

Effect of the Cycling WRF-3DVAR Data Assimilation of the Ship-borne Arctic Radiosonde Sounding on the Simulation of the Intense Arctic Cyclone in mid-August 2016

J.-H. Kim^{1*}, S.-W. Kim, and N.-K. Noh

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The Arctic Ocean is more accessible to human activities as sea-ice declines. As a result, Arctic severe weather prediction is becoming practically more important. Previous studies have demonstrated that the cyclone activity tends to enhance seasonally during summer in the central Arctic Ocean and, during the last several decades, the entrance of extratropical cyclones has increased toward the Arctic [1-3]. One representative case was a violent, long-lived Arctic cyclone in early August of 2012, with record lifetime minimum central pressure of 966 hPa [4]. In mid-August 2016, another atypically intense Arctic cyclone was observed, which was comparable to the 2012 cyclone. Originating from Scandinavia, it explosively developed over the Eurasian sector of the central Arctic Ocean, reaching its lifetime minimum central pressure of 968 hPa on 16 August. Thereafter it was weakening for three days while moving eastward and finally dissipated by merging into another developing cyclone from Alaska.

In this study, we perform WRF forecasts of this 2016 cyclone's life cycle with the initial (00Z 10 August) and boundary conditions from the NCEP GFS forecast fields. In addition, extra Arctic radiosonde sounding data over the Chukchi and East Siberian seas are available, since we produced on the icebreaker Araon. For an experimental purpose, we test the assimilation impact of those extra sounding data using the WRF-3DVAR. Three model experiments have been set up: 1) a control run without extra data assimilation (DA_NO), 2) an experiment with one-time assimilation on 00Z 10 August (DA_10), and 3) an experiment with 24-hr cycling assimilation from 00Z 10 through 00Z 13 August. Comparing the central pressure evolution among the three experiments, DA_NO and DA_10 simulated the cyclone's life cycle in a very similar way, whereas DA_13 shows a notable discrepancy on the simulation of the weakening phase from 16 August. In DA_13, the weakening rate is even more rapid, compared with the reanalysis data: the central pressure increased to the weakest peak of 979 hPa within 36-hr (c.f., from 968 hPa to 984 hPa within 48-hr in the reanalysis data). The reason of this difference is that an anticyclonic increment generated by the cycling sounding data assimilation grows and spreads to the central Arctic Ocean and excessively affects the cyclone weakening while it passes around the International Dateline, located at the closest distance from the Araon. Therefore, the extra Araon Arctic sounding data could affect the cyclone's central pressure forecast around the time of its lifetime peak period.

References

- [1] X. Zhang, J. E. Walsh, J. Zhang, U. S. Bhatt, and M. Ikeda, Climatology and interannual variability of Arctic cyclone activity: 1948-2002, *J. Climate* **17** (2004)
- [2] M. Serreze, and A. P. Barrett, The summer cyclone maximum over the central Arctic Ocean, *J. Climate* **21** (2008)
- [3] I. Simmonds, C. Burke, and K. Keay, Arctic climate change as manifest in cyclone behaviour, *J. Climate* **21** (2008)
- [4] I. Simmonds, and I. Rudeva, The great Arctic cyclone of August 2012, *Geophys. Res. Lett.* **39** (2012)

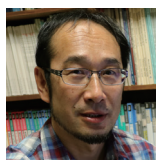
Hall

9:00- 9:20	Opening	
9:20- 9:50	Keynote speech 1	Kay I. Ohshima Effects of High Albedo and Brine Rejection of Sea Ice on the Arctic Ocean and its Recent Change
9:50-10:20	Keynote speech 2	Peter Wadhams A Farewell to Ice - Arctic climate feedbacks and their impact on global warming
10:20-10:30	Photo session	
10:30-10:40	Break	
10:40-12:40	Session presentations 1	Chair: S. Saito (Hokkaido Univ., Japan)
SP1-G1	10:40-11:00	Surface Energy Budget Process Relationships for Evaluating Model Performance in Central Greenland: Matthew Shupe, M. Miller, C. Cox, O. Persson
SP1-G6S6	11:00-11:20	Distribution shifts of marine taxa in the Pacific Arctic under contemporary climate changes: Irene D. Alabia J. Garcia Molinos, S.I. Saitoh, T. Hirawake, T. Hirata, F.J. Mueter
SP1-S7S8	11:20-11:40	Arctic challenge for ice observation and ice navigation: Natsuhiko Otsuka, K. Tateyama
SP1-S9	11:40-12:00	Towards a virtual research environment for geoscience: Øystein. Godøy, T. Thorbjørnsen, L. Ferrighi, A. Vines, T. Hamre, B. Pfeil
SP1-S10	12:00-12:20	Benefits sharing as a tool for sustainable development of Arctic indigenous communities in Russia: Violetta Gassiy
SP1-S14	12:20-12:40	Local Knowledge and Perception of Permafrost Degradation in Eastern Siberia: Development of Teaching Materials for Environmental Education: Yuichiro Fujioka, H. Takakura

