



Hokkaido University

Arctic Research Center (ARC-HU)





Director
FUKAMACHI Yasushi

For solving problems in the rapidly changing Arctic

The Arctic is experiencing rapid, unprecedented changes from climate change as no other place on Earth. Dramatic declines of sea-ice extent accelerated melting of glaciers and permafrost, increases of vast forest fires, and widespread changes of some of the most unique and sensitive ecosystems we have on this planet are part of a new norm in the Arctic recurrently making headlines in the media. These environmental changes are also uncapping new opportunities, invigorating an economic and geopolitical race for the use of sea routes and exploitation of the rich Arctic natural resource. Together, these environmental and socio-economic changes are affecting the lives of people in the Arctic in new and complex ways. But environmental changes in the Arctic, through feedbacks into the climate system, have remote effects in mid-latitude regions. This global, multi-faceted dimension of the new Arctic reality is symbolized by the colloquial expression “what happens in the Arctic does not stay in the Arctic”.

Responding to this new unfolding reality in the Arctic, the Ministry of Foreign Affairs of Japan assigned the first Ambassador for Arctic Affairs in March 2013. Soon after, Japan became an observer member of the Arctic Council in May 2013. This signaled the start of the committed, active contribution of Japan towards the Arctic Council. Under these circumstances, our Arctic Research Center at Hokkaido University was established in April 2015 to work towards the sustainable use and protection of the Arctic by assembling a multidisciplinary group of researchers from natural and applied sciences, social sciences and humanities. To this end, in addition to basic research in these disciplines, we conduct interdisciplinary research and industry-government-academia collaborations. Hokkaido University has participated as a core institute in the national flagship Arctic research project “Arctic Challenge for Sustainability (ArCS)” (funded by the Ministry of Education, Culture, Sports, Science and Technology of Japan: MEXT, 2015-20) and “Arctic Challenge for Sustainability II (ArCS II)” since 2020, together with the National Institute of Polar Research and the Japan Agency for Marine-Earth Science and Technology. The ArCS II project includes “Arctic Coastal Change and Its Impact on Society”, “Elucidating the Complex Dynamics of Arctic Politics and Its Contribution to Japan’s Arctic Policy” as well as “Overseas Fellowship Program”, led by researchers in Hokkaido University.

In October 2015, the National Ocean Policy Secretariat of the Cabinet Office announced the first “Japan’s Arctic Policy”. This policy indicates the importance of actions based on our strength in science and technology through our participation in Arctic field campaigns and our applied and theoretical research. The implementation of this Arctic policy became one of the main actions in “The Third Basic Plan on Marine Policy” approved at a cabinet meeting in May 2018. The importance of promoting Arctic research continues to be stated in the “The Fourth Basic Plan on Marine Policy” approved in May 2023. In October 2018, at the international meeting “Arctic Circle” held in Iceland, the Minister of Foreign Affairs Mr. Kohno gave a keynote speech on Japan’s Arctic policy including outcomes of the ArCS project. In May 2021, the third Arctic Ministerial was held in Tokyo by the MEXT with Icelandic Ministry. These actions are good examples of the active Japanese Arctic diplomacy.

