Science Board Symposium
Effects of natural and anthropogenic stressors in the North Pacific ecosystems: Scientific challenges and possible solutions

Co-Convenors: Sinjae Yoo (SB), Atsushi Tsuda (BIO), Elizabeth Logerwell (FIS), Hiroya Sugisaki (MONITOR), Kyung-Il Chang (POC), Toru Suzuki (TCODE), Thomas Therriault (AICE), Hiroaki Saito (COVE), Robin Brown (SOFE), Igor Shevchenko (Russia), Fangli Qiao (China)

Invited Speakers:
Benjamin Halpern (University of California Santa Barbara, USA)
Kitack Lee (Pohang University of Science and Technology, Korea)
William Li (Bedford Institute of Oceanography, DFO, Canada)
Reiji Masuda (Kyoto University, Japan)
Hans Paerl (The University of North Carolina at Chapel Hill, USA)
Ian Perry (Pacific Biological Station, DFO, Canada)
Hiroaki Saito (Tohoku National Fisheries Research Institute, FRA, Japan)
Xuelei Zhang (First Institute of Oceanography, SOA, China)

Human society depends on ocean ecosystems to meet many of its needs. The availability of marine ecosystem services to humans is important to sustain coastal communities and to ensure human health and well-being. Global warming, shoreline development, pollution, eutrophication, overfishing, non-indigenous species, and intensive mariculture are examples of anthropogenic stressors that affect marine ecosystems. These stressors can act alone or in combination to alter the structure, function, and productivity of marine ecosystems. Consequently, the potential for decline in the ability of the ocean to provide essential ecosystem services, as a result of synergies in natural and anthropogenic stressors, is a serious concern for human society. To advance ecosystem-based management and to mitigate the influence of stressors, there is a need to develop improved understanding of the mechanisms of change in marine ecosystems. Improved understanding of ecosystem structure, function, and resilience will aid the development of practical methods to maintain and monitor ecosystem health. These are challenging issues for marine science and PICES will continue to promote research to address these issues through FUTURE.

Monday, October 15 (10:30-18:30)

10:30  Tokio Wada (Keynote)
Resilience and sustainability of the human-ocean coupled system – Beyond the Great East Japan Earthquake

11:15  Hans W. Paerl, Kedong Yin, James E. Cloern, Paul J. Harrison, Jacob Carstensen and Todd D. O’Brien
Global patterns of phytoplankton dynamics in coastal ecosystems: Utilizing long-term data to distinguish human from climatic drivers of ecological change (S1-8359), Invited

11:40  Benjamin S. Halpern
The Ocean Health Index: Global assessment and future priorities (S1-8663), Invited

12:05  William K.W. Li and Nancy Shackell
Ecosystem change in the North Atlantic: Impacts, vulnerabilities, and opportunities (S1-8395), Invited

12:30  Lunch
14:00  R. Ian Perry and Diane Masson  
Understanding ecosystem structure, function, and change in the Strait of Georgia, Canada: A human-dominated marine ecosystem (S1-8611), Invited

14:25  Kitack Lee, Tae-Wook Kim, Raymond G. Najjar, Hee-Dong Jeong and Hae Jin Jeong  
The anthropogenic impacts on ocean nutrients and carbon systems in the marginal seas of northwestern Pacific Ocean (S1-8809), Invited

14:50  Anne Hollowed  
Projecting future status and trends of commercial fish and fisheries under shifting management strategies and climate change (S1-8605)

15:10  Yury I. Zuenko  
Ecosystem reconstruction of the Japan/East Sea under recent climate change: Lowered productivity vs enhanced efficiency (S1-8550)

15:30  Jilong Wang, Jilong Li and Wenbo Yang  
Impact of major climatic factors on biomass of the main commercial fishes in east China seas (S1-8456)

15:50  **Coffee/Tea Break**

16:10  Reiji Masuda  
Underwater visual census as a tool to monitor coastal ecosystems: Seasonal and interannual fluctuations, effect of thermal discharge from power stations, and recovery from the tsunami disaster (S1-8629), Invited

16:35  Xuelei Zhang, SL Fan, Y Li, S Fang, MZ Fu, W Zheng, RX Li, ZL Wang and MY Zhu  
The onset and development of green algal tide in the Yellow Sea (S1-8660), Invited

17:00  Hiroaki Saito, Takaomi Kaneko and Mitsutaku Makino  
Marine ecosystem responses to sporadic perturbation: Their processes, social impact and possible solutions (S1-8621), Invited

17:25  Staci Massey Simonich  
Is trans-Pacific atmospheric transport and deposition of persistent organic pollutants (POPs) to the North Pacific Ocean significant? (S1-8511)

17:45  Catharina J.M. Philippart, Martin J. Baptist, Taco de Bruin, Bruno J. Ens, Lucien Hanssen, Folkert de Jong and Frans J. Sijtsma  
Sensing marine life and livelihoods at the seashore – An integrated monitoring network and data portal for the Wadden Sea, a coastal UNESCO World Heritage site (S1-8502)

18:05  Takeo Kurihara, Kengo Suzuki, Gyo Itani, Masatsugu Iseda, Tomoyuki Nakano, Satomi Kamimura Koji Selke, Takenori Sasaki, Hideki Takami and Susumu Chiba  
Comparison of the mollusk assemblage in Japan before vs. after the Great Tohoku Earthquake (S1-8544)

18:25  **Discussion**

18:30  **Session Ends**
Victor F. Bugaev
Effects of pink salmon (*Oncorhynchus gorbuscha*) stock abundance on the growth of sockeye salmon (*Oncorhynchus nerka*) from Kamchatka River in the ocean

Sangjin Lee
NOWPAP Medium-term Strategy to address marine and coastal environment issues in the Northwest Pacific Ocean

Yulia S. Chernyshova and Tatyana Shpakova
Size-age structure of Japanese scallop (*Mizuhopecten yessoensis*) from Alexandrovsky Bay, Japan Sea in 2009–2011

Anna S. Vazhova, Denis P. Kiku, Andrey P. Chernyaev and Lidiya T. Kovkovdova
Assessment of petroleum hydrocarbons and heavy metals in estuarine areas of the rivers of Peter the Great Bay (Japan/East Sea)

Lidiya T. Kovkovdova and Denis P. Kiku
Metals in bottom sediments of Peter the Great Bay (Japan/East Sea)

Anatoliy L. Drozdov, Galina V. Moyseychenko, Konstantin A. Drozdov and Tatyana S. Vshivkova
Bioassessment of ecological conditions of rivers, estuaries and marine areas around Vladivostok-city: Amuriskiy and Ussuriiskiy Gulls of the Sea of Japan

Vladimiro Shulkin, Tatyana Yu. Orlova, O.G. Shevchenko and Inna V. Stonik
River runoff as a reason for the seasonal and interannual variability of coastal phytoplankton blooms and hydrochemical characteristics in the northwestern part of the East/Japan Sea

Kuninao Tada, Miho Kayama, Naoto Hirade, Hitomi Yamaguchi, Supaporn Yamaguchi, Kazuhiro Harada, Munehiro Fujiwara, Kazuhiko Ichimi and Tsuneo Honjo
Decrease of surface water nutrient concentration and nutrient flux from the sediment in Harima-Nada, Eastern Seto Inland Sea, Japan

Alla A. Ogorodnikova
A system of biotic indices and impact – Response indicators of hydraulic activity on marine bioresources

Dmitry Galanin, Sergey Dubrovsky, Viktor Sergeenko, Tatyana Shpakova and Yulia S. Chernyshova
Current state of the scallop *Mizuhopecten yessoensis* (Jay, 1856) resources of the Sakhalin-Kuril region (Okhotsk Sea)

Hyeong Kyu Kwon, Han-Soeb Yang, Seok Jin Oh, Ju Chan Kang and Chang Geun Choi
Phytoremediation: Novel approach to remediate eutrophic coastal sediment using light-emitting diodes (LEDs) and benthic microalgae (BMA)

Machiko Yamada, Mayuko Otsubo, Yuki Tsutsumi, Chiaki Mizota, Kuninao Tada and Paul J. Harrison
Effect of fresh water on species diversity of the genus *Skeletonema* (Bacillariophyceae) in coastal and brackish waters

Marisol Garcia-Reyes and William J. Sydeman
Wavelet decomposition of upwelling: Forcing and ecosystem response

Larissa A. Gayko
Influence of climate change on the development of mollusks on marine farms (Posseyet Bay, Japan/East Sea)
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<th>S1-15</th>
<th>Shang Chen and Tao Xia</th>
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<td>Technical directives for marine ecological capital assessment: Introduction and application in China seas</td>
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<th>Anna S. Vazhova and Andrey P. Chernyaev</th>
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<td>Content of polycyclic aromatic hydrocarbons (PAHs) in sediments of Amur Bay (Peter the Great Bay, Japan/East Sea)</td>
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<th>Talgat R. Kilmatov</th>
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<td>Changes in natural environment capacities due to climatic trends and possible migration of manpower on the western shore of the North Pacific</td>
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<th>Tamara G. Ponomareva and Polina A. Sokolova</th>
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<td>The Amur River estuary system</td>
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<th>Min-bo Luo and Yun-long Wang</th>
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<td>Community macrobenthos response to engineering in Hangzhou Bay, China</td>
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Ciguatera fish poisoning is a growing food-borne illness that is common in tropical waters, where poisoning numbers are poorly known but estimated to range from 50,000 to 500,000 cases per year. The incidence of ciguatera is on the rise, and appears to correspond to disturbances in the environment such as nutrients released into coastal waters, land-use changes, or warmer coastal waters. Indeed, the flagellates, *Gambierdiscus* and *Ostreopsis*, that can produce ciguatoxin- or palytoxin-like compounds, appear to be spreading to more temperate latitudes, including the waters of PICES member countries. To gain better insight to this new issue, we invite papers addressing benthic dinoflagellate taxonomy, evidence for range extension, descriptions of standardized sampling programs; assays for assessing toxicity, and sentinel products to alert public health officials to ciguatera risk. The goal of the session is to formulate a better understanding of environmental conditions fostering the prevalence of ciguatoxin-producing organisms in new geographical regions.

**Thursday, October 18 (9:00-12:50)**

09:00 *Introduction by Convenors*

09:05 *Toshiyuki Suzuki, Ryuichi Watanabe, Hajime Uchida, Ryoji Matsushima, Hiroshi Nagai, Takeshi Yasumoto, Takamichi Yoshimatsu, Shinya Sato and Masao Adachi*  
**Discovery of novel ovatoxin isomers in several Ostreopsis strains in Japan (Invited)**

09:35 *Masao Adachi, Takamichi Yoshimatsu, Haruka Iwamoto, Tomohiro Nishimura and Haruo Yamaguchi*  
**Effect of temperature change on the dominant species of Gambierdiscus in Japan - From a non-toxic species to a toxic species? (S2-8372), Invited**

09:55 *Takuo Omura and Yasuwo Fukuyo*  
**Gambierdiscus in the mainland of Japan (S2-8695)**

10:15 *Charles G. Trick and Danielle Beausoleil*  
**HABs and Ciguatera Fish Poisoning: Emerging methodological perspectives (S2-8824)**

10:35 *Coffee/Tea Break*

11:00 *Teina Rongo and Robert van Woesik*  
Ciguatera poisoning and climate oscillations in Rarotonga, southern Cook Islands (S2-8330), Invited

11:30 *Marina S. Selina, Tatiana V. Morozova, Nellya G. Litvinova and Tatyana Yu. Orlova*  
Toxic epiphytic dinoflagellates in Peter the Great Bay, Sea of Japan, Russia (S2-8386)

11:50 *Changkyu Lee, Taegyu Park and Youngtae Park*  
**Geographic distribution of benthic dinoflagellates along Korean coasts (S2-8827)**

12:10 *Patricia A. Tester and R. Wayne Litaker*  
Accidental taxonomists and the resurgence of Gambierdiscus research (S2-8826), Invited

12:40 *Comments and Discussion*
Occurrence of epiphytic dinoflagellate *Gambierdiscus* spp. in the uninhabited Baekdo Islands and Seopsom Island in the vicinity of Seogwipo, Jeju Province, Korea
POC Topic Session
Challenges in understanding Northern Hemisphere ocean climate variability and change

Co-Sponsored by CLIVAR and ICES

Co-Convenors: Jürgen Alheit (ICES/Germany), Emanuele Di Lorenzo (PICES/USA), Michael Foreman (PICES/Canada), Shoshiro Minobe (PICES/Japan), Hiroaki Saito (PICES/Japan) and Toshio Suga (CLIVAR/Japan)

Invited Speakers:
Kenneth Drinkwater (Institute of Marine Research, Norway)
Young-Oh Kwon (Woods Hole Oceanographic Institution, USA)
Nathan Mantua (University of Washington, USA)
Yoshi N. Sasaki (Hokkaido University, Japan)
Akinori Takasuka (National Research Institute of Fisheries Science, FRA, Japan)

Physical climate variability and change exert substantial impacts on marine ecosystems, particularly on longer timescales because of the longer ocean memory compared with the atmosphere, and the cumulative effects on marine ecosystems. On a centennial scale, climate changes due to anthropogenic forcings may dominate over natural variability, but variations on decadal or shorter timescales may be mainly due to natural climate variability. Furthermore, natural climate variability can be modified via climate changes. Therefore, a correct understanding of the mechanisms underlying climate variability and change should be the basis for understanding and predicting future conditions of the North Pacific and North Atlantic. For the North Pacific there is no widely accepted consensus on the mechanisms governing decadal-to-multidecadal climate variability, and this mainly reflects the uncertainty of how, or even whether, the mid-latitude ocean influences the atmosphere. Some linkages between processes, such as oceanic memory due to Rossby wave propagation, are generally accepted, and predictability associated with these processes may also be important for understanding marine ecosystem impacts. It is also unclear if teleconnection dynamics between the North Pacific, North Atlantic and the Arctic exert an important control on the ocean’s decadal climate state. This session brings together researchers of marine ecosystems, physical oceanography and climate to share ideas about what physical parameters and processes are important in understanding and predicting the response of specific marine ecosystems to climate forcing. Through collaboration among PICES, CLIVAR and ICES, this session invites contributions exploring important developments in the research field of the North Pacific climate variability and change, including physical environmental variations and their predictability, teleconnection dynamics between oceanic basins, such as the Pacific and Atlantic Oceans, and linkages between physical conditions and marine ecosystems.