12:40-13:30 Lunch

13:30 Breakout Sessions

Hall	Chu1	Chu2
G6S6 Changes in Sea Ice, Oceans and Ecosystems in the Arctic Ocean	S7S8 Arctic Challenge for Ice Observation and Ice Navigation	G1 Atmosphere
Chair: Amane Fujiwara	Chair: Peter Wadhams	Chair: Mio Matsueda
G6S6-O01 13:30-13:45 On the Nature of Wind-Forced Upwelling in Barrow Canyon *M. Pisareva, R. Pickart, P. Fratantoni, T. Weingartner	S7S8-O01 13:30-13:48 Maritime Target Detection and Discrimination in Ice-Infested Arctic Waters based on Generative Adversarial Network Using SAR Images Y. HE, *D. Tao, J. Zhang, L. Zhu, P. Ding	G01-O01 13:30-13:45 Sensitivity of the Arctic climate forcing due to atmospheric physical parameterizations *J. H. Yoon
G6S6-O02 13:45-14:00 Continuous Sea-ice Thickness Measurement in the Northeastern Coastal Chukchi Sea from 2009 *Y. Fukamachi, K. I. Ohshima, A. R. Mahoney, H. Eicken, D. Simizu, K. Iwamoto, E. Moriya, T. Takatsuka, J. Jones	S7S8-O02 13:48-14:06 The use of AUVs (autonomous underwater vehicles) under sea ice - achievements so far *P. Wadhams, B. Krogh	G01-O02 13:45-14:00 Cooling trend over Eurasian continent and Arctic sea ice decline *K. Nishii, B. Taguchi, A. Kuwano-Yoshida, H. Nakamura, Y. Kosaka, T. Miyasaka
G6S6-O03 14:00-14:15 Observed and anticipated changes in the seasonal cycle of coastal sea ice and their impacts in the Alaskan Arctic *H. Eicken, O. A. Lee, M. A. Johnson, A. R. Mahoney, P. L. Pulsifer	S7S8-O03 14:06-14:24 MAPPING SEA ICE FROM ABOVE AND BELOW *B. Krogh, P. Wadhams	G01-O03 14:00-14:15 Quantification of influence of Arctic sea-ice reduction and natural variability to recent Eurasian cooling *M. Mori, Y. Kosaka, M. Watanabe, H. Nakamura, M. Kimoto
G6S6-O04 14:15-14:30 Factors influencing Multi-time scale Sea-ice Variations in the Pacific Arctic Region *J. -H. Kim, K. -H. Cho, X. Zhang, L. Peng, K. Shimada, E. Yoshizawa, Y. Choi, S. -H. Kang	S7S8-O04 14:24-14:42 Estimation of sailing speed through ice covered waters on the northern sea route *K. Tateyama, H. Okuda, N. Otsuka	G01-O04 14:15-14:30 A comparison of climate impacts of the Arctic sea ice loss based on multiple sea ice concentration datasets *T. Nakamura, K. Yamazaki, K. Hoshi, M. Honda, J. Ukita
G6S6-O05 14:30-14:45 Causes and Consequences of the Beaufort Gyre Region Freshwater Content Changes (2003-2016) *A. Proshutinsky, R. Krishfield, W. Williams, M. -L. Timmermans	S7S8-O05 14:42-15:00 Arctic Marine Access and Ice Navigation Seasons *L.W. Brigham	G01-O05 14:30-14:45 Is the recent downturn of the summer North Atlantic Oscillation (SNAO) related to Arctic Sea Ice change? *H. W. Linderholm, T. Ou, J.-H. Jeong, D. Chen, B.-M. Kim
14:45-15:15 Break	15:00-15:15 Break	G01-O06 14:45-15:00 Analysis of cloud formation processes for arctic cyclone in the non-hydrostatic icosahedral grid model *T. Kurihana, H. Tanaka
Chair: Yoshiyuki Abe	Chair: Natsuhiko Otsuka	15:00- 15:15 Break
G6S6-O06 15:15-15:30 Dissolution of CaCO ₃ in the present and glacial ocean: A comparison of the effects of different dissolution parameterizations *D. Peya, C. Voelker, G. Lohmann	S7S8-O06 15:15-15:33 Development of NSR Transit Simulator "VESTA-ICE" *S. Uto, T. Matsuzawa	Chair: Keiichiro HARA
G6S6-O07 15:30-15:45 Enhancing of Biological Pump in the Chukchi Sea Based on Seven Chinese Arctic Summer Cruises since 1999 and Sediment Cores Records *J. Chen, H. Jin, Y. Zhuang, H. Li, Y. Bai, Q. Zhu	S7S8-O07 15:33-15:51 Sea Route Search Using the Global Dynamic Windows Approach including Ice Concentration *T. Takagi, K. Tateyama	G01-O07 15:15-15:30 Soil CO ₂ Measurements in Canada's High Arctic Winter *R. Layden
G6S6-O08 15:45-16:00 The Composition and Origin of Suspended Particles from Water Column in the Shelves of Chukchi Sea and Northern Bering Sea *X. Yu, L. Ye, Y. Liu, J. Lei, X. Yao, J. Zhu, X. Jin, W. Zhang	S7S8-O08 15:51-16:09 Field investigation of sea spray particles impinging on large vessels - Case study of the R/V Mirai *T. Ozeki, S. Toda, H. Yamaguchi	G01-O08 15:30-15:45 Terrestrial Biospheric and Oceanic CO ₂ Uptake Estimated from Long-term Measurements of Atmospheric CO ₂ Mole Fraction, d13C and d(O ₂ /N ₂) at Ny Aalesund, Svalbard *D. Goto, S. Morimoto, S. Ishidoaya, S. Aoki, T. Nakazawa
G6S6-O09 16:00-16:15 Inferences on Biological Community Structure of the Distributed Biological Observatory (DBO) from Undersea Video Imagery *L. Cooper, J. Grebmeier, A. Bayard, H. Bi	S7S8-O09 16:09-16:27 R & D Study of Oil Recovery Device for Ice-covered Waters - NMRI-ORDICE *K. Izumiya, S. Kanada, H. Shimoda, D. Wako, T. Matsuzawa	G01-O09 15:45-16:00 Relationships between wildfire occurrences and environmental factors over the Siberian region *T. J. Yasunari, K. -M. Kim, A. M. da Silva
G6S6-O10 16:15-16:30 Changes in seabird density relative to water mass around St. Lawrence Island, northern Bering Sea during summer *B. Nishizawa, H. Hayashi, N. Yamada, H. Ueno, T. Hirawake, Y. Watanuki	S7S8-O10 16:27-16:45 Arctic research and educational collaboration plan between Japan-Norway A. Yamakawa, *S. Sandven, S. Saitoh, H. Enomoto, Y. Kodama, N. Otsuka	G01-O10 16:00-16:15 Variations of black carbon and dust in Northwest Greenland reconstructed by Continuous Flow Analysis of an ice core *K. Goto-Azuma, Y. Ogawa-Tsukagawa, Y. Kondo, R. Dallmayr, M. Hirabayashi, J. Ogata, K. Kitamura, K. Kawamura, H. Motoyama, S. Matoba, M. Kadota, T. Aoki, N. Moteki, S. Ohata, T. Mori, M. Koike, Y. Komuro, A. Tsuchida, N. Nagatsuka
G6S6-O11 16:30-16:45 A Step-Wise Progression to Fisheries Ecosystem Science in the Central Arctic Ocean *J. Grebmeier, H. P. Huntington		G01-O11 16:15-16:30 Lidar Observed Seasonal Variation of Free Tropospheric Aerosols over Ny Alesund *T. Shibata, K. Shiraiishi, K. Sudo, S. Iwasaki, M. Shiobara, T. Takano
		G01-O12 16:30-16:45 Moistening of the Antarctic upper troposphere observed by balloonborne water vapor measurements *Y. Tomikawa, M. Kohma, M. Takeda, K. Sato
16:45-18:15 Poster Session		
19:00-21:00 Reception	TKP Takebashi	



Keynote speech 1

Kay I. Ohshima

Professor in Physical Oceanography
Institute of Low Temperature Science /
Arctic Research Center, Hokkaido University, Japan

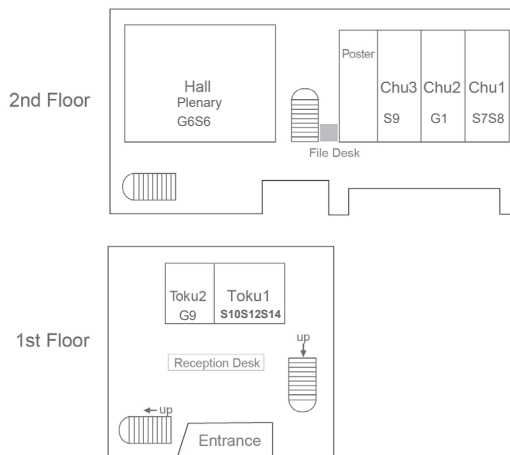


Keynote speech 2

Peter Wadhams

Professor Emeritus in Sea Ice Physics
Department of Applied Mathematics and Theoretical
Physics, University of Cambridge, UK; and Università
Politecnica delle Marche, Ancona, Italy

Room Layout



Chu3

S9 Understanding the Changing Arctic through Data: Stewardship, Publication, and Science

Chair: Øystein Godøy

S09-O01 13:30-13:45
Metadata Management, Interoperability and Data Citation in Polar Science
*M. Kanao, J. Friddell, A. Kadokura

S09-O02 13:45-14:00
Getting Necessary Heritage Data out of Deep Freeze
*E. Griffin

S09-O03 14:00-14:15
The Canadian Consortium for Arctic Data Interoperability: An Emerging Initiative for Canadian Arctic Data Stewardship
*M. Murray, S. C. Vossepoel

S09-O04 14:15-14:30
INTAROS: Integrated Arctic observation system development under Horizon 2020
*S. Sandven, H. Sagen, E. Buch, R. Pirazzini, D. Gustavson, A. B.-Moller, P. Voss, F. Danielsen, L. Iversen, P. Goncalves, T. Hamre, G. Ottersen, M. Sejr, D. Zola, N. Dwyer

