

Monday 20 Feb. 2023**Arts & Culture Center**

10:00	【Opening Session】 Opening Address	Chair, Seiji Katakura (City of Mombetsu) Shuhei Takahashi (Chair of the Symposium Committee) Natsuhiko Otsuka (Arctic Research Center, Hokkaido University) Shotaro Uto (Arctic Research Center, Hokkaido University)
10:20	【K: Key Note Speech】 Theme: Present and Future Prospects of Arctic Environment Researches	Chair, Shuhei Takahashi (Okhotsk Sea Ice Museum)
11:10	K-1 Research activities at JAMSTEC - Focusing on topics of Arctic research - ○Takeshi Kawano (Japan Agency for Marine-Earth Science and Technology (JAMSTEC)) K-2 Arctic sounds: listen to learn ○Evgeny A. Podolskiy (Arctic Research Center, Hokkaido University) Online Photo Session	
12:00	Lunch	

Monday 20 Feb. 2023**Room 1 (Municipal Museum)**

	【WS1 : Workshop, Sustainable Arctic Sea Routes in a Rapidly Changing Environment】	Chair, Toshihiro Ozeki (Hokkaido Univ. Educ. Sapporo)
13:30	Introduction: Akihisa Konno (Kogakuin Univ.)	
13:40	WS1-1 Preliminary research for ice thickness estimation using GCOM-W/AMSR2 in the Arctic Ocean ○Soichiro Kubo and Akihisa Konno (Kogakuin Univ.)	
14:00	WS1-2 Investigation of relationship between brash ice channel condition and ship resistance ○Yuya Yoshida and Akihisa Konno (Kogakuin Univ.)	
14:20	WS1-3 Measurement of ship structural response in wave-ice interaction ○Junji Sawamura (Osaka Univ.), Akihisa Konno, Taiki Tokudome (Kogakuin Univ.) and Itsuki Hamamoto (Osaka Univ.)	
14:40	Break	
14:50	WS1-4 A comparative study on the experimental hydrodynamic force of an ice piece in model-scale brash ice Ryota Hayashi, Akihisa Konno (Kogakuin Univ.), ○Jinxin Zhou, Qiao Li, Shuchuang Dong and Daisuke Kitazawa (Univ. Tokyo)	Chair, Junji Sawamura (Osaka Univ.)
15:10	WS1-5 Full-scale experiments of JCG patrol vessel SOYA from 1991 to 2013 in the southern Sea of Okhotsk ○Takatoshi Matsuzawa, Haruhito Shimoda, Tadanori Takimoto, Daisuke Wako (Natl. Mar. Res. Inst.), Koh Izumiyama and Shotaro Uto (Hokkaido Univ.)	
15:30	WS1-6 Laboratory experiment of spray icing using urea-doped water - Comparison of icing rate on simple shape specimens - ○Toshihiro Ozeki (Hokkaido Univ. Educ. Sapporo), Takatoshi Matsuzawa (Natl. Mar. Res. Inst.), Satoru Adachi (Snow Ice Res. Ctr.), Taiki Tokudome and Akihisa Konno (Kogakuin Univ.)	
15:50	Break	
16:00	WS1-7 Development of risk quantification method for oil-spill along the ship tracks in the Arctic ○Takatoshi Matsuzawa (Natl. Mar. Res. Inst.), Akihisa Konno (Kogakuin Univ.) and Motomu Oyama (Kogakuin Univ./NIPR)	Chair, Akihisa Konno (Kogakuin Univ.)
16:20	WS1-8 Results and discussion of mid-term Arctic sea ice forecast in 2022 ○Motomu Oyama (NIPR) and Noriaki Kimura (Univ. Tokyo)	
16:40	WS1-9 Quantifying the spread of ocean wave predictions due to sea ice concentration uncertainty ○Takehiko Nose, Tomotaka Katsuno, Tsubasa Kodaira and Takuji Waseda (Univ. Tokyo)	
17:00	WS1-10 Vessel speed optimization in China-Europe's transportation market considering multiple modes including the Northern Sea Route ○Ding Wenyi, Ryuichi Shibasaki and Chathumi Ayanthi Kavirathna (Univ. Tokyo)	