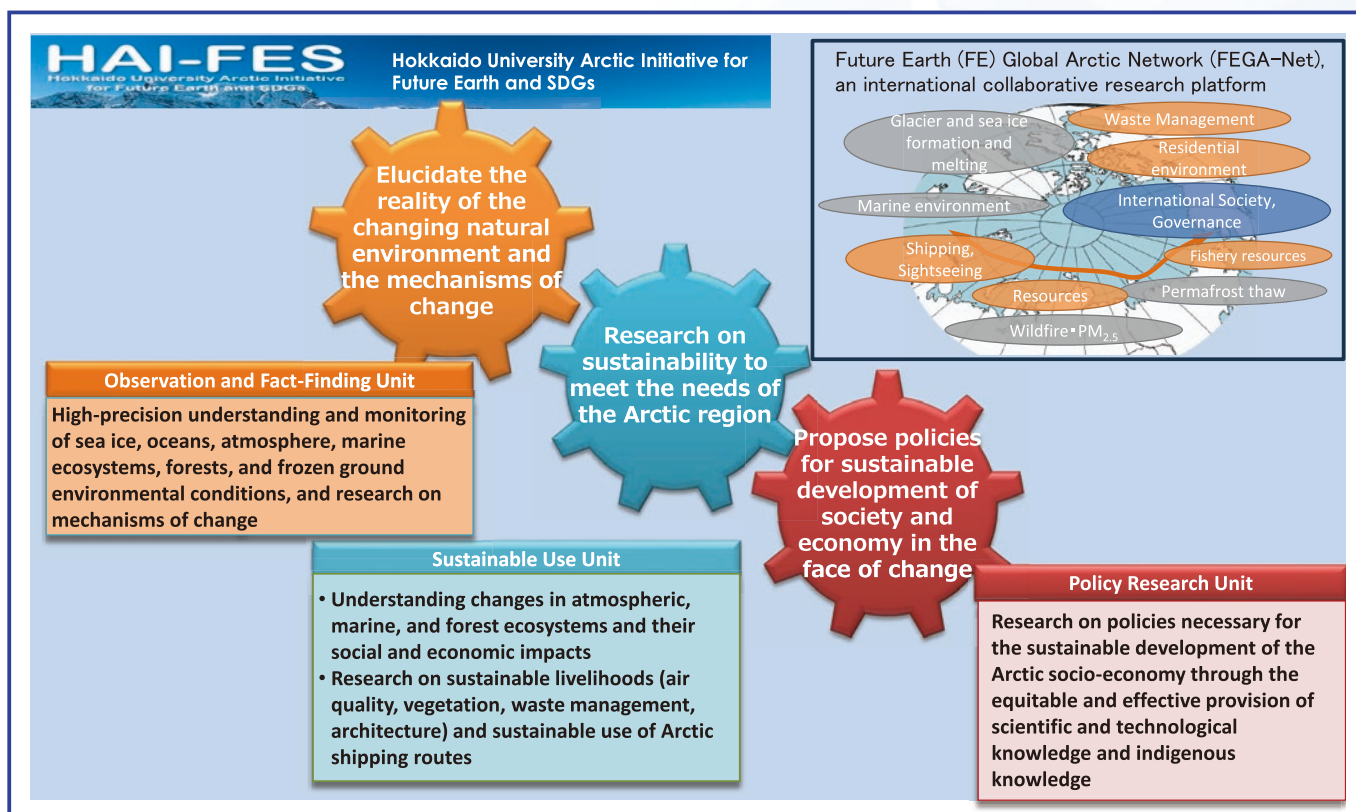
Our center has grown rapidly from counting with our former Director Prof. Saitoh as single dedicated academic staff in 2015 to having 8 full-time and 31 adjunct faculties working together on basic and interdisciplinary research

and industry-government-academia collaborations. In addition to the ArCS and ArCS II projects, an example of major achievements is the Japan Arctic Research Network Center (J-ARC Net, 2016-2021) which was approved by the MEXT as a Joint Usage/Research Center for promoting interdisciplinary research to solve problems in the Arctic. The J-ARC Net is a collaborative network consisting of our center, as the central core institute, together with the International Arctic Environment Research Center of National Institute of Polar Research, and the Institute of Arctic Climate and Environment Research in Japan Agency of Marine-Earth Science and Technology as cooperation institutes. The J-ARC Net supports bottom-up research themes from academic communities and promotes capacity-building and industry-government-academia collaborations through annual public funding calls.