S09-O05 14:30-14:45
Arctic Observations, Data and Society: using systems science to enhance Arctic information flow
*P.L. Pulsifer, P.A. Berkman, Y. Kontar, H. Savela, Y. Qiu

14:45-15:15 Break

Chair: Shannon Vossepoel

S09-O06 15:15-15:30
Data Management of Arctic Project in Japan
*H. Yabuki, T. Sugimura, T. Terui

S09-O07 15:30-15:45
Linking People with People and with the Data They Need: Recent Activities at the Canadian Cryospheric Information Network and Polar Data Catalogue
J. Friddell, *P. Pulsifer, G. Alix, D. Church, Y. Dong, D. Fairbairn, D. Friddell, F. Lauritzen, E. LeDrew

S09-O08 15:45-16:00
National ground segment for Sentinel data in Norway
*Ø. Godøy, N. Budewitz, T. Halsne, L. Ferrighi, B. Saadatnejad, L. -A. Breivik

S09-O09 16:00-16:15
Arctic Territory - geological data and modeling
*A. Rybkina, A. Reissell, P. Kabat, A. Gvishiani

Toku1

S10 Sustainable Development in the Russian Arctic: Perspectives from Economic, Environmental and Policy Studies

Chair: Violetta Gassiy, Daria Gritsenko

S10-O01 13:30-13:45
Is their resource curse in the Russian peripheral Arctic regions?
*D. Gritsenko, E. Efimova

S10-O02 13:45-14:00
Contested Russian Arctic: Paradoxes of path-dependency and nation-building
*V. -P. Tynkkynen

S10-O03 14:00-14:15
Participatory Rights - Interplay of Legislation and CSR in Russia
*S. Nystén-Haarala, M. Pappila, A. Kaerki

S10-O04 14:15-14:30
Russian Arctic: Indigenous Communities and Extractive Industries
*L. Sulandziga

14:30-14:40 Break

S12 Greenlandic Reflections of Global Concerns: Ecological, Social and Political Perspectives on the Future

Chair: Naotaka Hayashi, Minori Takahashi

S12-O01 14:40-14:55
Environmental change and its impact on human society in Qaanaaq, northwestern Greenland
*S. Sugiyama, Y. Fukamachi, ArCS Greenland Project members

S12-O02 14:55-15:10
Intercorporeality at the Kayak Competition: Traditional Practices and the Sense of Future in Greenland
*M. Walls

S12-O03 15:10-15:25
Intentions about economic development by the Government of Greenland in a climate change frame
*K. G. Hansen

S12-O04 15:25-15:40
Climate Change and Transformations in the Security Environment
*M. Takahashi

15:40-15:50 Break

S14 Synthesizing Local Interactions between Permafrost and Human Societies

Chair: Hiroki Takakura, Yoshiro Iijima, Tamara Litvineko

S14-O01 15:50-16:02
Melioration in the Permafrost Environment:History and Modernity
*S. Boyakova

S14-O02 16:02-16:14
Thermokarst activating in the recent decades in central Yakutia, Russia
*Y. Iijima, H. Saito, N. Basharin, A. Fedorov

S14-O03 16:14-16:26
Interaction of social and natural factors in economic activities of contemporary Sakha farmers
*M. Goto, S. Boyakova

S14-O04 16:26-16:38
Social Consequences of Changing Permafrost in Yakutia: Gendered Challenges in Churapchinsky region
*S. Grigorev, L.Vinokurova

S14-O05 16:38-16:50
Permafrost and Poverty: the Social Effects of Climate Change in the Republic of Sakha (Yakutia)
*V. Ignatyeva

Toku2

G9 Social and Cultural Dimensions

Chair: Shirow Tatsuzawa

G09-O01 13:30-13:45
Not-Quiteness of the Horse for the Tyva herders
V. Peemot

G09-O02 13:45-14:00
Knowing Salmon: An Ethnography of Knowledge Co-production in Alaska
*S. Kondo

G09-O03 14:00-14:15
Why do Khanty Choose to Wear Fur?: Fur-Wearing Culture and Use of Wild/Domesticated Animals
*Y. Oishi

G09-O04 14:15-14:30
New relationship between wildlife and local people - a case study of wild reindeer conservation in East Siberia -
*S. Tatsuzawa, I. Okhlopov, N. Solomonov, E. Nikolaev, R. Kirillin, E. Kirillin, M. Nicholai

G09-O05 14:30-14:45
De-extinction Debates and the Ethno-paleontology of Woolly Mammoths in Taimyr
*D. G. Anderson

Discussion 14:45-15:00

15:00-15:15 Break

Chair: Shiaki Kondo

G09-O06 15:15-15:30
Post-Soviet Population Dynamics In the Russian Extreme North: A Case of Chukotka
*K. Kumo, T. Litvinenko

G09-O07 15:30-15:45
Place Names, Landscapes, and Ways of Living from Local Perspectives in Nanvrapak (Iliamna Lake), Alaska
*Y. Kugo

G09-O08 15:45-16:00
Arctic research in the world based on bybliometric analysis
*A. Bancheva

16:00-16:45 Discussion

Hall

- 9:00- 9:30 Keynote speech 3** Peter Schweitzer Remoteness and Infrastructure: On the Affordances of the Built Environment in Polar Regions
- 9:30-10:00 Keynote speech 4** Jacqueline Grebmeier The Arctic in Transition: Status and Trends in Biological Oceanography to Understand the Changing Marine Ecosystem
- 10:00-10:15 Break**
- 10:15-12:35 Session presentations 2** Chair: T. Kikuchi (JAMSTEC, Japan)
- SP2-G5 10:15-10:35 Analyzing long-term growth trends of tree and forest biomass in the circumpolar boreal region: Moutar Kamara, Y. Tamura, Y. Matsuura, A. Osawa
 - SP2-G2 10:35-10:55 Forever cyclonic? How stable is the circulation of Atlantic Water in the Arctic Ocean?: Michael Karcher, H. Sumata, B. Rabe, T. Kikuchi, A. Behrendt, F. Kauker, R. Gerdes
 - SP2-G7 10:55-11:15 Ground-based instruments of the PWING project to investigate dynamics of the inner magnetosphere at subauroral latitudes: Kazuo Shiokawa, PWING Team
 - SP2-S1 11:15-11:35 Attribution of Trends of Seasonal Temperatures in Alaska: John E. Walsh, B. Bretschneider
 - SP2-S12 11:35-11:55 Seeking a future vision by negotiating environmental changes in North Greenland: Naotaka Hayashi
 - SP2-S15 11:55-12:15 Weaving techniques in subarctic areas: Their prosperity and decline in Northeast Asia: Shiro Sasaki
 - SP2-G8 12:15-12:35 Arctic Policies and Economy - A German perspective: Volker Rachold

12:35-13:30 Lunch

13:30 Breakout Sessions

Hall

G2 Ocean and Sea Ice

Chair: Hajime Yamaguchi

- G02-O01 13:30-13:48 SMOS-derived thin sea ice thickness in the Arctic and Antarctic
*X. Tian-Kunze, L. Kaleschke
- G02-O02 13:48-14:06 Circumpolar Polynya Characteristics in the Arctic -A Multi-sensor Intercomparison for the Period 2002/2003 to 2010/2011
*A. Preußer, S. Willmes, G. Heinemann, K. I. Ohshima
- G02-O03 14:06-14:24 Flat first-year ice thickness algorithm using AMSR2
*K. Shimada, T. Wada, E. Yoshizawa, K. -H. Cho, H. -S. La, S. -H. Kan
- G02-O04 14:24-14:42 Satellite observation of the thickening of sea ice through the ice deformation
*N. Kimura, H. Hasumi, M. Itoh, Y. Fukumachi, T. Kikuchi, E. Moriya
- G02-O05 14:42-15:00 Sea Ice Motion and Deformation Measurements Using Satellite Images
*H. -C. Kim, C. -U. Hyun