*Underlined title-numbers show Online Presentations

[A : Marine Biology and Fisheries in the Ice-Covered Waters]	
Chair, Marina Lomaeva (Hokkaido Univ.)	
13:00	A-1 Variability in oceanographic environment in the coastal water off Mombetsu, Hokkaido, during sea-ice season - Results from surveys by Garinko-II - ○Hiromi Kasai (Japan Fish. Res. Educ. Agcy.), Katsushi Iwamoto (City of Mombetsu), Katsushi Murai, Hitomi Yoshida (Okhotsk Garinko Tower Co., Ltd.) and Seiji Katakura (City of Mombetsu)
13:20	A-2 Prediction of appearance patterns of microeukaryote species using weekly time-series monitoring for ten years in Mombetsu Hokkaido, Japan, by AI technology ○Satoshi Nagai (Japan Fish. Res. Educ. Agcy.), Satoshi Tazawa, Noriko Nishi (AXIOHELIX Co. Ltd.), Sirje Sildever (Tallinn Univ. Tech. Estonia), Hiromi Kasai, (Japan Fish. Res. Educ. Agcy.), Akihiro Shiomoto (Tokyo Univ. Agriculture), Junya Hirai, Taisei Kikuchi (Univ. Tokyo), Fumito Maruyama (Hiroshima Univ.) and Seiji Katakura (City of Mombetsu)
13:40	A-3 Characterization of the genetic population structures of three <i>Pseudocalanus</i> species (Copepoda, Calanoida) in the Okhotsk Sea ○Junya Hirai (Univ. Tokyo), Seiji Katakura (City of Mombetsu) and Satoshi Nagai (Japan Fish. Res. Educ. Agcy.)
14:00	Break
Chair, Ikutaro Shimizu (Hokkaido Salmon Distribution Econ. Inst.)	
14:10	A-4 The effect of harmful dinoflagellate <i>Karenia selliformis</i> on survival of copepods from southeastern Hokkaido, Japan ○Takuya Ohnishi, Yukiko Taniuchi, Tsuyoshi Watanabe, Tomoyuki Shikata and Hiromi Kasai (Japan Fish. Res. Educ. Agcy.)
14:30	A-5 The specialized gut shape of the deep-sea planktonic copepods in the Arctic Ocean: Analysis by using micro X-ray CT scan ○Atsushi Yamaguchi, Yunosuke Koguchi (Hokkaido Univ.), Carin J. Ashjian (Woods Hole Oceanographic Inst. USA) and Katsunori Kimoto (JAMSTEC)
14:50	A-6 Seasonal variability of coastal ocean acidification in the southern coast of the Sea of Okhotsk: Summary of four years continuous monitoring ○Katsunori Kimoto (JAMSTEC), Keisuke Shimizu (Univ. Tokyo), Masahide Wakita (JAMSTEC), Kiminori Shitashima (Tokyo Univ. Mar. Sci. Tech.), Atsushi Yamaguchi, Kohei Matsuno (Hokkaido Univ.), Hiromi Kasai (Japan Fish. Res. Educ. Agcy.), Hitomi Yoshida (Okhotsk Garinko Tower Co., Ltd.) and Seiji Katakura (City of Mombetsu)
15:10	Break
Chair, Takuya Ohnishi (Japan Fish. Res. Educ. Agcy.)	
15:20	A-7 Proposal for a model of the ultrasonic emission organ in cetaceans ○Ayano Saisu-Miyazaki (Weathercock Co., Ltd.) and Motoki Sasaki (Obihiro Univ. Agriculture Veterinary Medicine)
15:40	A-8 Non-state actors and marine environmental governance in the North Pacific : The case of northern fur seal ○Marina Lomaeva (Hokkaido Univ.), Yoko Mitani (Kyoto Univ.) and Juha Saunavaara (Hokkaido Univ.)
16:00	A-9 Ukraine's fisheries market affected by Russia's invasion in 2022 - From information by SeafoodSource News - ○Ikutaro Shimizu (Hokkaido Salmon Distribution Econ. Inst.)
16:20	Break
[B : Cold Region Engineering]	
Chair, Koh Izumiyama (Hokkaido Univ.)	
16:30	B-1 Towards the conceptional design of coastal wave database around the Sakhalin Island ○Vitaly Kuzin and Andrey Kurkin (Nizhny Novgorod State Tech. Univ. n.a. R.E. Alekseev, Russia)
16:50	B-2 About analysis of multichannel big data streams delivered by microwave and optical means at monitoring marine ecosystems ○Ferdinant Mkrtychyan (Kotelnikov Inst. Radioengineering Electronics, RAS, Russia)
17:10	B-3 An adaptive spectrophotometry and a spectroellipsometry technology for monitoring water system ○Ferdinant Mkrtychyan (Kotelnikov Inst. Radioengineering Electronics, RAS, Russia)