Thursday, October 18 (9:00-17:30)

09:00 Introduction by Convenors

09:05 Kenneth F. Drinkwater
Challenges in understanding ocean climate variability and change and its impacts: Temporal and spatial scales and multi-forcing (S3-8639), Invited

09:30 Jürgen Alheit
Impact of multi-decadal climate forcing on northern hemisphere small pelagic fish populations (S3-8595)

09:50 Andrey S. Krovnin, Boris N. Kotenev and George Moury
Interaction of major teleconnection patterns as a mechanism linking the North Pacific and North Atlantic climate (S3-8493)

10:10 Nathan Mantua and Megan Stachura
Empirical evidence for North Pacific ecosystem regime shifts revisited (S3-8834), Invited
Coffee/Tea Break

10:55
William T. Peterson, Jay Peterson, Cheryl A. Morgan and Jennifer L. Fisher
Tracking ecosystem change in the northern California Current (S3-8688)

11:15
Akinori Takasuka, Ichiro Aoki and Yoshioki Oozeki
Environmental windows for small pelagic fish in the western North Pacific: How do their vital parameters respond to climate variability and change? (S3-8802), Invited

11:40
Albert J. Hermann, Nicholas A. Bond, Georgina A. Gibson, Enrique N. Curchitser, Kate Hedstrom and Phyllis J. Stabeno
Biophysical frequency response of the Bering Sea to large-scale forcing (S3-8710)

12:00
Hyung Jeck Kim, Kiseong Hyeong, Chan Min Yoo, Dongseon Kim and Boo-Keun Khim
Impact of strong El Niño events on sinking particle fluxes in the 10°N thermocline ridge area of the northeastern equatorial Pacific (S3-8584)

12:20
Elena I. Ustinova and Yury D. Sorokin
Regional features of the climate variability and change in the Far-Eastern Seas (S3-8753)

12:40
Lunch

14:00
Young-Oh Kwon
Role of the Kuroshio-Oyashio Extensions and Gulf Stream in the decadal climate and ecosystem variability (S3-8636), Invited

14:25
Bunmei Taguchi and Niklas Schneider
Dynamics of North Pacific oceanic heat content variability on decadal time-scale (S3-8752)

14:45
Yoshi N. Sasaki, Shoshiro Minobe and Niklas Schneider
Interannual to decadal variability of the Gulf Stream and Kuroshio Extension jets (S3-8397), Invited

15:10
Jennifer L. Fisher, William T. Peterson, Cheryl A. Morgan and Jay Peterson
Basin-scale versus local-scale drivers of copepod community dynamics in the northeast Pacific (Newport, Oregon, USA) (S3-8718)

15:30
Coffee/Tea Break

15:50
Andrew Davis and Emanuele Di Lorenzo
Forcing dynamics of mesoscale eddies in the California Current (S3-8332)

16:10
Vadim Navrotsky
Effects of solar activity on climate-ocean ecosystems interactions (S3-8532)

16:30
Howard J. Freeland
Temperature, salinity and density trends along Line-P and the implications for mixed layer formation (S3-8380)

16:30
Patrick Cummins and Diane Masson
Wind-driven variability of dissolved oxygen below the mixed layer at Station P (S3-8643)

16:50
Haruka Nishikawa, Voichi Ishikawa, Masafumi Kamachi, Hiromichi Igarashi, Shuhei Masuda, Toshimasa Doi, Shiro Nishikawa, Yoshihisa Hiyoshi, Yuji Sasaki, Takashi Mochizuki, Hiroshi Ishizaki, Tsuyoshi Wakamatsu and Toshiyuki Awaji
Estimation of nutrient supply process in the spring Kuroshio-Oyashio transition region (S3-8523)
Toshio Suga, Shigeki Hosoda, Ryuichiro Inoue, Kanako Sato, Koketsu Shinya, Taiyo Kobayashi, Fumiaki Kobashi, Katsuya Toyama, Toshiyuki Kita, Makio C. Honda, Kazuhiko Matsumoto, Kosei Sasaoka, Tetsuichi Fujiki, Hajime Kawakami, Masahide Wakita, Yoshikazu Sasai, Akihiko Murata, Kazuhiko Hayashi, Yoshimi Kawai, Vincent Faure, Akira Nagano, Takeshi Kawano and Toshiro Saino

Western North Pacific Integrated Physical-Biogeochemical Ocean Observation Experiment (INBOX) (S3-8619)

17:30

Session Ends

S3 Posters

S3-1 Svetlana Yu. Glebova
Winter cyclonic activities over the ocean as a factor in the subsequent changes in the atmospheric and thermal regime of the Far Eastern Seas and north-west Pacific (with a shift in one year)

S3-2 Qinghua Qi, Rong-shuo Cai and Qilong Zhang
The variability of sea temperature in South China Sea (SCS) and its relationship with the early or later of SCS summer monsoon outbreaks

S3-3 Licheng Feng, Baochao Liu and Jianping Li
A study of the effect of wind on Changjiang (Yangtze) River diluted water in summer

S3-4 Howard J. Freeland
The current status of the international Argo project

S3-5 Hong-jian Tan and Rong-shuo Cai
Possible impact of El Niño Modoki on marine environment in China offshore and its adjacent seas

S3-6 Taewook Park, Chan Joo Jang, Minho Kwon, Hanna Na and Kwang-Yul Kim
ENSO effect on surface salinity variability in the Yellow and East China Seas in summer

S3-7 Dmitry V. Stepanov, Victoria I. Stepanova and Nikolay A. Diansky
Interannual to interdecadal variability of circulation in the Japan/East Sea based on numerical simulations

S3-8 (cancelled) Jinguo Du, William W.L. Cheung, Bin Chen, Qiulin Zhou and Shengyun Yang
Progress and prospect of impacts of climate changes on marine biodiversity

S3-9 Larissa A. Gayko
Air-sea interaction along the coast of north-western East/Japan Sea within 75 years

S3-10 Yang Liu, Sei-Ichi Saitoh, I. Nyoman Radiarta, Tomonori Isada, Toru Hirawake, Hiroyuki Mizuta and Hajime Yasui
Impact of climate variability on marine aquaculture: A case study on the Japanese kelp in southern Hokkaido, Japan, using satellite remote sensing and GIS-based models

S3-11 Yuri Oh, Chan Joo Jang and Jihyun Lee
Enhanced stratification in the southwestern East Sea (Japan Sea)

S3-12 Yoshikazu Fukuda, Wataru Ito, Toshiya Nakano, Shiro Ishizaki and Tsurane Kuragano
Decadal variability of subsurface temperature in the North Pacific and recent modulation of the leading EOF modes
S3-13  Larisa Chernysheva and Viktoria Platonova  
Seasonal climate variability on the coastal zone of the western part of North Pacific

S3-14  Kosei Komatsu  
3D structure and decadal change of the nutrient in the Kuroshio region detected from historical data

S3-15  Naoki Furuichi, Toshiyuki Hibiya and Yoshihiro Niwa  
Assessment of turbulence closure models for resonant inertial response in the oceanic mixed layer using a large eddy simulation model

S3-16  Olga Skaberda, Lubov Vasilevskaya and Julia Stochkute  
The relationship between the air temperature of East Kamchatka and the water temperature of western part of the Bering Sea

S3-17  Yulong Liu, Qi Wang and Jinkun Yang
(cancelled)  
The features of bifurcate line about the North Equatorial Current in the Pacific

S3-18  Chan Joo Jang, Jihyeon So, Taewook Park and Sinjae Yoo  
Mixed layer variability and its associated chlorophyll a changes in the East Sea (Japan Sea)
Monitoring on a small budget: Cooperative research and the use of commercial and recreational vessels as sampling platforms for biological and oceanographic monitoring

Co-Convenors: Steven Barbeaux (USA), Jennifer Boldt (Canada), Martin Dorn (USA) and Jae Bong Lee (Korea)

Invited Speaker: Rudy Kloser (CSIRO (Commonwealth Scientific and Industrial Research Organisation), Australia)

Long-term monitoring is a key component of an ecosystem-based approach to fisheries management. Time series data enable the examination of changes in oceanographic and community metrics. Government funding sources for long-term monitoring of biological and oceanographic processes has dwindled in recent years, while the mandate for this type of information has increased. If data driven ecosystem-based management continues to be the goal then methods for reducing the costs of data collection must be found while data quality is maintained. An example of this type of innovative approach can be found in Alaska walleye pollock (Theragra chalcogramma) fishery where researchers have teamed with commercial fishers to deploy inexpensive temperature and depth data storage tags on trawl nets. At the same time, data on fish density and distribution are being collected using the fishing vessels’ own acoustic systems. These data are being used to validate oceanographic models, to assess the effects of oceanographic conditions on bycatch in the walleye pollock fishery, and to evaluate the effects of oceanographic conditions on walleye pollock density and distribution. This session is intended to explore the ways in which cooperative research with other seagoing stakeholders and the use of commercial and recreational vessels as sampling platforms for biological and oceanographic monitoring can be integrated into ocean monitoring systems. With sufficient interest by the contributors, a special issue of Fisheries Research will be sought.

Wednesday, October 17 (9:00-12:50)

09:00  Introduction by Convenors

09:05  Rudy J. Kloser, Tim E. Ryan, Ryan Downie, Mark Lewis and Gordon Keith
Using commercial vessels to monitor deep-water fisheries and basin scale ecosystems (S4-8546), Invited

09:30  Sonia Batten and Anthony Walne
Ship of Opportunity sampling of lower trophic levels (S4-8392)

09:50  Elizabeth A. Logerwell, Steven J. Barbeaux and Lowell W. Fritz
Using walleye pollock acoustic survey data and Steller sea lion foraging information to manage fisheries – sea lion interactions in the Aleutian Islands (S4-8435)

10:10  Viktor N. Filatov, Yury V. Eremin, Elena I. Ustinova and Aleksey V. Ballo
Monitoring of oceanographic and biological conditions in the Pacific saury fisheries expedition (S4-8811)

10:30  Coffee/Tea Break

10:50  Ata Suanda and John A. Barth
Long-term observations of internal waves with shore-based video cameras (S4-8361)

11:10  Oksana G. Mikhailova
Coastal monitoring the state of pink shrimp Pandalus borealis population on West Kamchatka (S4-8382)

11:30  Christopher Siddon
Collaborating with the commercial fishing industry: An intensive, cost-effective method to improve red king crab stock assessments in southeastern Alaska, U.S.A. (S4-8689)
11:50  
Aimee A. Keller, W. Waldo Wakefield, Victor H. Simon, John A. Barth and Stephen D. Pierce
Environmental sampling, hypoxia and the Northwest Fisheries Science Center’s Cooperative U. S. West Coast Groundfish Bottom Trawl Survey (S4-8804)

12:10  
Kazuaki Tadokoro, Yuji Okazaki, Akinori Takasuka, Tadafumi Ichikawa and Hiroya Sugisaki
Archiving historical meso-zooplankton samples collected around Japan (S4-8552)

12:30  
Steven J. Barbeaux
Cooperative monitoring in the Alaska walleye pollock (Theragra chalcogramma) fishery (S4-8510)

12:50  
Session Ends

S4 Posters

S4-1  
Igor Burago, Georgy Moiseenko, Olga Vasik and Igor Shevchenko
Sharing marine “small science” data

S4-2  
Aimee A. Keller, W. Waldo Wakefield, Victor H. Simon, John A. Barth and Stephen D. Pierce
Environmental sampling, hypoxia and the Northwest Fisheries Science Center’s Cooperative U.S. West Coast Groundfish Bottom Trawl Survey

S4-3  
Orio Yamamura, Kouji Kooka and Takeomi Isono
Monitoring demersal fish community containing predators of walleye pollock using a small fishing boat
MEQ/FUTURE Topic Session
Social-ecological systems on walleye pollock and other commercial gadids under changing environment: Inter-disciplinary approach

Co-Convenors: Keith Criddle (USA), Suam Kim (Korea), Mitsutaku Makino (Japan), Ian Perry (Canada), Yasunori Sakurai (Japan) and Anatoliy Velikanov (Russia)

Invited Speakers:
Oleg Bulatov (Russian Federal Research Institute of Fisheries and Oceanography, Russia)
Alan Haynie (Alaska Fisheries Science Center)

In order to build bridges between scientists, decision-makers, stakeholders, and across sectors, there is a need for more in-depth and concrete inter-disciplinary research framework in the context of the PICES integrative science program FUTURE. One of the typical groundfish resources in the North Pacific, pollock is highlighted to facilitate such academic discussions under the PICES framework. Research on walleye pollock from the perspectives of ecology, biology, stock dynamics, harvesting, fisheries management, history, marketing, processing, international trade, consumption, and culture will be presented. Inter-relationships among these varied perspectives, information needs, potential values for other disciplines, etc., will be discussed during this session. An expected outcome of this session will be a holistic framework for the inter-disciplinary research, which could be applied to other species.

Tuesday, October 16 (9:00-17:30)

09:00
Introduction by Convenors

09:05
Oleg A. Bulatov
Walleye pollock: Global view (S5-8399), Invited

09:35
Tetsuichiro Funamoto, Osamu Shida, Kazuhiko Itaya, Orio Yamamura, Ken Mori, Yoshiaki Hiyama and Yasunori Sakurai
Comparisons of recruitment fluctuation mechanisms of walleye pollock in the Sea of Japan and the Pacific Ocean off northern Japan (S5-8526)

09:55
Anatoliy Ya. Velikanov
Long-term changes in abundance and annual catches of walleye pollock off Sakhalin Island in the Japan/East Sea and the Okhotsk Sea: From collapse to renewal (S5-8357)

10:15
Benjamin C. Williams, Gordon H. Kruse and Martin W. Dorn
Variations in walleye pollock (Theragra chalcogramma) maturation rates in the Gulf of Alaska (S5-8455)

10:35
Coffee/Tea Break

11:00
Anatoly V. Smirnov
Ecosystem approaches to pollock fishery management in Russia (S5-8333)

11:20
Hirosi Kuroda, Daisuke Takahashi, Tomonori Azumaya and Humio Mitsudera
Development of a high-resolution coastal model around Hokkaido for fisheries science – A study on passive transport of eggs, larvae and juveniles of walleye pollock (S5-8747)

11:40
Igor K. Trofimov
About distribution of under-yearling saffron cod in Karaginsky and Olutorsky Gulfs, Bering Sea (S5-8383)
Establishment of a rearing system of larval and juvenile walleye pollock for elucidating their biological properties and responses to environmental changes (S5-8565)

Lunch

FishSET: A new tool to better incorporate fisher behavior into fisheries management (S5-8707), Invited

Interannual changes in the timing of walleye pollock spawning migration and their impacts on gill-net fisheries in the southwestern Pacific coast of Hokkaido, Japan (S5-8696)

The effect of environmental factors on the distributions of walleye pollock (Theragra chalcogramma) juveniles in Funka Bay and vicinity, Hokkaido, Japan (S5-8385)

Bering Sea pollock recruitment, abundance, distribution and approach to fishery management under changing environment (S5-8327)

Straddling the line: Cooperative and non-cooperative strategies for management of Bering Sea pollock (S5-8379)

Market and distribution of walleye pollock (S5-8780)

The ecology of walleye pollock and its market importance in Korea (S5-8830)

S5 Posters

Andrei N. Stroganov and Alexei M. Orlov
On the population structure of Pacific cod

Sergey S. Ponomarev
Inter-annual variability of Pollock 0–year–class abundance in the northern sea of Okhotsk

Andrey Smirnov
Correlation of pollock and herring yield broods inhabiting the northern part of the Sea of Okhotsk

Nadezhda L. Aseeva, Marina B. Shedko, Andrey Smirnov and Alexander S. Sergeev
New data on ectoparasites of walleye pollock in the Okhotsk Sea

Tadayasu Uchiyama, Gordon H. Kruse and Franz J. Mueter
Effects of water temperature increases on eastern Bering Sea juvenile pollock predation
Urban and industrial developments in the world’s coastal regions have led to the release of a large number of pollutants (heavy metals, POPs, plastics, oils, radioactive substances) into the marine environment. In some cases, these have detrimental effects on variety of marine resources in coastal and offshore areas. It is increasingly important to identify sources, subsequent transport through marine physical systems and resulting spatial patterns of these anthropogenic stressors. Compared to river-lake systems, knowledge of anthropogenic stressors in marine systems is less understood due to difficulties with detection over wide areas and in offshore regions. As top predators, such as many marine mammals and seabirds, bio-magnify some of these pollutants, these organisms can be used as bio-indicators of coastal, marine and/or food web contamination. The utility of these ‘sentinels’ was discussed at the PICES-2011 MEQ Workshop. This session will: 1) identify spatial patterns and geographic areas of concern (high concentrations) of pollutants or other stressors in the PICES region using bio-indicator species, 2) examine mechanisms of transport, and ultimate disposition, of contaminants in marine ecosystems, and 3) discuss health risks for certain predators and human consumers. Review papers, case studies, and innovative methods papers on anthropogenic stressors in marine predators are invited, as well as papers that distinguish between the effects of natural and anthropogenic stressors. In particular, studies linking predator habitat use with spatial aspects of stressors in the environment and in predators are encouraged.