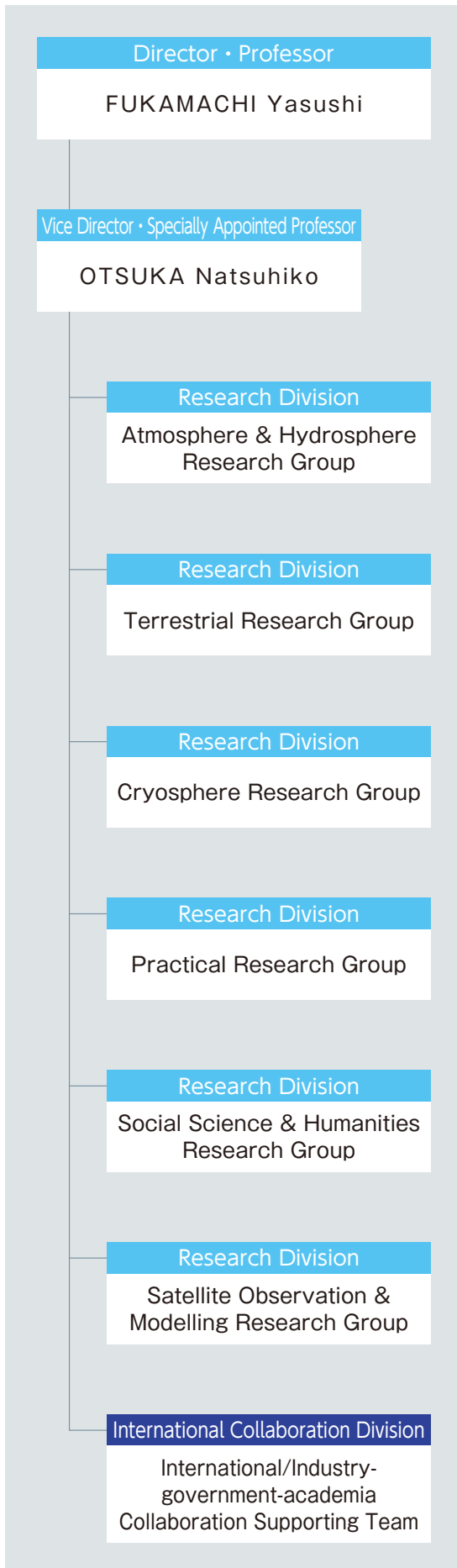
Furthermore, in April 2020, the “Hokkaido University Arctic Initiatives for Future Earth and SDGs (HAI-FES)” project was launched. The project aims to bring together Hokkaido University researchers in the Arctic region beyond the boundaries of their own departments to establish a center of excellence and build an Arctic network under the international collaborative research platform, Future Earth, to conduct problem-solving research in the Arctic.

According to our vision for contributing to the sustainable use and protection of the Arctic, we will continue to play our roles through actions in our center. We would greatly appreciate your support participation and encouragement.

August 2023



Organization



Research and Education

Atmosphere and Hydrosphere Research Group

- Variability of ocean and sea ice in the Pacific Arctic and Bering Sea
- Variability of marine ecosystems in the Pacific Arctic and Bering Sea
- Climate variability in mid-to-high latitudes associated with Arctic change
- Wildfire, its air pollution in and around the Arctic, and their connections to climate



◎	Professor/Director	FUKAMACHI Yasushi	Ph.D.
○*	Associate Professor	UENO Hiromichi	Ph.D.
*	Professor	WATANUKI Yutaka	Doctor of Agriculture
*	Professor	OHSIMA Keiichiro	Doctor of Science
*	Professor	YAMAMOTO Masanobu	Ph.D.
*	Professor	UEDA Kayo	Ph.D.
*	Professor	KASAI Akihide	Ph.D.
*	Professor	NISHIOKA Jun	Ph.D.
	Associate Professor	YASUNARI Teppei J.	Ph.D.
*	Associate Professor	YAMAGUCHI Atsushi	Ph.D.
*	Associate Professor	OOKI Atsushi	Ph.D.
*	Assistant Professor	SATO Tomonori	Ph.D.
*	Assistant Professor	NOMURA Daiki	Ph.D.
*	Assistant Professor	MATSUNO Kohei	Ph.D.

Terrestrial Research Group

- Carbon cycle of terrestrial ecosystem in the circumpolar north
- Field observations at northeastern Siberia and sustainable development of the north
- Phylogeographical history and conservation biology of mammals in northern Eurasia
- Plant community responses to changes in wildfire disturbance intensity
- Space geodetic observations of permafrost degradation and water cycle



◎	Professor	TSUYUZAKI Shiro	Doctor of Science
○*	Professor	FURUYA Masato	Ph.D.
*	Professor	MASUDA Ryuichi	Doctor of Science
*	Associate Professor	ISHKAWA Mamoru	Ph.D.
*	Specially Appointed Assistant Professor	TATSUZAWA Shirow	Doctor of Science

Practical Research Group

- Sustainable use of the Arctic (Arctic Sea Route, infrastructures in cold climate)
- Observation of Arctic environment and human impact through the satellite remote sensing
- Co-working with stakeholders
- Assessment and prediction of air pollution and meteorological disaster



◎	Specially Appointed Professor/Vice-Director	OTSUKA Natsuhiko	Doctor of Engineering
○*	Professor	SETOGUCHI Tsuyoshi	Ph.D.
	Specially Appointed Professor	UTO Shotaro	Doctor of Engineering
*	Professor	MORI Taro	Ph.D.
	Associate Professor	YASUNARI Teppei J.	Ph.D.
*	Associate Professor	YAMADA Tomohito	Ph.D.
*	Assistant Professor	WATANABE Norihiro	Ph.D.

