to FUTURE Science Program</i>)
BIO	Biological Oceanography Committee
COVE-AP	Advisory Panel on Climate, Oceanographic Variability and Ecosystems (<i>belongs to FUTURE Science Program</i>)
CPR-AP	Advisory Panel on the Continuous Plankton Recorder Survey in the North Pacific (<i>belongs to MONITOR Committee</i>)
CREAMS-AP	Advisory Panel for a CREAMS/PICES Program in East Asian Marginal Seas (<i>belongs to MONITOR and POC Committees</i>)
CC-S	Section on Carbon and Climate (<i>belongs to BIO and POC Committees</i>)
FIS	Fishery Science Committee
HAB-S	Harmful Algal Blooms Section (<i>belongs to MEQ Committee</i>)
MBM-AP	Advisory Panel on Marine Birds and Mammals (<i>belongs to BIO Committee</i>)
MEQ	Marine Environmental Quality Committee
MONITOR	Technical Committee on Monitoring
POC	Physical Oceanography and Climate Committee
SOFE-AP	Advisory Panel on Status, Outlooks, Forecasts, and Engagement (<i>belongs to FUTURE Science Program</i>)
TCODE	Technical Committee on Data Exchange
WG-21	Working Group on Non-indigenous Aquatic Species (<i>belongs to MEQ Committee</i>)
WG-23	Working Group on Comparative Ecology of Krill in Coastal and Oceanic Waters around the Pacific Rim (<i>belongs to BIO Committee</i>)
WG-24	Working Group on Environmental Interactions of Marine Aquaculture (<i>belongs to FIS and MEQ Committees</i>)
WG-FCCIFS	Joint PICES/ICES Working Group on Forecasting Climate Change Impacts on Fish and Shellfish (<i>belongs to FIS and POC PICES Committees and OCC ICES Committee</i>)
WG-26	Working Group on Jellyfish Blooms around the North Pacific Rim: Causes and Consequences (<i>belongs to BIO Committee</i>)
WG-27	Working Group on North Pacific Climate Variability and Change (<i>belongs to POC Committee</i>)
WG-28	Working Group on Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors (<i>belongs to BIO and MEQ Committees</i>)

Keynote Lecture

Recent changes in the North Pacific marine ecosystems related to climate change: Global or regional forcing?

Vjacheslav P. Shuntov and Olga S. **Temnykh**

Pacific Research Fisheries Centre (TINRO-Centre), 4 Shevchenko Alley, Vladivostok, 690090, Russia. E-mail: temnykh@tinro.ru

The idea that anthropogenic greenhouse gases are among the major drivers of climate change became widespread at the end of the 20th century. Some researchers suggest that global warming caused by the greenhouse effect will continue at least until the end of the 21st century. We do not argue that increasing human activity will have an increasing effect on regional and global climate. However, there is a real need to outline the magnitude of natural climate oscillations, with periods from hundreds to thousands of years, that were occurring long before humans started to have any noticeable impacts on the biosphere. All physical processes on Earth evolve under the guidance of cosmogenic and global geophysical factors influencing the atmosphere and hydrosphere. This may be the reason for the approximately synchronous cycles in physical (climate) and biological processes. The simultaneous overlaying of cycles having a time span from years and decades to centuries produce numerous combinations in the observed patterns of climatic, and especially, biological events. Existing trends in the dynamics of populations, biotic communities, and ecosystems depend on temporal and spatial factors. When global factors produce major effects, changes in biota occur in phase over wide areas and on a long time scale. When regional (province) factors are in play, local and short-term trends are more evident. Therefore, even large, occasionally local anomalies should not be interpreted as responses to global causes, either natural, or anthropogenic. Global changes may occur differently in different regions. Patterns in population and community dynamics may differ significantly even during analogous cycles due to multivariate impacts on biota. Biotic processes are influenced not only by fundamental environmental factors, but by population and community factors as well. Therefore, widely used climatic indices are not always reliable for unraveling mechanisms and cause-and-effect relationships. Such a conclusion is supported by newly revised datasets on variations in productivity of pelagic and bottom fish, squids, zooplankton and jellyfish acquired by TINRO-Centre in the northwestern Pacific Ocean during the last 3 decades. Observed sharp changes in fluctuating fish stocks are still poorly predictable on the basis of existing stock assessment approaches. It is therefore, important to support stock assessment models with real observational data obtained in ecosystem surveys when abundance and biomass of each species are evaluated. Macroecosystems of the North Pacific function normally, keeping biological (in particular, fish) productivity at a high level today, though it is somewhat lower than in the 1980s. Traditional methods of assessing further changes in populations and ecosystems do not have the power for producing long-term forecasts. To improve our understanding of marine ecosystem function, we need in-depth studies on how climate and oceanographic factors impact energy transfer (especially during the earliest ontogenetic stages of marine organisms) in the biosphere.

**Schedules
and
Abstracts**

S1 Science Board Symposium

Mechanisms of Marine Ecosystem Reorganization in the North Pacific Ocean

Co-Convenors: Sinjae Yoo (SB), Atsushi Tsuda (BIO), Mikhail Stepanenko (FIS), Steven Rumrill (MEQ), Hiroya Sugisaki (MONITOR), Kyung-Il Chang (POC), Toru Suzuki (TCODE), Thomas Therriault (AICE), Hiroaki Saito (COVE), Robin Brown (SOFE) and Fangli Qiao (China)

Invited Speakers:

Sukgeun Jung (Jeju National University, Korea)

Maurice Levasseur (Université Laval, Canada)

William Sydeman (Farallon Institute for Advanced Ecosystem Research, U.S.A.)

Mitsuo Uematsu (University of Tokyo, Japan)

Igor Volvenko (TINRO-Center, Russia)

Marine ecosystem variation often is attributed to natural or anthropogenic stressors, especially climatic or hydrological forcing. These studies typically show correlations among ecosystem characteristics and indices of global warming or climatic oscillations. Also, changes in biological communities often are described in terms of their correlative relationships to these large-scale indices. While these studies have produced interesting results, the underlying mechanisms responsible for ecosystem change have not been totally identified, especially when it comes to understanding how populations, communities, and ecosystems are reorganized, sometimes dramatically, over short time periods. Complexity, arising from varying influences of biotic and abiotic factors on multiple spatial and temporal scales, challenges our understanding of these processes. Because of our insufficient understanding of ecological mechanisms for oceanic regions, it is not unusual to find that what has happened in the past cannot adequately predict what will happen in the future. Thus, the focus of this Science Board Symposium will be on describing mechanisms of ecosystem change and reorganization. The influence of factors operating at various temporal and spatial scales will be considered. This symposium will lead to a better understanding of factors that control species composition and ecosystem structure in the North Pacific Ocean, and improve our ability to predict system responses to future stressors, including climate change

Monday, October 17 (10:40-18:00)

- 10:40 **Vjacheslav P. Shuntov and Olga S. Temnykh (Keynote)**
Recent changes in the North Pacific marine ecosystems related to climate change: Global or regional forcing?
- 11:20 **Mitsuo Uematsu, Shigenobu Takeda, Hiroshi Furutani and Itsushi Uno**
Potential importance of volcanic emissions on marine biogeochemical cycles and clouds over the North Pacific (S1-7776), Invited
- 11:45 **Maurice Levasseur**
Response of the plankton ecosystem of the Alaska Gyre to dust and ash depositions under current and future pH conditions (S1-7694), Invited
- 12:10 **Ryan R. Rykaczewski, John Dunne and William T. Peterson**
Projected changes in the relationship between water-column stratification and nutrient supply in the northeast Pacific (S1-7836)
- 12:30 **Lunch**
- 14:00 **Igor V. Volvenko**
Biological structure of the ocean and general patterns in the spatial-temporary distribution of the integrative characteristics of pelagic macrofauna of the north-west Pacific (S1-7855), Invited

- 14:25 **William J. Sydeman, Isaac D. Schroeder, Jarrod A. Santora, Sarah Ann Thompson, Jeffrey G. Dorman, John C. Field, Steven J. Bograd, Baldo Marinovic, Julie A. Thayer and Bryan A. Black**
Mechanisms of change in the California Current: An ecosystem case history (S1-7876), Invited
- 14:50 **Chan Joo Jang, Sinjae Yoo, Taewook Park, Jisoo Park and Minho Kwon**
Mixed layer depth variability and its associated changes in chlorophyll concentration in the North Pacific Ocean (S1-7766)
- 15:10 **William T. Peterson**
Variations in source waters which feed the California Current may be the mechanism which links the PDO and climate change with ecosystem response (S1-7837)
- 15:30 **Min Bo Luo, Xin Qian Shen and Yun Long Wang**
Comparison between the biodiversity index, Exergy, and the AMBI index for the benthos during large-scale engineering within the Yangshan Deep-water Harbor (Yangtze Estuary, China) (S1-7826)
- 15:50 ***Coffee/Tea Break***
- 16:10 **Sukgeun Jung and Ilsu Choi**
Climate-driven ecosystem shifts in Korean waters during the past 40 years (S1-7791), Invited
- 16:35 **Sanae Chiba, Kosei Sasaoka, Hiroya Sugisaki, Tsuneo Ono, Tomoko M. Yoshiki and Sonia Batten**
Phytoplankton phenology and community changes in the western subarctic North Pacific 2000-2009 based on satellite and CPR observation (S1-7707)
- 16:55 **Yury Zuenko**
Winter monsoon influence on reproduction of winter-spawning fish (Japanese sardine and Saffron cod) in the Japan/East Sea (S1-7586)
- 17:15 **Nick Tolimieri, Jameal Samhuri and Phillip Levin**
Ecological consequences of a precipitous decline in mean trophic level in the Northern California Current (S1-7885)
- 17:35 **David M. Checkley, Jr.**
A framework for ocean observing (S1-7909)
- 17:50 Summary
- 18:00 Session ends

S1 Posters

- S1-7740
Cancelled **Pavel A. Saveliev**
The deep-water ichthyofauna of the Sea of Japan and global climate variability
- S1-7765 **Chan Joo Jang, Jisoo Park, Taewook Park and Sinjae Yoo**
Projected changes in the North Pacific Ocean mixed layer depth and their impacts on primary production
- S1-7784 **Jongyeon Park, Jongseong Kug, Jisoo Park, Sangwook Yeh and Chan Joo Jang**
Variability of chlorophyll associated with ENSO and its possible biological feedback in the Equatorial Pacific
- S1-7810 **Jiyeon Kim, Kwangbae Kim, Chaewoo Ma and Heungsik Park**
Changes in the population and distribution of the amphipoda *Haustorioides koreanus* (Family Dogielinotidae) caused by the Hebei Spirit oil spill in the Hakampo and Ggotji beach on the west coast of Korea
- S1-7815 **Kwangbae Kim, Jiyeon Kim and Chaewoo Ma**
Spatio-temporal changes in distribution and density of polychaete communities in Hebei Spirit oil spill impacted intertidal zones of the west coast of Korea
- S1-7844 **Xinming Pu and Ruixiang Li**
Changes in phytoplankton within the Yellow Sea during the past 50 years

S2 BIO/POC Topic Session

Mechanisms of physical-biological coupling forcing biological “hotspots”

Co-Sponsored by ICES

Co-Convenors: Jürgen Alheit (ICES/Germany), Elliott Hazen (PICES/U.S.A.), Oleg Katugin (PICES/Russia), Robert Suryan (PICES/U.S.A.), Yutaka Watanuki (PICES/Japan) and Ichiro Yasuda (PICES/Japan)

Invited Speakers:

Jürgen Alheit (Leibniz Institute for Baltic Sea Research, Germany)

Igor Belkin (University of Rhode Island, U.S.A.)

Sei-Ichi Saitoh (Hokkaido University, Japan)

Robert M. Suryan (Oregon State University, U.S.A.)

This session will examine the physical and oceanographic factors that correspond to ecological or economic “hotspots” in the North Pacific and North Atlantic and their marginal seas. For the Pacific, this session will focus on the Kuroshio/Oyashio extensions and ecotone, the intersection of the Sea of Okhotsk and the western North Pacific (Kuril Islands region), and the Western Bering Sea. For the Atlantic, this session will focus on the North Sea, the intersection of the Gulf Stream and Labrador Current, in addition to tidally driven systems such as the Gulf of Maine and Gulf of St. Lawrence. “Hotspots” can broadly be defined as areas encompassing high species diversity, high abundance of individuals, especially of important indicator species, or areas of high economic value. Interdisciplinary contributions on physical-biological coupling and resulting seasonal or year-round “hotspots” in primary to tertiary productivity are invited. This includes data on physics, phyto- and zooplankton, forage fish, and upper trophic level predators (e.g., fish, seabirds, mammals, humans). We are particularly interested in simultaneous multi-species multi-use hotspots (i.e., sites of ecological importance that overlap highly with sites of economic value) and potential changes in hotspots under future climate change scenarios. Modeling and empirical studies are encouraged. We will solicit a special publication in the primary literature pending subscription to the session.