	【B : Cold Region Engineering】	Chair, Kenta Hasegawa (Natl. Mar. Res. Inst.)
9:00	B-4 Experiment evaluation of underwater acoustic positioning systems in Mombetsu Port ○Shingo Yoshizawa, Yuki Yamada, Madoka Kawasaki, Atsushi Wada (Kitami Inst. Tech.), Shinsuke Konishi (Tamagawa Electronics) and Hideki Sugimoto (Penta-Ocean Constr.)	
9:20	B-5 Preliminary study of the powering method for ships in ice using WMO egg code information ○Shotaro Uto (Hokkaido Univ.)	
9:40	B-6 Case analysis of cargo ship besetting caused by sea ice in the Northern Sea Route - From the incident in November 2021- ○Natsuhiko Otsuka, Hitoshi Kohama, Keiko Sato and Shotaro Uto (Hokkaido Univ.)	
10:00	Break	
		Chair, Koh Izumiyama (Hokkaido Univ.)
10:10	B-7 Fundamental study on interference between synthetic ice ridge keel and subsea structure - The effect of ice rubble shapes on the load - ○Kenta Hasegawa (Natl. Mar. Res. Inst.)	
10:30	B-8 Image analysis methods in ice tank tests ○Keisuke Anzai, Shigeya Mizuno and Yutaka Yamauchi (Japan Mar. United Corp.)	
10:50	B-9 Numerical study on the process of drift ice floe transport in river channel induced by tsunami run-up ○Takaaki Abe and Hiroya Ogushi (Civil Engineering Res. Inst. Cold Region)	
11:10	B-10 Improvement of sea ice thickness measurement method using the shipborne Electro-Magnetic inductive device by sea water conductivity ○Kosuke Kawamura and Kazutaka Tateyama (Kitami Inst. Tech.)	
11:30	Lunch	
	【WS2 : Workshop, Trans-Disciplinary Arctic Research】	Chair, Natsuhiko Otsuka (Hokkaido Univ.)
13:00	WS2-1 A discussion of integrated knowledge and transdisciplinary research for Arctic issues ○Natsuhiko Otsuka and Yuji Kodama (Hokkaido Univ.)	
13:20	WS2-2 Comprehensive Arctic research efforts by integrating field of study -HAI-FES ○Yuji Kodama, Natsuhiko Otsuka, Juha Saunavaara, Fujio Ohnishi, Shotaro Uto and Yasushi Fukamachi (Hokkaido Univ.)	
13:40	WS2-3 Envisioning the future of the earth from the Arctic - Activities of the Arctic transdisciplinary community of practice - ○Yuka Yoshida and Fujio Ohnishi (Hokkaido Univ.)	
14:00	WS2-4 Co-working of industry-government-academia on Arctic issues - Footprints of Japan Arctic Research Network Center (J-ARC Net) - ○Masato Tanaka (Japan External Trade Organization), Yasushi Fukamachi and Natsuhiko Otsuka (Hokkaido Univ.)	
14:20	Break	
	【C : Interdisciplinary】	Chair, Shuhei Takahashi (Okhotsk Sea Ice Museum)
14:30	C-1 Countermeasures for disasters in cold region - Look back on previous MONODUKURI PBL- ○Kei Horio, Muhammad Haziq Aiman Bin Hazbauni, Muhammad Najib Bin Roslan, Kosuke Kushibiki, Naoto Asakura and Rikuto Kano (Utsunomiya Univ.)	
14:50	C-2 SMART (Sensor Enabled Scientific Monitoring and Reliable Telecommunications) submarine cables through the Arctic Ocean: possibilities, challenges, and steps to be taken ○Juha Saunavaara (Hokkaido Univ.)	
15:10	C-3 Sámi indigenous tourism and snow & ice in the Arctic ○Takafumi Fukuyama, Hidetoshi Kobayashi, Hirofumi Ueda and Juha Saunavaara (Hokkaido Univ.)	
15:30	C-4 William Robert Broughton's voyage of discovery to the North Pacific and expedition of the Strait of Tartary/Mamiya Strait ○Gaston R. Demarée (Royal Meteorological Inst. Belgium, Belgium), Yoshio Tagami (Univ. Toyama) and Patrick Beillevaire (French Natl. Ctr. Sci. Res., France)	
15:50	Break	