Social Science & Humanities Research Group

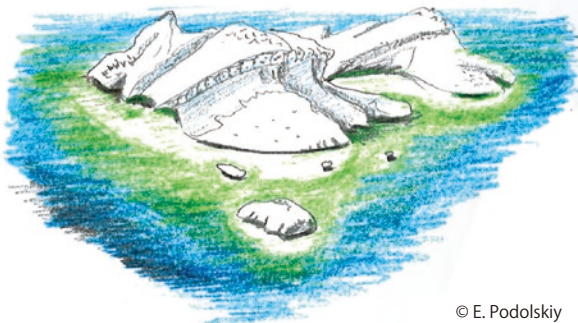
- International relations in the Arctic
- Arctic governance
- Arctic security
- National Arctic policies
- Paradiplomacy of the Arctic cities
- Arctic economy (regional development, infrastructure, local economy)



◎	Associate Professor	OHNISHI Fujio	Doctor of International Relations
○	Associate Professor	SAUNAVAARA Juha Mikael	Ph.D.
*	Professor	KATO Hirofumi	Master of Literature
*	Professor	KOYANO Mari	LL.M.
*	Professor	HATTORI Michitaka	Ph.D.
*	Associate Professor	SHIRAIWA Takayuki	Doctor of Environmental Science
*	Assistant Professor	CHI Hyunjoo Naomi	Doctor of Jurisprudence
*	Specially Appointed Assistant Professor	TATSUZAWA Shirow	Doctor of Science

Cryosphere Research Group

- Glaciers, Ice Sheets and Snow: observations and modeling
- Glacier Seismology
- Polar Oceanography and Acoustics
- Ice-cores and Paleoclimate

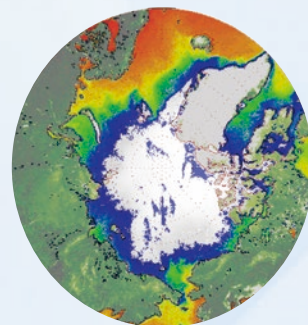


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◎*	Professor	SUGIYAMA Shin	Ph.D.
○	Associate Professor	PODOLSKIY Evgeny	Ph.D.
*	Professor	GREVE Ralf	Doctor of Natural Sciences
*	Associate Professor	IIZUKA Yoshinori	Ph.D.
*	Associate Professor	UETAKE Jun	Ph.D.
*	Assistant Professor	MATOBATA Sumito	Ph.D.

Satellite Observation and Modeling Research Group

- Vulnerability assessment of the pan-Arctic marine ecosystems
- Variability of marine ecosystem in the Pacific Arctic
- Global Change Ecology/Macroecology/Aquatic Ecology (Marine & Freshwater)
- Forest fire in East Siberia and spatio-temporal variability of ground deformation using Interferometry Synthetic Aperture Radar (InSAR)



◎	Associate Professor	GARCÍA MOLINOS Jorge	Ph.D.
*	Professor	FURUYA Masato	Ph.D.

Research and Education

◎ Team Leader ○ Team Sub Leader

International/Industry-government-academia Collaboration Supporting Team

- Promoting GI-CoRE Cooperating Hubs and Japan-Russia Joint Research Laboratories for international collaborative researches
- International educational cooperation through summer and winter schools organized both in Japan and overseas
- Hosting international symposia and seminars based on industry-government-academia collaborations
- Promoting joint research that contribute to sustainable industrial use through industry-government-academia and interdisciplinary collaboration

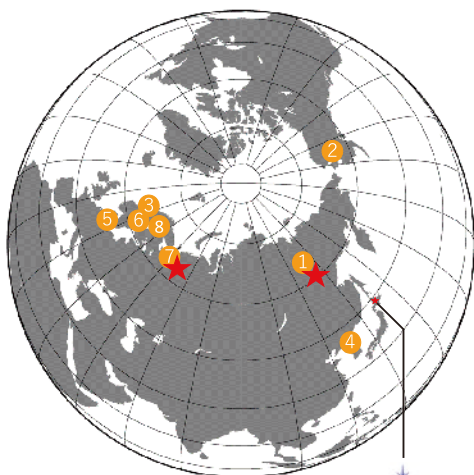


- ◎ UTO Shotaro
- SAUNAVAARA Juha Mikael
- OTSUKA Natsuhiko
- OHNISHI Fujio
- GARCIA MOLINOS Jorge
- PODOLSKIY Evgeny