Tuesday, October 18 (9:00-18:00)

- 9:00 **Introduction by Convenors**
- 9:05 **Sei-Ichi Saitoh, Robinson M. Mugo, Mukti Zainuddin and Fumihiro Takahashi**
Potential fishing zones as “hotspots” of skipjack tuna (*Katsuwonus pelamis*) and albacore (*Thunnus alalunga*) in the western North Pacific (S2-7875), Invited
- 9:30 **Shin-ichi Ito, Yugo Shimizu, Shigeho Kakehi, Taku Wagawa, Masatoshi Satoh, Daisuke Ambe, Takeshi Okunishi and Kazuyuki Uehara**
A quasi-steady warm water jet and an ecological hotspots in the western North Pacific (S2-7642)
- 9:50 **David G. Foley**
Constructing oceanographic data sets and delivery systems to meet the needs of biologists (S2-7829)
- 10:10 **Robert Suryan, Kathy Kuletz, Martin Renner, Patrick Ressler, Shannon Fitzgerald, Kiyooki Ozaki, Fumio Sato, Tomohiro Deguchi and Elizabeth Labunski**
Mechanisms affecting seabird-prey associations over submarine canyons in the northwestern Bering Sea (S2-7847), Invited
- 10:35 **Coffee/Tea Break**
- 11:00 **Igor M. Belkin**
Satellite oceanography of fronts as biological hotspots (S2-7839), Invited

- 11:25 **Hiroaki Saito, Kazutaka Takahashi, Miwa Nakamachi, Mutsuo Ichinomiya, Shigeo Kakehi, Tadafumi Ichikawa, Kiyotaka Hidaka, Koji Hamasaki, Yuta Nishibe and Ken Furuya**
Horizontal variability in nitrogen dynamics in the Kuroshio Extension Region (S2-7800)
- 11:45 **Robinson M. Mugo, Sei-Ichi Saitoh, Fumihiro Takahashi, Akira Nihira and Tadaaki Kuroyama**
When, where and why skipjack tuna, red flying squid and pacific saury potential fishing zones are likely to overlap in the western North Pacific: A proof of concept (S2-7874)
- 12:05 **Takashi Yamamoto, Akinori Takahashi, Nariko Oka, Takahiro Iida, Nobuhiro Katsumata, Katsufumi Sato and Philip N. Trathan**
Foraging areas of streaked shearwaters in relation to seasonal changes in the marine environment of the Northwestern Pacific (S2-7678)
- 12:25 **Lunch**
- 14:00 **Jürgen Alheit**
Climate variability impact on North Sea ecosystem (S2-7845), Invited
- 14:25 **Elliott L. Hazen, Scott A. Shaffer, Michelle A. Kappes, Ryan R. Rykaczewski, David G. Foley, Steven J. Bograd and Daniel P. Costa**
Oceanographic habitat segregation among postbreeding Hawaiian albatrosses and potential changes from 2001-2100 (S2-7679)
- 14:45 **Mary-Anne Lea, Jeremy T. Sterling, Nicholas A. Bond, Sharon Melin, Rolf Ream and Tom Gelatt**
Habitat use of Alaskan northern fur seal pups in the western North Pacific Ocean (S2-7849)
- 15:05 **Kaoru Hattori, Takeomi Isono and Orio Yamamura**
Wintering aggregations of Steller sea lions in Ishikari-Bay, Sea of Japan (S2-7598)
- 15:25 **Coffee/Tea Break**
- 16:00 **Haruka Nishikawa, Ichiro Yasuda, Sachihiko Itoh, Yoshikazu Sasai and Hideharu Sasaki**
Impacts of climatic regime shift on Japanese sardine stock collapse (S2-7792)
- 16:20 **Konstantin Rogachev**
Satellite and direct observations of circulations features associated with bowhead feeding hotspots in the Sea of Okhotsk (S2-7576)
- 16:40 **George L. Shillinger, Alan M. Swithenbank, Helen Bailey, Steven J. Bograd, Michael R. Castelton, Bryan P. Wallace, James R. Spotila, Frank V. Paladino, Rodney Piedra and Barbara A. Block**
Vertical and horizontal habitat preferences of post-nesting leatherback turtles in the South Pacific Ocean (S2-7864)
- 17:00 Discussion
- 18:00 Session ends

S2 Posters

- S2-7634 **Tomoko Harada, Kentaro Kazama, Tomohiro Deguchi, Hajime Suzuki and Yutaka Watanuki**
Foraging behavior of subtropical black-footed albatross *Phoebastria nigripes* and the marine environment around Bonin Islands
- S2-7828 **Igor M. Belkin and S. Kalei Shotwell**
Propagation of SST anomalies along the North Pacific Polar Front and their impact on the Gulf of Alaska, Aleutians, and Bering Sea ecosystems

S3 FIS Topic Session

Population dynamics, trophic interactions and management of cephalopods in the North Pacific ecosystems

Co-Convenors: John Field (U.S.A.), Yasunori Sakurai (Japan) and Mikhail Zuev (Russia)

Invited Speakers:

Mary Hunsicker (Oregon State University, U.S.A.)

Chingiz Nigmatullin (AtlantNIRO, Russia)

Mitsuo Sakai (National Research Institute of Far Seas Fisheries, Japan)

In most coastal and oceanic ecosystems, cephalopods are or can be an influential driver of food web dynamics due to their rapid growth, high population turnover rates. They also represent a major, and apparently growing, fraction of total catches, both in the Northern Pacific and throughout the world's oceans. In contrast to the generally slower population response rates of most finfish, cephalopod populations tend to exhibit boom-bust cycles, challenging traditional management strategies. As events along the West Coast of the United States and Canada have shown, they may also represent highly visible indicators of ecosystem change, and both the causes and the consequences of the jumbo squid range expansion on the California Current ecosystem are questions of growing interest as a result. This session will focus on the ecology and management of cephalopods in North Pacific ecosystems, specifically on the known or suspected drivers of population dynamics, and applied or potential management strategies that are (or may be) robust to such dynamics. Papers on the role of cephalopods within marine ecosystems, particularly with respect to trophic interactions and the strategic management of marine ecosystems (e.g., the role of cephalopods as forage versus fisheries targets, or as competitors for species targeted by commercial fisheries), are highly encouraged.

Friday, October 21 (9:00-12:30)

- 9:00 **Introduction by Convenors**
- 9:05 **Chingiz M. Nigmatullin**
Structural and functional aspects of nektonic squid food and parasite relations in the World Ocean ecosystems (S3-7663), Invited
- 9:30 **Mitsuo Sakai, Yoshiobu Hiraoka, Taro Ichii, Hitoshi Imaizumi, Shintaro Imamura, Denzo Inagake, Toshie Wakabayashi, Yoshiki Kato, Katsuhiko Miki, Hideki Nikaido, Yosuke Ochi, Yuji Omura, Hiroaki Saito, Go Takayama, Takakashi Yanagimoto, Takanori Kobayashi, Nobuhide Hamaji and Ken-Ichi Ishida**
Utilization structure of jumbo flying squid stock in fluctuating environments: Possible impact on other squid harvests in the North Pacific (S3-7688), Invited
- 9:55 **Mary E. Hunsicker, Timothy E. Essington, Reg Watson and Ussif R. Sumaila**
The value of cephalopods to global marine fisheries (S3-7746), Invited
- 10:20 **Coffee/Tea Break**
- 10:50 **Hideaki Kidokoro, Norio Yamashita, Sangwoo Kim, Youngmin Choi and Yasunori Sakurai**
Ecological traits and population dynamics of Japanese common squid *Todarodes pacificus* that concerned with the fishing grounds and fishing seasons of Japanese and Korean fisheries (S3-7638)
- 11:10 **Polina Dulenina and Alexander Dulenin**
Some data on biology and fishing of Pacific squid (*Todarodes Pacificus*) in northwestern part of the Tartar Strait and their relations with hydrological processes (S3-7870)

- 11:30 **Hyejin Song, Michio J. Kishi and Yasunori Sakurai**
Prediction of trade-off between growth and maturation depending on the environmental conditions in common squid *Todarodes pacificus* (S3-7640)
- 11:50 **Mikhail A. Zuev, Nikolai S. Vanin, Oleg N. Katugin and Gennady A. Shevtsov**
Long-term fluctuations in gonatid squid (Gonatidae) abundance in the Okhotsk Sea (S3-7644)
- 12:10 **Hikomichi Igarashi, Toshiyuki Awaji, Masafumi Kamachi, Yoichi Ishikawa, Norihisa Usui, Yosuke Fujii, Takahiro Toyoda, Shuhei Masuda, Toshimasa Doi, Shiro Nishikawa, Yoshihisa Hiyoshi, Mitsuo Sakai, Yoshiki Kato, Sei-Ichi Saitoh and Shin-ichi Sato**
A statistical approach to identify optimal habitat suitability of neon flying squid in northwestern North Pacific by using satellite datasets and 3-D ocean data assimilation product (S3-7774)
- 12:30 Session ends

S3 Posters

- S3-7591 **Gennady A. Shevtsov and Evgenyi V. Slobodskoy**
Cephalopods inhabiting Japan/East Sea off Korean Peninsula
- S3-7606 **Osamu Tamaru, Kazushi Miyashita, Yasuzumi Fujimori, Toshihiro Watanabe and Teisuke Miura**
Fishery Income fluctuation by selecting fishing ground in the Japanese coastal squid jigging fishery
- S3-7613 **Mikhail A. Zuev, Gennady A. Shevtsov and Oleg N. Katugin**
Seasonal shifts in species composition and distribution of cephalopods in the epipelagic northwest Pacific Ocean
- S3-7625 **Gennady A. Shevtsov and Konstantin A. Karyakin**
Pelagic cephalopods of the Subarctic transition zone in spring 2010
- S3-7636 **Toshie Wakabayashi, Takashi Yanagimoto, Shiro Wada, Yoshiki Kato and Mitsuo Sakai**
A review of population structure of the neon flying squid, *Ommastrephes bartramii* and new findings based on mtDNA sequence data
- S3-7639 **Konstantin A. Karyakin, Gennady A. Shevtsov and Oleg N. Katugin**
Cephalopods from the Emperor Seamounts
- S3-7713 **Julia S. Stewart, William F. Gilly and John C. Field**
Movement patterns and foraging ecology of the Humboldt squid in the California Current
- S3-7873 **Vasiliy D. Didenko, Nikolai S. Vanin and Oleg N. Katugin**
Is there a relation between the abundance of *Berryteuthis magister* (Teuthida: Gonatidae) off the Kuril Islands and variability in atmospheric circulation patterns?

S4 FIS/POC Topic Session

Recent changes of North Pacific climate and marine ecosystems: Implications for dynamics of the dominant species

Co-Sponsored by ICES

Co-Convenors: Sukyung Kang (Korea), James Overland (U.S.A.), Akihiko Yatsu (Japan) and Skip McKinnell (PICES)

Invited Speakers:

Jürgen Alheit (Leibniz Institute for Baltic Sea Research, Germany)

Emanuele Di Lorenzo (Georgia Institute of Technology, U.S.A.)

The coincidence of multidecadal-scale alternations of dominant marine fish species coupled with multidecadal-scale “Climatic Jumps” created a concept of the Regime Shift. The recently published PICES North Pacific Ecosystem Status Report noted that the frequency of these events appears to have increased, and various indicators suggest that their amplitude has increased as well. The Arctic Oscillation Index, for example, reached an extreme negative anomaly during January-March of 2010, which brought a severe winter to much of the Northern Hemisphere, while other areas were warmed equivalently by the effects of the 2009/10 El Niño. The summer of 2010 saw record-setting high temperatures in some PICES member countries, accompanied by an abrupt shift in the tropics from El Niño to La Niña in July 2010. In the northwestern Pacific, after decades at low levels, sardine abundance has begun to increase, while the anchovy abundance is declining; perhaps signaling a new Regime. This session will review recent ocean/climate variability, with emphasis on what has occurred from 2009 to 2010. It will focus on the major ecological components of North Pacific marine ecosystems, particularly commercially important fish species. Papers on mechanistic linkages between population dynamics of marine species and environmental conditions are especially encouraged.