15:00-15:15 Break

Chair: Hiroyasu Hasumi

- G02-O06 15:15-15:33 Inter-Sensor Calibration of Space-Borne Passive Microwave Radiometers for Retrieving Long-Term Sea Ice Trends
*M. Seki, M. Hori, K. Naoki, M. Kachi, K. Imaoka
- G02-O07 15:33-15:51 Anomalously low central Arctic salinity in a years of high sea-ice melt and converging atmospheric conditions
*B. Rabe, M. Korhonen, M. Hopmann, R. Ricker, S. Hendricks, T. Krumpen, A. Ulfso, E. Jones, U. Schauer, J. Beckers
- G02-O08 15:51-16:09 Water movements in the Arctic Ocean below 1500m statistically confirmed by geochemical data
*M. Ikeda, S. S. Tanaka, Y. Watanabe
- G02-O09 16:09-16:27 Effect of different factors on calcium carbonate saturation in the Canada Basin in the last two decades
*Y. Zhang, M. Yamamoto-Kawai
- G02-O10 16:27-16:45 Middle Pleistocene to Holocene environmental changes in the northern Northwind Ridge: evidence from terrigenous depositional at ARC06-C22
*R. Wang, W. Zhang, W. Xiao, X. Yu, B. K. Biskaborn, X. Gong, J. Ren, Y. Liu, B. Diekmann

Chu1

G5 Terrestrial Ecosystems

Chair: Yojiro Matsuura

- G05-O01 13:30-13:50 Top-down and bottom-up CO₂ fluxes at Yakutsk, Siberia
K. Takata, *P. Patra, A. Kotani, T. Ohta, T. Saeki, K. Ichii
- G05-O02 13:50-14:10 Carbon cycle of permafrost: main terrestrial and hydrological ecosystems in Eastern Siberia
*T. Maximov, H. Dolman, T. Ohta, P. Anderson, A. Kononov, A. Maksimov, R. Petrov
- G05-O03 14:10-14:30 Seasonal change and spatial pattern of monoterpane in a forest soil in a black spruce stand in Interior Alaska
*T. Morishita, T. Miyama, K. Noguchi, Y. Matsuura, Y. Kim
- G05-O04 14:30-14:50 Effects of snow cover change on taiga forest ecosystem
*R. Shakhmatov, A. Sugimoto, T. Maximov, S. Hashiguchi

14:50-15:15 Break

Chair: Yojiro Matsuura

- G05-O05 15:15-15:35 Simulating topographic controls on the abundance of larch forest in eastern Siberia, and its consequences under changing climate
*H. Sato, H. Kobayashi
- G05-O06 15:35-15:55 Change over time in development of root stocks of black spruce growing at upper and lower slopes in Interior Alaska
*S. Otake, T. Morishita, Y. Matsuura, K. Noguchi, T. Shirota, R. Ruess, J. Hollingsworth, K. Yasue
- G05-O07 15:55-16:15 Warming permafrost accelerates development of soil hummocks and drunken forest
*K. Fujii, K. Yasue, Y. Matsuura, A. Osawa
- G05-O08 16:15-16:35 A Late Cretaceous (70 Ma) High Latitude Paleoenvironmental Transect Across Greenhouse Alaska, USA: Investigating the Relationship between Environments and Fossil Vertebrates
*A. R. Fiorillo, P. McCarthy

Chu2

S1 Arctic Warming by Natural Variability and/or Human Impact

Chair: Hiroshi L. Tanaka

- S1-O01 13:30-13:50 On the Natural Component of Climate Change
*S. Akasofu, H. L. Tanaka
- S1-O02 13:50-14:10 Accelerated increase in the Arctic "tropospheric" warming events
*S -Y. Wang, Y. -H. Lin, J. -H. Yoon
- S1-O03 14:10-14:30 Future changes in precipitation over the Arctic projected by massive ensemble simulations with a 60-km mesh global atmospheric model
*S. Kusunoki
- S1-O04 14:30-14:50 Multi-Decadal Variability in Planetary Albedo
*H. Tanaka, K. Itoh
- Questionary 14:50-15:00 H. L. Tanaka

15:00-15:15 Break

Chair: John Walsh

- S1-O05 15:15-15:35 Impacts of Climate and Vegetation Changes on Hydrological Processes in a Canadian Northern Research Basin
*K. Rasouli, J. W. Pomeroy
- S1-O06 15:35-15:55 Intrusion of Lower Latitude Warm-Moist Air Contributing to the Arctic amplification
*T. Yamanouchi
- S1-O07 15:55-16:15 Analysis of the difference between Arctic Oscillation and North Atlantic Oscillation using Self-Organizing Maps
*T. Sunaga, H. Tanaka
- S1-O08 16:15-16:20 Maintenance mechanism of a long-lasting polar low observed over the Barents Sea in January 2011
*A. Manda, T. Mitsui, J. Inoue, M. Hori, K. Kawamoto, K. Komatsu
- Pannel Discussion 16:20-16:45 J. Walsh and H. L. Tanaka

16:45-18:15 Poster Session



Keynote speech 3

Peter Schweitzer

Professor of Anthropology
Department of Social and Cultural Anthropology,
University of Vienna, Austria

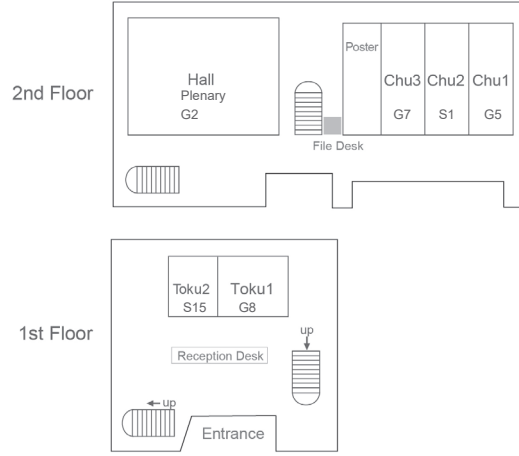


Keynote speech 4

Jacqueline Grebmeier

Professor in Biological Oceanography
Chesapeake Biological Laboratory, University of
Maryland Center for Environmental Sciences, Solomons,
Maryland, USA

Room Layout



Chu3

G7 Geospace

Chair: Masaki Tsutsumi

G07-O01 13:30-13:50
Multi-Year Analysis of Arctic Gravity Waves Over Alaska Across the Atmospheric Layers and Into The Near-space Environment
*N. Kim, W. Brittany, D. Eric, N. Michael, C. Richard

G07-O02 13:50-14:10
Gravity Wave Propagation and Dissipation in the Arctic Region and Connection to Vertical Coupling
*E. Yigit

G07-O03 14:10-4:25
Impacts of thermospheric gravity wave on the Ionospheric variability in the Arctic region simulated by GAIA
*Y. Miyoshi, H. Jin, H. Fujiwara, H. Shinagawa

G07-O04 14:25-14:45
Coupling Between Tidal and Planetary Wave Modes in the Mesosphere and Lower Thermosphere
*P. Espy, N. Stray, R. Hibbins