### Wednesday, October 17 (9:00-13:00)

**09:00**

*Introduction by Convenors*

**09:05**

**Andy Sweetman, John Crosse, Richard Shore, Gloria Pereira and Kevin Jones**

Long term trends in PBDE concentrations in gannet (*Morus bassanus*) eggs from two UK colonies (S6-8461), Invited

**09:30**

**Rei Yamashita, Hideshige Takada, Mai Miyazaki, Takashi Yamamoto, Akinori Takahashi, Maki Yamamoto, Philip N. Trathan and Yutaka Watanuki**

Persistent organic pollutants (POPs) in preen gland oils from streaked shearwaters reflect exposure in overwintering areas (S6-8745), Invited

**09:50**

**Sang Hee Hong, Gi Myung Han, Won Joon Shim, Sung Yong Ha and Nak Won Heo**

Concentrations and profiles of persistent organic pollutants (POPs) in birds collected from an urbanized coastal region of South Korea (S6-8763)

**10:10**

**Annamalai Subramanian and Shinsuke Tanabe**

Developing Asian countries as sources of pollutants to the Asia-Pacific region (S6-8540)

**10:30**

*Coffee/Tea Break*

**10:50**

**John E. Elliott, Kyle H. Elliott, Melanie F. Guigueno, Laurie K. Wilson, Sandi Lee and Abde Idrissi**

Seabirds are indicators of persistent contaminants in the marine environment: Examples from the Pacific Coast of Canada (S6-8626), Invited
Persistent Organic Pollutants (POPs) in marine mammals: Harmless chemicals or lingering poisons? (S6-8641)

Marine mammals as bioindicators of persistent toxic substance (PTS) contamination in Russian Subarctic marine ecosystems (S6-8554)

POPs in the preen gland oil of Streaked Shearwaters breeding on the islands in Japan reflect marine pollution in western North Pacific (S6-8465)

Marine/beach plastic litter as a transport vector of pollutants (S6-8533), Invited

Marine plastics: Monitoring matrix for persistent organic pollutants (POPs) and carrier of POPs to seabirds (S6-8731), Invited

Radioactive isotopes in atmospheric aerosols over Russia and the Sea of Japan following the nuclear accident at Fukushima nr. 1 Daiichi nuclear power station in March 2011

Polycyclic aromatic hydrocarbon (PAH) distribution in the Amur River estuary

PAHs in sediments of rivers of the Primorsky Region, Far East of Russia

Ecological risk evaluation of metals in the coastal areas of Peter the Great Bay, Japan/East Sea
Evidence is accumulating that gelatinous zooplankton populations have increased substantially in many regions of the world, most likely through anthropogenic stresses, but we have insufficient understanding of how these blooms affect fish and, more broadly, marine ecosystems. Some benefits of jellyfish to marine fish include provisioning of food for some species and shelter for juvenile stages of several others. There is also a relatively minor human benefit in that some jellyfish are both commercially fished and cultured for human consumption in several countries. However, the negative effects of jellyfish population outbursts are thought to greatly exceed any positive ones and their effects on ecosystems and the economies that depend on them can be profound. These effects have been examined through field studies, controlled laboratory experiments, and estimated using quantitative ecosystem models. Jellyfish are generally detrimental to fish because they feed on zooplankton and ichthyoplankton, and so are both predators and potential competitors of fish. Relatively little of the energy consumed by gelatinous zooplankton ends up at higher trophic levels of interest to humans compared to krill and forage fishes. Jellyfish blooms also directly impact commercial fisheries through filling or clogging trawls and fouling fixed gear and aquaculture net pens, resulting in enormous economic losses worldwide. This session will focus on empirical field, laboratory, or modeling studies that examine the effects jellyfish have on marine ecosystems, fish species and fisheries, and relevant ecosystem-based management issues important to the needs of society over wide-ranging space and time-scales up to and including climate variations.
11:10  **Cornelia Jaspers**  The invasive ctenophore *Mnemiopsis leidyi* in northern European waters and its potential impact on fisheries (S7-8597)

11:30  **Shin-ichi Uye, Alenka Malej and Tjasa Kogovsek**  Comparative analysis of the Inland Sea of Japan and the northern Adriatic: Can changes in anthropogenic pressures disclose jellyfish outbreaks? (S7-8623)

11:50  **Martin K.S. Lilley, Steven E. Beggs, Thomas K. Doyle, V.J. Hobson, K.H.P. Stromberg and Graeme C. Hays**  Direct and indirect evidence for massive differences in jellyfish biomass between the Pacific and Atlantic: Implications for fisheries bycatch? (S7-8590)

12:10  **Lucas Brotz, William W.L. Cheung, Reg Watson, Kristin Kleisner, Evgeny Pakhomov, Philippe Cury, Roxane Maranger, Brooke Campbell and Daniel Pauly**  Anthropogenic impacts related to observed increases of jellyfish populations (S7-8509)

12:30  **Lunch**

14:00  **Christopher P. Lynam, Martin K.S. Lilley, Thomas Bastian, Thomas K. Doyle, Steven E. Beggs and Graeme C. Hay**  Have jellyfish in the Irish Sea benefited from climate change and overfishing? (S7-8676)

14:20  **Alexander V. Zavolokin**  Jellyfish of the Far Eastern Seas of Russia: Composition, spatio-temporal variations and significance for ecosystems (S7-8331)

14:40  **Song Sun, Chaolun Li, Guantao Zhang, Shiwei Wang and Xiao Xia Sun**  Giant jellyfish blooms in the Yellow Sea and East China Sea (S7-8450)

15:00  **Akira Okuno, Tatsuro Watanabe, Satoshi Kitajima, Naoto Honda and Katsumi Takayama**  Numerically simulated migration/distribution of *Nemopilema nomurai* in the Japan Sea using temperature-based controls (S7-8633)

15:20  **Masaya Toyokawa, Akira Yasuda, Yusuke Murata, Kazuhiro Aoki, Manabu Shimizu and Minoru Hamada**  *Aurelia* swarms originate from polyps near the mouth of a bay: evidence from Mikawa Bay and Ise Bay (S7-8464)

15:40  **Coffee/Tea Break**

16:00  **Mary Needler Arai**  Predation on gelatinous cnidaria and ctenophores (S7-8402)

16:20  **Brian E. Smith and Jason S. Link**  The presence of gelatinous zooplankton in the diets of fishes of the Northeast U.S. continental shelf: Trends in shelf-wide feeding and consumptive removals (S7-8667)

16:50  **James J. Ruzicka, Elizabeth A. Daly and Richard D. Brodeur**  Salmon and jellyfish: Bumping elbows in the Northern California Current (S7-8360)

17:10  **John C. Field Jarrod A. Santora Keith Sakuma Amber Payne and Baldo Marinovic**  Spatial and temporal patterns of variability in Scyphomedusae in the central California coastal marine ecosystem (S7-8798)

17:30  **Richard D. Brodeur, Mary Beth Decker, Elizabeth A. Daly, Caren Barcelo, James J. Ruzicka and Kristin Cieciel**  A tale of two *Chrysaora*: Pivotal roles in contrasting marine ecosystems (S7-8430)

17:50  **Discussion**

18:00  **Session Ends**
S7 Posters

S7-1  
**Sim Yee Kwang, Chuah Chern Chung, Anita Talib and Khairun Yahya**  
Exogenous impacts on the massive occurrence of jellyfish in the northern part of Malacca Straits, Malaysia

S7-2  
**Wen-Tseng Lo, Hung-Yen Hsieh and Shwu-Feng Yu**  
Comparison of siphonophore assemblages during northeasterly and southwesterly monsoon seasons in the Taiwan Strait, western North Pacific Ocean

S7-3  
**Ryosuke Makabe, Ryuji Furukawa, Mariko Takao and Shin-ichi Uye**  
Marine construction as a factor boosting *Aurelia aurita* s.l blooms: A case study of a new floating pier deployment in Hiroshima Bay, Japan

S7-4  
**Takashi Kamiyama**  
Planktonic ciliates as a prey source for moon Jellyfish *Aurelia aurita*: Feeding activities and growth effects of ephyra and metephyra stages

S7-5  
**Satoshi Kitajima, Akira Okuno, Naoki Iguchi, Naoto Honda, Tatsumo Watanabe and Osamu Katoh**  
Low temperature excludes medusae of *Nemopilema nomurai* in the Japan Sea in winter

S7-6  
**Thomas Bastian, Damien Haberlin, Mary Catherine Gallagher, Sean Rooney, Graeme C. Hays and Thomas K. Doyle**  
Tracking the lion’s mane jellyfish: Horizontal and vertical movements of *C. capillata* (Scyphozoa) in a shallow coastal environment

S7-7  
**Steven E. Beggs, Thomas Bastian, Martin K.S. Lilley and Thomas K. Doyle**  
Annual and regional variations in associations between Scyphomedusae and juvenile gadoids in the Irish Sea

S7-8  
**Martin K.S. Lilley and F. Lombard**  
Developing a technique for in-situ monitoring of fragile planktonic organisms

S7-9 (cancelled)  
**Kristin Cieciel, Jeanette Gann and Bruce Wing**  
Methods for conducting individual measurements on trawled jellyfish

S7-10  
**Naoki Fujii, Shinya Magome, Atsushi Kaneda and Hidetaka Takeoka**  
Relationship between jellyfish abundance and environmental fluctuations in Uwa Sea

S7-11  
**Jun Nishikawa, Fatimah Md. Yusoff, Nguyen Thi Thu, Khwanruan Srinui, Mulyadi and Shuhei Nishida**  
Jellyfish fisheries in Southeast Asia
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 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. To model fish behavior, integrated studies are needed including laboratory experiments, tagging and acoustic observations, and modeling. The purpose of this session is to review the current state of development in laboratory experiments, field observations and modeling to understand fish behavior and to discuss future potential collaborations to improve fish migration models. Presentations related to laboratory experiments, field observations and modeling works related to fish behavior are welcome.

**Invited Speaker:**
Robert Humston (Washington and Lee University, USA)

**Wednesday, October 17 (9:00-12:40)**

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<td>09:05</td>
<td>Robert Humston</td>
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<td></td>
<td>Selecting appropriate models of fish movement for End-to-End models of marine ecosystems (S8-8831), Invited</td>
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<td>09:30</td>
<td>Ivonne Ortiz, Kerim Aydin and Albert J. Hermann</td>
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<td>20 species, 15 lengths: How fish move driven by happiness as defined by growth and predation (S8-8706)</td>
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<td>09:50</td>
<td>Seokjin Yoon, Terui Takeshi, Michio J. Kishi and Shin-ichi Ito</td>
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<td>An individual-based modeling approach for Pacific saury migrations (S8-8570)</td>
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<td>10:10</td>
<td>Yoshiiki Oozeki, Takeshi Okunishi, Akinori Takasuka and Daisuke Ambe</td>
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<td>Annual change in migration pattern of Pacific saury larvae from spawning to nursery grounds (S8-8681)</td>
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<td>10:30</td>
<td>Coffee/Tea Break</td>
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<td>11:00</td>
<td>Masanori Takahashi, Atsushi Kawabata, Chikako Watanabe, Michio Yoneda, Daisuke Ambe and Takeshi Okunishi</td>
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<td>Migratory behavior and recruitment process of the Pacific stock of chub mackerel <em>Scomber japonicus</em> (S8-8766)</td>
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<td>11:20</td>
<td>Tohya Yasuda, Ryuji Yukami and Seiji Ohshima</td>
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<td>Changes in spatial distribution of chub mackerel under climate change: The case study using Japanese purse seine fisheries data in the East China Sea (S8-8560)</td>
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<td>11:40</td>
<td>Jung Jin Kim, William T. Stockhousen, Yang-Ki Cho, Gwang Ho Seo and Suam Kim</td>
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<td>Transport processes of eggs and paralarvae of Japanese common squid, <em>Todarodes pacificus</em> in the Northwest Pacific (S8-8765)</td>
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<td>12:00</td>
<td>Akira Okuno, Tatsuro Watanabe, Naoto Honda, Katsumi Takayama, Naoki Iguchi and Satoshi Kitajima</td>
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<td>Importance of swimming-depth model of jellyfishes <em>Nemopilema nomurai</em> in simulation of their migration in the Japan Sea (S8-8634)</td>
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Satomi Nakada, Takashi Uenaka, Ken-ichi Kitao, Kenta Matsui, Yoichi Ishikawa, Naohisa Sakamoto, Koji Koyamada, Toshiyuki Awaji and Sei-Ichi Saitoh
Estimated migration of scallop larvae in Funka Bay by using streamline visualization (S8-8677)

12:40
Session Ends

S8 Poster

S8-1  Michio J. Kishi
Discussions on random walk and behavioral movement models coupled with NEMURO. FISH: Case study on chum salmon and saury
S9  FIS/MEQ Topic Session
Ecological functions and services associated with marine macrophyte communities as indicators of natural and anthropogenic stressors in nearshore zones of the North Pacific

Co-Convenors: Ik-Kyo Chung (Korea) and Jun Shoji (Japan)

Invited Speakers:
Masakazu Hori (National Research Institute of Fisheries and Environment of Inland Sea, Japan)
Katsumasa Yamada (National Institute for Environmental Studies, Japan)

Diverse communities of marine and estuarine macrophyte vegetation including kelp beds, seaweeds, macrobenthic algae, seagrasses, and salt marshes occur along the coastlines of the PICES member countries. In addition to the direct primary production of organic material into marine ecosystems, these macrophytic communities are also considered as ecological engineers that can have important indirect supporting roles in the lives of heterotrophic organisms such as fishes, shellfish, seabirds, and other marine organisms. Seasonal growth and breakdown of macrophytic vegetation has important implications for the biochemistry of essential nutrients in the nearshore zones, and for the interactions among vertebrate and invertebrate members of marine and estuarine communities. Fluctuations in physical and chemical parameters such as sea water temperature, salinity, nutrient availability, incident light levels, water flow, and sediment conditions contribute as complex regulating factors toward the establishment and persistence of macrophyte communities. In contrast, the physical structure of the macrophytes themselves can modify the local environment, affect the composition and abundance of their associated organisms, and provide essential ecological roles as recruitment sites, nursery areas, foraging habitats, and sinks for marine carbon. These interactions among ambient environmental parameters, macrophytes, and their associated organisms are collectively known as ecosystem functions and services, which are influenced not only by natural forces but also by anthropogenic stressors. The topic session will focus on the ecological functions and services provided by diverse communities of macrophytes throughout the North Pacific coastal zone. In particular, presentations are encouraged that explore the diversity and dynamics of ecosystem functions and services provided by macrophytes that may be regarded as biotic indicators of natural shifts and human-induced stressors in nearshore ecosystems.

Friday, October 19 (9:00-12:15)

09:00  Introduction by Convenors

09:05  Masakazu Hori
Effect of coastal seascape diversity on associated fish production (S9-8495), Invited

09:30  Nam-Il Won, Hideki Takami, Yutaka Kurita, Daisuke Muraoka and Tomohiko Kawamura
Trophic structure of the rocky shore ecosystem in Otsuchi Bay, Japan: Implications for benthic–pelagic coupling (S9-8529)

09:50  Tsutomu Noda, Yoshitomo Nagakura, Daisuke Shimizu, Hideaki Aono, Hiroyuki Okouchi, Masami Hamaguchi, Atsushi Fukuta, Yasuhiro Kamimura and Jun Shoji
Impact of the tsunami from the Great East Japan Earthquake on seagrass beds and fish assemblages in Miyako Bay (S9-8632)

10:10  Shiori Sonoki, Yuka Morita, Jun Syoji and Kazushi Miyashita
Monitoring seasonal variations in a seagrass bed by an acoustics method (S9-8416)

10:30  Coffee/Tea Break

10:50  Katsumasa Yamada
Functional diversity and functional redundancy of a faunal community in a seagrass ecosystem of northern Japan (S9-8587), Invited
11:15  **Sang Rul Park, Joseph Stachelek and Kenneth H. Dunton**
The role of salt marsh plants as a net sink or source for carbon dioxide in the southwestern Gulf of Mexico (S9-8506)

11:35  **Ekaterina V. Golovashchenko**
The economic value of ecosystem services in Kievka Bay (Japan Sea) (S9-8675)

11:55  **Seokjin Yoon, Michio J. Kishi, Satoshi Nakada, Yoichi Ishikawa, Tomonori Isada and Sei-Ichi Saitoh**
Ecological functions of a kelp community as an indicator of anthropogenic nutrient stressors (S9-8772)

12:15  **Session Ends**

**S9 Posters**

S9-1  **Chunjiang Guan, Jie Na, Meng Xu and Xiutang Yuan**
Studies on carbon, nitrogen, and phosphorus uptake fluxes by *Suaeda salsa* around the Bohai Sea District

S9-2  **Ivan I. Cherbadgy and Ludmila I. Sabitova**
Influence of environmental factors on ammonium and phosphate uptake rates by a red alga (*Ahnfeltia tobuchiensis*) population in Izmena Bay (Kunashir Island)

S9-3  **Yun Hee Kang, Chang Jae Choi and Sang Rul Park**
Effects of intensity and season of disturbance on the marine benthic community of a rocky intertidal shore with a periodic green tide occurrence in Korea

S9-4  **Chang Geun Choi and Seok Jin Oh**
Development of artificial seaweed bed for ecological restoration (S9-8558)
Marine ecosystems of the North Pacific, both coastal and offshore, are influenced by multiple stressors, such as increased temperature, change in iron supply, harmful algal blooms, invasive species, hypoxia/eutrophication, ocean acidification, and intensive fishing. These multiple stressors can (but do not always) act synergistically to change ecosystem structure, function, and dynamics in unexpected ways that can differ from responses to single stressors. Further, these stressors can be expected to vary by region and over time. This session seeks to understand the responses of various marine ecosystems to multiple stressors and to identify appropriate indicators of these effects. Contributions are invited which review and define categories of indicators to document the status and trends of ecosystem change at a variety of spatial scales (e.g., coastal, regional, basin) in response to multiple stressors. Emphasis will be placed on empirical and theoretical approaches that forge links between ecosystem change and the intensities of multiple stressors. This session will form a contribution to the work of PICES WG 28 on Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors (http://www.pices.int/members/working_groups/wg28.aspx).