History

- April | 2015
Hokkaido University established the Arctic Research Center (ARC).
- September | 2015
National flagship project “Arctic Challenge for Sustainability (ArCS)” started (-March 2020).
- April | 2016
“Japan Arctic Research Network Center” started (-March 2021), consisting of three Arctic research centers at Hokkaido University, National Institute of Polar Research, and Japan Agency for Marine Science and Technology as a Joint Usage/ Research Center.
- April | 2020
Hokkaido University Arctic Initiative for Future Earth and SDGs (HAI-FES) started.
- June | 2020
National flagship project “Arctic Challenge for Sustainability II (ArCS II)” started.

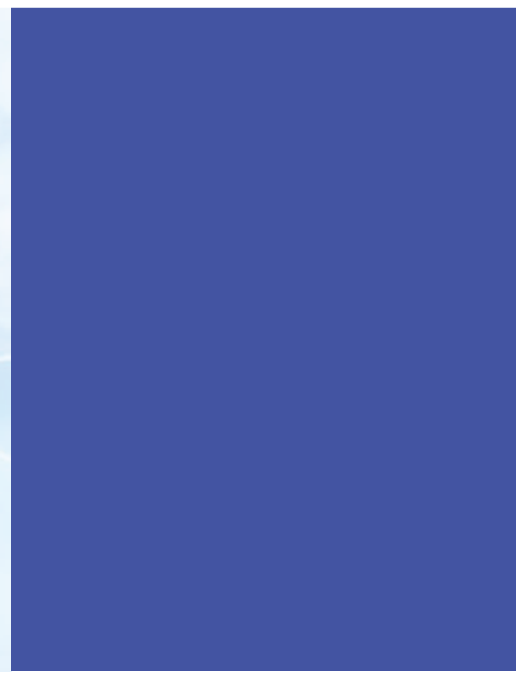
International Collaboration



- 1 Russian Academy of Sciences
 - ◆ Melnikov Permafrost Institute, Siberian Branch
 - ◆ Far Eastern Geological Institute, Far Eastern Branch
 - ◆ Institute for Humanities Research and Indigenous Studies of the North, Siberian Branch
- 2 The International Arctic Research Center, University of Alaska Fairbanks
- 3 Centre for High North Logistics, Nord University
- 4 Unit of Arctic Sea Ice Prediction, Korean Polar Research Institute (KOPRI)
- 5 AAU Arctic, Aalborg University
- 6 Nansen Environmental and Remote Sensing Center
- 7 Northern (Arctic) Federal University
- 8 Arctic Center, University of Lapland

Japan-Russia Joint Research Laboratory

- ★ North-Eastern Federal University · Institute for Biological Problems of Cryolithozone, Siberian Branch
- ★ Northern (Arctic) Federal University





 **Hokkaido University**
Arctic Research Center

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- From New Chitose Airport to Japan Railway (JR) Sapporo Station
Railway (Rapid Airport): 40 min. Limousine bus: 70-80 min.
- From JR Sapporo Station to Creative Research Institute, Hokkaido University
Taxi: Depart from the JR Sapporo Station north exit and ride 10 min. via Kita 20-jo Higashi Gate.
Chuo Bus (西51, 西71): Ride 16 min. from JR Sapporo station, get off at Kita 21-jo Nishi 15-chome bus stop, and walk 5 min.
Subway: Ride 3 min. from JR Sapporo station on Namboku Subway Line, get off at Kita 18-jo station, and walk 20 min.
Campus bus (free): Walk 10 min. from JR Sapporo station to the bus stop at the Hokkaido University main gate and ride the bus for 10 min. to the Creative Research Center "Sosei" bus stop.
Campus buses depart about every 15 min. from 8:20 a.m. to 8:30 p.m.



[Web Site] <https://www.arc.hokudai.ac.jp/en/>

[Facebook] <https://www.facebook.com/ARCHokkaido/>

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[Twitter] @ARC_HokkaidoU