Tuesday 21 Feb. 2023

Room 1 (Municipal Museum)

	【WS3: Workshop, Impact of Russia's Invasion to Ukraine ~ Industry, Science and Education】 Chair, Fujio Ohnishi (Hokkaido Univ.)
16:00	WS3-1 Re-evaluation and review on Japan-Russia energy cooperation - Both countries' paths in upstream business before the Ukraine Crisis and milestones toward Carbon Neutral - ○Daisuke Harada (Japan Organization for Metals and Energy Security)
16:20	WS3-2 Arctic Sea Route under pandemic and Ukraine Crisis -Current state of commercial use- ○Natsuhiko Otsuka (Hokkaido Univ.)
16:40	WS3-3 Japan-Russia academic collaboration after Russia's invasion of Ukraine ○Marina Lomaeva (Hokkaido Univ.) and Anna Lyude (Niigata Univ.)
17:00	WS3-4 Arctic science challenges and approaches to implementation ○Hiroyuki Enomoto (NIPR)

Tuesday 21 Feb. 2023

Room 2 (Machinaka Art Museum)

	【D : Sea Ice, Wind Waves】 Chair, Takatoshi Matsuzawa (Natl. Mar. Res. Inst.)
9:00	D-1 Estimation of the Arctic sea-ice thickness based on ice histories ○Noriaki Kimura and Hiroyasu Hasumi (Univ. Tokyo)
9:20	D-2 Integrated sea ice thickness algorithm based on thermodynamic and dynamic sea ice growth using AMSR2 data ○Koji Shimada (Tokyo Univ. Mar. Sci. Tech.), Eri Yoshizawa (JAXA) and Kohei Mizobata (Tokyo Univ. Mar. Sci. Tech.)
9:40	D-3 Waves, ice, and current measurements using 5-beam ADCP at the Barrow Canyon - One year of mooring observation from September 2021 - ○Tsubasa Kodaira (Univ. Tokyo), Yasushi Fujiwara (Kobe Univ.), Motoyo Itoh (JAMSTEC), Takehiko Nose, Tomotaka Katsuno (Univ. Tokyo) and Takuji Waseda (Univ. Tokyo/JAMSTEC)
10:00	D-4 Observation of ocean wind wave development by multiple drifting wave buoys under the off-ice condition in the Beaufort Sea ○Tomotaka Katsuno, Tsubasa Kodaira, Takehiko Nose, Ryosuke Uchiyama (Univ. Tokyo) and Takuji Waseda (Univ. Tokyo/JAMSTEC)
10:20	Break
	【E : Meteorology】 Chair, Yuji Kodama (Hokkaido Univ.)
10:30	E-1 Diurnal variation in precipitation and cloud formation during winter in Rikubetsu, inland Hokkaido, northern Japan ○Naohiko Hirasawa (NIPR/SOKENDAI) and Hiroyuki Konishi (Osaka-kyoiku Univ.)
10:50	E-2 Weather in the northern part of the Sea of Japan at the end of the 18th century ○Yoshio Tagami (Toyama Univ.), Gaston R. Demarée (Royal Meteorological Inst. Belgium, Belgium) and Patrick Beillevaire (French Natl. Ctr. Sci. Res., France)
11:10	E-3 Characteristics and factors of snow cover in the Okhotsk region during winter 2014/15 : A case study of heavy snowfall ○Hina Ishii and Tatsuo Shirakawa (Kitami Inst. Tech.)
11:30	E-4 Atmospheric forecast skill of multi resolution atmosphere atmosphere-ocean coupled models in relation to the Arctic cyclone ○Akio Yamagami (Meteorological Res. Inst./JSPS Postdoctoral Fellow), Takahiro Toyoda, Shogo Urakawa, Hideyuki Nakano, Eiki Shindo, Hiromasa Yoshimura, Yuma Kawakami, Kei Sakamoto, (Meteorological Res. Inst.), Takuya Nakanowatari and Hung Wei Shu (Japan Fish. Res. Educ. Agcy.)
11:50	E-5 The detection and distribution of atmospheric river in south polar region ○Kazu Takahashi and Takatoshi Sakazaki (Kyoto Univ.)
12:10	Lunch