Friday, October 19 (9:00-12:00)

09:00  Introduction by Convenors

09:05  Natalie C. Ban, Stephen S. Ban and Hussein M. Alidina
Mapping cumulative impact: Advances, relevance and limitations to marine management and conservation in Pacific Canada, and emerging Bayesian approaches (S10-8514), Invited

09:25  R. Ian Perry and Jennifer Boldt
Identifying multiple stressors and potential habitat responses in marine ecosystems of Pacific Canada (S10-8612)

09:45  Vladimir V. Kulik
Mapping cumulative human and natural impacts in the Sea of Okhotsk (S10-8559)

10:05  Motomitsu Takahashi, Sachihiko Itoh, Naoki Yoshie, Kazuhiko Mochida, Masakazu Hori and Shigeru Itakura
Comparative study on ecosystem responses to anthropogenic activities and natural stressors among inland, shelf and oceanic waters around Japan (S10-8568)

10:25  Coffee/Tea Break

10:45  Mingyuan Zhu, Ruixiang Li and Zongling Wang
Ecosystem Changes under multi-stressors in the Yellow Sea (S10-8573)

11:05  Kyung-Su Kim, JeongHee Shim and Suam Kim
The combined effects of elevated carbon dioxide concentration and temperature on the early development stage of olive flounder Paralichthys olivaceus (S10-8429)

11:25  Anna V. Skriptsova, Ludmila I. Sabitova and Ivan I. Cherbadgy
Long-term changes in the subtidal macrophyte community in Peter the Great Bay (Sea of Japan): A response to climate change? (S10-8428)

12:00  Session Ends
S10 Posters

S10-1 Evgeniya Tikhomirova
Typical distributions of primary production at the surfaces of Peter the Great Bay (Japan Sea)

S10-2 Kanako Naito, Setsuko Sakamoto, Mineo Yamaguchi, Ichiro Imai and Ken-ichi Nakamura
Iron as a triggering factor for harmful dinoflagellate blooms

S10-3 Aya Morinaga and Kazumi Matsuoka
Eutrophication suggested by the heterotrophic signal of dinoflagellate cyst assemblages; Case of Omura Bay, West Japan

S10-4 Yuta Inagaki, Tetsuya Takatsu, Masafumi Kimura, Yota Kano, Toyomi Takahashi, Yoshihiko Kamei, Naoto Kobayashi and Tatsuaki Maeda
Effects of hypoxia on annual changes in growth and somatic condition of flathead flounder Hippoglossoides dubius in Funka Bay, Japan

S10-5 Tetsuya Takatsu, Koji Shinoda, Shoichi Inoue, Tomofumi Seta and Yuta Inagaki
Drastic reduction of demersal fish abundance by hypoxia in Mutsu Bay Japan in the fall of 2011

S10-6 Stephani Zador and Kirstin Holsman
Identifying and comparing ecosystem stressors in the eastern Bering Sea and Gulf of Alaska

S10-7 Yumiko Yara, Meike Vogt, Masahiko Fujii, Hiroya Yamano, Claudine Hauri, Marco Steinacher, Nicolas Gruber and Yasuhiro Yamanaka
Ocean acidification limits temperature-induced poleward expansion of coral habitats

S10-8 Anastasiia Strobykina
Spatial and temporal variability of nutrients in the Okhotsk Sea shelf zone
From ancient times, we have been discussing and taking countermeasures on revival of fisheries and social infrastructures of waterside from natural disasters such as tsunamis and floods. The earthquake (Magnitude 9.0) that occurred in northeastern Japan on the 11th of March, 2011, was beyond our imagination. The earthquake and the subsequent gigantic tsunami destroyed the regional fisheries and surrounding society, and impacted marine ecosystems in eastern Japan. The tsunami also damaged the nuclear power plant of Fukushima, posing a serious threat to the North Pacific ecosystems due to the radioactive contamination of the ocean. Other recent examples of disasters which caused serious problems of environmental pollution for the marine ecosystems are hurricane Katrina in 2005, and the oil spill of the Gulf of Mexico in 2010. The magnitude of climatic disasters such as storms and floods may have been enhanced due to global warming. Since oil refineries, factories, power plants and other industrial infrastructures are often built in the coastal areas of the world, coastal ecosystems are vulnerable to natural and artificial disasters. For the wise use of ecosystem services, it is urgent and important to reveal the effects of natural and artificial disasters on marine ecosystems, to document their restoration processes, and to promote effective measures for restoration and mitigation of disaster impacts. The purposes of this session are to discuss: (1) the effect on the marine ecosystem by disasters, (2) the effect on the marine industries and societies by disasters, (3) schemes for the mitigations and recoveries from the disasters, (4) field monitoring on the effect and the process of recoveries, (5) domestic and international cooperation, and (6) policy and its effect.

**Tuesday, October 16 (9:30-17:30)**

09:30 **Introduction by Convenors**

09:40 **Stanley D. Rice**
Exxon Valdez: Long Term environmental consequences of oil persistence and toxicity (S11-8835), Invited

10:10 **Hiroya Sugisaki**
On behalf of Japanese Society of Fisheries Oceanography
General report on the projects aided by the PICES/ICES/JSFO fund for fisheries and oceanographic research on the recovery from the Great East Japan Earthquake (S11-8539)

10:30 **Coffee/Tea Break**

10:50 **Shin-ichi Ito, Shigeho Kakehi, Taku Wagawa, Yoji Narimatsu, Yutaka Kurita, Tomoko Sakami, Hideki Takami, Hideki Kaeriyama, Ken Fujimoto, Tsuneo Ono, Hiroyuki Tanaka, Takashi Kamiyama, Shigeru Itakura, Yuji Okazaki, Kazuaki Tadokoro, Akira Kuwata, Hiroaki Saito, Masaki Ito and Tsutomu Hattori**
The application of marine research to the study the marine ecosystem on the Pacific coast of northeastern Japan after the Great East Japan Earthquake disaster (S11-8403), Invited
Daisuke Muraoka, Tomoko Sakami, Goro Yoshida, Masakazu Hori, Hiromori Shimabukuro, Takehisa Yamakita and Hitoshi Tamaki
Impact of the Great East Japan Earthquake on Zostera meadows in the coastal area close to the epicenter (S11-8441)

Hideki Takami, Tomohiko Kawamura, Daisuke Muraoka, Nam-Il Won and Hiroshi Nakaie
Effects of the mega-earthquake and tsunami on rocky shore ecosystems on Sanriku Coast, Japan (S11-8345)

Hiroshi Isami and Atsushi Tsuda
Effects of the tsunami on zooplankton communities in Otsuchi Bay, northern Japan (S11-8650)

Lunch

Masahiro Yamao Zulhamsyah Imran, Achmad Zamroni, Kazuko Tatsumi and Michiko Amamo
Strengthening social resilience in earthquake and tsunami affected coastal Asia through improvement of livelihood and social capital (S11-8820), Invited

Natsuki Hasegawa and Toshihiro Onitsuka
Damage from the tsunami on the Asari clam fishery in east Hokkaido, Japan and the problems in its recovery (S11-8352)

Delvan Neville, Richard D. Brodeur, A. Jason Phillips and Kathryn Higley
Assessment and characterization of radionuclide concentrations from the Fukushima Reactor release in the plankton and nekton communities of the Northern California Current (S11-8703)

Toshihiro Wada, Yoshiharu Nemoto, Shinya Shimamura and Satoshi Igarashi
Tsunami disaster and nuclear power plant accident effects on fishery facilities and marine products in Fukushima Prefecture: Present conditions and prospects (S11-8594)

Coffee/Tea Break

Nikolai Maximenko and Jan Hafner
Tracking marine debris generated by the March 11, 2011 tsunami using numerical models and observational reports (S11-8530), Invited

John A. Barth, Jonathan Allan, Craig Risien, Jan A. Newton and NANOOS Colleagues
The Northwest Association of Networked Ocean Observing Systems (NANOOS) interactive tsunami evacuation maps (S11-8821)

Josef Cherniawsky and Roy Walters
Predicting future tsunami waves and currents on the West Coast of Canada (S11-8800), Invited

Xiaorong Li, Huaming Yu and Songyang Song
A new method based on FVCOM to simulate the impacts of a tidal power station on the surrounding marine environment (S11-8810)

Discussion

Session Ends
S11 Posters

S11-1 Yuichiro Yamada, Shinnosuke Kaga and Takehiko Ogata
Influence of a huge tsunami on the coastal plankton community structure, especially on the abundance of the toxic dinoflagellate (*Alexandrium tamarense*) in Ofunato Bay, Sanriku, Japan

S11-2 Yuji Okazaki, Yutaka Kurita and Shinji Uehara
Changes in the demersal fish communities of the sandy beach in Sendai Bay after the disturbance by the tsunami

S11-3 Hiroyuki Tanaka, Shigeho Kakehi and Shin-ichi Ito
Temporal variation of polycyclic aromatic hydrocarbons in surface seawater from Sendai Bay, Japan, between June 2011 and March 2012

S11-4 Daisuke Ambe, Hideki Kaeriyama, Yuya Shigenobu, Ken Fujimoto, Hajime Saito, Hideki Sawada, Tsuneo Ono, Takashi Setou and Tomowo Watanabe
Distribution of radioactive cesium in sea sediment and bottom boundary layer after the Fukushima Daiichi Nuclear Power Plant accident

S11-5 Galina S. Borisenko, Yuriy G. Blinov and Igor I. Glebov
Investigation of radioactive pollution of biological resources in the northwest part of the Pacific Ocean after leakage at the nuclear power station “Fukushima-1” in Japan

S11-6 Hideki Kaeriyama, Daisuke Ambe, Masachika Masujima, Kou Nishiuchi, Ken Fujimoto, Tsuneo Ono and Tomowo Watanabe
Oceanic dispersion of radioactive cesium around Japan and western North Pacific after the Fukushima Dai-ichi Nuclear Power Plant accident

S11-7 Hiroya Sugisaki
On behalf of Japanese Society of Fisheries Oceanography
General report on the projects aided by the PICES/ICES/JSFO fund for fisheries and oceanographic research on the recovery from the Great East Japan Earthquake (S11-8539)
The goal of this session is to compile a comprehensive collection of papers for the first time in two decades that can serve to synthesize knowledge of the roles of climate, physics, chemistry, biology, and humans in the Subtropical Frontal Zone (STFZ). The STFZ is a large, seasonally variable, dynamic, and complex oceanic region spanning the breadth of the North Pacific Ocean from Asia to North America. Its large-scale fronts and mesoscale processes give rise to localized “hot spots” of enhanced biological aggregation. The productivity of the region provides the ecological underpinnings for multi-national commercial fisheries. The STFZ provides important habitat for many species of fish and squid, seabirds, and marine mammals that undergo extensive seasonal migrations between the STFZ and summer feeding grounds in the Subarctic. Concern for interactions between protected species, such as loggerhead turtles, and fisheries are focus areas of interest today, as is the health and productivity of the fisheries resources. Finally, interest in the effect of marine debris that is accumulating in oceanic “garbage patches” is increasing, perhaps exacerbated by growing interest in the fate of the debris field in the aftermath of the 2011 tsunami near Japan. This session would provide valuable information on potential impacts of climate and humans on marine ecosystem in the STFZ. The compilation of papers submitted to this session will be published in a special issue of Progress in Oceanography.

**S12 BIO/FIS/POC Topic Session**

**Advances in understanding the North Pacific Subtropical Frontal Zone Ecosystem**

**Co-Convenors:** Taro Ichii (Japan), Skip McKinnell (PICES) and Michael Seki (USA)

**Invited Speakers:**
Hiromichi Igarashi (Data Research Center for Marine-Earth Science, JAMSTEC, Japan)

The goal of this session is to compile a comprehensive collection of papers for the first time in two decades that can serve to synthesize knowledge of the roles of climate, physics, chemistry, biology, and humans in the Subtropical Frontal Zone (STFZ). The STFZ is a large, seasonally variable, dynamic, and complex oceanic region spanning the breadth of the North Pacific Ocean from Asia to North America. Its large-scale fronts and mesoscale processes give rise to localized “hot spots” of enhanced biological aggregation. The productivity of the region provides the ecological underpinnings for multi-national commercial fisheries. The STFZ provides important habitat for many species of fish and squid, seabirds, and marine mammals that undergo extensive seasonal migrations between the STFZ and summer feeding grounds in the Subarctic. Concern for interactions between protected species, such as loggerhead turtles, and fisheries are focus areas of interest today, as is the health and productivity of the fisheries resources. Finally, interest in the effect of marine debris that is accumulating in oceanic “garbage patches” is increasing, perhaps exacerbated by growing interest in the fate of the debris field in the aftermath of the 2011 tsunami near Japan. This session would provide valuable information on potential impacts of climate and humans on marine ecosystem in the STFZ. The compilation of papers submitted to this session will be published in a special issue of Progress in Oceanography.

**Friday, October 19 (9:00-12:30)**

09:00 *Introduction by Convenors*

09:05 Hiromichi Igarashi, Toshiyuki Awaji, Taro Ichii, Mitsuo Sakai, Yoichi Ishikawa, Shuhei Masuda, Haruka Nishikawa, Yoshihisa Hiyoshi, Yuji Sasai and Sei-Ichi Saitoh

Diagnosis of the possible link between interannual variation of neon flying squid abundance in the North Pacific and the recent climate regime shift in 1998/99 by using 4DVAR ocean data assimilation product (S12-8662), Invited

09:30 Evan A. Howell, Aimee L. Hoover, Jeffrey J. Polovina and Michael P. Seki

Spatial and temporal variability in the biophysical properties of the North Pacific Subtropical Frontal Zone during 1997-2011 (S12-8615)

09:50 Carey Morishige and Evan A. Howell

Marine debris movement and concentration within the North Pacific Ocean (S12-8708)

10:10 Kedarnath Mahapatra and Yoshihiro Okada

Influence of climate variability on pelagic ocean condition in the Kuroshio-Oyashio Transition Area using time series remote sensing data (S12-8803)

10:30 *Coffee/Tea Break*

10:50 Hiroaki Saito, Kazutaka Takahashi, Yuichiro Nishibe, Ken Furuya, Koji Hamasaki, Kiyotaka Hidaka, Tadafumi Ichikawa, Mutsuo Ichinomiya, Shigeho Kakehi, Miwa Nakamachi, Yuta Nishibe, Yui Okazaki and Yuya Tada

Food-web structure and dynamics in the frontal zone of Kuroshio Extension (S12-8622)
Mitsuo Sakai, Toshie Wakabayashi, Haruka Urabe, Makoto Okazaki, Yoshiki Kato, Masachika Masujima, Denzo Inagake and Yasuhiro Senga

Distribution and growth of young neon flying squid, *Ommastrephes bartramii*, in the central North Pacific Subtropical and Transition Zones during winter (S12-8564)

Taro Ichii, Haruka Nishikawa, Hiromichi Igarashi, Hiroshi Okamura, Kedarnath Mahapatra, Mitsuo Sakai, Toshie Wakabayashi, Denzo Inagake and Yoshihiro Okada

Impacts of extensive squid driftnet fishery and climate variability on epipelagic nekton in the Transition Region of the central North Pacific (S12-8563)

David G. Foley, Elliott L. Hazen, Steven J. Bograd, Scott A. Shaffer, Scott Benson, Barbara A. Block and Daniel P. Costa

Convergence from bottom to top: An oceanographic perspective on the movements of apex predators near the North Pacific transition zone chlorophyll front (S12-8799)

Lesley H. Thorne, Scott A. Shaffer, Elliott L. Hazen, Steven J. Bograd, David G. Foley, Melinda G. Connors, Michelle A. Kappes and Daniel P. Costa

Effects of inter-annual variability of the transition zone chlorophyll front on the habitat use and reproductive success of Laysan and Black-footed albatrosses (S12-8618)

**S12 Posters**

**S12-1**

Atsushi Yamaguchi, Kohei Matsuno, Yoshiyuki Abe and Ichiro Imai

Interannual/latitudinal variations in abundance, biomass, community structure and estimated production of epipelagic mesozooplankton along 155˚E longitude in the western North Pacific during spring

**S12-2**

Dharmamony Vijai, John R. Bower, Yoshihiko Kamei and Yasunori Sakurai

Distribution and characteristics of neon flying squid (*Ommastrephes bartramii*) near a spawning area off Hawaii
Currently, approximately 60% of the world’s population lives within 60 km of the coast, and this number is expected to reach 75% within the next two decades due to increased population growth. The coastal zone is an extremely complex environment that includes both coastal, nearshore marine and estuarine ecosystems, and the adjacent terrestrial area. Human populations around the North Pacific rely heavily on this zone for their livelihood, but growing pressures from increasingly diverse human activities coupled with climate change and natural catastrophes (e.g., earthquake and tsunami) threaten the sustainability and productivity of coastal ecosystems. Risk management based on adaptive management and precautionary principles, is one way to prioritize, identify, and potentially mitigate impacts resulting from diverse human activities in coastal zones. This session will focus on: (1) preparation and countermeasures to respond to natural catastrophes; (2) protection of coastal zone ecosystems from human-mediated impacts (e.g., habitat loss, pollution, harmful algal events, invasive species), and (3) the institution and protection of marine protected areas (MPAs).
11:30  Sei-Ichi Saitoh, Katsuyoshi Tanaka and Fumihiro Takahashi  
Development and application of Tohoku Coastal Web-GIS for supporting recoveries of the Tohoku Earthquake (S13-8786)

11:50  Jianguo Du, Qiulin Zhou, Shengyuan Yang, Quan Wen and Bin Chen  
The demonstration of estuarine biodiversity conservation, restoration and PA networking in China (S13-8412)

11:50  Paul J. Harrison, Jie Xu and Kedong Yin  
Do changes in N:P ratios influence the occurrence of HABs?