Thursday, October 20 (9:00-17:55)

- 9:00 **Introduction by Convenors**
- 9:05 **Emanuele Di Lorenzo and Mark Ohman**
A null hypothesis linking zooplankton “regime shifts” to North Pacific climate (S4-7719),
Invited
- 9:35 **Soonil An, Jiwon Kim, Seulhee Im, Beakmin Kim and Jaeheung Park**
Cancelled Recent and future sea surface temperature trends in Tropical Pacific (S4-7607)
- 9:55 **C. Tracy Shaw, Leah R. Feinberg, Cheryl A. Morgan and William T. Peterson**
Recent high variability in hydrography and lower trophic levels in the upwelling region off
Newport, OR, USA (S4-7850)
- 10:15 **Tomoko M. Yoshiki, Sanae Chiba, Hiroya Sugisaki, Kosei Sasaoka, Tsuneo Ono and
Sonia Batten**
Interannual variability of zooplankton community structure based on Continuous Plankton
Recorder in the western subarctic North Pacific during 2001-2009 (S4-7803)
- 10:35 **Coffee/Tea Break**
- 11:00 **David Mackas and Moira Galbraith**
Zooplankton time series from the Strait of Georgia (British Columbia, Canada): Changes in
biomass and community structure 1990-2010 (S4-7872)
- 11:20 **Lu Guan, John Dower, Skip McKinnell and Pierre Pepin**
Inter-annual variation in the spring ichthyoplankton assemblage in the Strait of Georgia from
2007-2010 (S4-7739)

- 11:40 **Jianguo Du, Zhenbin Lu, Shengyun Yang, Mingru Chen and Bin Chen**
Changes in the ecological characteristics and population dynamics of the main fishes in Taiwan Strait and its adjacent areas (S4-7783)
- 12:00 **Jinyeong Kim, Heeyong Kim and Sukgeun Jung**
Predicting recruitment of anchovy based on oceanographic and reproductive conditions in the southern waters of Korea (S4-7817)
- 12:20 *Lunch*
- 13:50 *Announcements by Convenors*
- 13:55 **Jürgen Alheit**
Simultaneous Atlantic and Pacific regime shifts through northern hemisphere teleconnection pattern (S4-7846), Invited
- 14:25 **Anatoliy Ya. Velikanov**
Some features of changes in species composition and stock abundance for pelagic fishes off Sakhalin Island during the first decade of the 21 century: Recurrent influence of climatic regime shift (S4-7585)
- 14:45 **Yongjun Tian and Hideaki Kidokoro**
Response patterns of the fish community in the Japan Sea to the climate regime shifts and identification of ecosystem indicators (S4-7703)
- 15:05 **Anne Hollowed, Matt Baker, Megan Stachura, Nathan J. Mantua and Ray Hilborn**
Regime shift effects on Bering Sea fish and fisheries (S4-7868)
- 15:25 *Coffee/Tea Break*
- 15:55 **Andrei S. Krovnin, Nataliya V. Klovach, Boris N. Kotenev and George P. Moury**
Multi-decadal changes in the Far East salmon stocks in relation to climate regime shifts in the Northern Hemisphere (S4-7616)
- 16:15 **Akihiko Yatsu, Kaoru Nakata, Kimio Hanawa, Tomowo Watanabe and Hiroya Sugisaki**
Recent changes in stock abundance of small pelagics in the Kuroshio/Oyashio ecosystem and associated physical conditions (S4-7842)
- 16:35 **Sangdeok Chung and Hideaki Nakata**
The change in the environment and fish community structure in an enclosed bay of western Japan over the last five decades (S4-7682)
- 16:55 **Boris N. Kotenev, Andrei S. Krovnin and Mikhail V. Bondarenko**
On the different physical-biological mechanisms of survival of Northeast Arctic cod generations during 1946-2010 (S4-7686)
- 17:15 **Jacquelynne R. King, Gordon A. McFarlane, Simon R.M. Jones, Scott R. Gilmore and Cathryn L. Abbott**
Abrupt changes in migratory behaviour of Pacific hake in Canadian waters: Stock delineation and implications for fishery management (S4-7904)
- 17:35 **J. Anthony Koslow, A. Lara-Lopez, P. Davison and N. Bowlin**
Climate, biomass, and the trophic role of midwater fishes in the southern California Current (S4-7751)
- 17:55 Session ends

S4 Posters

- S4-7589 **Kyungsu Kim, Jeonghee Shim and Suam Kim**
Effect of ocean acidification on the early life history of coastal fishes
- S4-7600 **Dmitriy Antonenko and Nadezhda L. Aseeva**
The long-term dynamics of biomass and species composition of flatfish in waters of Primorye Region (Sea of Japan)
- S4-7617 **Chih-Hao Hsieh, Wann-Nian Tzeng, Yu-Heng Tseng, Yu-San Han, Chih-Chieh Hsu, Chih-Wei Chang, Sen Jan and Emanuele Di Lorenzo**
Multi-scale climate effects on the recruitment of Japanese eel, *Anguilla japonica*, to Taiwan
- S4-7779 **Kazuaki Tadokoro, Yuji Okazaki, Tsuneo Ono and Hiroya Sugisaki**
Recent changes of *Neocalanus* copepods biomass in the Oyashio waters, western North Pacific
- S4-7816 **Jun Sui and Jun Wang**
A three-dimensional numerical ecosystem dynamic model of Xiamen Bay
- S4-7859 **Sukyung Kang, Kwangho Choi, Jisuk Ahn, Jaedong Hwang and Dongwoo Lee**
Distribution and species composition of major fish species under varying climate scenarios in Korean waters
- S4-7878 **Antonina Artemova**
Paleoceanography changes in the Sea of Okhotsk during late Pleistocene and Holocene according to diatoms

S5 MEQ Topic Session

Harmful algal blooms in a changing world

Co-Convenors: *Tatiana Morozova (Russia) and Mark Wells (U.S.A.)*

Invited Speaker:

Feixue Fu (University of Southern California, U.S.A.)

The impacts of regional and global climate change and other anthropogenic forcing on the initiation, frequency and severity of harmful algal blooms (HABs) are widely anticipated but are difficult to identify. Often these “blooms” reflect subtle adjustments in the relative proportion of HAB species within a larger, more abundant phytoplankton community. In others, new blooms may reflect the possible climate-driven range extension of HAB species, but direct evidence that previous environmental conditions were unfavorable for bloom development normally is lacking. Ascribing HAB events to specific, but slowly evolving driving forces, will demand comparative observations among similar but geographically separated ecosystems. This session invites papers that focus on emerging toxic and ecosystem disruptive HAB events as well as changing plankton assemblages that are evolving towards more frequent or intense HAB incidents. Papers addressing long-term time series data, land use changes, effects of macro- or micro-nutrient stress on cell physiology, trophic interactions, and the impacts of changing riverine runoff, ocean development (e.g., aquaculture, wind turbines), and ocean acidification are particularly encouraged. The goal of the session is to help formulate a better understanding of conditions enhancing the success of HAB species.

Tuesday, October 18 (9:00-12:50)

- 8:55 **Introduction by Convenors**
- 9:00 **Feixue Fu**
Global change and the future of toxic algal blooms in the North Pacific Ocean (S5-7661),
Invited
- 9:30 **Tetsuya Nishikawa, Yutaka Hori, Satoshi Nagai, Kazutaka Miyahara, Yukinobu Nakamura, Kazuhiro Harada, Minoru Tanda, Takehiko Manabe, Kuninao Tada and Ichiro Imai**
Long term (35 years) observations in dynamics of nutrients and phytoplankton including the harmful diatom *Eucampia zodiacus* in Harima-Nada, eastern Seto Inland Sea, Japan (S5-7822)
- 9:50 **Xuelei Zhang, Y. Li, P. Sun, L.Y. Qu, C.L. Gao, L.Y. Duan and Ruixiang Li**
The impacts of temperature and salinity on growth and toxicity of an emerging harmful alga *Phaeocystis globosa* in the Northern Seas of China (S5-7896)
- 10:10 **Charles G. Trick and Brian Sutton-Quaid**
Are fish-killing flagellates a sign of things to come? (S5-7912)
- 10:30 **Coffee/Tea Break**
- 10:50 **Marina S. Selina, Tatiana V. Morozova, Nellya G. Litvinova, Dmitry I. Vyshkvartsev and Tatiana Yu. Orlova**
Seasonal dynamics and spatial distribution of *Ostreopsis* spp. in the Peter the Great Bay, the Sea of Japan (S5-7631)
- 11:10 **Akira Ishikawa, Yumi Takeichi, Setsuko Sakamoto and Mineo Yamaguchi**
Year-round occurrence of the benthic dinoflagellate *Gambierdiscus* sp. in temperate coastal waters of Japan (S5-7706)
- 11:30 **Mingyuan Zhu and Ruixiang Li**
HAB in coastal waters of China in 2010 (S5-7562)

- 11:50 **Ekaterina V. Lepskaya**
Toxic micro alga in Okhotsk Sea in Kamchatka shore (S5-7648)
- 12:10 **Stephanie K. Moore, Vera L. Trainer, Nathan J. Mantua and Eric P. Salathé, Jr.**
Future scenarios for environmental conditions favoring the accumulation of paralytic shellfish toxins in Puget Sound shellfish (S5-7895)
- 12:30 **Raphael M. Kudela, John P. Ryan and Jenny Q. Lane**
Multiple, simultaneous harmful algal bloom organisms and toxins in the California Current: An emerging threat? (S5-7886)
- 12:50 Session ends

S5 Posters

- S5-7573 **Qiulu Wang and Yanxia Zhou**
The elementary study of the bacteria biomass and environmental factor in East China Sea
- S5-7672 **Inna V. Stonik, Tatiana Yu. Orlova, Luisa N. Propp, Natalia L. Demchenko and Anna V. Skriptsova**
Bloom of *Pseudo-nitzschia* species in Amurskii Bay, the northwestern East/Japan Sea: The role of environmental factors in population dynamics
- S5-7738 **Hao Guo**
Study on the growth characteristics of cultured red-tide-algae *Alexandrium tamarense*
- S5-7899 **Qiufen Li, Bijuan Chen and Hong Jiang**
The toxicity mechanism of two toxic algae *Heterosigma akashiwo* and *Alexandrium tamarense* on the fish *Paralichthys olivaceus*

S6 MEQ/FIS Topic Session

Identification and characterization of environmental interactions of marine aquaculture in the North Pacific

Co-Convenors: Katsuyuki Abo (Japan), Brett Dumbauld (U.S.A.) and Galina Gavrilova (Russia)

Invited Speakers:

Shuanling Dong (Ocean University of China, PR China)

Tomoko Sakami (Tohoku National Fisheries Research Institute, Japan)

Marine aquaculture is an important economic and social activity within PICES member countries. To ensure that development of aquaculture is environmentally and economically sustainable we need to: 1) improve our understanding of interactions between marine aquaculture and the environment (including wild stocks of plants and animals, 2) develop methods to study and/or predict such interactions, and 3) devise ways to reduce negative impacts on the environment. To this end the PICES Working Group on Environmental Interactions of Marine Aquaculture has begun to characterize the nature of these interactions with a focus on the benthic environment and aquatic animal health. To align with the activities, papers for this session are solicited in the following areas: 1) identification and characterization of marine aquaculture-environmental interactions; 2) development of tools to identify and study such interactions; and 3) social science research related to aquaculture interactions with the marine environment.

Tuesday, October 18 (14:00-17:55)

- 14:00 **Introduction by Convenors**
- 14:05 **Tomoko Sakami, Ryuji Kondo and Takanori Kobayashi**
An attempt to assess the environment by using microbial communities of the bottom sediments from marine areas of fish aquaculture (S6-7567), Invited
- 14:35 **Shuanglin Dong**
Integrated aquaculture in China (S6-7755), Invited
- 15:05 **Katsuyuki Abo**
Environmental interactions of marine aquaculture in Japan (S6-7736)
- 15:30 **Coffee/Tea Break**
- 15:50 **Brett R. Dumbauld, Jennifer L. Ruesink, Alan C. Trimble and Jessica Ramsay**
Ecosystem services provided by oyster aquaculture in Willapa Bay, Washington compared with historical estimates for native oysters (S6-7665)
- 16:15 **Stewart Johnson, Michael Foreman, Kyle Garver, Brent Hargreaves, Simon R.M. Jones and Chrys Neville**
Interactions between wild and farmed salmonids in Southern British Columbia: Pathogen transfer (S6-7861)
- 16:40 **Tatiana Krupnova, Vladimir Pavlutcykov and Nina Shepel**
Environmental influences on harvesting from hanging plantations for *Laminaria* kelp (S6-7858)
- 17:05 **I Nyoman Radiarta, Sei-Ichi Saitoh, Toru Hirawake and Hajime Yasui**
GIS-based spatial models for Japanese kelp (*Laminaria japonica*) aquaculture site selection in the Southwestern Hokkaido, Japan (S6-7827)
- 17:30 **Wei Zheng, Honghua Shi, Xuelei Zhang, Mingyuan Zhu and Zongling Wang**
Ecological-economic assessment of monoculture and integrated multi-trophic aquaculture in Sanggou Bay, China (S6-7580)
- 17:55 Session ends

S6 Posters

- S6-7627 **Chunjiang Guan and Feng'ao Lin**
Absorption of carbon and nitrogen by culturing *Sargassum thunbergii* in coastal waters
- S6-7728 **Vera Valova**
The influence of salmon hatchery conditions on the physiological status of Amur sturgeon
- S6-7741 **Olga G. Shevchenko**
Monitoring of potentially toxic microalgae in Severnaya Bight (Slavyanskii Bay, the Sea of Japan) in 2008, 2009

S7 MEQ/FUTURE Topic Session

Land-sea interactions and anthropogenic impacts on biological productivity of North Pacific Ocean coastal ecosystems

Co-Sponsored by NOWPAP

Co-Convenors: Masahide Kaeriyama (Japan), Olga Lukyanova (Russia), Steven Rumrill (U.S.A.) and Thomas Therriault (Canada)

Invited Speakers:

Neil Banas (University of Washington, U.S.A.)

Takayuki Shiraiwa (Hokkaido University, Japan)

Vladimir Shulkin (NOWPAP/POMRAC, Russia)

Jing Zhang (East China Normal University, PR China)

Land-sea interactions are widely recognized as an important component of coastal ecosystem processes throughout the North Pacific Region. Anthropogenic activities in upland and coastal areas can significantly alter the productivity of coastal ecosystems and disturb the communities that depend on them. Human activities such as pollution or overfishing can result in immediate and direct impacts on biological productivity. However, there are an increasing number of indirect impacts such as altering the flow of ecosystem-transboundary materials (ETMs) that are responsible for the enriched productivity of many northern coastal systems. In Asia, the dissolved iron that is transported from the Amur River basin into the Sea of Okhotsk and Oyashio Region is now recognized as a major regulator of the primary productivity in these coastal waters. Similarly, disruptions in the timing and amplitude of riverine discharges from the Columbia River Basin (Pacific Northwest) result in significant alterations of salinity regimes, sediment transport, biological productivity, and fisheries returns throughout the region influenced by the Columbia River plume. Anthropogenic impacts such as changes in land use, artificial river channelization, hydropower structures, and urbanization disrupt and alter the flow of ETMs thereby reducing the productivity in these coastal ecosystems. Furthermore, these alterations can lead to the manifestation of other stressors in coastal ecosystems such as jellyfish blooms, hypoxia events, and harmful algal bloom (HAB) outbreaks. This session will focus on: 1) how ETMs (e.g., dissolved iron, carbon and other elements) are transported from upland ecosystems into coastal ones; 2) what mechanisms regulate the supply of ETMs and how the downstream transport of these impact the productivity (primary production) of coastal systems; 3) how anthropogenic impacts disrupt the ETM system and resulting changes downstream including increased ecosystem vulnerability; 4) how anthropogenic impacts directly reduce coastal productivity; and 5) exploration of potential adaptive management strategies based on the ecosystem-approach to protect the ETM system to ensure sustainability of coastal ecosystems and stability for the coastal societies depending on them.