※Underlined title-numbers show Online Presentations

Tuesday 21 Feb. 2023**Room 2 (Machinaka Art Museum)**

	【F : Effects of River Discharge】	Chair, Peng Xin (Hokkaido Univ.)
13:10	F-1 Pollution source analysis of the Kushiro River basin using rare earth elements ○Syiraz B. M. Alijaafar, Katsuaki Komai and Tatsuki Igusa (Kitami Inst. Tech.)	
13:30	F-2 Estimating streamflow of the Abashiri River under likely future climate and land use land cover conditions ○Muqing Shi and Takayuki Shiraiwa (Hokkaido Univ.)	
13:50	F-3 Features of long-term phases of increased and decreased Lena water flow in the XX-XXI centuries ○Aleksandr Georgiadi and I. P. Milyukova (Inst. Geography, RAS, Russia)	
14:10	F-4 Effect of permafrost on mudflow parameters in Arctic regions ○Leonid Muzychenko, Yuri Gensiorovskiy, Valentina Lobkina, Alexandra Muzychenko and Mikhail Mikhalev (Far East Geological Inst., Russia)	
14:30	Break	
	【G : Long-Term Changes, Climate】	Chair, Takahiro Toyoda (Meteorological Res. Inst.)
14:40	G-1 Analysis of global history, and carbon cycle ○Takao Nakajin (Tokai Univ.)	
15:00	G-2 Mechanism of four year cycle sea ice variation in the Arctic Ocean ○Wakana Sawada and Koji Shimada (Tokyo Univ. Mar. Sci. Tech.)	
15:20	G-3 SST variations and changes in the subpolar gyre of the North Atlantic caused by variations of sea ice export from the Arctic Ocean ○Hiroto Takahashi and Koji Shimada (Tokyo Univ. Mar. Sci. Tech.)	
15:40	G-4 Climate and bioclimate conditions in SW Greenland in the second half of the 18th century ○Rajmund Przybylak, Andrzej Arażny, Przemysław Wyszowski, Konrad Chmista and Garima Singh (Univ. Toruń, Poland)	