12:10  Blake E. Feist, Marlene Bellman, Michael J. Ford and Phillip S. Levin  
Potential vulnerability of cetaceans to groundfish fishing fleets in the California Current (S13-8795)

12:10  Masahide Kaeriyama, Yu-xue Qin, Yosuke Koshino, Daisuke Uryu and Hideaki Kudo  
Sustainability and risk management of Pacific salmon under changing climate and catastrophic earthquake and tsunami in coastal ecosystems around Japan

12:30  Session Ends

S13 Posters

S13-1  Masahide Kaeriyama, Yu-xue Qin, Yosuke Koshino, Daisuke Uryu and Hideaki Kudo  
Sustainability and risk management of Pacific salmon under changing climate and catastrophic earthquake and tsunami in coastal ecosystems around Japan

S13-2  Tomoya Kataoka, Hirofumi Hinata and Shin’ichiro Kako  
Simultaneous monitoring at multiple sites of beached plastic litter quantity using webcam

S13-3  Galina S. Gavrilova  
Some risks of on-bottom shellfish aquaculture in Peter the Great Bay (Japan Sea)
Ocean biogeochemistry is undergoing rapid and growing anthropogenic change. A significant fraction of anthropogenic CO₂ is taken up by the ocean, which drives down pH and reduces the saturation state of carbonate minerals like calcite and aragonite, a process known as “ocean acidification”. Global climate models also predict that dissolved oxygen concentrations in the deep ocean will decline by 20-40% over the coming century or so as global warming enhances stratification of the upper mixed layer and reduces ventilation of the deep ocean. Declining oxygen levels have now been reported from mid-ocean depths in the tropical oceans and across the North Pacific. Both processes are of particular concern in the North Pacific, where the water is naturally “old” and has shallow carbonate saturation horizons, relatively low buffering capacity, and extensive oxygen minimum zones. It is anticipated that these anthropogenic influences on the global ocean will increase in coming decades as atmospheric CO₂ levels and global temperatures continue to rise. We invite papers on the changing biogeochemistry of the global ocean, its impacts on organisms and ecosystem function, and emergent impacts on biogeochemical cycles related to the interaction of ocean acidification and declining oxygen with climate change and other anthropogenic impacts.

Tuesday, October 16 (9:00-17:30)

09:00  Introduction by Convenors

09:05  Akihiko Murata, Shinya Kouketsu, Toshimasa Doi, Kazuhiro Hayashi and Yuichiro Kumamoto
Decadal changes of dissolved inorganic carbon in the Pacific (S14-8699), Invited

09:35  Liqi Chen, Zhongyong Gao, Wweijun Cai, Heng Sun and Suqing Xu
Surface Carbon Changes in the western Arctic Ocean under seaice rapid shrinking and its implication of Arctic Ocean Acidification (S14-8394)

09:55  Takamitsu Ito and Curtis Deutsch
Understanding low-frequency variability of subsurface oxygen using a hierarchy of models (S14-8705)

10:15  Shuchai Gan and Ying Wu
Quantification of BDOC (bio-available dissolved organic carbon) of different water masses in East China Sea (S14-8651)

10:35  Coffee/Tea Break

10:55  Kosei Komatsu, Ichiro Yasuda, Sachihiko Itoh, Toru Ikeya, Hitoshi Kaneko, Kiyotaka Hidaka and Satoshi Osafune
Impacts of epipycnal and diapycnal nutrient-transport by the Kuroshio on the productivity in the adjacent epipelagic waters (S14-8691)

11:15  James Christian, Laurent Bopp, John Dunne, Michael Eby, Paul Halloran, Tatiana Ilyina, Ian Totterdell and Akitomo Yamamoto
Trends in ocean CaCO₃ undersaturation in the CMIP5 suite of Earth System Models (S14-8721)
11:35 Silvana N.R. Birchenough, Nigel Lyman, David A. Roberts, Juan Moreno-Navas and J. Murray Roberts
*In-situ* characterisation of habitats adjoining cold-water coral reefs using a Sediment Profile Imagery (SPI) camera (S14-8789)

11:55 John A. Barth, Francis Chan and Stephen D. Pierce
Understanding and predicting hypoxia over the Pacific Northwest continental shelf (S14-8814)

12:15 Yvette H. Spitz and Harold P. Batchelder
Oregon shelf oxygen dynamics and exchange with the deep ocean: A modeling approach (S14-8788)

12:35 **Lunch**

14:05 Curtis Deutsch and Aaron Ferrel
Metabolic constraints on marine habitat and its climatic change (S14-8732), Invited

14:35 Brad A. Seibel
Climate change impacts on animal function and biogeochemical cycles (S14-8700), Invited

15:05 Angelica Peña and William Crawford
Trends in oxygen concentrations in the Gulf of Alaska and British Columbia waters (S14-8518)

15:25 **Coffee/Tea Break**

15:50 Yukihiro Nojiri, Sayaka Yasunaka, Shinichiro Nakaoka, Tsuneo Ono, Hitoshi Mukai and Norihisa Usui
Variability of carbon cycle and biological production in the North Pacific estimated from mapping of $pCO_2$, alkalinity, and dissolved inorganic carbon (S14-8625)

16:10 Keith B. Rodgers, Masao Ishii, Daniele Iudicone, and Olivier Aumont, Matthew C. Long and Joan A. Kleypas
Re-emergence of anthropogenic carbon and pacific warm pool acidification (S14-8757)

16:30 Finlay Scott, Ruth Parker and Silvana N.R. Birchenough
Predicting the regional impacts of ocean acidification: Integrating sediment biodiversity and ecosystem function (S14-8782)

16:50 J. Anthony Koslow, Peter Davison and Ana Lara-Lopez
The influence of declining oxygen concentrations and mesopelagic fish biomass on ecosystem structure in the California Current (S14-8658)

17:10 Julie E. Keister, Anna McLaskey, Lisa Raatikainen, Shallin Busch, Amanda Winans and Paul McElhany
Oxygen and pH conditions experienced by zooplankton in a North Pacific fjord: Impacts on taxonomic composition, distributions, and growth (S14-8750)

17:30 **Session Ends**
S14 Posters

S14-1  **Baodong Wang**  
Shift in salinity regions of maximum phytoplankton biomass in the Changjiang River plume: Impacts of the Three Gorges Dam?

S14-2  **Toshiya Nakano, Takashi Midorikawa, Tomoyuki Kitamura, Yusuke Takatani, Kazutaka Enyo, Masao Ishii and Hisayuki Y. Inoue**  
Recent slowdown of wintertime oceanic $pCO_2$ increase in the western North Pacific: Relationship to variation in the subtropical gyre

S14-3  **Yusuke Takatani, Daisuke Sasano, Toshiya Nakano, Takashi Midorikawa and Masao Ishii**  
Decrease of dissolved oxygen due to warming and other factors in the western North Pacific subtropical gyre

S14-4  **Naohiro Kosugi, Daisuke Sasano, Masao Ishii, Kazutaka Enyo, Toshiya Nakano and Takashi Midorikawa**  
Acidification in the North Pacific subtropical mode water and its relation with climate variability

S14-5  **Sébastien Putzeys, Carlos Almeida, Pierrick Bécognée, Lidia Yebra, Ángeles Marrero Diaz and Santiago Hernández-León**  
Active carbon flux by diel migrant zooplankton in the eutrophic and oligotrophic waters of the Canary Current

S14-6  **Toru Suzuki, Masao Ishii, Tsuneo Ono, Takeshi Kawano, Masahide Wakita, Lisa A. Miller, Akihiko Murata, Ken-ichi Sasaki, James Christian and Robert M. Key**  
PACIFICA: Pacific Ocean Interior Carbon Data Synthesis
The Biological Oceanography Committee (BIO) has a wide range of interests spanning from molecular to global scales. BIO targets all organisms living in the marine environment including bacteria, phytoplankton, zooplankton, micronekton, benthos and marine birds and mammals. In this session, we welcome all papers on biological aspects of marine science in the PICES region. Contributions from the early career scientists are especially encouraged.

Day 1, Thursday, October 18 (14:00-17:30)

14:00  Introduction by Convenors

14:05  John R. Bower, Katsunori Seki, Tsunemi Kubodera, Jun Yamamoto and Takahiro Nobetsu
Egg brooding in a gonatid squid off the Shiretoko Peninsula, Hokkaido, Japan (BIO-P-8672)

14:25  Oh Youn Kwon, Jung-Hoon Kang, Kyun-Woo Lee, Woong-Seo Kim and Jin Hwan Lee
Size-fractionated phytoplankton biomass and species composition in the Yellow Sea: A comparison of different latitudes in spring and summer (BIO-P-8631)

14:45  Hidefumi Fujioka, Atsushi Tsuda and Ryuji J. Machida
Early life cycle of Neocalanus plumchrus and Neocalanus flemingeri in the Oyashio region, western north Pacific (BIO-P-8586)

15:05  Yuichiro Nishibe, Kazutaka Takahashi, Tadafumi Ichikawa, Kiyotaka Hidaka, Hiroaki Kurogi, Kyohei Segawa and Hiroaki Saito
Feeding of oncaeid copepods on discarded appendicularian houses (BIO-P-8553)

15:25  Coffee/Tea Break

15:50  Minkyung Shin, Wongyu Park and Jungwha Choi
Population dynamics of Oithona similis off Busan, South Korea (BIO-P-8724)

16:10  C. Tracy Shaw, Leah R. Feinberg and William T. Peterson
Effects of environmental changes on the euphausiids Euphausia pacifica and Thysanoessa spinifera in the coastal upwelling zone off the Oregon Coast, USA (BIO-P-8507)

16:30  Rui Saito, Atsushi Yamaguchi, Hiromichi Ueno, Hiroji Onishi and Ichiro Imai
Interannual variations in the zooplankton community in the Alaskan Stream region during the summer of 2004-2010 (BIO-P-8497)

16:50  Akash R. Sastri, John Nelson and Beatrix E. Beisner
Spatial patterns of zooplankton community productivity and functional trait diversity in the Bering and Chukchi Seas (BIO-P-8665)

17:10  Jarrod A. Santora, John C. Field, Isaac D. Schroeder, Keith Sakuma, Brian K. Wells and William J. Sydeman
Spatial ecology of krill, micronekton and top predators in the central California Current: implications for defining ecologically important areas (BIO-P-8417)

17:30  Session Ends
Day 2, Friday, October 19 (9:00-12:30)

09:00  
Introduction by Convenors

09:05  
Vjacheslav S. Labay  
Long-term variability of sublittoral macrobenthos of the Sakhalin’s shelf of Tatar Strait (Sea of Japan) (BIO-P-8349)

09:25  
Harold P. Batchelder  
Spatial-temporal patterns of residence-time, transport and connectivity among near-shore marine reserves on the Oregon shelf from particle-tracking using inputs from multiple physical models (BIO-P-8796)

09:45  
Yongjiu Xu, Joji Ishizaka and Hisashi Yamaguchi  
Interannual variation of jellyfish (Nemopilema nomurai) abundance and magnitude, and timing of phytoplankton bloom in the Yellow and East China Seas (BIO-P-8580)

10:05  
Koji Hamasaki, Akiko Tomaru, Akiyo Taniguchi, Yuya Tada, Yasuyuki Nogata and Haruto Ishii  
Microbial control of jellyfish larval settlement (BIO-P-8709)

10:25  
Coffee/Tea Break

10:50  
Tabitha C.Y. Hui, Yumi Kobayashi, Yoko Mitani, Kei Fujii, Kei Hayashi and Kazushi Miyashita  
Spatial, temporal and dietary overlap between harbour seals and fisheries in Erimo, Japan: Conflict at sea? (BIO-P-8652)

11:10  
George L. Hunt, Jr., Martin Renner and Kathy Kuletz  
The composition and distribution of seabird communities across the southeastern Bering Sea shelf (BIO-P-8816)

11:30  
Robert M. Suryan and Amanda J. Gladics  
Effects of environmental variation on diets and stable isotope signatures of a piscivorous seabird in a coastal upwelling system (BIO-P-8808)

11:50  
Andrew W. Trites, Elizabeth Atwood, Christopher Barger, Brian Battaile, Kelly J. Benoît-Bird, Ine Dorrestein, Scott Heppell, Brian Hoover, David Irons, Nathan Jones, Alexander Kitaysky, Kathy Kuletz, Chad Nordstrom, Rosana Paredes, Heather Renner, Daniel Roby and Rebecca Young  
Is it food? A comparative analysis of increasing and decreasing populations of thick-billed murres, black-legged kittiwakes and northern fur seals in the eastern Bering Sea (BIO-P-8719)

12:10  
Peter A. Thompson, Anya Waite and Lynnath Beckley  
Investigating the recruitment failure of Australia’s western rock lobster (Panulirus cygnus) (BIO-P-8444)

12:30  
Session Ends

BIO-P Session Posters

BIO-P-1  
Yuji Tomaru and Yoshitake Takao  
Diversities of diatom viruses isolated from Japanese coastal waters

BIO-P-2  
Anastasia S. Dolganova  
Far eastern seas benthos and its investigation in TINRO-Centre (2002-2012)
BIO-P-3  Toru Kobari, Minoru Kitamura and Makio C. Honda  
Seasonal changes in abundance, stage composition and depth distribution of Neocalanus copepods in the Western Subarctic Gyre

BIO-P-4  Chiyuki Sassa and Yuichi Hirota  
Seasonal occurrence of mesopelagic fish larvae in the onshore side of the Kuroshio off southern Japan

BIO-P-5  Young-Ok Kim, Seung Won Jung and Eun-Sun Lee  
Effects of oil pollution on attached microbial communities in short-term indoor microcosms

BIO-P-6  Seung Won Jung, Young-Ok Kim, Jung-Hoon Kang, Moonkoo Kim and Won Joon Shim  
Impact of dispersant plus crude oil on natural plankton assemblages in short-term marine mesocosms

BIO-P-7  Kyun-Woo Lee, Chang Kyu Joo, Jung-Hoon Kang, Oh-Yoon Kown and Won Joon Shim  
Acute and chronic toxicity of the water accommodated fraction (WAF) and chemically enhanced WAF (CEWAF) of crude oil in the rock pool copepod Tigriopus japonicus

BIO-P-8  Elena Dulepova and Vladimir Dulepov  
Carrying capacity of the Okhotsk Sea pelagic ecosystem

BIO-P-9  Ludmila S. Belan, Tatyana Belan, Boris Borisov, Alexander Moshchenko and Tatyana Konovalova  
Distribution of macrozoobenthos along the pipeline route at the Lunskoye field (NE Sakhalin Island Shelf)

BIO-P-10  Seung Ho Baek, Moon Ho Shon and Won Joon Shim  
Effects of the chemically-enhanced water-accommodated fraction of Iranian Heavy Crude oil on the periphytic microbial communities in microcosm experiments

BIO-P-11  Vladimir P. Korchagin, Olga Grunina, Alexander Dubov and Olga N. Vakulenko  
Bioconversion of algae biomass into bioethanol using homogenate from marine invertebrate digestive organs

BIO-P-12  Rie Nakamura, Toru Kobari, Kazuyuki Tanabe, Minoru Kitamura and Makio C. Honda  
Comparison of seasonal changes in the mesozooplankton community between the subtropical and subarctic North Pacific Ocean

BIO-P-13  Liudmila Dolmatova and Olga Zaika  
Temporal variations in activities of antioxidant enzymes in coelomic fluid of the holothurian Eupentacta fraudatrix in Alexeev Bay (Peter the Great Bay), Sea of Japan

BIO-P-14  Kiyotaka Hidaka, Takumi Nonomura, Kosei Komatsu, Sachihiko Itoh, Ichiro Yasuda, Toru Ikeya and Shingo Kimura  
Distribution of calanoid copepods of the genus Paracalanus around the Izu Ridge, south of Japan, and extent of the ‘island mass effect’ in the region