Thursday, October 20 (9:00-18:00)

- 9:00 *Introduction by Convenors*
- 9:05 **Takayuki Shiraiwa**
 “Giant fish-breeding forest”: A new environmental system linking a continental watershed with open water (S7-7705), Invited
- 9:35 **Svetlana Belaya and Petr Tishchenko**
 Primary production of Amurskiy Bay (Japan Sea) in the winter season (S7-7761)
- 9:55 **Yousuke Koshino, Masao Minagawa, Hideaki Kudou, Yuxue Qin and Masahide Kaeriyama**
 Effect of salmon-derived nutrients and organic matter on riparian ecosystems in the Shiretoko World Natural Heritage area (S7-7561)
- 10:15 *Coffee/Tea Break*

- 10:40 **Neil S. Banas, Barbara M. Hickey, Eric P. Salathé and Parker MacCready**
 Freshwater influences on productivity in the northern California Current System, present and future (S7-7913), Invited
- 11:10 **Thomas W. Therriault and Claudio DiBacco**
 Does diet determine the impact of invasive tunicates in shellfish aquaculture?: Application of stable isotopes (S7-7906)
- 11:30 **Steven Rumrill, Alicia Helms and Adam DeMarzo**
 Detection of pH shifts in the South Slough estuary (Oregon, USA): Exploration of relationships between changing carbonate chemistry, eutrophication, and net estuary ecosystem metabolism (S7-7745)
- 11:50 **Jennifer E. Purcell**
 Jellyfish and ctenophore blooms coincide with human proliferations and environmental perturbations (S7-7590)
- 12:10 **Peter S. Ross and Steven Jeffries**
 Marine mammals provide an integrated measure of spatial and temporal trends in coastal food web contamination by persistent environmental contaminants (S7-7643)
- 12:30 ***Lunch***
- 14:00 **Vladimir Shulkin**
 The spatial dimension of the environmental problems existing in coastal zone due to land-sea interactions (S7-7595), Invited
- 14:30 **Pavel Tishchenko, Vladimir Zvalinsky, Tatiana Mikhajlik and Petr Tishchenko**
 Assessment of eutrophication status of Amursky Bay (Japan/East Sea) (S7-7743)
- 14:50 **Ichiro Imai, Mineo Yamaguchi and Yutaka Hori**
 Long-term changes in eutrophication and harmful algal blooms in the Seto Inland Sea of Japan (S7-7823)
- 15:10 **Tatiana L. Chizhova, Hisatoshi Nakase, Pavel Tishchenko and Kazuichi Hayakawa**
 Distribution of polycyclic aromatic hydrocarbons in the North-western part of the Japan Sea (S7-7775)
- 15:30 ***Coffee/Tea Break***
- 15:50 **Jing Zhang and NSFC Task Team**
 Remobilization of nutrients from watersheds and eutrophication in marine recipients (S7-7898), Invited
- 16:20 **Jianguo Du, Bin Chen, Qiulin Zhou, Quan Wen, Honghua Shi, Weiwei Yu and Hao Huang**
 Strategies of marine biodiversity conservation based on integrated coastal zone management (S7-7782)
- 16:40 **Vladimir Ostrovskii**
 Factors controlling the pink salmon (*Oncorhynchus gorbusha*) juvenile abundance in the Isky River (S7-7866)
- 17:00 **Sergey D. Ponomarev**
 Influence of ecological factors on Pacific herring spawning efficiency (S7-7871)
- 17:20 **Vera Valova**
 Reactions by Amur sturgeon fingerling to pollution within the Amur River (S7-7727)

17:40 **Satoshi Nakada, Yoichi Ishikawa, Toshiyuki Awaji and Sei-Ichi Saitoh**
Coupled land-ocean model for the coastal fisheries in a Region of Freshwater Influence (ROFI): A case study in Funka Bay (S7-7685)

18:00 Session ends

S7 Posters

- S7-7559 **Lidiya T. Kovekovdova and Denis P. Kiku**
Assessment of levels of toxic elements (As, Hg, Pb, Cd) in the environment and commercial hydrobionts in coastal waters of the Russian zone of Japan/East and Okhotsk Seas
- S7-7569 **Svetlana A. Ireykina**
Molecular biomarkers in monitoring of the coastal and estuarine zones of Peter the Great Bay (Japan/East Sea)
- S7-7571 **Andrey P. Chernyaev and Anna S. Vazhova**
Petroleum hydrocarbon distribution in the Far Eastern Seas of Russia in 2010
- S7-7572 **Anna S. Vazhova**
Wastewater pollutants discharge into Peter the Great Bay (Japan/East Sea) through estuaries of the rivers
- S7-7608 **Aleksandra S. Kondakova and Andrey P. Chernyaev**
Levels of 4-NP in coastal waters in the Russian zone of Japan/East and Bering Seas
- S7-7622 **Alexander Moshchenko, Tatyana Belan and Yuri Korostelev**
Long-term changes in the marine environment and benthic communities in the north part of Amursky Bay (Sea of Japan)
- S7-7659 **Galina S. Borisenko and Galina V. Moyseychenko**
Estimation of the level of radioactive pollution in mollusks and bottom sediments in Posieta Bay (Japan/East Sea)
- S7-7667 **Olga N. Lukyanova and Svetlana A. Ireykina**
Pollution of river-sea interaction areas in Peter the Great Bay (Japan/East Sea)
- S7-7804 **T.P. Belova and Olga N. Selivanova**
Application of *Saccharina*-based sorbents for purification of sewage waters of metal mining industry
- S7-7851 **Wang Yongzhi, Feng Aiping, Qiao Lulu, Yang Zuosheng and Bao Xianwen**
Research on the transport mechanism for suspended sediment along northeast Shandong Peninsula coast in summer and winter
- S7-7891 **Zhen Wang, Ying Wang, Xindong Ma, Zhongsheng Lin, Guangshui Na and Ziwei Yao**
Probabilistic ecological risk assessment of typical PAHs in coastal water of the Bohai Sea
- S7-7897 **Hong Chen, Jianbo Han and Chuanlin Huo**
Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) in wastewater treatment plants and surface water in Dalian coastal area in China
- S7-7917 **Irina R. Levenets and Anna V. Skriptsova**
Macrophyte seasonality in the Sobol Bay, Peter the Great Bay, Sea of Japan

S8 POC/FIS Topic Session

Linking migratory fish behavior to end-to-end models

Co-Sponsored by ICES

Co-Convenors: Enrique Curchitser (PICES/U.S.A.), Geir Huse (ICES/Norway), Shin-ichi Ito (PICES/Japan), Michio Kishi (PICES/Japan) and Skip McKinnell (PICES)

Invited Speakers:

Jerome Fiechter (University of California Santa Cruz, U.S.A.)

Kenneth Rose (Louisiana State University, U.S.A.)

In order to understand ecosystem response to climate impacts, End-to-End modeling (E2E) approaches are essential. One of the most difficult parts for E2E is the modeling of fish behavior migration. Fish behavior can be very complex; it is a consequence of genetics, physical, chemical and biological environments and their interaction. Learned behavior may also be a factor. Recently, new technology has been introduced to tagging equipment, and as a consequence data availability is vastly improved. Additionally, new technologies are used to investigate fish movements in laboratory settings. This new information is expected to improve our understanding of fish migration mechanism and contribute to the development of fish migration models. Furthermore, the development of high-resolution ecosystem models coupled to circulation models makes it possible to simulate fish migration in the context of realistic environmental fields. The purpose of this session is to understand the current state of development in modeling fish behavior and discuss future potential collaborations to improve fish migration models. This session anticipates presentations that discuss successes (and failures) in modeling migratory fish behavior. Presentations related to data availability for model evaluation of fish behavior are also welcome. Based on the results and opinions expressed at the session, the conveners would like to discuss the desirability of establishing a group that will focus its attention on developing and advancing the state of fish behavioral modeling.

Friday, October 21 (9:00-12:10)

- 9:00 *Introduction by Convenors*
- 9:05 **Kenneth A. Rose, Katherine Shepard, Haosheng Huang, Sean Creekmore, Paul Venturelli, Jerome Fiechter, Enrique N. Curchitser, Kate Hedstrom, Matthew Campbell and Dubravko Justic**
Modeling movement of fish over spatial and temporal scales: If fish were dumber and people were smarter (S8-7621), Invited
- 9:35 **Jerome Fiechter, Kenneth A. Rose, Enrique N. Curchitser, Kate Hedstrom, Miguel Bernal and Alan Haynie**
Behavioral cues for small coastal pelagic species in the California Current: Results from a fully-coupled end-to-end ecosystem model (S8-7592), Invited
- 10:05 **Shin-ichi Ito and Takeshi Okunishi**
Comparison of migration algorithms for Japanese sardine (*Sardinops melanostictus*) in the western North Pacific (S8-7893)
- 10:25 *Coffee/Tea Break*
- 10:50 **Chen-Yi Tu, Yu-Heng Tseng, Tai-Sheng Chiu, Mao-Lin Shen and Chih-Hao Hsieh**
Using coupled fish behavior-hydrodynamic model to investigate spawning migration of Japanese anchovy, *Engraulis japonicus*, from Taiwan to the East China Sea (S8-7892)
- 11:10 **Skip McKinnell**
Evolution's challenge to modeling sockeye salmon spawning migration (S8-7877)

- 11:30 **Kjell Rong Utne and Geir Huse**
Towards end-to-end modeling with a special focus on planktivorous fish (S8-7903)
- 11:50 **Shin-ichi Ito, Masatoshi Sato, Takeshi Terui, Michio J. Kishi, Daisuke Ambe, Takahiko Kameda, Satoshi Suyama, Masayasu Nakagami and Yasuhiro Ueno**
Euler-type and Individual Based modeling approaches for fish migration: An example of Pacific saury (S8-7887)
- 12:10 Session ends

S9 MONITOR/POC/FUTURE Topic Session

How well do our models really work and what data do we need to check and improve them?

Co-Sponsored by IMBER

Co-Convenors: Jack Barth (U.S.A.), Dake Chen (China), Michael Foreman (Canada), Phillip Mundy (U.S.A.), Young-Jae Ro (Korea) and Sei-Ichi Saitoh (Japan)

Invited Speakers:

Nikolay Diansky (Institute of Numerical Mathematics, Russia)

Yoichi Ishikwa (Kyoto University, Japan)

Alexander Kurapov (Oregon State University, U.S.A.)

Shoshiro Minobe (Hokkaido University, Japan)

Kenneth Rose (Louisiana State University, U.S.A.)

Given the importance of models to FUTURE, it is crucial to examine their skill and utility through comparison with data. Models are being used to study and forecast physical (atmospheric and oceanic circulation and mixing), chemical (air-sea fluxes, dissolved oxygen), biological (primary production, trophic dynamics) and fisheries (individual based modeling, migration pathways) processes. Climate forcing and coupling between processes is of prime importance. Presentations are invited over the range of modeling scales, from local to global, and from hours to decades. Contributions are also welcome identifying data sets that we currently have that are helpful for assessing model skill and what new data sets are needed and might be obtained through ocean observing efforts. Discussions of uncertainty in model predictions and ways to reduce that uncertainty are also invited.