Wednesday 22 Feb. 2023**Room 1 (Municipal Museum)**

	【WS4 : Workshop, Climatic and Oceanic Variabilities and their Impacts on the Biogeochemical Cycles in the Pan-Okhotsk Region】	
8:45	Introduction: Humio Mitsudera (Hokkaido Univ.)	Chair, Humio Mitsudera (Hokkaido Univ.)
	WS4-1 Shiretoko Project: Prediction of sea ice variations due to climate change and its impacts on biogeochemical processes and marine ecosystems - ○Humio Mitsudera (Hokkaido Univ.), Hiroaki Ueda (Tsukuba Univ.), Tomohiro Nakamura, Jun Nishioka and Orio Yamamura (Hokkaido Univ.)	
9:00	WS4-2 Year-to-year fluctuations of sea-ice extent in the Okhotsk Sea associated with the winter monsoon spanning Eurasia and the North Pacific ○Hiroaki Ueda, Masaya Kuramochi (Univ. Tsukuba) and Humio Mitsudera (Hokkaido Univ.)	
9:20	WS4-3 Relationship between fluctuations of the Aleutian low and the global atmospheric circulation from a Pan-Okhotsk climate perspective ○Masaya Kuramochi and Hiroaki Ueda (Univ. Tsukuba)	
9:40	WS4-4 A study on the properties of granular ice of sea ice from laboratory experiments ○Takenobu Toyota (Hokkaido Univ.), Yudai Yamashita (TableMark Co., Ltd.) and Haruka Koda (Japan Meteorological Agency)	
10:00	WS4-5 Seasonal and inter annual variations of sea ice along the Okhotsk coast of Hokkaido from the viewpoint of coupled atmosphere-ocean dynamics ○Yuki Asazuma, Hiroaki Ueda (Univ. Tsukuba) and Humio Mitsudera (Hokkaido Univ.)	
10:20	Break	
		Chair, Hiroaki Ueda (Univ. Tsukuba)
10:30	WS4-6 Reproducibility and future projections of winter climate over the Pan-Okhotsk Sea region based on CMIP6 multi-model datasets ○Tomoshige Inoue, Hiroaki Ueda, Youichi Kamae (Univ. Tsukuba) and Humio Mitsudera (Hokkaido Univ.)	
10:50	WS4-7 Warming experiments of the Sea of Okhotsk ○Ryu Saiki, Humio Mitsudera (Hokkaido Univ.), Takuya Nakanowatari, Hiroshi Kuroda (Japan Fish. Res. Educ. Agency), Tomoshige Inoue and Hiroaki Ueda (Univ. Tsukuba)	