BIO-P-15  Hirotada Moki, Akira Okuno and Tatsuro Watanabe  
Development of a new ocean carbon cycle model for the Japan Sea

BIO-P-16  Corinne Pomerleau, Francis Juanes, Rodney Rountree and Kate Moran  
A comparative study of sound production in two marine environments monitored by the NEPTUNE Canada undersea observatory network

BIO-P-17  Kate Moran, S. Kim Juniper and Corinne Pomerleau  
The Two Ocean Networks Canada (ONC) undersea observatory networks: NEPTUNE Canada and VENUS
BIO-P-18  William J. Sydeman, Jarrod A. Santora, Jason Hassrick, Marcel Losekoot, Sean Hayes and William T. Peterson
Canyonlands: Krill “hotspots” of the northern California Current

BIO-P-19  Naoya Kanna, Koji Suzuki, Aiko Murayama and Jun Nishioka
Bioavailability of sea ice-derived iron for phytoplankton growth

BIO-P-20  Natsuko Nakayama, Shinichi Kondo, Reiko Nakao, Yasuhiro Shima, Naotsugu Hata, Yuji Tomaru, Masami Hamaguchi, Keizo Nagasaki and Shigeru Itakura
Contribution of HerNAV viruses against Heterocapsa circularisquama bloom by inoculating frozen sediment

BIO-P-21  Sayaka Sogawa (nee Matsumura), Hiroya Sugisaki and Tomohiko Kikuchi
Carbon and nitrogen isotope ratios of euphausiids in the northwestern Pacific

BIO-P-22  Yoshiyuki Abe, Masafumi Natsuiki, Kohei Matsuno, Atsushi Yamaguchi and Ichiro Imai
Variability in assimilation efficiency of the copepod Neocalanus cristatus: Effect of food

BIO-P-23  John R. Bower, Yusuke Okude, Tetsuya Nishikawa and Kazutaka Miyahara
Movement of diamond squid in the Sea of Japan revealed using pop-up satellite tags

BIO-P-24  Shinji Shimode Kazutaka Takahashi and Atsushi Tsuda
Ontogenetic vertical migration of two tropical-subtropical copepods, Rhincalanus nasutus and Rhincalanus rostrifrons, in the northwestern Pacific Ocean: Implication for a variety of life history strategies of Rhincalanus

BIO-P-25  Toru Kohari, Keisuke Unno, Haruka Nagafuku, Hajime Kawakami, Minoru Kitamura and Makio C. Honda
Comparisons of fecal pellet characteristics in the surface layers between the subarctic and subtropical North Pacific Ocean

BIO-P-26  Hironori Higashi, Hiroshi Koshikawa, Wang Qinxue, Motoyuki Mizuochi, Toru Hasegawa, Yoko Kiyomoto, Kou Nishiuchi, Kazumaro Okamura, Hiroaki Sasaki, Yasushi Gomi, Hideki Akiyama, Kunio Kohata and Shogo Murakami
A numerical study on predominance of dinoflagellates on the central continental shelf of the East China Sea

BIO-P-27  Jingfeng Fan, Xiaohui Wang and Hongxia Ming
Bacterial communities of the sea surface microlayer in the Northern Yellow Sea in China

BIO-P-28  Yuri V. Prikhodko, Vasilii Yu. Tsygankov and Margarita D. Boyarova
Pesticides and seafood safety in the Russian fish market

BIO-P-29  Wang Lijun
Introduced marine species and their impacts in China seas

BIO-P-30  Konstantin A. Karyakin, Alexander A. Nikitin and Oleg N. Katugin
Distribution Patterns of the Common Squid (Todarodes pacificus) in the Russian EEZ in 2009-2011

BIO-P-31  Shinichi Watanabe, Satoshi Morinobu and Norimichi Souji
Daily and seasonal activity patterns of horseshoe crabs in the Kasaoka Bay estuary, Seto-Inland Sea, Japan
FIS Paper Session

Co-Convenors: Xianshi Jin (China) and Elizabeth Logerwell (USA)

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 FIS-sponsored Topic Sessions.

Thursday, October 18 (9:00-16:45)

09:00 
*Introduction by Convenors*

09:05
Yongjun Tian, Kazuhisa Uchikawa and Yuji Ueda
A comparison of fish community and trophic structure from three marine ecosystems around Japan: Synchronies, differences and environmental forcing (FIS-P-8661)

09:25
Osamu Tamaru, Kazushi Miyashita, Nobuo Kimura, Yasuzumi Fujimori, Toshihiro Watanabe, Hideo Takahara and Teisuke Miura
Fishery income fluctuation due to changing vessel speed from harbor to the fishing ground in the Japanese coastal squid jigging fishery (FIS-P-8334)

09:45
Xun Zhang, Sei-Ichi Saitoh and Toru Hirawake
Spatial modeling of the potential fishing zone of Japanese common squid in coastal waters of southwestern Hokkaido, Japan (FIS-P-8501)

10:05
Sergey V. Prants, M.V. Budyansky and M.Yu. Uleysky
Lagrangian coherent structures in the ocean favourable for fishing grounds (FIS-P-8325)

10:25
*Coffee/Tea Break*

10:50
Cindy A. Tribuzio and Gordon H. Kruse
Demographic and risk analyses of spiny dogfish in the Gulf of Alaska (FIS-P-8348)

11:10
Jacquelynne R. King and Romney P. McPhie
Age, growth and maturity estimates of spotted ratfish (*Hydrolagus colliei*) in British Columbia (FIS-P-8432)

11:30
Alan C. Haynie and Lisa Pfeiffer
Climate change and fisher behavior in the Bering Sea pollock trawl and Pacific cod longline fisheries (FIS-P-8781)

11:50
Jeffrey Polovina and Phoebe Woodworth-Jefcoats
Understanding ecosystem dynamics in the central North Pacific pelagic ecosystem from a size-based perspective (FIS-P-8469)

12:10
Steven J. Barbeaux, John Horne and Jim Ianelli
A novel approach for estimating location and scale-specific fishing exploitation rates of eastern Bering Sea walleye pollock (*Theragra chalcogramma*) (FIS-P-8508)

12:30
*Lunch*

14:00
Kai Zhang, Yoshiro Watanabe, Hiroshi Kubota, Atsushi Kawabata and Tomohiko Kawamura
Growth and survival of juvenile Japanese anchovy *Engraulis japonicus* in the Kuroshio-Oyashio transitional regions in 2010 (FIS-P-8694)
14:20 Pavel Chernyshkov
Interannual variability of large-scale hydrometeorological processes in the northern parts of the Pacific and Atlantic Oceans and their probable impact on commercial fish migrations (FIS-P-8833)

14:40 Chiyuki Sassa, Motomitsu Takahashi, Kou Nishiuchi and Youichi Tsukamoto
Distribution, growth, and mortality of larval jack mackerel Trachurus japonicus in the southern East China Sea in response to habitat conditions (FIS-P-8426)

15:00 Peng Sun, Zhenlin Liang, Liuyi Huang and Xin He
Changes in fish phenotypic traits induced by trawl selectivity (FIS-P-8481)

15:20 Coffee/Tea Break

15:50 Poster Introductions

16:45 Session Ends

FIS-P Session Posters

FIS-P-1 Pavel Mikheev
Relationships between Pacific salmon and residential fish in the Amur River basin

Preliminary results of the study of sablefish population structure within the Russian waters using DNA-markers

FIS-P-3 Wen-Bin Huang, Chih-Shin Chen and Wei-Ting Hsu
The spatio-temporal pattern of Pacific saury Cololabis saira abundance in the Northwestern Pacific

FIS-P-4 Yu-xue Qin, Ryo Koyama, Yosuke Koshino, Hideaki Kudo, Shigehiko Urawa and Masahide Kaeriyama
Spatiotemporal change in carbon and nitrogen stable isotopes of chum salmon during developmental

FIS-P-5 Eugene V. Samko and Nafanail V. Bulatov
The role of a warm anticyclonic eddy at Hokkaido (North-West Pacific) in the formation of saury fishing grounds

FIS-P-6 Indah Puspitasari and Chulwoong Oh
Population structure and reproductive biology of the lake prawn Palaemon paucidens (Caridea, Palaemonidae) from Goesan Lake, Korea

FIS-P-7 Oleg Ivanov
Nekton species structure in the Far East Seas and adjacent waters of the Pacific Ocean in 1980-2009

FIS-P-8 Ming-Ming Zhang, Chulwoong Oh, Wan-Ok Lee and Kyung-Jun Song
Reproductive biology of the largemouth bass, Micropterus salmoides from Goel-san Lake, Korea

FIS-P-9 Ming-Ming Zhang, Chulwoong Oh, Wan-Ok Lee and Kyung-Jun Song
Age and growth of the catfish Pelteobagrus fulvidraco in Goel-san Lake, Korea
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<tr>
<th>Paper ID</th>
<th>Authors</th>
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<tr>
<td>FIS-P-10</td>
<td>Youjung Kwon and Chang Ik Zhang</td>
<td>An ecosystem-based assessment and management system in Korean waters</td>
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<tr>
<td>FIS-P-11</td>
<td>Hiroshi Kuroda, Takashi Setou, Kazuhiro Aoki, Yoshitsugu Hagiwara and Hiroko Akabane</td>
<td>A numerical study of “shirasu” fishing ground formation based on the Kuroshio submesoscale model, south of Japan</td>
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<tr>
<td>FIS-P-12</td>
<td>Atsushi Tawa, Taku Yoshimura and Noritaka Mochioka</td>
<td>High dispersal of moray eel larvae to the open ocean: Early life history estimated from ocean-wide distribution patterns</td>
</tr>
<tr>
<td>FIS-P-13</td>
<td>Michail Kuznetsov</td>
<td>The influence of underwater vessel noise on fish behaviour and methods of its reduction</td>
</tr>
<tr>
<td>FIS-P-14</td>
<td>Graham E. Gillespie, Tammy Norgard, Sean MacConnachie, Lily Stanton and Jessica Finney</td>
<td>Program to assess the conservation status of the Olympia oyster, <em>Ostrea lurida</em>, in Canada</td>
</tr>
<tr>
<td>FIS-P-15</td>
<td>Hideki Nakano</td>
<td>International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean</td>
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</tbody>
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POC Paper Session

Co-Convenors: Kyung-Il Chang (Korea) and Michael 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 POC-sponsored Topic Sessions.

Tuesday, October 16 (9:05-17:20)

09:05

Introduction by Convenors

09:10

Makoto Kashiwai

TransV analysis on watermass processes in the Sea of Okhotsk (POC-P-8344)

09:30

Yohei Takano, Taka Ito and Curtis Deutsch

High-frequency variability of dissolved oxygen in the subpolar North Pacific (POC-P-8562)

09:50

Michael Foreman, Wendy Callendar, Diane Masson, John Morrison and Isaak Fain

An update on the IOS regional climate model for the British Columbia continental shelf (POC-P-8613)

10:10

Evgeny Vyazilov, Evgeny Uraevsky, Igor Rostov, Natalia Rudyk, Vladimir Rostov, Elena Dmitrieva and Andrey Golik

Far Eastern segment of the Unified State System of Information on the World Ocean (ESIMO) (POC-P-8443)

10:30

Coffee/Tea Break

10:50

Jae-Hun Park, Hanna Na, D. Randolph Watts, Kathleen A. Donohue and Ho Jin Lee

Near 13-day barotropic ocean response to atmospheric forcing in the North Pacific (POC-P-8778)

11:10

Hiroyuki Tsujino, Shiro Nishikawa, Kei Sakamoto, Norihisa Usui, Hideyuki Nakano and Goro Yamanaka

Effects of large-scale wind variation on the Kuroshio path south of Japan in a 60-year historical GCM simulation (POC-P-8567)

11:30

Olga Trusenkova

Intrasessional SST oscillations in the Japan/East Sea (POC-P-8423)

11:50

Jun-pen Zhang and Rong-shuo Cai

Modeling the East China Sea Cold Eddy responses to the inter-decadal climatic jump of the East Asian monsoon around 1976/77 (POC-P-8415)

12:10

Viktor Kuzin, Gennady Platov and Elena Golubeva

Influence of interannual variations of Siberian river discharge on the redistribution of freshwater in the Arctic Ocean (POC-P-8346)

12:30

Lunch

14:00

Vadim Navrotsky and Elena Pavlova

Biological effects of internal waves in coastal waters (POC-P-8531)

14:20

Keiichi Yamazaki, Yujiro Kitade, Yosuke Igeta and Tatsuro Watanabe

Time variations of large amplitude near-inertial internal waves induced by typhoon observed around the Tango Peninsula, Japan (POC-P-8575)
14:40  Takahiro Tanaka, Ichiro Yasuda, Kenshi Kuma and Jun Nishioka
Vertical turbulent iron flux sustains the Green Belt along the shelf break in the southeastern Bering Sea (POC-P-8746)

15:00  Fangli Qiao and Chuan Jiang Huang
Comparison between vertical shear mixing and surface wave-induced mixing in the extratropical ocean (POC-P-8736)

15:20  Young-Gyu Park, Jae-Hun Park, Ho Jin Lee, Hong Sik Min and Seon-Dong Kim
The effects of geothermal heating on the East Sea circulation (POC-P-8735)

15:40  Andrey G. Andreev and Igor A. Zhabin
Origin of the mesoscale eddies and year-to-year changes of the chlorophyll $a$ concentration in the Kuril Basin of the Okhotsk Sea (POC-P-8538)

16:00  Coffee/Tea Break

16:20  Aigo Takeshige, Tetsuya Takahashi, Hideaki Nakata and Shingo Kimura
Long-term trends in seawater temperature in Omura Bay, Japan (POC-P-8424)

16:40  Masanori Konda, Tamami Ono, Kazuyuki Uehara, Kunio Kutsuwada, Osamu Tsukamoto, Fumiyo Kondo and Naoto Iwasaka
Ocean mixing layer variation as indicated by the measurement of the dissipation rate in the Kuroshio Extension region (POC-P-8486)

17:20  (cancelled)  
Talgat R. Kilmatov and Olga I. Trinko
The influence of cumulative cabbeling on the salinity minimum of North Pacific Intermediate Water and future climatic trends (POC-P-8655)

17:00  Liping Yin and Fangli Qiao
Observation and simulation of Continental Shelf Waves in the East China Sea (POC-P-8727)

17:20  Session Ends

POC-P Session Posters

POC-P-1  Igor Rostov, Vladimir Rostov, Natalia Rudykh, Elena Dmitrieva and Andrey Golik
Components of oceanographic and marine environment management information support in the Far Eastern region of Russia

POC-P-2  Valentina V. Moroz
Thermohaline structure peculiarities formed by tides in the Kuril Straits archipelago and adjacent areas

POC-P-3  Valentina V. Moroz
Thermohaline structure peculiarities formed in the Kuril Islands area and climate change

POC-P-4  Yosuke Igeta, Tatsuro Watanabe, Akira Okuno and Naoto Honda
Strong coastal currents associated with winter monsoon around the Noto Peninsula, Japan

POC-P-5  Sachihiko Itoh, Ichiro Yasuda, Masahiro Yagi, Satoshi Osafune, Hitoshi Kaneko, Jun Nishioka, Takeshi Nakatsuka and Yuri N. Volkov
Strong vertical mixing in the Urup Strait, Kuril Islands

POC-P-6  Hiroshi Kuroda, Daisuke Takahashi, Takashi Setou, Tomonori Azumaya and Humio Mitsudera
Hindcast experiment for the Okhotsk Sea using the sea-ice-coupled Regional Ocean Modeling System

POC-P-7  Tatsuro Watanabe and Koji Kakinoki
Interannual variation in the volume transport through the Sado Strait in the Japan Sea
GP

General Poster Session

GP-1 Anna V. Dakus, Denis S. Kurnosov, Helen V. Kashchenko and Sergey D. Ponomarev
Intraspecific genetic variation among spawning aggregations of the Pacific herring (Clupea pallasii) from the Okhotsk Sea

GP-2 Mana Ito, Kazuhiro Mochida, Katsutoshi Ito, Toshimitsu Onduka and Kazunori Fujii
Testicular toxicity of an antifouling biocide 4,5-dichloro-2-n-octyl-3(2H)-isothiazolone (Sea-Nine 211) to the marine teleost mummichog Fundulus heteroclitus

GP-3 Yoshiharu Nemoto, Shinya Shimamura and Satoshi Igarashi
Radioactive substance effects on marine products in Fukushima Prefecture

GP-4 Naoto Hirakawa, Toshihiro Wada, Ikuo Matsumoto, Tadashi Tokai, Seiji Akiyama, Keiichi Uchida, Yoshihito Miyamoto, Hisayuki Arakawa and Seiichi Takeda
Great East Japan Earthquake effects on coastal fishing grounds of Iwaki City, Fukushima, Japan