Day 1, Wednesday, October 19 (9:00-12:35)

- 9:00 **Introduction by Convenors**
- 9:05 **Nikolay A. Diansky and Vladimir Zalesny**
Numerical simulation of the large-scale ocean circulation with a multi-component splitting method (S9-7811), Invited
- 9:30 **Alexander Kurapov**
Oregon coastal ocean data assimilation system: Model performance and assimilated data assessment (S9-7833), Invited
- 9:55 **Pavel A. Fayman and Jong-Hwan Yoon**
The numerical simulation of seasonal variability of upper layer circulation in the Okhotsk Sea (S9-7767)
- 10:15 **John A. Barth, Sangil Kim, Christopher A. Edwards and Patrick T. Drake**
To where the currents flow - Larval dispersal and connectivity along the U.S. West Coast (S9-7832)
- 10:35 **Coffee/Tea Break**
- 10:50 **Kenneth A. Rose**
Combining hydrodynamic, NPZ, and fish models into climate-physics-fish-fisher models: Can the biology and people keep up with the computers? (S9-7620), Invited
- 11:15 **Angelica Peña and Diane Masson**
Modelling lower trophic level ecosystem dynamics in the Strait of Georgia (S9-7747)
- 11:35 **Youngjae Ro, Kwangyoung Jung and Baekjin Kim**
Ecosystem monitoring/modeling project in the Chunsu Bay, Yellow Sea, Korea (S9-7778)

- 11:55 **Xiangnan Wang, Changlei Ma, Songtang Liu, Jianjun Shi, Rui Zhu and Chuan Tian**
Development and application of marine ecological and environmental monitoring system in the Yellow Sea and Polar region (S9-7757)
- 12:15 **Jerome Fiechter, Jeremiah Brown, Williams Leeds, Radu Herbei, Ralph Milliff, Christopher Wikle, Andrew Moore, Thomas Powell and Mevin Hooten**
Parameter uncertainty in marine ecosystem models: What can we learn from ensemble calculations and Bayesian models? (S9-7594)
- 12:35 Session ends

Day 2, Thursday, October 20 (9:00-12:35)

- 9:00 *Introduction by Convenors*
- 9:05 **Shoshiro Minobe and Utaka Hosoya (INVITED)**
Regional secular trends in a new global gridded phosphate and oxygen dataset (S9-7742),
- 9:30 **Takamitsu Ito, Yohei Takano and Curtis Deutsch**
Cancelled Observed and modeled dissolved oxygen variability in the North Pacific (S9-7750)
- 9:30 **Naoki Yoshie, Xinyu Guo, Naoki Fujii and Tomohiro Komorita**
Phytoplankton and nutrient dynamics in the western Seto Inland Sea, Japan based on observation and a modified NEMURO model (S9-7681)
- 9:50 **James R. Christian**
Effects of natural variability on biogeochemical processes in climate models (S9-7748)
- 10:10 **Takashi Mochizuki, Masahide Kimoto, Masayoshi Ishii, Yoshimitsu Chikamoto, Hiroaki Tatebe, Yoshiki Komuro, Takashi T. Sakamoto, Masahiro Watanabe and Masato Mori**
Decadal prediction using recent series of MIROC global climate model (S9-7808)
- 10:30 *Coffee/Tea Break*
- 10:50 **Yoichi Ishikawa, Toshiyuki Awaji, Masafumi Kamachi, Shuhei Masuda, Hiromichi Igarashi, Yoshihisa Hiyoshi, Yuji Sasaki, Shiro Nishikawa, Toshimasa Doi, Nozomi Sugiura, Norihisa Usui, Yosuke Fujii, Takahiro Toyoda, Sei-Ichi Saitoh, Mitso Sakai, Yoshiki Kato and Shin-ichi Sato (INVITED)**
Forecasting ocean circulation and fishery-resource variabilities for operational use (S9-7731),
- 11:15 **Mohamed Rawidean MohdKassim**
Fish Forecasting System using Sea Surface Temperature and Chlorophyll satellite images: A statistical model approach (S9-7558)
- 11:35 **Michael Foreman, Kyle Garver, Dario Stucchi, Ming Guo and Darren Tuele**
Uncertainties in modeling water-borne disease transmission among salmon farms in the Discovery Islands, British Columbia (S9-7733)
- 11:55 **Xiutang Yuan, Zhifeng Zhang, Chuanlin Huo and Gengchen Han**
Environmental monitoring and assessment of mariculture zones in China: Status and prospects (S9-7901)
- 12:15 **V.F. Mishukov, V.V. Kalinchuk, V.V. Plotnikov and A.V. Voytsytskiy**
Using satellite images for testing simulation models of contaminant transport in the Peter the Great Bay of the Sea of Japan (S9-7856)
- 12:35 Session ends

S9 Posters

- S9-7641 **Shin-ichi Ito, Naoki Yoshie, Takeshi Okunishi, Tsuneo Ono, Yuji Okazaki, Akira Kuwata, Taketo Hashioka, Kenneth A. Rose, Bernard A. Megrey, Michio J. Kishi, Miwa Nakamachi, Yugo Shimizu, Shigeo Kakehi, Hiroaki Saito, Kazutaka Takahashi, Kazuaki Tadokoro, Akira Kusaka and Hiromi Kasai**
Application of an automatic approach to calibrate the NEMURO nutrient–phytoplankton–zooplankton food web model in the Oyashio region
- S9-7651 **Vladimir V. Kulik and Igor V. Volvenko**
North Pacific database of pelagic and bottom trawl surveys from Russian EEZ applicable to Ecosystem Based Management
- S9-7681 **Naoki Yoshie, Xinyu Guo, Naoki Fujii and Tomohiro Komorita**
moved to Oral Phytoplankton and nutrient dynamics in the western Seto Inland Sea, Japan based on observation and a modified NEMURO model
- S9-7684 **Bunmei Taguchi, Hisashi Nakamura, Masami Nonaka, Nobumasa Komori, Akira Kuwano-Yoshida, Koutarou Takaya and Atsushi Goto**
Seasonal evolutions of atmospheric response to decadal SST anomalies in the North Pacific subarctic frontal zone: Observations and a coupled model simulation
- S9-7753 **Changshui Xia, Xingang Lv and Fangli Qiao**
Simulation of the tide and tidal current in the Qinzhou Bay

BIO Paper Session

Co-Convenors: *Michael J. Dagg (U.S.A.) and Atsushi Tsuda (Japan)*

This session invites oral and poster presentations on all aspects of biological oceanography in the North Pacific and its marginal seas that are not covered in Topic Sessions sponsored by the Biological Oceanography Committee (BIO).

Day 1, Thursday, October 20 (14:00-17:50)

- 14:00 *Introduction by Convenor*
- 14:05 **Xiuning Du and William T. Peterson**
Seasonal cycle of phytoplankton community composition in the coastal upwelling system off central Oregon in 2009 (BIO-P-7647)
- 14:25 **Elena A. Shtraikhert, Sergey P. Zakharkov, Tatyana N. Gordeychuk and Julianna V. Shambarova**
About the mechanism of the winter-spring phytoplankton bloom in Peter the Great Bay (Sea of Japan) (BIO-P-7699)
- 14:45 **Tatyana Belonenko and Alexey Koldunov**
Non-stationary cycles of primary productivity in the Northeastern Atlantic (BIO-P-7708)
- 15:05 **Jingfeng Fan, Lili Li, Jiangyu Li, Hao Guo and Xinzhen Lin**
Diversity and structure of bacterial communities in Fildes Peninsula, King George Island (BIO-P-7763)
- 15:25 *Coffee/Tea Break*
- 15:50 **Kyung-Il Chang and Heemang Park**
Time-series measurements of biogeochemical and physical parameters in the southwestern East/Japan Sea during the spring transition in 2010 (BIO-P-7787)
- 16:10 **Sang-Rae Lee, Jee Eun Lee, Jung Hyun Oak, Jin Ae Lee and Ik Kyo Chung**
Metagenomic analysis reveals cryptic plankton biodiversity in the Nakdong River Estuary in Korea (BIO-P-7794)
- 16:30 **Sayaka Matsumura, Hiroya Sugisaki, Hiroaki Saito, Yuji Okazaki and Tomohiko Kikuchi**
Vertical distribution of euphausiids in the Oyashio to Oyashio-Kuroshio Transition Region of the western North Pacific (BIO-P-7821)
- 16:50 **Rui Saito, Atsushi Yamaguchi, Ichiro Imai, Atsushi Tsuda and Ichiro Yasuda**
Spatial and temporal changes in the zooplankton community around the Aleutian Islands during the summer of 2009 (BIO-P-7574)
- 17:10 **Kohei Matsuno, Atsushi Yamaguchi and Ichiro Imai**
Body chemical contents and gut pigments of copepods in the western Arctic Ocean during summers of 2008 and 2010 (BIO-P-7575)
- 17:30 **Marina Yurieva, Artyom Lazhentcev, Aleksey Pavlovsky and Konstantin Gorbatenko**
The biochemical composition and energy content of zooplankton of the Okhotsk Sea (BIO-P-7723)
- 17:50 Session ends

Day 2, Friday, October 21 (9:00-12:30)

- 9:00 **Introduction by Convenor**
- 9:05 **Natalia T. Dolganova**
Euphausiids from Far-Eastern Russian waters: Composition, distribution, and seasonal dynamics (BIO-P-7610)
- 9:25 **Se-Jong Ju, Jinho Chae, Dongju Lee, Ah-Ra Ko, Hyungbeen Lee and Donhyug Kang**
Importance of the bottom cold-water mass as an over-summering refuge for *Euphausia pacifica* in the Yellow Sea (BIO-P-7704)
- 9:45 **Atsushi Yamaguchi, Jumpei Fukuda, Kohei Matsuno and Ichiro Imai**
Inter-annual and latitudinal changes in zooplankton abundance, biomass and size composition along the 180° transect in the North Pacific during summers: Analyses with an Optical Plankton Counter (BIO-P-7570)
- 10:05 **Akira Okuno, Tatsuro Watanabe, Naoto Honda and Katsumi Takayama**
Forecast of the giant jellyfish *Nemopilema nomurai* appearance in the Japan Sea (BIO-P-7683)
- 10:25 **Coffee/Tea Break**
- 10:50 **Changhoon Han and Wonduk Yoon**
Distribution and density of *Aurelia aurita* polyps on Saemangeum dike, Korea (BIO-P-7687)
- 11:10 **Elena A. Shtraikhert, Sergey P. Zakharkov, Tatyana N. Gordeychuk and Julianna V. Shambarova**
Influence of environment factors on phytoplankton blooms in Peter the Great Bay (Sea of Japan) in winter-spring (BIO-P-7700)
- 11:30 **Harold P. Batchelder, Jennifer Fisher and Alexander Kurapov**
Potential larval connectivity among nearshore marine reserves in Oregon: The importance of temperature dependent pelagic durations and vertical distribution (BIO-P-7749)
- 11:50 **Vjacheslav S. Labay**
Elements of seasonal dynamics of the macrobenthos on a shelf of northeast Sakhalin (Sea of Okhotsk) (BIO-P-7564)
- 12:10 **Anastasia S. Dolganova and R.G. Bezrukov**
Composition and distribution of macrobenthos in some coastal-estuary systems in Ussury Bay (Japan/East Sea) (BIO-P-7720)
- 12:30 Session ends

BIO Paper Session Posters

- BIO-P-7602 **Kyungsoon Shin, Minchul Jang, Pungguk Jang and Woojin Lee, Bonggil Hyun and Seungho Baek**
Annual change in the mesozooplankton community of the western channel of the Korea Strait from 2006 to 2010
- BIO-P-7618 **Yongjiu Xu and Joji Ishizaka**
Abundance of giant jellyfish (*Nemopilema nomurai*) and spring sea surface temperature variability in the northern East China and Yellow Seas
- BIO-P-7624 **Tatyana Belan, Boris Borisoy, Ludmila Belan, Alexander Moshchenko and Tatyana Konovalova**
Long-term dynamics of some plankton and benthic characteristics at the Piltun-Astokhskoye field (NE Sakhalin Island Shelf)
- BIO-P-7630 **Alexander V. Zavolokin**
Jellyfish blooms in the Far Eastern Seas of Russia: Significance for ecosystems and social-economic consequences
- BIO-P-7712 **Kristin Cieciel, Jim Murphy, Lisa Eisner and Bruce Wing**
A comparison of trawl caught jellyfish in the eastern Bering Sea
- BIO-P-7715 **Jung-Hoon Kang, MinHo Seo, OhYoun Kwon and Woong-seo Kim**
Vertical distribution of the copepod *Calanus sinicus* before and after formation of Yellow Sea Bottom Cold Water (YSBCW) in the Yellow Sea
- BIO-P-7717 **Seungmok Roh, Joongki Choi and Youngju Lee**
Distribution and community structure of phytoplankton in the offshore waters around Korean Peninsula during autumn season
- BIO-P-7724 **Victor Nadtochy and Marina Yurieva**
Ecological characteristic of sublittoral bivalve communities of the Bering and Okhotsk Seas
- BIO-P-7793 **Sungeun Ju, Jiho Seo and Joongki Choi**
The distribution of Kuroshio indicator zooplankton around the IEODO Ocean Research Station in the East China Sea
- BIO-P-7799 **Yuji Okazaki and Kazuaki Tadokoro**
Biomass estimates of *Euphausia pacifica* using MOHT in the Oyashio region
- BIO-P-7806 **OhYoun Kwon, Woong-seo Kim, Jung-Hoon Kang, Kyunwoo Lee and Jin Hwan Lee**
Temporal and spatial variation of size-fractionated phytoplankton communities in the Yellow Sea, Korea
- BIO-P-7812 **Kaoru Aoki, Takuya Sirokiya, Kazuya Takeda Satoshi Yamada, Masaya Toyokawa and Tomohiko Kikuchi**
Spatiotemporal distribution and biomass of two abundant jellyfish in Ise and Mikawa Bay, Japan
- BIO-P-7824 **Seokgwan Choi, Kyumjoon Park, Hyunwoo Kim, Youngran Lee, Jieun Park, Daeyeon Moon and Yongroek An**
Finless porpoise, *Neophocaena phocaenoides*, Distribution in the South Sea of Korea
- BIO-P-7838 **Elena Dulepova and Natalya Kuznetsova**
Zooplankton production in the western zone of the Subarctic front in winter-spring 2011

FIS Paper Session

Co-Convenors: *Gordon H. Kruse (U.S.A.) and Mikhail Stepanenko (Russia)*

This session invites papers addressing general topics in fishery science and fisheries oceanography in the North Pacific and its marginal seas, except those covered by Topic Sessions sponsored by the Fishery Science Committee (FIS).