G07-O05 14:45-15:00
Millimeter-wave spectrometer for monitoring minor constituents in the middle atmosphere at Tromsø
*A. Mizuno, T. Nakajima, S. Nozawa, T. Nagahama, T. Kawabata, K. Haratani, H. Iwata, K. Suzuki

15:00-15:15 Break

Chair: Yasunobu Ogawa

G07-O06 15:15-15:30
Temporal and spatial variations of the ionosphere and plasmasphere during geomagnetic storms as seen in global Total Electron Content (TEC) data
*A. Shinbori, Y. Otsuka, T. Tsugawa, M. Nishioka

G07-O07 15:30-15:50
Anomalous ambipolar diffusion observed using meteor radars in the Arctic
*M. Tsutsumi, Y. Ogawa, S. Nozawa, C. Hall

G07-O08 15:50-16:10
Enhanced Polar Outflow Probe (e-POP) Ionospheric Radio Occultation Measurements at High Latitudes
*C. Watson, R. Langley, D. Themens, A. Yau, A. Howarth, T. Jayachandran

G07-O09 16:10-16:25
SuperDARN Hokkaido Pair of (HOP) radars: Powerful tools for monitoring the ionosphere and upper atmosphere in the arctic region
*N. Nishitani

G07-O10 16:25-16:45
China-Iceland Joint Aurora Observatory (CIAO) at Karholl
*H. Hu, H. Yang, Z. Hu

Toku1

G8 Policies and Economy

Chair: Shinichiro Tabata

G08-O01 13:30-14:00
International Science, Policy, and Fisheries in the Central Arctic Ocean
*H. Huntington, F. Ohnishi

G08-O02 14:00-14:30
Arctic security: A cooperative move for building human secure transnational society
*H. Kamrul

Book presentation 14:30-15:00
*V. Tynkkynen, S. Tabata, D. Gritsenko, M. Goto

15:00-15:15 Break

Chair: Fujio Ohnishi

G08-O03 15:15-15:37
Economic Development of the Arctic Regions of Russia: Analysis of Regional Budgets
*S. Tabata

G08-O04 15:37-15:59
Modeling the formation of income and resources of the local population of Sakha (Yakutia)
*N. Bochkarev, T. Gavrilyeva

G08-O05 15:59-16:21
Russian climate policy after the Paris Agreement: Perspectives of the North
*N. Stepanova, T. Gavriileva

G08-O06 16:21-16:43
Perspectives of Carbon Tax Implementation in Russia
*T. Gavrilyeva, A. Nogovitsyn, N. Stepanova

Toku2

S15 Technology, Infrastructure and Human Space in the Past and Present of Northern Regions

Chair: Naoko Iwasaki / Hiroki Takakura

S15-O01 13:30-13:50
The influence of Japanese technology on the Ainu
*N. Iwasaki, Y. Murakami

S15-O02 13:50-14:10
The role of settlements and authority in changes of the traditional nomadic routes in the first half of the 20th century in the Iamal peninsula
*E. Vozhanina

S15-O03 14:10-14:30
Territorial Isolation and the Sustainability of Local Communities: The Case of the European North of Russia
*A. Pozanenko

S15-O04 14:30-14:50
Trying to understand the indirect impacts of Northern mine infrastructure: The Case of the Faro Mine
*C. Southcott

Discussion 14:50-15:00

15:00-15:15 Break

Chair: Peter Schweitzer

S15-O05 15:15-15:35
High Tech for High North: Bringing remote northern communities closer to the rest of the world through information technology
*A. Pestereva

S15-O06 15:35-15:55
Fashioning The New Arctic
*V. Korkina

S15-O07 15:55-16:15
Innovative Arctic: Geography and Dynamics of Patented Innovation in Alaska
*A. Petrov, S. Zbeed

S15-O08 16:15-16:35
GPS tracking of herds in the North: from methodological tool to object of study
*C. Marchina

Discussion 16:35-16:45

Hall

9:00- 9:30	Keynote speech 5	Bruce Forbes	Coping with a warming winter climate in Arctic Russia : patterns of extreme weather affecting Nenets reindeer nomadism
9:30-10:00	Keynote speech 6	Tero Mustonen	Community-led Monitoring and Ecological Restoration in the Arctic: History, Power and Resilience
10:00-10:15	Break		
10:15-12:15	Session presentations 3	Chair: H. Enomoto (NIPR, Japan)	
SP3-G4	10:15-10:35	Evaluation of the Greenland Ice Sheet surface mass balance estimated by the NHM-SMAP regional climate model:	Masashi Niwano, T. Aoki, A. Hashimoto, S. Matoba, S. Yamaguchi, T. Tanikawa, K. Fujita, A. Tsushima, Y. Iizuka, R. Shimada, M. Hori
SP3-S2	10:35-10:55	Comprehensive Atmospheric Measurements at MOSAIC to Study Cloud-Atmosphere-Surface Interactions:	Matthew Shupe
SP3-S3	10:55-11:15	Heat transport from northern rivers to Canadian Arctic coast:	Daqing Yang, S. Tank, J. Lung, H. Park
SP3-S4	11:15-11:35	Early detection of changing pan-arctic wetland methane emission:	Akihiko Ito
SP3-S5	11:35-11:55	Assessing the Carbon Climate in the Upper Waters of a changing Arctic Ocean:	Leif G. Anderson, A. Olsen
SP3-S11S13	11:55-12:15	The Global Arctic as a New Geopolitical Context – potential influences of Arctic actors beyond the (Arctic) region:	Lassi Heininen, M. Finger

12:15-13:30 Lunch

13:30 Breakout Sessions

Hall

G2 Ocean and Sea Ice

Chair: Genki Sagawa

G02-O11 13:30-13:48
Analysis of the interannual and seasonal variability of upwelling events on the Arctic Ocean continental shelf from 0.08-degree Arctic Ocean HYCOM-CICE
*D. Dukhovskoy

G02-O12 13:48-14:06
The Atlantic water inflow through the Fram Strait in a climate model
*T. Kawasaki

G02-O13 14:06-14:24
Importance of Processes and Coupling for Arctic Sea Ice and Climate Modeling and Prediction
*W. Maslowski, R. Osinski, S. Kamal, Y. Lee, A. Roberts

G02-O14 14:24-14:42
A simultaneous optimization of Arctic sea ice model parameters by genetic algorithm
H. Sumata, *M. Karcher, F. Kauker, R. Gerdes, C. Koerberle

G02-O15 14:42-15:00
A model approach to carbon exchange in the air, sea, and ice of the marine Arctic
*E. Mortenson, N. Steiner, A. Monahan

15:00-15:15 Break

S4 Biogeochemical Cycles and Biodiversity of Terrestrial Ecosystems under Arctic Warming

Chairs: Hideki Kobayashi, Josef Elster, Shin Nagai, Yongwon Kim, Elie Verleyen

S04-O01 15:15-15:30
Study on stable isotopes of precipitation in Hokkaido, North Japan
*X. Li, A. Sugimoto, A. Ueta

S04-O02 15:30-15:45
Multi-year Effect of Wetting on CH₄ Flux at Taiga-Tundra Boundary in Northeastern Siberia Clarified by Stable Isotopes of CH₄
*R. Shingubara, A. Sugimoto, J. Murase, S. Tei, S. Takano, T. Morozumi, M. Liang, G. Iwahana, T. Maximov

S04-O03 15:45-16:00
Perspectives of low-temperature microalgae biomass production in the Arctic
*J. Elster