11:10	WS4-8 Improvements of sea ice thermodynamics and salt content parameterizations in an OGCM ○Takahiro Toyoda, Kei Sakamoto (Meteorological Res. Inst.), Takenobu Toyota (Hokkaido Univ.), Hiroyuki Tsujino, L. Shogo Urakawa, Yuma Kawakami, Akio Yamagami, Kensuke K. Komatsu, Goro Yamanaka, Tomonori Tanikawa and Hideyuki Nakano (Meteorological Res. Inst.)
11:30	WS4-9 Research on beach litter in the Shiretoko World Natural Heritage Site ○Honami Nishikawa, Yusuke Kobayashi and Takayuki Shiraiwa (Hokkaido Univ.)
11:50	Lunch
13:00	WS4-10 Ocean monitoring and ship observations around Shiretoko ○Tomohiro Nakamura (Hokkaido Univ.), Takahiro Nobetsu (Shiretoko Nature Foundation), Tadashi Misaka (Kushiro Fish. Res. Inst.), Jun Nishioka (Hokkaido Univ.), Yoko Mitani (Kyoto Univ.), Orio Yamamura and Humio Mitsudera (Hokkaido Univ.) Chair, Jun Nishioka (Hokkaido Univ.)
13:20	WS4-11 Year-round observation of the East Sakhalin Coastal Current using a mooring system ○Shinzou Fujio, Daigo Yanagimoto (Univ. Tokyo), Tomohiro Nakamura, Jun Nishioka and Humio Mitsudera (Hokkaido Univ.)
13:40	WS4-12 Analysis of published and unpublished observation data around Shiretoko ○Kaoru Ito and Tomohiro Nakamura (Hokkaido Univ.)
14:00	WS4-13 Estimations of sea ice melt and associated heat/salt transport in the Sea of Okhotsk ○Mariko Honda, Kay I. Ohshima, Vigan Mensah, Jun Nishioka (Hokkaido Univ.) and Stephen C. Riser (Univ. Washington, USA)
14:20	Break
14:30	WS4-14 Characteristics of water masses and nutrients conditions in the southern Sea of Okhotsk ○Jun Nishioka, Takenobu Toyota, Aiko Murayama, Kazuya Ono, Momoka Imai, Youhei Yamashita, Koji Suzuki, Tomohiro Nakamura, Kay I. Ohshima and Humio Mitsudera (Hokkaido Univ.) Chair, Tomohiro Nakamura (Hokkaido Univ.)
14:50	WS4-15 Impact of sea ice meltwater on biogeochemical condition in the southern Sea of Okhotsk ○Momoka Imai, Aiko Murayama, Kazuya Ono, Youhei Yamashita, Koji Suzuki, Tomohiro Nakamura, Kay I. Ohshima, Humio Mitsudera and Jun Nishioka (Hokkaido Univ.)
15:10	WS4-16 Seasonal mixed-layer dissolved iron variation in the Western Subarctic Gyre ○Zhang Zhenlong, Tomohiro Nakamura and Jun Nishioka (Hokkaido Univ.)
15:30	WS4-17 Accumulation of iron in sea ice during ice formation- ice tank experiment - ○Zhou Jiakai and Jun Nishioka (Hokkaido Univ.)
15:50	Break
16:00	WS1-18 Changes in the characteristics of photosynthesis-irradiance parameters for surface phytoplankton in the southern Sea of Okhotsk from winter to spring ○Yudai Oshino, Jun Nishioka, Takenobu Toyota and Koji Suzuki (Hokkaido Univ.) Chair, Takenobu Toyota (Hokkaido Univ.)
16:20	WS1-19 Differences in phytoplankton communities and their controlling environmental factors in the southern Sea of Okhotsk between winter and spring ○Yanxu Sun, Jun Nishioka, Takenobu Toyota and Koji Suzuki (Hokkaido Univ.)
16:40	WS1-20 Estimation of freshwater discharge from the Gulf of Alaska drainage basins ○Peng Xin, Humio Mitsudera, Muqing Shi and Takayuki Shiraiwa (Hokkaido Univ.)
17:00	WS1-21 Anticyclonic circulation causing extreme snowfall events in the Japan-Sea coast of Japan ○Meiji Honda (Niigata Univ.) and Hiroaki Kawase (Meteorological Res. Inst.)
17:20	【Closing Session】 Review Akihisa Konno (Kogakuin University) Natsuhiko Otsuka (Arctic Res. Center, Hokkaido University) Shotaro Uto (Arctic Research Center, Hokkaido University) Humio Mitsudera (Institute of Low Temperature Science, Hokkaido University) Closing Address Shuhei Takahashi (Chair of the Symposium Committee) Chair, Seiji Katakura (City of Mombetsu)

【Poster Session】

- P-1** On the seasonal variations of the Bering Slope Current
Humio Mitsudera, Youichi Hirano (Hokkaido Univ.), Hatsumi Nishikawa (Univ. Tokyo) and Hung Wei Shu (Japan Fish. Res. Educ. Agcy.)
- P-2** The Northern Sea Route: A review of recent developments
Arild Moe (Fridtjof Nansen Inst., Norway)

Public Program

Monday 20 Feb. 2023

Arts & Culture Center

【Public Program, Forum on Disasters, Oil Pollution Countermeasures, and Environmental Protection】 *(in Japanese language only)*

What it takes to protect peace and the environment

Chair, Go Saito (Okhotsk Environment Protection Net, OEPN)

13:00 Introduction, Masato Ito (Okhotsk Environment Protection Net, OEPN)

13:10 I Disaster relief operation of SDF
○Munetake Chaen (Japan Self-Defense Forces)13:35 II How to fight against oil spill at Okhotsk
○Kuniaki Sasaki (Oil Pollution-Consultant)14:05 III History and current status of the red-crowned crane in Hokkaido
○Fumio Matsumoto (Akan International Crane Center)14:30 IV Aim for Lake Komuke to be registered under the Ramsar Convention !!
○Kazuhiro Odate (Mombetsu-Kaihatsu Club)

Discussion

Tuesday 21 Feb. 2023

Arts & Culture Center

【Public Program, How Do We Act at Heavy Snowstorm in Okhotsk Area ?】 *(in Japanese language only)*

Chair: Hidehiko Ninomiya (Abashiri Develop. Constr. Dept.)