Day 1, Tuesday, October 18 (9:00-12:30)

- 9:00 **Introduction by Convenors**
- 9:05 **Hyemin Park, Youngseok Seo and Chulwoong Oh**
Reproductive biology of *Argis lar* from the East Sea of Korea (FIS-P-7604)
- 9:25 **Sergey E. Kulbachny and Sergey F. Zolotukhin**
Chum spawning migration in the north-western part of the continental coastline of the Okhotsk Sea (FIS-P-7869)
- 9:45 **Masayuki Chimura, Yuuho Yamashita and Satoshi Honda**
Why did the northern Japan Sea walleye pollock stock experience high survival in 2006? (FIS-P-7702)
- 10:05 **Motomitsu Takahashi, Chiyuki Sassa and Youichi Tsukamoto**
Growth-selective recruitment from pelagic to demersal habitats for juvenile jack mackerel in the East China Sea: Implications for year-class strength (FIS-P-7801)
- 10:25 **Coffee/Tea Break**
- 10:50 **Ming-Ming Zhang, Chulwoong Oh, Wanok Lee, Jaemin Back and Jonghun Na**
Comparison of scales, whole otoliths and sectioned otoliths for estimating age and growth of largemouth bass, *Micropterus salmoides* (FIS-P-7692)
- 11:10 **Sergey F. Zolotukhin**
Contribution of Pacific salmon from the Amur River to the total salmon biomass of the North Pacific Ocean (FIS-P-7867)
- 11:30 **Soojeong Lee, Jaebong Lee, Hyeokchan Kwon and Changik Zhang**
Population ecological parameters of elkhorn sculpin (*Alcichthys alcicornis*) along the Uljin area of Korea (FIS-P-7650)
- 11:50 **Oleg A. Bulatov**
Walleye pollock: Fishery and stock dynamics (FIS-P-7568)
- 12:10 **Jennifer L. Boldt, Thomas W. Therriault, Douglas E. Hay, Jacob Schweigert and Matthew Thompson**
Nearshore fish community dynamics in the Strait of Georgia: Information from juvenile herring surveys (FIS-P-7830)
- 12:30 Session ends

Day 2, Wednesday, October 19 (9:00-12:30)

- 9:00 ***Introduction by Convenors***
- 9:05 **Alexey A. Khoruzhiy**
Species composition and abundance of the nekton community in the upper epipelagic layer of the Northwest Pacific Ocean during summer 2004-2010 (FIS-P-7563)
- 9:25 **Mary E. Hunsicker, Lorenzo Ciannelli, Kevin M. Bailey and Stephani Zador**
The influence of climate and demography on predator-prey interactions between walleye pollock and arrowtooth flounder in the eastern Bering Sea (FIS-P-7752)
- 9:45 **Nadezhda L. Aseeva, Andrey B. Savin and Marina B. Shedko**
Dynamics of demersal fish community structure on the shelf of West Kamchatka (FIS-P-7601)
- 10:05 **William R. Bechtol, Gordon H. Kruse, Joshua Greenberg and Hans Geier**
Reduced minimum size limits improve Tanner crab fishery management in the eastern Bering Sea (FIS-P-7557)
- 10:25 ***Coffee/Tea Break***
- 10:50 **Keith R. Criddle and James Strong**
Dysfunction by design: Consequences of limitations on transferability of catch shares in the Alaska pollock fishery (FIS-P-7711)
- 11:10 **Heewon Park, Jaebong Lee, Youngil Seo and Changik Zhang**
Management strategies in a marine ranching ecosystem based on an integrated fisheries risk analysis method for ecosystems (IFRAME) framework (FIS-P-7656)
- 11:30 **Elizabeth A. Logerwell and Mary Campbell Baker**
A conceptual model for determining oil fate and effects on habitat and wildlife in the Arctic (FIS-P-7619)
- 11:50 **Yoshiki Kato, Mitsuo Sakai, Takaya Namba, Toshie Wakabayashi, Shuhei Masuda, Hiromichi Igarashi, Yoichi Ishikawa, Masafumi Kamachi and Toshiyuki Awaji**
Effect of water-temperature transition on hatching in the neon flying squid and numerical simulation of larval migration (FIS-P-7735)
- 12:10 **Chingiz M. Nigmatullin, Alexander Arkhipkin, John C. Field and Unai Markaida**
Jumbo squid population structure and ecosystem role in variable environment of the Eastern Pacific (FIS-P-7831)
- 12:30 Session ends

FIS Paper Session Posters

- FIS-P-7555 **Victor F. Bugaev**
Correlation between the distribution of plerocercoid *Diphyllobothrium* sp. in sockeye salmon *Oncorhynchus nerka* smolts and adults with the abundance of parental stocks in the Kamchatka River
- FIS-P-7577 **Ekaterina V. Golovashchenko and Oleg Z. Badaev**
Efficiency increase of marine bioresources usage based on the example of some trades
- FIS-P-7578 **Ekaterina V. Golovashchenko**
Efficiency increase of marine bioresources usage based on the example of some trades economic value of ecosystem services of Eastern and Western Sakhalin fishery zones' shelf
- FIS-P-7582 **Peng Sun and Zhenlin Liang**
The effect of the trawl selective parameters on the phenotypic traits of fish stocks
- FIS-P-7609 **Anna V. Dakus, Helen V. Kashchenko, Sergey D. Ponomarev and Evgeny Denisenko**
The use of molecular techniques for population genetic analysis of the Pacific herring (*Clupea pallasii*) in the Okhotsk Sea
- FIS-P-7628 **Chiyyuki Sassa, Seiji Ohshimo, Hiroshige Tanaka and Youichi Tsukamoto**
Reproductive biology of *Benthosema pterotum* (Pisces: Myctophidae) in the shelf region of the East China Sea
- FIS-P-7655 **Jaebong Lee, Jonghee Lee, Kwangho Choi, Inja Yeon and Dongwoo Lee**
Recent distribution and migration patterns of Pacific cod (*Gadus macrocephalus*) in Korean waters
- FIS-P-7657 **Changik Zhang, Heewon Park, Youjung Kwon, Jaebong Lee, Youngil Seo, Heeyong Kim, Inja Yeon and Dongwoo Lee**
Fisheries risk assessment in a marine ranching ecosystem based on integrated fisheries risk analysis method for ecosystems (IFRAME) framework
- FIS-P-7662 **Changik Zhang, Jaebong Lee and Soojeong Lee**
Stock assessment of elkhorn sculpin (*Alcichthys alcicornis*) along the Uljin area of Korea
- FIS-P-7666 **Wongyu Park, Yujin Jeon, Junghwa Choi and Dongwoo Lee**
Spatial and temporal variations of sea surface temperature, zooplankton abundance and anchovy harvest in western waters of the Korean Peninsula during the last three decades
- FIS-P-7670 **Jungnyun Kim, Junghwa Choi, Kangseok Hwang, Taegyun Oh, Kwangho Choi and Dongwoo Lee**
Seasonal variations of species composition and abundance in the decapod crustacean assemblage in the coastal waters of Geoje Island and Namhae Island, Korea
- FIS-P-7675 **Alexander V. Lysenko**
Snow crab (*Chionoecetes opilio*) in the western Kamchatka: A new target fishery?
- FIS-P-7680 **T.A. Shatilina and A.A. Goryainov**
Climatic changes above the Far East and returning of chum salmon into the South Primorye rivers
- FIS-P-7691 **Ming-Ming Zhang, Chulwoong Oh, Wanok Lee, Jonghun Na and Jaemin Back**
Aging method comparison and growth of Amur barbell, *Hemibarbus labeo* from Goe-san Lake in Korea

- FIS-P-7695 **Andrew N. Deminov**
 Occurrence of deep snow crab *Chionoecetes japonicus* on the shelf of the northwestern Sea of Japan
- FIS-P-7710 **Alexei M. Orlov**
 Northwestern Pacific and southeastern Asia chondrichthyan fishes: Major threats and conservation status
- FIS-P-7718 **Minkyong Shin, Wongyu Park, Changuk Park and Thomas Shirley**
 Distribution and timing of larval Tanner crab *Chionoecetes bairdi* in Glacier Bay and neighboring strait in southeastern Alaska, USA
- FIS-P-7795 **Sachihiko Itoh, Toshiro Saruwatari, Haruka Nishikawa, Ichiro Yasuda, Kosei Komatsu, Atsushi Tsuda, Takeshi Setou and Manabu Shimizu**
 Exploring impacts of environmental history on larval growth: Combination of otolith microstructure analyses and particle-tracking experiments
- FIS-P-7805 **Jinho Bae, Hyemin Park, Hyeonggi Kim and Chulwoong Oh**
 Age and growth of Conger eel *Conger myriaster* (Brevoort) using UV light from Korean waters
- FIS-P-7848 **Youngil Seo, Hyungki Cha, Sunkil Lee, Heeyong Kim, Jinyeong Kim and Changik Zhang**
 Stock assessment by risk analysis of ecosystem indicators in the southern sea of Korea
- FIS-P-7882 **Graham E. Gillespie, Tammy Norgard, Sean MacConnachie, Lily Stanton and Jessica Finney**
 Program to assess the conservation status of the Olympia oyster, *Ostrea lurida*, in Canada
- FIS-P-7883 **Suzanne Kohin, Heidi Dewar, John Childers, Karen Nieto, Eric Prince, Barbara A. Block and Rosa Runcie**
 Movements of albacore, swordfish and shortfin mako sharks in pelagic environments: Electronic tagging reveals the influence of oceanography on vertical and horizontal behavior

POC Paper Session

Co-Convenors: *Kyung-Il Chang (Korea) and Michael G. Foreman (Canada)*

Papers are invited on all aspects of physical oceanography and climate in the North Pacific and its marginal seas, except those covered by Topic Sessions sponsored by the Physical Oceanography and Climate Committee (POC).

Day 1, Tuesday, October 18 (14:00-18:05)

- 14:00 *Introduction by Convenors*
- 14:05 **Elena I. Ustinova, Yury D. Sorokin and Svetlana Yu. Glebova**
Regional and seasonal inhomogeneity of climatic variability in the Far-Eastern Seas (POC-P-7862)
- 14:25 **Alexander Lazaryuk, Boris Burov and Vladimir Ponomarev**
Evolution of the thermohaline structure of water under ice of Amurskii Bay (POC-P-7860)
- 14:45 **Anastasiya Abrosimova, Igor A. Zhabin and Igor M. Belkin**
Distribution of the Amur River discharge in the Okhotsk and Japan seas (POC-P-7772)
- 15:05 **Pavel A. Fayman, Vladimir Ponomarev and Vyacheslav Dubina**
Simulation of the mesoscale circulation in the Peter the Great Bay and adjacent Japan Basin area (POC-P-7768)
- 15:25 *Coffee/Tea Break*
- 15:45 **Igor A. Zhabin**
Tidally driven system around the Shantar Islands (the Sea of Okhotsk) (POC-P-7565)
- 16:05 **Jaehun Park, Hojin Lee, Younggyu Park, Hongsik Min, Chan Joo Jang and Kyungtae Jung**
Tidal impacts on spatio-temporal variabilities of intermediate and deep waters in the East/Japan Sea (POC-P-7762)
- 16:25 **Oleg Zaitsev, Cuauhtemoc Turrent-Thompson and Jean Linero Cueto**
Intense sea-breeze currents in the coastal zone of the southern Baja California peninsula, Mexico (POC-P-7645)
- 16:45 **Hanna Na and Kwang-Yul Kim**
Decadal variability of the upper-ocean heat content in the Northwestern Pacific (POC-P-7852)
- 17:05 **Takao Kawasaki, Hiroyasu Hasumi and Masao Kurogi**
A modeling study of the North Pacific shallow overturning circulation (POC-P-7756)
- 17:25 **Talgat R. Kilmatov and Olga I. Trinko**
Modeling the subarctic–subtropical boundary and possible climatic changes (POC-P-7653)
- 17:45 **Tatyana Belonenko, Victor Foux, Victor Koldunov, Alexey Koldunov and Dmitriy Staritsyn**
Sea-surface levels in the Northwestern Pacific as indicators of local and global tendencies in climate change (POC-P-7709)
- 18:05 Session ends

Day 2, Wednesday, October 19 (9:00-12:25)

- 9:00 *Introduction by Convenors*
- 9:05 **Howard J. Freeland**
An analysis of the time-varying heat, salt and volume budget in an oceanic control volume (POC-P-7879)
- 9:25 **Michael Foreman, Wendy Callendar, Diane Masson, John Morrison, Badal Pal and William Merryfield**
A regional climate model for the British Columbia continental shelf (POC-P-7734)
- 9:45 **Enrique N. Curchitser, Justin Small, Kate Hedstrom, Mike Alexander and Brian Kaufman**
Regional and global ramifications of eastern boundary upwelling (POC-P-7902)
- 10:05 **Rong-shuo Cai, Hong-jian Tan and Rong-hui Huang**
The impacts of thermal anomalies in the East China Sea and its adjacent seas on East Asian atmospheric circulation and climate change in East China (POC-P-7583)
- 10:25 *Coffee/Tea Break*
- 10:45 **Fangli Qiao, Guansuo Wang, Xingang Lv and DeJun Dai**
Drift characteristics of green macroalgae in the Yellow Sea in 2008 and 2010 (POC-P-7693)
- 11:05 **Taewook Park, Chan Joo Jang, Minhoo Kwon, Hanna Na and Kwang-Yul Kim**
Sea surface salinity variability in the Yellow and East China Seas and its relation to ENSO (POC-P-7834)
- 11:25 **Yanzhou Wei, Daji Huang and Xiaohua Zhu**
Temporal and spatial variability of the Kuroshio at PN/TK sections during 1955–2010 (POC-P-7890)
- 11:45 **Wang Rong, Xiao Yuzhang, Yang Fan, Song Pingping and Wang Hefeng**
Analysis and forecasting of wind field characteristics on the northern and open-ocean borders of the South China Sea (POC-P-7807)
- 12:05 **Xiaomeng Wang and Jianbo Han**
An overview of the development of technical and legal issues of carbon dioxide ocean storage and the progress in China (POC-P-7900)
- 12:25 Session ends