S04-O04 16:00-16:15
Methane flux measurements over a larch forest in eastern Siberia: emission or uptake?
*T. Nakai, T. Hiyama, A. Kotani, T. Ohta, T. Maximov

S04-O05 16:15-16:30
Accurate detection of spatio-temporal variability of plant phenology in boreal ecosystems by near-surface and satellite remote-sensing
*S. Nagai, T. Morozumi, S. Tei, A. Kotani, H. Ikawa, Y. Kim, H. Kobayashi

S04-O06 16:30-16:45
Seasonal changes in spectral reflectance in an open canopy black spruce forest in Interior Alaska
*H. Kobayashi, S. Nagai, Y. Kim, H. Nagano, K. Ikeda, H. Ikawa

Chu1

S5 Synoptic Arctic Survey – An Ocean Research Program for the Future

Chair: Are Olsen

S5-O01 13:30-13:45
Arctic Ocean CO₂ uptake: an improved multi-year estimate of the air-sea CO₂ flux incorporating chlorophyll-a concentrations
*S. Yasunaka, E. Siswanto, A. Olsen, M. Hoppema, E. Watanabe, A. Fransson, M. Chierici, A. Murata, S. K. Lauvset, R. Wanninkhof, T. Takahashi, N. Kosugi, A.M. Omar, S. van Heuven, J. T. Mathis

S5-O02 13:45-14:00
Responses of nutrient and phytoplankton distributions to gale-force winds in the western Arctic Ocean
*S. Nishino, Y. Kawaguchi, J. Inoue, M. Yamamoto-Kawai, M. Aoyama

S5-O03 14:00-14:15
Variations in water mass distributions in western regions of the Pacific sector of the Arctic Ocean from 2011 to 2017
*E. Yoshizawa, K. -H. Cho, T. -W. Park, Y. - S. Choi, K. Shimada, S. -H. Kang

S5-O04 14:15-14:30
Influence of warm-core eddy on dissolved methane distribution in the southwestern Canada Basin during late summer/early fall 2015
*O. T. N. Bui, S. Kameyama, Y. Kawaguchi, D. Sasano, M. Ishii, S. Nishino, N. Kosugi, U. Tsunogai, H. Yoshikawa-Inoue

S5-O05 14:30-14:45
Distributions of trace metals (Mn, Fe, Ni, Zn and Cd) in the western Arctic Ocean in late summer 2012
*Y. Kondo, H. Obata, N. Hioki, A. Ooki, S. Nishino, T. Kikuchi, K. Kuma

S5-O06 14:45-15:00
Radioesium in the Arctic Ocean after Fukushima Dai-ichi nuclear power plant accident
*Y. Kumamoto, M. Aoyama, Y. Hamajima, S. Nishino, A. Murata, T. Kikuchi

15:00-15:15 Break

Chair: Shigeto Nishino

S5-O07 15:15-15:30
Ensuring Comparability of Oceanic nutrient data in the Synoptic Arctic Survey
*M. Aoyama, E. M. S. Woodward, A. Olsen

S5-O08 15:30-15:45
Rapidly changing western Arctic Ocean sea-ice and ecosystem; Korean research efforts and plan
*S. -H. Kang

S5-O09 15:45-16:00
Korea Arctic Ocean Information System
*J. Chi, H. -C. Kim, S. -H. Kang

S5-O10 16:00-16:15
The Changing Arctic Transpolar System: a Multidisciplinary Russian-German Research Project
*H. Kassens, J. Hölemann, L. A. Timokhov, V. Ivanov

S5-O11 16:15-16:30
Response of dimethyl sulfide production by phytoplankton to change in multiple environmental stressors in the western Arctic Ocean
*S. Kameyama, K. Sugie, A. Fujiwara, S. Nishino

S5-O12 16:30-16:45
Absolute Salinity measurements in the Arctic Ocean
*H. Uchida, S. Nishino, M. Wakita, S. Gary

Chu2

S2 Synergies for "New Arctic" Climate Prediction, Observation and Modeling

Chair: Jun Inoue

S02-O01 13:30-13:45
Seasonal progression of the deposition of black carbon by snowfall at Ny-Ålesund, Spitsbergen
*Y. Kondo, P. R. Sinha, K. Goto-Azuma, Y. Ogwawa-Tsukagawa, M. Koike, S. Ohata, N. Moteki, T. Mori, N. Oshima, E. J. Forland, M. Irwin, J. -C. Gallet, C. A. Pedersen

S02-O02 13:45-14:00
Seasonal differences in the characteristics of ice nucleating particles on Mt. Zeppelin in Ny-Ålesund, Svalbard: A case study in 2016/2017
*Y. Tobo, K. Adachi, N. Nagatsuka, P. DeMott, T. Hill, S. Ohata, Y. Kondo, M. Koike

S02-O03 14:00-14:15
Ship-based Observation and Regional Chemical Transport Model analysis for Atmospheric Black Carbon over the Arctic Ocean
*F. Taketani, T. Miyakawa, M. Takigawa, M. Yamaguchi, S. Kato, Y. Kanaya, Y. Komazaki, P. Mordovskoi, H. Takashima, Y. Tohjima

S02-O04 14:15-14:30
Seasonal variability of near-inertial internal waves in the Northwind Abyssal Plain, Arctic Ocean
*Y. Kawaguchi, M. Itoh, Y. Fukamachi, E. Moriya, J. Onodera, T. Kikuchi

S02-O05 14:30-14:45
Physical Oceanography activities during MOSAIC: a summary from the OCEAN team
*B. Rabe, C. Provost, MOSAIC OCEAN team

S02-O06 14:45-15:00
Year-round surveys for air-sea ice gas flux in the Arctic Ocean
*D. Nomura, E. Damm, B. Loose, B. Delille, A. Fransson, M. Chierici, M. Granskog, J. Inoue

15:00-15:15 Break

Chair: Benjamin Rabe

S02-O07 15:15-15:30
Interaction between YOPP and MOSAIC from observations to modeling
*J. Inoue

S02-O08 15:30-15:45
Impact of extra Arctic radiosonde observations on 5-day weather forecasts over Alaska during August 2015
*M. -H. Lee, J. -H. Kim, H. -J. Song, J. Inoue, K. Sato, A. Yamazaki

S02-O09 15:45-16:00
Effect of the Cycling WRF-3DVAR Data Assimilation of the Ship-borne Arctic Radiosonde Sounding on the Simulation of the Intense Arctic Cyclone in mid-August 2016
*J. -H. Kim, S. -W. Kim, N. -K. Noh

S02-O10 16:00-16:15
Medium-range forecast skill for Arctic Cyclones
*A. Yamagami, M. Matsuueda, H. Tanaka

S02-O11 16:15-16:30
Analysis of arctic cyclone of August 2012 using non-hydrostatic global atmosphere and ocean coupled model
*H. Kubokawa, M. Satoh, H. Hasumi, N. Kimura, T. Kawasaki

S02-O12 16:30-16:45
Medium-range forecast skill of summertime sea ice conditions over the East Siberian Sea: Importance of synoptic-scale atmospheric fluctuations
*T. Nakanowatari, J. Inoue, K. Sato, L. Bertino, J. Xie, M. Matsuueda, A. Yamagami, T. Sugimura, H. Yabuki, N. Otsuka