14:00 Introduction, Shuhei Takahashi (Okhotsk Sea Ice Museum/Symposium Committee)

14:05 I Characteristics of heavy snowstorms in Okhotsk area ~Effective use of disaster prevention information~
○Toshiharu Shibata (Abashiri Local Meteorological Office)14:25 II Support activity for community disaster preparedness by Hokkaido Regional Development Bureau
○Takahiro Yoshida (Abashiri Develop. Constr. Dept.)

14:40 Break

14:50 Panel Discussion Coordinator, Masahiro Nemoto (Japan Red Cross Hokkaido College of Nursing)

Theme: How do We Act at Heavy Snowstorm

Panelists: Osamu Yamada (Abashiri Local Meteorological Office)
Makoto Ishikawa (City of Mombetsu)
Tomohiro Iwaya (Mombetsu City Social Welfare Council)
Noriko Shimamiya (Mombetsu School of Nursing)
Hidehiko Ninomiya (Abashiri Develop. Constr. Dept.)

Review: Masahiro Nemoto (Japan Red Cross Hokkaido College of Nursing)

15:55 Closing Remarks: Hideyuki Fukuhara (Abashiri Develop. Constr. Dept.)

Wednesday 22 Feb. 2023

Arts & Culture Center

	【Public Program, Our Home Okhotsk Sea】	<i>(in Japanese language only)</i>
		Chair, Nobuyuki Kano (City of Mombetsu)
13:30	Introduction, Etsuya Kawashiro (City of Mombetsu)	
13:35	I Development for the Blue Carbon Project in Hokkaido ○Shukichi Hashida (Hokkaido Electric Power Co., Inc.)	
14:20	II How to remove sand for the best taste of Japanese basket clams ○Akiyuki Satou (Abashiri Fish. Res. Inst.)	
	Discussion	
15:15	Closing Remarks	

Thursday 23 Feb. 2023

Arts & Culture Center

	【Public Program, Okhotsk Terroir Symposium】	<i>(in Japanese language only)</i>
13:00	Introduction, Hiroshi Daikoku (Okhotsk Terroir)	
13:05	Session I Lecture of Education and Culture Design of future society for splendid life ○Shinichi Fukuoka (Biologist)	
15:00	Break	
15:10	Session II HARU- Freewheeling Conversation	Chair, Kazuo Furuya (Okhotsk Terroir)
	Splendid Okhotsk life leading to the future	
16:40	Panelists: Shinichi Fukuoka (Biologist) Yoshikazu Miyakawa (City of Mombetsu) Shuhei Takahashi (Okhotsk Sea Ice Museum) Yuzo Tachibana (Mombetsu Otani Kindergarten) Shinichi Chonan (Okhotsk Terroir)	
	Closing Remarks	

Friday 24 Feb. 2023

Citizens' Public Hall

13:10	【Symposium on Sea Ice for Children】	<i>(in Japanese language only)</i>
		Chair, Muneyuki Kotsugai (City of Mombetsu)
14:30	Introduction, Kengo Sato (City of Mombetsu) Global environment and sea ice in the Sea of Okhotsk ○Shuhei Takahashi (Okhotsk Sea Ice Museum)	

Okhotsk Sea Ice Museum

	【Public Program, Poster Exhibition】	
	Saturday 11 - Tuesday 28 February	
	Okhotsk Marine Environment Conservation Seminar Symposium on the Forest-Ocean Linkage	
	Monday 20 Feb. - Sunday 12 March	
	Symposium for Public Education: Presentations by Junior-High School Students	