POC Paper Session Posters

- POC-P-7588 **Dmitrii S. Strobykin, Yury N. Morgunov, Yury A. Polovinka, Vladimir V. Bezotvetnykh and Evgeny A. Voytenko**
Shallow water acoustic tomography of hydrophysical processes in the Korea Strait
- POC-P-7596 **Hong-jian Tan and Rong-shuo Cai**
Possible impact of tropical El Niño Modoki on SST of China's offshore and its adjacent waters
- POC-P-7611 **Alexander A. Nikitin and Irina L. Tsypysheva**
Cancelled Upwelling in the coastal areas of the Primorye according to satellite observational data
- POC-P-7612 **Larisa S. Muktepavel**
Special features of spatial-temporal distribution of ice in the basic commercial zone and spawning areas of the Okhotsk Sea in 2006-2010
- POC-P-7615 **T.A. Shatilina, G.Sh. Tsitsiashvili and T.V. Radchenkova**
Intrinsic features of regional circulation and climate above the Far East in the summer period of 1980–2009
- POC-P-7623 **Elena I. Yaroshchuk**
The study of patterns of energy transformation of surface wind sea waves into energy of microstrains of the Earth's crust
- POC-P-7626 **Nadezda M. Dulova and Fedor F. Khrapchenkov**
Short-term variability of currents and sea level fluctuations in the coastal zone of the Posyet Bay (the Sea of Japan/East Sea)
- POC-P-7629 **Galina Pavlova and Pavel Tishchenko**
Alkalinity of the Japan Sea: A new look
- POC-P-7649 **Vadim V. Novotryasov and Anatoliy E. Filonov**
Observations of highly nonlinear internal tidal waves in the Northern Gulf of California
- POC-P-7652 **Polina Lobanova and Dmitriy Staritsyn**
On a possibility to forecast interannual variability of sea level in the Japan and Okhotsk Seas
- POC-P-7664 **Evgeniya Tikhomirova and Vladimir Luchin**
Typical distributions of oceanographic parameters in Peter the Great Bay (Japan Sea)
- POC-P-7674 **Valentina V. Moroz**
The intermediate water hydrology-acoustical characteristics forming peculiarities in the Kuril-Kamchatka area
- POC-P-7690 **Viktoria A. Platonova and Larisa S. Chernushova**
Climatic trends from characteristics of the cold half-year on the coast of the Russian Far East
- POC-P-7696 **Alexandr Figurkin**
Variability of thermohaline characteristics in the 0-1000 m water layer of the deep part of the Okhotsk Sea

- POC-P-7697 **Svetlana Shkorba and Elena Dmitrieva**
Linkages between anomalies of ice extent in the Japan/East Sea, Pacific SST and atmospheric indices
- POC-P-7701 **Nadezda M. Vakulskaya**
A study of time changes of ice regime characteristics in the Bering Sea
- POC-P-7722 **Irina Mashkina**
Multi-scale variability of water structure in the northwestern part of the Sea of Japan using Argo drifters
- POC-P-7771 **Pungguk Jang, Kyoungsoo Shin, Okmyung Hwang, Minchel Jang, Woojin Lee, Bongkil Hyen and Dongchll Jeon**
Seasonal effect of Tsushima Current Warm Water in the South Sea of Korea
- POC-P-7780 **Svetlana N. Taranova and Igor A. Zhabin**
Seasonal and interannual sea surface temperature variability in the Japan/East Sea
- POC-P-7789 **Kwangyoung Jung, Youngjae Ro and Baekjin Kim**
Impact of the freshwater release on the tidal circulation in the Chunsu Bay, Yellow Sea, Korea based on numerical modeling
- POC-P-7790 **Eduard A. Spivak and Anatoly N. Salyuk**
Winter hydrography and periodic shallow water dynamics in the southeastern part of Laptev Sea—Results of the POI FEB RAS expedition in April 2011
- POC-P-7814 **Yongchao Pang and Zhuoying Zhao**
On research status and application of China Standard Seawater
- POC-P-7818 **Kirill Kivva, Anna S. Vazhova and Sergey Dudkov**
Influence of eddy structures on nutrients distribution in the western Bering Sea from September-October 2010
- POC-P-7820 **Vladimir Ponomarev, Pavel A. Fayman and Vyacheslav Dubina**
Simulation of mesoscale circulation over the continental slope of the Northwest Japan/East Sea
- POC-P-7835 **Taewook Park, Chan Joo Jang, Johann H. Jungclaus, Helmuth Haak, Wonsun Park and Im Sang Oh**
Changjiang freshwater effects on summer sea surface warming in the Yellow and East China Seas
- POC-P-7843 **Taewook Park, Chan Joo Jang, Johann H. Jungclaus, Helmuth Haak, Wonsun Park and Im Sang Oh**
Changjiang freshwater effects on summer sea surface warming in the Yellow and East China Seas
- POC-P-7894 **Rosa Runcie, Jonathan Phinney and Harold P. Batchelder**
Pacific Coast Ocean Observing System (PaCOOS) scientific objectives and recent activities
- POC-P-7916 **Dongfeng Xu and Mingquan Xu**
The improvement of the Kuroshio path in Luzon Strait by assimilation of Argo data into numerical modelling

GP

General Poster Session

- GP-7599 **Natsuki Hasegawa, Toshihiro Onitsuka, Hiroya Abe, Michio J. Kishi, Masahiro Nakaoka and Toyomitsu Horii**
An indicator of productive estuarine ecosystems and fisheries using macrophytes
- GP-7614 **Toshihiro Onitsuka, Ryo Kimura, Hideki Takami, Tsuneo Ono and Yukihiko Nojiri**
Effects of elevated $p\text{CO}_2$ on early development and settlement of the turban snail *Turbo cornutus* and abalone *Haliotis diversicolor*
- GP-7646 **Cuauhtemoc Turrent-Thompson and Oleg Zaitsev**
Land-sea breeze in the Bay of La Paz, Mexico: Numerical modeling
- GP-7658 **Zhongyong Gao, Liqi Chen and Heng Sun**
Air-sea CO_2 flux and its related parameters over the Bering Slope Current
- GP-7676 **Vladimir Rostov, Natalia Rudykh, Igor Rostov and Elena Dmitrieva**
An oceanographic information system on “Natural ecosystems exploitation, state and tendencies of marine environment changing in coastal areas of Russia in the Japan/East Sea”
- GP-7758 **Baonan Sun, Yongzeng Yang, Yeli Yuan and Lei Han**
Study on the vertical mixing of oil droplets by breaking waves
- GP-7857 **G.I. Mishukova, V.F. Mishukov and A.I. Obzhirov**
Distribution of methane gases in seawater and its fluxes on the border of water-atmosphere in some regions of the Sea of Okhotsk
- GP-7880 **Howard J. Freeland**
The current status of the international Argo project
- GP-7905 **Valery N. Koblikov and Aleksey G. Slizkin**
On the dynamics of the fishing grounds of *Chionoecetes opilio* in the southern Primorye (Sea of Japan)
- GP-7907 **Yeon-Kye Kim, Ho-Dong Yoon, Irina A. Kadnikova and Natalia Aminina**
Isolation and potential applicability of UV-absorbing materials from marine organisms
- GP-7914 **Sangjin Lee**
NOWPAP activities related to the marine and coastal environment of the Northwest Pacific Ocean
- GP-7915 **Sang Deuk Lee, Joon Sang Park, Jun Mo Lee and Jin Hwan Lee**
The setae structures of the gill-clogging diatom genus *Chaetoceros*
- GP-7921 **Michael F. Sigler, Thomas I. Van Pelt and Francis K. Wiese**
Maps, milestones, and destinations: Managing outcomes in the ecosystem-scale ‘Bering Sea Project’ marine research program
- GP-7922 **Nora L. Deans, Francis K. Wiese and Cynthia Suchman**
Communicating ocean science – The North Pacific Research Board’s education and outreach program

W1

BIO Workshop

MEMIP-IV: Quantitative comparison of ecosystem models applied to North Pacific shelf ecosystems--humble pie or glee?

Co-Convenors: Harold P. Batchelder (U.S.A.), Shin-ichi Ito (Japan), Angelica Peña (Canada) and Yvette Spitz (U.S.A.)

Invited Speakers:

Jerome Fiechter (University of California Santa Cruz, U.S.A.)

Yvette Spitz (Oregon State University, U.S.A.)

The objective of the Marine Ecosystem Model Inter-comparison Project (MEMIP) is to compare the performance of various lower trophic level marine ecosystem simulation models at predicting the abundance and distribution of coastal zooplankton functional groups. During the series of workshops, three test beds (Newport, Seward, and A-Line) were selected, and eight potential ecosystem models (NPZD+, NAPZD+, NEMURO, COSINE, NPZD-Fe, Nemuro-Fe, Nemuro-K5 and Biology) were identified to be embedded in ROMS-2D models. The focus of this 4th MEMIP workshop will be quantitative model-model and model-data analysis and comparison of the results of the simulations. Prior to this workshop, different ecosystem models embedded in ROMS-2D will have simulated several 3-4 specific years at each test bed. At the workshop, the results of different ecosystem models within each test bed will be compared. The combination of different years, multiple ecosystem models and three regions should provide sufficient runs to enable ensemble-based estimates of the uncertainty of ecosystem hindcasts, which will provide information needed for assessing FUTURE coupled ecosystem-physical forecast products.

Day 1, Friday, October 14 (9:00-18:00)

- 9:00 *Introduction by Convenors*
- 9:10 **Jerome Fiechter, Christopher A. Edwards, Andrew Moore, Nicole Goebel and Kaustubha Raghukumar**
How accurately can we predict chlorophyll concentrations in the Northeast Pacific: The role of ecosystem model complexity and data assimilation? (W1-7593), Invited
- 9:40 **Yvette H. Spitz**
Intercomparison of pelagic ecosystem models for the Oregon Shelf: “The devil is in the details” (W1-7716), Invited
- 10:10 **Guimei Liu, Fei Chai and Hui Wang**
Comparison of air-sea CO₂ flux and biological productivity in the South China Sea, East China Sea, and Yellow Sea: A three-dimensional physical-biogeochemical modeling study (W1-7721)
- 10:30 *Coffee/Tea Break*
- 10:50 **Harold Batchelder and Shin-ichi Ito**
Updates on data progress since PICES-2010
- 11:05 **Yvette Spitz and Shin-ichi Ito**
Physical test bed updates
- 11:35 **Guimei Liu**
Ecosystem models
- 11:45 **Angelica Peña**
Ecosystem models

11:55	Yvette Spitz Ecosystem models
12:05	Jerome Fiechter Ecosystem models
12:15	Shin-ichi Ito Ecosystem models
12:25	Harold Batchelder Ecosystem models
12:35	Lunch
14:00	Individual/small group work Ecosystem model results and analysis
15:30	Coffee/Tea Break
15:50	Yvette Spitz A skill assessment primer
16:20	Small groups Individual model assessments and intercomparisons of models
18:00	Workshop ends

Day 2, Saturday, October 15 (9:00-12:30)

9:00	Recap and next tasks by Convenors
9:15	Brainstorm lessons learned; recommendations for future North Pacific ecosystem modeling; recommendations about generality of ecosystem models applied to coastal systems
10:30	Coffee/Tea Break
10:50	Individual/small group work Continuation of MEMIP tasks
11:50	Workshop Wrap-up: Timeline, Products, Final Report
12:30	Workshop ends

W2 FIS Workshop

Remote sensing techniques for HAB detection and monitoring

Co-Sponsored by NOWPAP

Co-Convenors: *Tatiana Orlova (PICES/Russia), Vera Trainer (PICES/U.S.A.) and Takafumi Yoshida (NOWPAP/Japan)*

Invited Speakers:

Joji Ishizaka (Nagoya University, Japan)

Raphael Kudela (University of California Santa Cruz, U.S.A.)

Monitoring harmful algal blooms (HABs) and the environmental factors associated with their occurrence can often be improved by remote sensing. Satellite imagery can be used to help: (1) detect and identify HAB species or the oceanic features in which they reside, and (2) in mitigation of damage to fisheries and human health by HABs. However, the effective use of the data from these sensors is often hindered by a lack of skills to acquire, process, and interpret them. The goal of the workshop is to teach the basic skills needed to work independently with data from a variety of satellite sensors (e.g., SeaWiFS, MODIS, MERIS, AVHRR, and CZCS). This workshop may also include such themes as the fundamentals of bio-optics, pigment algorithms, primary production algorithms and, to a lesser extent, the underlying physical principals leading to the measurement of sea surface temperature, ocean wind speed and ocean topography. A series of lectures will describe research and monitoring efforts that currently use remote sensing for the study of HABs. The workshop will take place following the NOWPAP/PICES/WESTPAC young investigator training course on “Remote sensing data analysis” held on October 8-12, 2011, in Vladivostok, Russia.