16:45-17:00 Break

17:00-17:30 Closing Hall



Keynote speech 5
Bruce Forbes

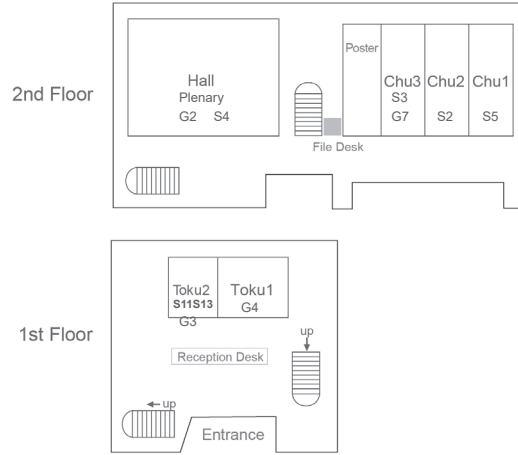
Research Professor
Leader, Global Change Research Group
Arctic Centre, University of Lapland, Rovaniemi, Finland



Keynote speech 6
Tero Mustonen

Director
Snowchange Cooperative, Finland

Room Layout



Chu3

S3 A Complex Adapting Arctic Ecohydrology in the Context of Changing Climate

Chair: Hotaek Park

S03-O01 13:30-13:40
Polar Knowledge Canada and the Canadian High Arctic Research Station (CHARS) in Nunavut
*D. J. Scott

S03-O02 13:40-13:55
Spatial variability of streamflow in continuous permafrost environment in Central Yakutia, Russia
*L. Lebedeva, O. Makarieva, N. Nesterova

S03-O03 13:55-14:10
Hydrological changes in the Arctic circumpolar tundra and pan-Arctic large river basins from 2002 to 2016
*K. Suzuki, K. Matsuo, D. Yamazaki, K. Ichii, Y. Iijima, T. Hiyama

S03-O04 14:10-14:25
Permafrost groundwater age of spring discharges around Khangai Mountains in central Mongolia
*T. Hiyama, A. Dashtseren, K. Asai, H. Kanamori, M. Ishikawa

S03-O05 14:25-14:40
Perennial Snowfields in the Central Brooks Range, Alaska: A Landsat Based Time Series of Extent Changes in Gates of the Arctic National Park and Preserve
*M. Tedesche, E. Trochim, S. Fassnacht

S03-O06 14:40-14:55
Active-layer thickness at permafrost larch forests in eastern Siberia
*A. Kotani, M. Nakatsubo, T. Ohta, T. Hiyama, Y. Iijima, T. Maximov

S03-O07 14:55-15:10
The amplified Arctic terrestrial ecohydrological processes under the climate change
*H. Park

15:10-15:15 Break

G7 Geospace

Chair: Yoshizumi Miyoshi

G07-O11 15:15-15:35
Energetic electron precipitations associated with chorus waves; Initial observations from Arase and ground-based observations
*Y. Miyoshi, S. Kurita, S. Saito, I. Shinohara, Y. Kasahara, S. Matsuda, Y. Kasaba, S. Yagitani, H. Kojima, M. Hikishima, F. Tsuchiya, A. Kumamoto, Y. Katoh, A. Matsuoka, N. Higashio

G07-O12 15:35-15:50
Ground-based optical observations of pulsating aurora in coordination with ARASE/ERG satellite
*K. Hosokawa, Y. Miyoshi, S. Oyama, Y. Ogawa, S. Kurita, Y. Kasahara, Y. Kasaba, S. Yagitani, S. Matsuda, M. Ozaki, F. Tsuchiya, A. Kumamoto, R. Kataoka, K. Shiokawa, H. Miyaoka, Y. Tanaka, S. Nozawa, M. Teramoto, T. Takashima, I. Shinohara, R. Fujii

G07-O13 15:50-16:10
Role of Space-based and Ground-based Infrastructure in Studies of the Atmospheric Forcing by High-Energy Particle Precipitation and the New Research Opportunity by the EISCAT_3D Incoherent Scatter Facility
*E. Turunen, A. Kero, P. Verronen, Y. Miyoshi, S. Oyama, S. Saito, K. Shiokawa

G07-O14 16:10-16:30
EISCAT radar measurements of energetic particle precipitation during ARASE satellite conjunctions
*A. Kero, P. Verronen, E. Turunen, S. Oyama, Y. Miyoshi

G07-O15 16:30-16:45
Energetic electron precipitation and auroral morphology at the substorm recovery phase
*S. Oyama, A. Kero, C. J. Rodger, M. A. Clilverd, Y. Miyoshi, N. Partamies, E. Turunen, T. Raita, P. T. Verronen, S. Saito

Toku1

G4 Ice Sheets, Glaciers and Ice Cores

Chair: Konrad Steffen

G04-O01 13:30-13:45
The role of the North Atlantic Oscillation (NAO) on recent Greenland surface mass loss and mass partitioning
*M. Tedesco, P. Alexander, D. Porter, X. Fettweis, S. Luthke, T. Mote, A. Rennelalm, E. Hanna

G04-O02 13:45-14:00
Positive feedback effect of NIR albedo reduction on surface melting observed at SIGMA-A on Greenland ice sheet
*T. Aoki, M. Niwano, T. Tanikawa, S. Matoba, S. Yamaguchi, T. Yamasaki, K. Fujita, Y. Iizuka, H. Motoyama, M. Hori, R. Shimada

G04-O03 14:00-14:15
Simulations of the evolution of the Greenland ice sheet under Paris Agreement warming scenarios
*R. Greve, M. Rueckamp, A. Humbert

G04-O04 14:15-14:30
Tracking Crevasse Extent over the Greenland Ice Sheet using ICESat-1
*S. Grigsby, W. Abdalati, W. Colgan

G04-O05 14:30-14:45
Seismic noise as a proxy for glacier dynamics
*E. Podolskiy, F. Walter, S. Sugiyama, M. Funk

G04-O06 14:45-15:00
Seasonal/long-term changes in Rayleigh-wave phase velocity at the bottom of Greenland ice sheet
*G. Toyokuni, H. Takenaka, R. Takagi, M. Kanao, S. Tsuboi, Y. Tono, D. Zhao

15:00-15:15 Break

Chair: Naoko Nagatsuka

G04-O07 15:15-15:30
Japanese activities under EGRIP (East Greenland Ice Core Project)
*K. Goto-Azuma, F. Nakazawa, M. Hirabayashi, N. Nagatsuka, W. Shigeyama, J. Okuno, S. Fujita, H. Enomoto, T. Homma, N. Azuma, T. Saruya, A. Abe-Ouchi, R. Greve, F. Saito, M. Miyahara

G04-O08 15:30-15:45
Reconstruction of nitrogen isotopic composition of nitrate preserved in High-Accumulation Dome at South East Greenland
*S. Hattori, A. Tsuruta, Y. Iizuka, K. Fujita, R. Uemura, S. Matoba, N. Yoshida

G04-O09 15:45-16:00
Composition of salt inclusions in the southeastern Greenland (SE-Dome) ice core analyzed by micro-Raman spectroscopy
*T. Ando, Y. Iizuka, H. Ohno, S. Sugiyama

G04-O10 16:00-16:15
Speciation of calcium in particles trapped in Greenlandic ice core
*C. Miyamoto, Y. Iizuka, K. Sakata, Y. Takahashi

G04-O11 16:15-16:30
Effect of solid particles on polycrystalline ice and its relations with rapid deformation of ice-age ice
*T. Saruya, K. Nakajima, M. Takata, T. Homma, N. Azuma, K. Goto-Azuma

Toku2

S11S13 Environmental, Economic, Societal and Geopolitical Dynamics in the Arctic, their Global Drivers and Implications

Chair: Lassi Heininen, Matthias Finger

S11S13-O01 13:30-13:48
European cooperation: Poland a strategic link to ensure Arctic governance
*D. Garcia-Caceres