GP-5 Min-Chul Jang and Kyoungsoon Shin
Distribution of calanoid copepod eggs in seabed sediments of Masan Bay, Korea

GP-6 Hyoung Sum Han and Chae Woo Ma
Population dynamics of Archaeomysis vulgaris (Crustacea: Mysidacea) after Hebei spirit oil spill accident

GP-7 Kyoungsoon Shin, Min-Chul Jang and Keun-Hyung Choi
Interannual and seasonal changes in zooplankton community in a monsoonal coastal bay

GP-8 Hiroki Asami and Takahiro Takashima
Seasonal and annual fluctuations in the abundance and biomass of Neocalanus plumchrus in Japan Sea off northern Hokkaido

GP-9 Chul-Min Ko, Il-Ju Moon and Chan Joo Jang
Effect of preceding and adjacent typhoons on the intensity and track prediction of typhoon in the western North Pacific

GP-10 Takashi Iwasaki, Kyoichi Kamiyama, Kazuyoshi Takasaki, Kunihiro Wakui and Satoshi Igarashi
Tohoku Tsunami effects on Matsukawa-ura Lagoon, Fukushima, Japan

GP-11 Youngseok Seo, Hyemin Park, Ahreum Kim, Hojin Bae, Jungyeon Kim, Sangyeop Lee and Chulwoong Oh
Population dynamics of Kuro Shrimp Argis lar from the East Sea of Korea

GP-12 Kazunori Shizuka, K. Ito, K. Sasaki, S. Katayama and K. Yusa
Effects of the great earthquake and tsunami on the running upstream, growth and maturation of ayu Plecostomus altivelis altivelis in the Natori and Hirose Rivers, Northeastern Japan

GP-13 Yutaka Okumura, Shigeo Kakehi and Yoh Yamashita
Mass balance of dioxins from pesticides in Sendai Bay, Japan

GP-14 Jung-Hoon Kang, Kyu Hee Cho, Kyun-Woo Lee and Woong-Seo Kim
Range expansion of calanoid copepod Acartia hongi known as endemic species to the coastal waters of the Yellow Sea

GP-15 Leslie K. Rosenfeld and Steven J. Bograd
An update on CeNCOOS, the central and northern California Ocean Observing System
Population trends of the Kuril harbor seal *Phoca vitulina stejnegeri* from 1974 to 2011 in southeastern Hokkaido, Japan

Seasonal variability of the mixed layer depth in the East Sea (Japan Sea)

Difference with transporting patterns of MDN from salmon to the riparian ecosystems caused by structure and function of river system

Spatiotemporal distribution of meso- and micro-plastics on a sand beach in South Korea

Occurrence and distribution of microplastics in surface bulk water and microlayer in southern coast of South Korea

Significance of the Krusenstern expedition to Japan in the early 19th century: Its contribution to the development of ichthyology from biological and historical perspectives

Sea ice classification using polarimetric information and texture features of RADARSAT-2 quad-polarization data

Contributions from the IMBER “Human Dimensions Working Group” to the effects of anthropogenic stressors in marine ecosystems

Contributions from the IMBER “Data Management Committee” to the scientific challenges of the changing marine ecosystems

Development of a high-resolution Japanese coastal ocean model toward operational monitoring and forecasting

Organic micropollutants in plastic resin pellets from sand beaches of South Korea

The Pacific Arctic Group (PAG): A Pacific perspective on Arctic science

Effect of mussel ecology on organic-carbon deposition around seawalls in Osaka Bay

Projected sea level change in the North Pacific Ocean based on IPCC AR4 A1B Scenario

The distribution and the seasonal variability of the nutrient on the O-line (138E-line)

The Effects of Dams on Fish Biology in the Amur River Basin
<table>
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<th>GP-32</th>
<th>Japan (Student)</th>
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<td>Japan (Student)</td>
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BIO Workshop
Identifying critical multiple stressors of North Pacific marine ecosystems and indicators to assess their impacts

Co-Convenors: Jennifer Boldt (Canada), Vladimir Kalik (Russia), Chaolun Li (China), Jameal Samhouri (USA), Motomitsu Takahashi (Japan) and Chang-Ik Zhang (Korea)

Invited Speaker:
Natalie Ban (James Cook University, Australia)

Multiple natural and human stressors on marine ecosystems are common throughout the North Pacific, and may act synergistically to change ecosystem structure, function and dynamics in unexpected ways that can differ from responses to single stressors. Further, these stressors can be expected to vary by region, and over time. This workshop seeks to understand responses of various marine ecosystems to multiple stressors, and to identify and characterize critical stressors in PICES regional ecosystems including appropriate indicators of their impacts. The goal is to help determine how ecosystems might change in the future and to identify ecosystems that may be vulnerable to the combine impacts of natural and anthropogenic forcing. Contributions are invited which identify and characterize the spatial and temporal extent of critical stressors in marine ecosystems (both coastal and offshore regions) of PICES member countries, and in particular the locations at which multiple stressors interact. Contributions will include a review and identification of broad categories of indicators which document the status and trends of ecosystem change at the most appropriate spatial scale (e.g., coastal, regional, basin) in response to these multiple stressors. This workshop is linked with the topic session titled “Ecosystem responses to multiple stressors in the North Pacific” but is designed to provide more in-depth examination and discussion of the spatial and temporal extents of critical marine ecosystem stressors and their potential indicators. It will assist with progress towards the goals of PICES WG 28 on Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors (http://www.pices.int/members/working_groups/wg28.aspx).

Friday, October 12 (9:00-18:00)

09:00 Introduction by Convenors

09:00 Papers:

Natalie C. Ban, Stephen S. Ban and Hussein M. Alidina
Combining stressor information – Experiences from Canada’s Pacific waters and Australia’s Great Barrier Reef (W1-8513), Invited

Olga N. Lukyanova, Elena V. Zhuravel, Sergey A. Cherkashin, Denis N. Chulchekov, Viktor A. Nadtochyi and Olga V. Podgurskaya
Bioindicators of multiple stressors interaction in the North-Eastern shelf of Sakhalin Island (Sea of Okhotsk) (W1-8472)

Stephani Zador, Kirstin Holsman, Sarah Gaichas and Kerim Aydin
Developing indicator-based ecosystem assessments for diverse marine ecosystems in Alaska (W1-8638)

10:30 Coffee/Tea Break

10:50 Papers:

Christopher Mulanda Aura, Sei-Ichi Saitoh, Yang Liu and Toru Hirawake
Spatio-temporal model for mariculture suitability of Japanese scallop (Mizuhopecten yessoensis) in Funka and Mutsu Bays, Japan (W1-8451)

Elliott L. Hazen, Jameal F. Samhouri, Isaac D. Schroeder, Brian K. Wells, Steven J. Bograd, David G. Foley, Nick Tolmieri, Phillip S. Levin, Greg Williams, Kelly Andrews, Sam McClatchie, William T. Peterson, Jay Peterson, Jessica Redfern, John C. Field, Ric Brodeur and Kurt Fresh
Ecosystem indicators for the California Current: A Quantitative Approach Towards Indicator Development (W1-8505)
11:40 Discussion
12:30 Lunch
14:00 Papers:

Jameal F. Samhouri
Much ado about everything: Comparison of expert-based vulnerability assessments for coastal habitats along the U.S. west coast (W1-8806)

Jennifer Boldt, Alida Bundy, Caihong Fu, Lynne Shannon and Yunne Shin
An overview of IndiSeas2: Evaluating the status of marine ecosystems in a changing world (W1-8431)

15:30 Coffee/Tea Break
15:50 Break out Group Discussions
17:00 Group Discussion
18:00 Workshop Ends

W1 Workshop Poster

W1-1 Nadezhda L. Aseeva
Reconstructions of flounder community on the shelf of West Kamchatka (Okhotsk Sea) under influence of environmental changes and interspecies relationships
Zooplankton communities play important roles on the transfer of primary production to higher trophic levels of marine ecosystems. In the past two decades, the quantitative evaluation of the energy flow has been emphasized for better understanding how marine ecosystems respond to climate change and global warming. To date, primary production can be globally estimated with remote sensing techniques and validated with \textit{in situ} experiments using radio or stable isotope. Although secondary production has been estimated with various methods (natural cohort, artificial cohort, molting rate, egg production, nucleic acids ratio, enzyme activity and empirical models), there is little information which method is relevant for natural zooplankton population or community. Thereby, we have little knowledge or confidence of secondary production measurements compared with that of primary production. In this workshop, we intend to review current methodologies to measure secondary production. Through published reports of secondary production on natural zooplankton population or community, this workshop will clarify the assumptions, advantages and disadvantages for each method. We will also discuss new techniques (nucleic acids ratio, enzyme activity, chitobiase, or other methods) and challenges in the calibration between the estimates using different methods.

\textbf{Friday, October 12 (9:00-18:00)}

\begin{itemize}
\item [09:00] \textit{Introduction by Convenors}
\item [09:15] \textbf{Lidia Yebra}\nBiochemical indices of zooplankton production (W2-8355), Invited
\item [10:00] \textbf{Akash R. Sastri}\nChitobiase-based measurements of crustacean zooplankton community biomass production rates: Method development and application in the NE subarctic Pacific (W2-8666)
\item [10:40] \textit{Coffee/Tea Break}
\item [11:00] \textbf{William T. Peterson, Jay Peterson and Jennifer L. Fisher}\nUse egg production of adult female copepods as a measure of secondary production (W2-8686)
\item [11:40] \textbf{Hyung-Ku Kang}\nSecondary production of \textit{Acartia steueri} and \textit{A. omorii} (Copepoda: Calanoida) in a small bay, southeastern coast of Korea: The growth rate approach (W2-8764)
\item [12:20] \textit{Lunch}
\item [14:00] \textbf{Ruben Escribano and Pamela Hidalgo}\nCan temperature-dependent growth be used to measure secondary production of copepods in coastal upwelling systems? (W2-8734)
\item [14:40] \textbf{Pamela Hidalgo and Ruben Escribano}\nThe importance of rapid development to produce more biomass on a year cycle: Comparing some copepod species from the Humboldt Current (W2-8733)
\item [15:20] \textit{Coffee/Tea Break}
\end{itemize}
Yasuhide Nakamura, Atsushi Yamaguchi and Noritoshi Suzuki
Characteristics of zooplankton community in the Japan Sea: Biomass, stable isotope ratio and dominant taxa (W2-8354)

Discussion

Workshop Ends

W2 Workshop Posters

W2-1 Lidia Yebra, Elisa Berdalet, Rodrigo Almeda, Verónica Pérez, Albert Calbet and Enric Saiz
AARS activity and RNA/DNA ratio as proxies for growth and fitness of Oithona davisae early developmental stages

W2-2 Lidia Yebra, Sébastien Putzeys, Dolores Cortés, Ana Luisa Da Cruz, Francisco Gómez, Pablo León, Jesús M. Mercado and Soluna Salles
Application of biochemical tools to assess zooplankton metabolism in the coastal North Alboran Sea (SW Mediterranean)

W2-3 Toru Kobari, Shigeki Kori and Haruko Mori
Nucleic acids and protein contents as proxies for protein-specific growth of Artemia salina

W2-4 Sachi Miyake and Toru Kobari
Nucleic acids and protein contents as proxies for starvation of marine copepods

W2-5 Andrew G. Hirst, Julie E. Keister and numerous contributors
Assessing copepod growth rates using the Modified Moult Rate Method
**BIO Workshop**

*The feasibility of updating prey consumption by marine birds, marine mammals, and large predatory fish in PICES regions*

**Co-Convenors:** George Hunt, Jr. (USA), Hidehiro Kato (Japan) and Michael Seki (USA)

**Invited Speaker:**
Robert Olson (Inter-American Tropical Tuna Commission, USA)

It has been 12 years since the publication of PICES Scientific Report No. 14 on “Predation by marine birds and mammals in the subarctic North Pacific Ocean” edited by Hunt, G.L. Jr., Kato, H., and McKinnell, S.M. This publication is the sole overview of the trophic requirements and trophic roles of marine birds and mammals for the North Pacific, and has been a much used reference by a wide variety of scientists including those interested in modeling the roles of marine birds and mammals. As of 2012, Google Scholar lists 49 citations of this report. In the 12 years since its publication, it has become rather considerably out of date. Our knowledge of the distribution and abundance of marine birds and mammals has advanced greatly, as has our knowledge of the food habits of a number of species. Additionally, there has been an increase in interest in the roles of large predatory fish in the world’s oceans. Thus it would seem timely to provide an update of PICES Scientific Publication 14, and, if there is interest for it, to include information on prey consumption by large predatory fishes.

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**Friday, October 12 (9:00-18:00)**

09:00  
*Introduction by Convenors*

09:05  
**Robert J. Olson**  
Data availability for estimating prey consumption by large pelagic fishes, particularly tunas, in the PICES region (W3-8823), Invited

09:30  
**Tsutomu Tamura** and **Kenji Konishi**  
Prey consumption and feeding habits of three baleen whale species in the western North Pacific (W3-8669)

09:50  
**Kaoru Hattori**, **Yoko Goto**, **Mari Kobayashi** and **Orio Yamamura**  
Food habits of pinnipeds in Japanese waters: A review (W3-8762)

10:30  
**Coffee/Tea Break**

10:50  
**Yutaka Watanuki**  
Diet study of seabirds breeding in Japan (W3-8466)

11:20  
**Sayaka Nakatsuka**, **Daisuke Ochi**, **Yukiko Inoue**, **Kotaro Yokawa**, **Hirosi Ohizumi**, **Yasuaki Niizuma** and **Hirosi Minami**  
The food composition of Laysan and Black-footed Albatrosses in the North Pacific from 2010 to 2011 (W3-8368)

11:40  
**George L. Hunt, Jr.**, **Martin Renner**, **Kathy Kuletz**, **Gary Drew** and **John Piatt**  
Seabird numbers, days of occupancy, and prey habits in the Gulf of Alaska and the eastern Bering Sea (W3-8818)

12:00  
**Discussion**

12:30  
**Lunch**

14:00  
**Mike Seki** Lead  
*Discussion*: Should we Include Fish, and if so, what species?

14:30  
**Yutaka Watanuke** Lead  
*Discussion*: How much can we add about seabirds in the Western Pacific?
15:00  George L. Hunt, Jr  Lead
Discussion: How much can we add about seabirds in the Eastern Pacific?

15:30  Coffee/Tea Break

15:50  Hidehiro Kato  Lead
Discussion: How much do we know about cetaceans in the Western Pacific?

16:20  Kaoru Hattori  Lead
Discussion: How much do we know about pinnipeds in the Western Pacific?

16:50  Rolf Ream  Lead
Discussion: How much do we know about pinnipeds in the Eastern Pacific?

17:20  Rolf Ream  Lead
Discussion: How much do we know about cetaceans in the Eastern Pacific?

17:50  Wrap up by Convenors

18:00  Workshop Ends
Exchanges of water masses and their associated flora and fauna strongly link the marine Arctic and the Subarctic. Both regions have undergone significant warming, and there has been reduced sea-ice in recent years in some regions. Climate change scenarios indicate that these regions are likely to experience even greater warming and transformation in the future. To better understand how climate variability and change will affect these marine ecosystems from biogeochemical processes, through the food web to the highest trophic levels, it is essential to improve our knowledge of the role of physical and biological fluxes between the Subarctic and Arctic and the fate of the transported organisms. Therefore, this workshop will examine the influence of the warm Subarctic inflows on the physical conditions and biology in the Arctic basin and shelves, as well as the role of fluxes of water from the Arctic basin onto the surrounding shallow shelves and into the Subarctic. Papers that cover multiple trophic levels or investigate biophysical coupling are especially sought. Also, we encourage presentations on the observed changes that are occurring as well as those on possible scenarios under climate change. Relevant experimental studies, field programs and modeling of Arctic-Subarctic interactions will be considered. Emphasis will be on the Arctic-Pacific Ocean linkages but those considering the exchanges in the Atlantic are also welcome.