Saturday, October 15 (9:00-17:30)

- 9:00 *Introduction by Convenors*
- 9:05 **Raphael M. Kudela, Mati Kahru, John P. Ryan and David G. Foley**
Linking changes in dinoflagellate blooms along the US west coast to short and longterm restructuring of the California Current System (W2-7654), Invited
- 9:45 **Sergey P. Zakharkov, Tatyana N. Gordeychuk, Elena A. Shtraikhert and Julianna V. Shambarova**
Study of diatom succession in the Sea of Japan based on satellite and ship data (W2-7632)
- 10:05 **Lijian Shi, Bin Zou, Yingni Shi and Maohua Guo**
The application of HJ-1A/1B CCD data to *Enteromorpha Prolifera* monitoring over the Yellow Sea and East Sea (W2-7802)
- 10:25 *Coffee/Tea Break*
- 10:50 **Joji Ishizaka, Kazuyoshi Miyamura, Ken Furuya and Shigeru Itakura**
Status and perspective remote sensing data use to reduce the damage caused by red tides (Harmful Algal Bloom) in Japan (W2-7637), Invited
- 11:30 **Chao Liang**
A preliminary study on the application of the wave degree of polarization in marine oil spill monitoring (W2-7813)
- 11:50 Discussion, Introduction to the afternoon session
- 12:30 *Lunch*

- 14:00 **Workshop**
Remote sensing data availability
Merit or demerit of each satellite sensor
Issues specific to HABs and eutrophication
- 15:30 ***Coffee/Tea Break***
- 15:50 **Workshop**
What kind of software is available for analysis of remote sensing data
How to analyze and manipulate remote sensing data
Some demos of advanced methods
Brief primer on time series analysis
- 17:30 Workshop ends

W3

MEQ Workshop Pollutants in a changing ocean: Refining indicator approaches in support of coastal management

Co-Sponsored by GESAMP, ICES and IOC

Co-Convenors: *Kris Cooreman (ICES/Belgium), Peter Kershaw (GESAMP/UK), Olga Lukyanova (PICES/Russia) and Peter Ross (PICES/Canada)*

Invited Speakers:

Joel Baker (University Washington Tacoma, U.S.A.)

Chris Cooreman (Institute for Agricultural and Fisheries Research, Belgium)

Peter Kershaw (Centre for Environment, Fisheries and Aquaculture Science, UK)

Annamalai Subramanian (Ehime University, Japan)

Many anthropogenic pollutants impact marine environmental quality, with coastal zones being particularly vulnerable. Persistent organic pollutants (POPs) are a concern because they magnify in food webs and present health risks to humans and wildlife. Other chemicals are less persistent, but may nonetheless impact the health of biota. While some pollution indicators are ensconced into monitoring and management regimes in different nations over space and time, new pollutant concerns may not yet be captured by existing protocols. These include “micro-plastics”, the breakdown products of debris and other forms of structural pollutants, which can clog the gills of invertebrates and fish, and asphyxiate seabirds and marine mammals. In addition, these micro-plastics may adsorb some of the other chemical contaminants and transfer them to marine organisms. This workshop will review ways in which chemical and structural pollutants enter the marine environment, are transported through ocean currents and/or biological transport, and impact marine biota. The workshop will critically review several examples of pollution indicators used by different nations, as a basis for improving and/or expanding indicator approaches in the North Pacific Ocean. These examples will also critically evaluate the extent to which changing baselines (*e.g.*, climate variability) may impact on source/transport/fate processes and effects on biota, and recommend means of improving the utility and reliability of current indicator / monitoring approaches in a changing world. The objectives of this workshop are to:

- (1) Critically review 3-5 examples of currently used indicators of marine contamination in different PICES member nations (*e.g.*, shellfish monitoring of PAHs, metals, persistent organic pollutants, fecal bacteria; POPs in seabird eggs and marine mammals); List advantages and disadvantages for each, and describe management/policy linkages; Consider the influence of changing climate on indicator performance and ways to address this.
- (2) Review emergent pollutant concerns and in particular, examine the topic of plastics and micro-plastics as structural pollutants and as mechanisms for the transfer of contaminants to marine biota; Examine existing and/or new opportunities to establish indicator approaches to plastic pollution, and review sampling and analytical methods.
- (3) From these applied examples/case studies, identify opportunities for future PICES activities on the topic of marine pollution:
 - a). evaluate feasibility of establishing Study Group on Marine Contaminants, including terms of reference, membership, and deliverables;
 - b). description of the scope of PICES/FUTURE activities that focus on contaminants in the North Pacific marine environment;
 - c). update and revise MEQ Action Plan elements on marine contaminants;
 - d). identify potential interactions with IOC/ICES/GESAMP/NOWPAP/NOAA programs that focus on contaminants in the marine environment.

Friday, October 14 (9:00-18:00)

- 9:00 ***Introduction by Convenors***
- 9:15 **Peter J. Kershaw**
Pollution indicators in the marine environment – A GESAMP perspective (W3-7908), Invited
- 9:45 **Kris Cooreman, Roel Smolders, Yves Verhaegen, Koen Parmentier, Patrick Roose and Guy Smaghe**
Building expert knowledge to reach integrated scientific advice for marine management (W3-7926), Invited
- 10:15 ***Coffee/Tea Break***
- 10:35 6 ‘power talks’ and poster presentations
- 11:15 **Annamalai Subramanian and Shinsuke Tanabe**
Contamination by persistent organic pollutants in the Asia-Pacific region (W3-7884), Invited
- 11:45 **Joel E. Baker, Julie Masura, Gregory Foster and Courtney Arthur**
Abundance, distribution, sources and potential implication of microplastic particles in coastal waters of the North Pacific region (W3-7863), Invited
- 12:15 ***Lunch***
- 13:45 Emerging opportunities for pollution research and monitoring in the North Pacific Ocean (projects, national programs, international collaborations, knowledge gaps): Draft summary statement
- 15:30 ***Coffee/Tea Break***
- 15:50 PICES opportunities: hot topics, activities, collaborations, and linkages to other groups or programmes (MEQ Committee, BIO Committee, Advisory Panel on Marine Birds and Mammals, FUTURE Advisory Panel Anthropogenic Impacts on Coastal Ecosystems)
- 17:00 Draft statement/proposal for activity/plan to PICES
- 18:00 Workshop ends

Workshop 3 Posters

- W3-7660 **Natalia Pichugina and Vladimir Goryachev**
The radioactive pollution of hydrobionts at the place of nuclear accident in the Chazhma Bay, the Japan Sea
- W3-7677 **Vasiliy Yu. Tsygankov, Margarita D. Boyarova, Peter A. Tyupelev and Olga N. Lukyanova**
Persistent organic pollutants (POPs) and mercury (Hg) in organs of the grey whale (*Eschrichtius robustus*) from the Bering Sea
- W3-7729 **Mikhail V. Simokon and Lidiya T. Kovekovdova**
Mercury in the bottom sediments of Peter the Great Bay (Japan/East Sea)
- W3-7730 **Mikhail V. Simokon**
Environmental pollution monitoring of Far Eastern Seas
- W3-7796 **Zou Ya-Rong, Zou Bin and Liang Chao**
Multiple index marine oil spill information extraction research
- W3-7797 **Zou Ya-Rong, Zou Bin and Liang Chao**
Using the SAR to analyze marine oil spill polarization characteristics

W4

POC/MONITOR/TCODE Workshop

Recent advances in monitoring and understanding of Asian marginal seas: 5 years of CREAMS/PICES EAST-I Program

Co-Convenors: Kyung-Il Chang (Korea), Toshitaka Gamo (Japan), Young-Shil Kang (Korea), Kyung-Ryul Kim (Korea), Vyacheslav Lobanov (Russia), Toru Suzuki (Japan) and Yury Zuenko (Russia)

Invited Speakers:

Sukgeun Jung (Jeju National University, Korea)

Tomoharu Senjyu (Kyushu University, Japan)

Under the auspices of the EAST-I program initiated and supervised by the CREAMS/PICES Advisory Panel, scientists from Japan, Korea and Russia have carried out many successful cruises in the East Asian marginal seas over the last 5 years. With the active discussion and promotion by CREAMS/PICES of a new EAST-II program focusing on the Yellow and East China Seas, it is timely to have a forum summarizing some important results obtained by the international cooperative efforts of EAST-I. This workshop welcomes studies on hydrography, circulation, biogeochemistry, and ecology and their variability in East Asian marginal seas in the PICES area and on effects of climate and long-term changes in the abiotic and biotic environments of this region.

Friday, October 14 (9:00-18:00)

- 9:00 ***Introduction by Convenors***
- 9:05 **Toshitaka Gamo, Joji Ishizaka, Changkeun Kang, Kuh Kim, Vyacheslav Lobanov and Yury Zuenko**
Progress report of CREAMS-AP *ad hoc* committee to complete 2010 North Pacific Ecosystem Status Report (W4-7770)
- 9:25 **Kyung-Ryul Kim, Kyung-Il Chang, Tongsup Lee, Changkeun Kang and Dong-Jin Kang**
A report on Korea EAST-I (East Asian Seas Time-series I) program (W4-7777)
- 9:45 **Dong-Jin Kang, Hee-Mang Park, Cho-Rong Moon, Kyung-Il Chang and Kyung-Ryul Kim**
Preliminary results of E-RAP (EAST-I Real-time Automatic Profiler) in the Ulleung Basin, the East/Japan Sea (W4-7773)
- 10:05 **Tomoharu Senjyu**
The East Asian Marginal Seas System; Connectivity between the Japan Sea and the East China Sea (W4-7769), Invited
- 10:30 ***Coffee/Tea Break***
- 10:50 **Vyacheslav Lobanov, Pavel Tishchenko, Alexander Sergeev, Dmitry D. Kaplunenko, Vladimir Ponomarev and Svetlana Ladychenko**
Overview of POI activities under the CREAMS/PICES program (W4-7841)
- 11:10 **Taekeun Rho, Tongsup Lee, Hyunduck Jeon, Dong-Jin Kang and Kyung-Ryul Kim**
Vertical and spatial distribution patterns of transparent exopolymer particles (TEP) in the East Sea during summer 2009 (W4-7759)
- 11:30 **Dmitry D. Kaplunenko, Vyacheslav Lobanov, Pavel Tishchenko and Mariya Shvetsova**
Vertical *in situ* profiles of nitrate and oxygen in the northern Japan Sea (W4-7714)
- 11:50 **Olga Trusenкова, Dmitry D. Kaplunenko, Svetlana Ladychenko and Vyacheslav Lobanov**
Non-linear patterns of eddy kinetic energy in the Japan/East Sea (W4-7587)

- 12:10 **Junheon Jang, Kyung-II Chang, Seungtae Yoon and Hanna Na**
Long-term variation of subsurface temperature in the Ulleung Basin of the East/Japan Sea (W4-7785)
- 12:30 **Lunch**
- 14:00 **Junghyun Kwak, Yunsook Kim, Daesung Lee, Jeomshik Hwang, Kyung-Ryul Kim and Changkeun Kang**
Summer primary productivity and phytoplankton community structure in the East/Japan Sea (W4-7854)
- 14:20 **Andrey G. Andreev**
Year-to-year changes of pre-winter environmental conditions and chlorophyll *a* concentration in the central and southern Japan Sea (W4-7725)
- 14:40 **Sukgeun Jung and Iisu Choi**
Alternations of dominant fisheries species in the southwestern Japan/East Sea since 1968 in relation to climate change (W4-7798), Invited
- 15:05 **Yury Zuenko, Yongjun Tian, Sukgeun Jung and Rabea Diekmann**
Recent climatic changes in the Japan/East Sea ecosystem on the tri-national data set (W4-7726)
- 15:25 Discussion
- 15:30 **Coffee/Tea Break**
- 15:50 CREAMS/PICES AP meeting
- 18:00 Workshop ends

Workshop 4 Posters

- W4-7635 **Dmitry V. Stepanov and Nikolay A. Diansky**
Study of the low-frequency variability of the Japan/East Sea circulation by numerical simulations
- W4-7754 **Pavel Semkin, Pavel Tishchenko, Vyacheslav Lobanov, Alexander Sergeev, Ruslan Chichkin, Galina Pavlova, Sergey Sagalaev, Elena Shkirnikova, Mariya Shvetsova, Petr Tishchenko, Tatyana Volkova and Vladimir Zvalinsky**
Seasonal and spatial variability of hydrochemical parameters in the Ussuriyskiy Bay (Japan Sea)
- W4-7764 **Keiko Yamada, Sangwoo Kim and Joji Ishizaka**
Spring phytoplankton blooms detected in the Japan/East Sea since 1998 by the ocean color sensor, SeaWiFS
- W4-7786 **Jaehyung Park and Kyung-II Chang**
Characteristics of anomalous summertime coastal upwelling events off the east coast of Korea during 2003-2009
- W4-7819 **Georgiy Moiseenko, Igor Shevchenko, Vadim Burago and Sergey Levashov**
On the possible estimation of the Okhotsk Sea water upper layer properties using remote-sensing reflectances
- W4-7865 **Lian Zhong-Lian, Zheng Ai-Rong, Fang Hong-Da and Qian Hong-Lin**
Preliminary study on biological nitrogen fixation of Tokin Gulf in winter
- W4-7911 **Gennady Kantakoy, Victor Tambovsky, Alexey Bobkov and Evgeny Lunev**
Recent surface currents observations in the Okhotsk Sea by Argos drifters