S11S13-O02 13:48-14:06
The Role of Non-Arctic States in Regime Building for the Central Arctic Ocean Fisheries Management
*L. Zou

S11S13-O03 14:06-14:24
The Role of non-Arctic Regions in the Globalized Arctic
*J. Saunavaara

S11S13-O04 14:24-14:42
Security as a Key Prerequisite for Stability and Sustainable Environment in the Arctic
*B. Padrova

S11S13-O05 14:42-15:00
The Arctic and the International Discourse on Climate Change: Which Implications for Arctic Indigenous Peoples
*M. Scopelliti

15:00-15:15 Break

G3 Rivers, Lakes, Permafrost and Snow Cover

Chair: Mamoru Ishikawa

G03-O01 15:15-15:33
Changes of streamflow and heat flow in the largest Russian Arctic Rivers
*A. Georgiadi, E. Kashutina, I. Milyukova

G03-O02 15:33-15:51
Features and extent of the degradation of ice-wedges in Central Yakutia under the influence of modern climate warming
*A. Fedorov, N. Basharin, R. Desyatkin, A. Desyatkin, Y. Iijima, H. Park, G. Iwahana, H. Saito, P. Konstantinov, P. Efremerov

G03-O03 15:51-16:09
Engineering-Geocryological Mapping of the Republic of Sakha (Yakutia)
*A. Shestakova

G03-O04 16:09-16:27
Probabilistic modelling of methane emissions from Arctic shelf during Holocene
D. Yumashev, V. Yumashev, N. Shakhova, I. Semiletov, *P. Wadhams

G03-O05 16:27-16:45
Assessment of seasonal snow cover mass in NH and the Arctic during satellite-era (1980-present)
*K. Luojus, J. Cohen, J. Ikonen, K. Veijola, J. Pulliainen, C. Derksen, R. Brown

Poster Sessions

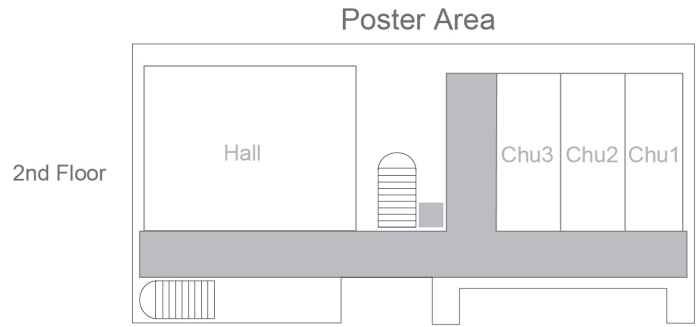
Core Time

● January 16 (16:45-18:15)

- G1 Atmosphere
- G2 Ocean and Sea Ice
- G5 Terrestrial Ecosystems
- G6S6 Changes in Sea Ice, Oceans and Ecosystems in the Arctic Ocean
- G9 Social and Cultural Dimensions
- S1 Arctic Warming by Natural Variability and/or Human Impact
- S7S8 Arctic Challenge for Ice Observation and Ice Navigation
- S9 Understanding the Changing Arctic through Data: Stewardship, Publication, and Science

● January 17 (16:45-18:15)

- G3 Rivers, Lakes, Permafrost and Snow Cover
- G4 Ice Sheets, Glaciers and Ice Cores
- G7 Geospace
- G8 Policies and Economy
- S2 Synergies for "New Arctic" Climate Prediction, Observation and Modeling
- S4 Biogeochemical Cycles and Biodiversity of Terrestrial Ecosystems under Arctic Warming
- S5 Synoptic Arctic Survey – An Ocean Research Program for the Future
- S14 Synthesizing Local Interactions between Permafrost and Human Societies

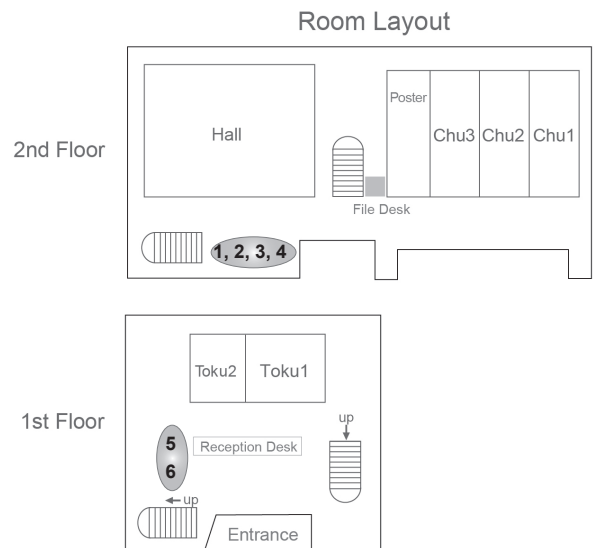


Exhibition Area

1. Japan Arctic Research Network Center Industry-academia-government collaboration support project
"Arctic Technology Research Forum to consolidate Opinions from Industry"

ENGINEERING ADVANCEMENT ASSOCIATION OF JAPAN (ENAA), The University of Tokyo, MITSUBISHI HEAVY INDUSTRIES, LTD. Hokkaido University, National Institute of Polar Research, Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

2. Arctic Data archive System (ADS)
3. Japan Aerospace Exploration Agency (JAXA)
4. Japan Arctic Research Network Center (J-ARC Net)
5. Arctic Challenge for Sustainability (ArCS)
6. Institute for Space-Earth Environmental Research (ISEE), Nagoya University



■G1 Atmosphere

G01-P01

How well do medium-range ensemble forecasts simulate atmospheric blocking events?
*M. Matsueda

G01-P02

Remote tropical influence on a regional Arctic warming over the Barents Sea since the late 1990s
*B. Taguchi, K. Nishii, M. Mori, H. Nakamura, Y. Kosaka, T. Miyasaka

G01-P03

A lag-relationship between the Arctic Oscillation in winter and the summer climate in the Northern Hemisphere
*R. Hoshi, H. Takahashi

G01-P04

Synoptic-scale Fire Weather Conditions in Southern Sakha - Relationship with Warm Air Mass
*H. Hayasaka, K. Yamazaki

G01-P05

Seasonal feedback analysis on polar amplification in warm climate induced by orbit/CO₂ and impact of wetland
*R. Oishi, K. Kino, A. Abe-Ouchi, M. Yoshimori, M. Suzuki

G01-P06

Temporal variations of the mole fraction, carbon and hydrogen isotope ratios of atmospheric methane in the Hudson Bay Lowlands, Canada
*R. Fujita, S. Morimoto, T. Umezawa, K. Ishijima, P. Patra, D. Worthy, D. Goto, S. Aoki, T. Nakazawa

G01-P07

Observations of atmospheric black carbon at Poker Flat Research Range, Alaska, since April 2016
*P. Mordovskoi, F. Taketani, Y. Kanaya, Y. Kim, H. Kobayashi, T. Miyakawa, M. Yamaguchi, M. Takigawa

G01-P08

The water-soluble species in airborne particles at NEEM
*M. Hirabayashi, K. Satow, K. Goto-Azuma

G01-P09

Clouds with low lidar returns and high cloud radar echoes
*S. Iwasaki, H. Okamoto, K.sato, S. Katagiri, M. Fujiwara, T. Shibata, K. Tsuboki, T. Ono, T. Sugidachi

G01-P10

Seasonal variation of lower stratospheric aerosols observed by lidar above Svalbard, Norway
*K. Shiraiishi, T. Shibata, M. Shiobara

G01-P11

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