Friday, October 12 (9:00-15:30)

09:00  
Introduction by Convenors

09:15  
Seth L. Danielson, Tom Weingartner, Kate Hedstrom, Knut Aagaard, Enrique N. Curchitser, Jinlun Zhang and Rebecca A. Woodgate

The Bering Sea shelf circulation and its role in Pacific-Arctic exchanges (W4-8396), Invited

09:40  
Ichiro Imai, Chiko Tsukazaki, Kohei Matsuno, Ken-Ichiro Ishii and Atsushi Yamaguchi

Abundant distribution of diatom resting stage cells in bottom sediments of Bering Sea and Chuckchi Sea: Possible seed populations for blooms (W4-8646), Invited

10:05  
Eiji Watanabe, Michio J. Kishi, Akio Ishida, Maki N. Aita and Takeshi Terui

Biological hot spots emerging along the pathway of Pacific summer water in the western Beaufort Sea (W4-8525), Invited

10:30  
Coffee/Tea Break

11:00  
Atsushi Yamaguchi, Rie Ohashi, Kohei Matsuno and Ichiro Imai

Interannual changes in the zooplankton community structure on the southeastern Bering Sea shelf and Chukchi Sea during summers of 1991–2009 (W4-8339)

11:20  
Yasunori Sakurai, HaeKyun Yoo and Jun Yamamoto

A comparison of reproductive characteristics and strategies between walleye pollock (Theragra chalcogramma) and Arctic cod (Boreogadus saida) (W4-8743)

11:40  
Franz J. Mueter, Mike A. Litzow, Seth L. Danielson, Paul D. Spencer and Robert R. Lauth

The roles of temperature, abundance and advection in modifying the spatial dynamics of groundfish at the Subarctic-Arctic boundary in the eastern Bering Sea (W4-8624)
12:00  Jacqueline M. Grebmeier  
The Distributed Biological Observatory (DBO): A change detection array in the Pacific Arctic region (W4-8793)

12:20  Poster Descriptions

12:30  Lunch

14:00  George L. Hunt, Jr., Arny Blanchard, Peter Boveng, Padmini Dalpadado, Kenneth F. Drinkwater, Lisa Eisner, Russ Hopcroft, Kit Kovaes, Brenda Norcross, Paul Renaud, Marit Reigstad, Martin Renner, Hein Rune Skjoldal, Andy Whitehouse and Rebecca A. Woodgate  
The Barents and Chukchi Seas: Comparison of two Arctic shelf ecosystems (W4-8433)

14:20  Kenneth F. Drinkwater  
On the role of advection on the interaction between the Arctic and Subarctic seas: Comparing the Atlantic and Pacific Sectors (W4-8640)

14:40  Discussion

15:30  Workshop Ends

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**W4 Workshop Posters**

**W4-1**  Zhongyong Gao, Heng Sun and Liqi Chen  
Comparison of decadal changes in the carbon sink and potential responses to climate change in the Taiwan Strait, Bering Sea and bipolar regions

**W4-2**  Jacqueline M. Grebmeier and Takashi Kikuchi  
The Pacific Arctic Group (PAG): A Pacific perspective on Arctic science
This will be the first MEMIP (Marine Ecosystem Model Intercomparison Project) workshop where we have completed model comparisons within single shelf systems; e.g., within the Northern California Shelf, Gulf of Alaska shelf and Oyashio shelf and offshore, individually. The workshop tasks will be to undertake quantitative assessment of the successes and shortcomings of individual models within regions and across regions. This formal skill assessment is a key activity to enable MEMIP to identify which, if any, of the various ecosystem models have broad skill spatially and temporally in multiple North Pacific shelf ecosystems. The observations (nutrients, chlorophyll and zooplankton biomass) from the key years of simulation (2000-2003) have been compiled to enable model-data comparisons for each of the three regions. To our knowledge this will be the first multiple model skill assessment that extends to zooplankton, e.g., beyond phytoplankton, and the first that focuses on ecosystem models applied to coastal systems. We anticipate one or several peer-reviewed scientific papers and a MEMIP report to result from this workshop.

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

09:00   Introduction by Convenors

09:20   Jarrod A. Santora, William J. Sydeman, Monique Messić, Fei Chai, Sarah Ann Thompson, Brian K. Wells and Francisco P. Chavez
        Triple check: Spatio-temporal observations of krill and seabirds verifies structural realism of an ocean ecosystem model (W5-8418)

09:45   Yvette Spitz (Chair)
        Work Session 1: Overview of MEMIP Model Status. Update on progress since Oct 2011.

10:30   Coffee/Tea Break

10:50   Hal Batchelder (Chair) / Angelica Peña (Chair)
        Work Session 2: MEMIP Impressions, Recommendations, Stumbling Blocks

11:30   Hal Batchelder (Chair)
        Coupled model results/new simulations/etc.

12:30   Lunch

14:00   Shin-ichi Ito (Chair)
        Work Session 3: Coupled model results/new simulations/etc. (continued)

15:30   Coffee/Tea Break

15:50   Angelica Peña (Chair)
        Work Session 4: Coupled model results/new simulations/etc. (continued)

17:30   Workshop Convenors
        Day 1 Wrap-up: Open Discussion of Progress and Planning Day 2

18:00   Day 1 Workshop Ends
Day 2, Saturday, October 13 (9:00-18:00)

09:00  
*Introduction by Convenors*

09:10  
Yvette Spitz (Chair) / Hal Batchelder (Chair)  
Skill Assessment: Example of SA using Newport Spitz model

09:45  
Hal Batchelder (Chair) / Angelica Peña (Chair)  
Work Session 5: Continue model simulations and/or skill assessments

10:30  
*Coffee/Tea Break*

10:50  
Yvette Spitz (Chair) / Hal Batchelder (Chair)  
Work Session 6: Continue model simulations and/or skill assessments

12:30  
*Lunch*

14:00  
Yvette Spitz (Chair) / Hal Batchelder (Chair)  
Work Session 7: Continue model simulations and/or skill assessments

15:30  
*Coffee/Tea Break*

15:50  
Yvette Spitz (Chair) / Hal Batchelder (Chair)  
Work Session 8: Continue model simulations and/or skill assessments

17:00  
*Workshop Convenors*  
Workshop Wrap-up: Accomplishments, Progress Report, Future Steps, Requests to BIO (if any)

18:00  
*Workshop Ends*
MEQ Workshop
The contrasting cases of HABs in the eastern and western Pacific in 2007 and 2011

Co-Convenors: Changkyu Lee (Korea) and Mark Wells (USA)

Invited Speakers:
Sanae Chiba (JAMSTEC, Japan)
William Peterson (Hatfield Marine Science Center, NMFS, USA)

Harmful algal blooms reached historic levels along coastlines of the eastern Pacific in 2011, but similar blooms were minimal to non-existent in Japan, Korea and Russia. The situation was largely reversed in 2007, and this disparity between these years offers a unique opportunity to compare and contrast the basic environmental parameters and HAB dynamics during these regimes. Combining these observations with a broader overview of the basin-scale physical dynamics during this time frame would provide new insights to the factors enhancing these blooms. The workshop foundation will be the pre-submission of available data from member countries, including but not limited to: HAB species presence and abundance, time of year, temperature range, salinity range, water clarity, wind, river flow (flooding), and upwelling indices. Workshop participants will review and discuss the trends and patterns in these data over the first day, and integrate them with information on the basin-scale physical dynamics. Participants will develop a detailed outline for manuscript preparation during the second day, with agreed writing assignments and draft submission deadlines. The manuscript will be targeted for the appropriate international journal decided upon by participants.

Day 1, Friday, October 12 (9:00-17:40)

09:00  Introduction by Convenors

09:15  Takashi Kamiyama, Hiroyuki Yamauchi, Shinnosuke Kaga, Satoshi Nagai and Mineo Yamaguchi
Effects of the tsunami by the Great East Japan Earthquake on distribution of Alexandrium cysts and risk of PSP occurrence in Tohoku coastal areas in Japan (W6-8476)

09:45  Ruixiang Li, Zongling Wang and Mingyuan Zhu
Harmful Algal Blooms in coastal water of China in 2011 (W6-8697)

10:15  Coffee/Tea Break

11:00  William T. Peterson
The potential influence of local physical forcing (factors related to coastal upwelling) and basin-scale forcing (factors related to ENSO and the PDO) on harmful algal bloom in the Oregon upwelling zone (W6-8687), Invited

11:40  Sanae Chiba
Contrast of the lower trophic level responses to climatic forcing over the eastern and western North Pacific (W6-8406), Invited

12:10  Lunch

13:30  Tatyana Yu. Orlova, O.G. Shevchenko, Inna V. Stonik and Vladimir M. Shulkin
Cases of HABs in 2007 and 2011 in Peter the Great Bay (East/Japan Sea), Russia (W6-8537)

14:00  Svetlana Esenkulova and Nicola Haigh
Bloom dynamics of Heterosigma akashiwo in coastal waters of British Columbia (BC), Canada in 2007 and 2011; Data from the Harmful Algae Monitoring Program (W6-8614)

14:30  Chang-Hoon Kim and Ji Hoe Kim
Monitoring and development of PSP toxins along the south coast of Korea (W6-8754)
15:30  *Coffee/Tea Break*

16:00  **Changkyu Lee**  
HAB DATA 2007 and 2011 - Korea

16:20  **Shigeru Itakura**  
HAB DATA 2007 and 2011 - Japan

16:40  **Charles Trick**  
HAB DATA 2007 and 2011 - Canada

17:00  **Vera Trainer**  
HAB DATA 2007 and 2011 - USA

17:20  *Discussion and Day 2 Plan*

17:40  *Workshop Ends*

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**Day 2, Saturday, October 13 (9:00-12:30)**

09:00  Session Plan  
Identification of Central Findings  
Discussion of Outcome

10:30  *Coffee/Tea Break*

10:50  Identification of Lead Author  
Detailed Outline of Manuscript  
Assignment of Tasks and Timeline  
Summary

12:30  *Workshop Ends*

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**W6 Workshop Posters**

**W6-1**  **Junya Tomita, Tomoki Nishiguchi, Motoaki Yagi, Daekyung Kim and Tatsuya Oda**  
Evaluation of toxic potential of newly isolated *Chattonella antiqua*, by laboratory exposure experiments and micro-bioassay using cultured cells

**W6-2**  **Hao Guo, Xu Xiao-man and Li Xia**  
Red tide survey and information system in Dalian Port

**W6-3**  **Feng-ao Lin, Hao Guo, Yongjian Liu, Daoyan Xu and Xingwang Lu**  
High-incidence HABs species in China Coastal Waters and the forewarning method based on the HABs Risk Index

**W6-4**  **Lijian Shi, Bin Zou, Qimao Wang and Maohua Guo**  
The application of multi-sensor to Red Tide monitoring over the Yellow Sea

(cancelled)
Co-Convenors: Hans Paerl (USA) and Kedong Yin (China)

Invited Speaker:
William Li (Bedford Institute of Oceanography, DFO, Canada)

Phytoplankton biomass and community structure have undergone dramatic changes in coastal ecosystems over the past several decades in response to climate variability and human disturbance. These changes have short- and longer-term impacts on global carbon and nutrient cycling, food web structure and productivity, and coastal ecosystem services. There is a need to identify the underlying processes and measure rates at which they alter coastal ecosystems on a global scale. Hence, the Scientific Committee on Ocean Research (SCOR) formed Working Group 137 (WG 137) on Global Patterns of Phytoplankton Dynamics in Coastal Ecosystems: Comparative Analysis of Time Series Observations. To address fundamental questions that emerged, WG 137 will use data compiled from 84 sampling stations, representing research and monitoring programs spread across five continents, and is seeking additional time series of coastal/estuarine/near-shore phytoplankton and relevant hydrographic data. Investigators with decadal observational data are encouraged to contribute to this growing compilation and discuss interests in collaboration. The wealth of information in these data sets provides an unprecedented opportunity to develop a global analysis and investigation of the dynamics and status of ecosystems where land and sea meet. The workshop will cover conceptual models of phytoplankton community variability and quantitative approaches for extracting patterns from time series.

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

09:00 Introduction by Convenors

09:05 William K.W. Li, Todd D. O’Brien and Xosé Anxelu G. Morán
An ecological status report for phytoplankton and microbial plankton in the North Atlantic and adjacent seas (W7-8704), Invited

10:30 Coffee/Tea Break

10:50 Jacob Carstensen, Hans W. Paerl and James E. Cloern
The phytoplankton composition across the world’s coastal ecosystems (W7-8602)

12:30 Lunch

14:00 Todd D. O’Brien
COPEPOTIDE: An online toolkit for plankton time series analysis and visualization (W7-8787)

15:30 Coffee/Tea Break

15:50 N. Ramaiah
Anthropogenic influences on phytoplankton compositional variability in coastal waters (W7-8715)

18:00 Day 1 Workshop Ends
Day 2, Saturday, October 13 (9:00-18:00)

09:00
Introduction by Convenors

09:05
Kedong Yin and Paul J. Harrison
Anthropogenic influence on phytoplankton community structure: Long time series data analysis in Hong Kong coastal waters (W7-8759)

10:30
Coffee/Tea Break

10:50
Yury I. Zuenko
Conditions of phytoplankton blooms at Primorye coast (Japan/East Sea) and year-to-year change of their timing (W7-8551)

12:30
Lunch

14:00
Poster Presentations

15:30
Coffee/Tea Break

15:50
Poster Presentations (continued)

18:00
Workshop Ends

W7 Workshop Posters

W7-1
Hyeon Ho Shin, Jong Sick Park, Young-Ok Kim, Seung Ho Baek, Dhongil Lim and Yang Ho Yoon
Dinoflagellate cyst production and flux in Gamak Bay: A sediment trap study

W7-2
Dolores Cortés, Ana Luisa Da Cruz, Francisco Gómez, Pablo León, Jesús M. Mercado, Sébastien Putzeys, Iria Sala, Soluna Salles and Lidia Yebra
Time variability of the taxonomical composition and the physiological performance of diatom-dominated assemblages in an area affected by coastal upwelling

W7-3
Inna V. Stonik and Tatyana Yu. Orlova
Population dynamics and toxicity of the diatom species of the genus Pseudo-nitzschia in Peter the Great Bay, the northwestern part of the Sea of Japan

W7-4
Ah-Ra Ko, Se-Jong Ju, Ho Young Soh and Kyoungsoon Shin
Understanding seasonal variation of the source of particulate organic matter in relationship with plankton community in the estuary of Sunjin River, Korea

W7-5
Juyun Lee, Mirinae Kim, Jun-mo Lee and Man Chang
Phytoplankton composition under low temperature period at East Sea in Korea
(canceled)

W7-6
Juyun Lee, Mirinae Kim, Jun-mo Lee and Man Chang
The evaluation for the fast cell division with non-uniform cell cycles
(canceled)

W7-7
Juyun Lee, Jun-mo Lee, Mirinae Kim and Man Chang
Different growth pattern of Heterosigma akashiwo with salinity and micronutrients gradient by geology
(canceled)
Recruitment of juvenile Japanese eel (Anguilla japonica) in eastern Asia

Co-Convenors: Ruizhang Guan (China), Tatsu Kishida (FRA, Japan), Akihiro Mae (Japan), Tae Won Lee (Korea), Wann-Nian Tzeng (Chinese Taipei) and Kazuo Uchida (FRA, Japan)

The production of Japanese eel relies mainly on the aquaculture of natural juveniles (glass eel). In recent years, the catch of glass eel has been fluctuating from year to year but remained at the low level. The purpose of this workshop is to discuss the reasons and mechanisms for the inter-annual variation in glass eel recruitment in the coastal area of eastern Asia in order to sustain the stock of Japanese eel. Discussion is also expected on international collaboration and effective measures for sustaining glass eel recruitment.

Saturday, October 20 (10:00-17:10)

10:00  
**Introduction by Convenors**  
*Chair: Wann-Nian Tzeng*

10:05  
**Kazuo Uchida**  
Life history of Japanese eel (review) (W8-8839)

10:35  
**Seinen Chow, Toshihiro Yamamoto, Hiroaki Kurogi, Makoto Okazaki and Tomoo Watanabe**  
Discovery of mature freshwater eels in the spawning area and remarks on the oceanic migration (W8-8822)

11:05  
**Daisuke Ambe, Makoto Okazaki, Tomowo Watanabe, Hiroaki Kurogi and Seinen Chow**  
Oceanographic conditions in spawning ground and larvae transportation area of the Japanese eel (W8-8840)  
*Chair: Tae Won Lee*

11:35  
**Hiroaki Kurogi**  
Ecology and annual recruitment levels of Japanese eel in Japan (W8-8842)

12:15  
**Lunch**

13:35  
**Tae Won Lee**  
Ecology and recruitment of Japanese eel in Korea (W8-8682)

14:15  
**Ruizhang Guan**  
Ecology and annual recruitment levels of Japanese eel in continent China (W8-8841)

14:55  
**Wann-Nian Tzeng and Yu-San Han**  
Spatial and temporal variations in the recruitment of Japanese eel (A. japonica) in Taiwan (W8-8692)

15:35  
**Coffee/Tea Break**  
*Chair: Ruizhang Guan*

16:00  
**Tatsu Kishida and Kazuo Uchida**  
Management measures for eel in Europe (W8-8843)

16:30  
**General Discussion**

17:10  
**Workshop Ends**