



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” (funded by the Ministry of Education, Culture, Sports, Science and Technology of Japan: MEXT) since September 2015, together with the National Institute of Polar Research and the Japan Agency for Marine-Earth Science and Technology. This project includes “Response and biodiversity status on the Arctic ecosystems under environmental change”, “People and community in the Arctic: Possibility of sustainable development” and “Variations in the ice sheet, glaciers, ocean and environment in the Greenland region”, as well as an active program for overseas visits by young researchers, 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. In October 2018, at the international meeting “Arctic Circle” held in Iceland, the former Minister of Foreign Affairs Mr. Kono gave a keynote speech on Japan's Arctic policy including outcomes of the ArCS project. In the same month, the former Minister of MEXT Mr. Shibayama also gave a speech on the outcomes of the ArCS project and invited the Arctic Ministerial in Japan during 2020 at its second meeting held in Germany. These actions are good examples of the active Japanese Arctic diplomacy. Recently, Prime Minister Abe directed accelerating research and developments in the Arctic in his address of June 2019. Japan's commitment to the Arctic is clearly gaining momentum.

In less than 5 years, our center has grown rapidly from counting with our former Director Prof. Saitoh as single dedicated academic staff in 2015 to having 10 full-time and 31 adjunct faculties working together on basic and interdisciplinary research and industry-government-academia collaborations. In addition to the ArCS project, examples of major achievements are the international research consortiums led by two of our faculty members (Profs. Saitoh and Sugimoto) on “Resilience and adaptive capacity of Arctic marine systems under a changing climate” and “C budget of ecosystems and cities and villages on permafrost in eastern Russian Arctic” under the Belmont Forum cooperative research action program “Arctic Observing and Research for Sustainability”.

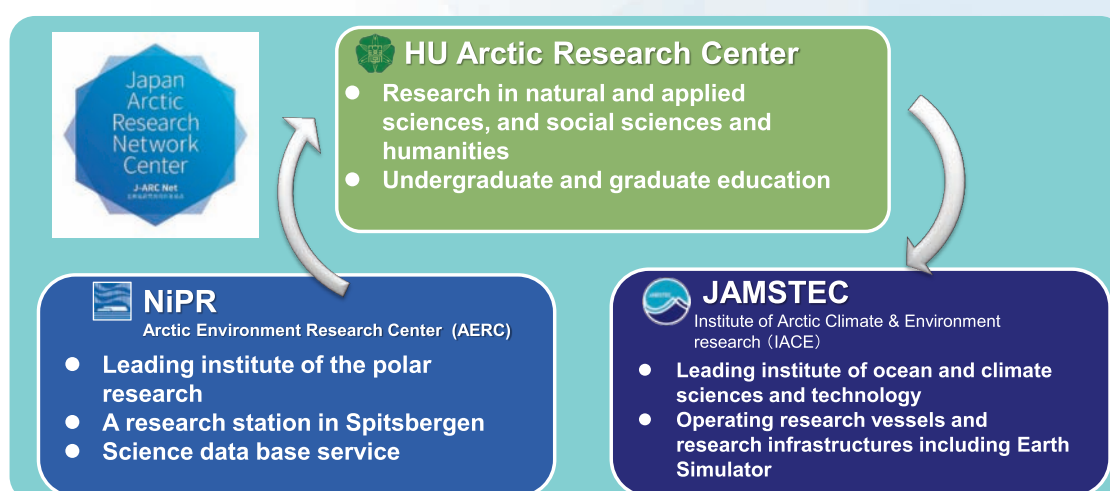
In April 2016, the Japan Arctic Research Network Center (J-ARC Net) was approved by the MEXT as a Joint Usage/ Research Center for promoting interdisciplinary research to solve problems in the Arctic. The J-ARC Net is a collaborative network consisting of our center, as the central core institute, together 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.

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 and the J-ARC Net. We would greatly appreciate your support, participation and encouragement.

October 2021

Japan Arctic Research Network Center (J-ARC Net)

Hokkaido University (HU), National Institute of Polar Research (NiPR), and Japan Agency for Marine-Earth Science and Technology (JAMSTEC) formed a national framework for Arctic research in Japan.



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



◎	Director/Professor	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.
	Associate Professor	YASUNARI Teppei J.	Ph.D.
*	Associate Professor	YAMAGUCHI Atsushi	Ph.D.
*	Associate Professor	OOKI Atsushi	Ph.D.
*	Associate Professor	SATO Tomonori	Ph.D.
*	Associate Professor	NISHIOKA Jun	Ph.D.
*	Associate 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
*	Professor	HEKI Kosuke	Doctor of Science
*	Associate Professor	ISHIKAWA Mamoru	Ph.D.
*	Assistant Professor	TATSUZAWA Shirow	Ph.D.

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



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

Social Science & Humanities Research Group

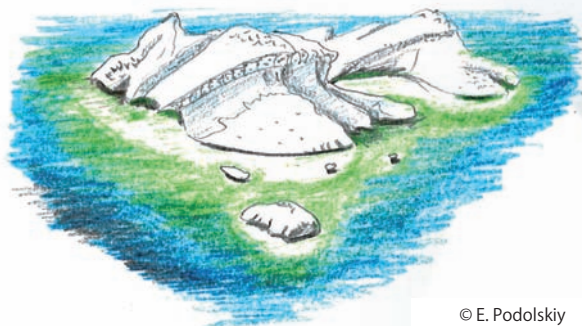
- International relations in the Arctic
- Arctic governance
- Arctic security
- National Arctic policies
- Paradiplomacy of the Arctic cities
- Arctic economy (regional development, infrastructure, local economy)



◎	Associate Professor	OHNISHI Fujio	Doctor of International Relations
○*	Professor	TABATA Shinichiro	Master of Social Science
*	Professor	KATO Hirofumi	Master of Literature
*	Professor	KOYANO Mari	LL.M
*	Associate Professor	SHIRAIWA Takayuki	Doctor of Environmental Science
*	Associate Professor	CHI Hyunjoo Naomi	Doctor of Jurisprudence
	Assistant Professor	SAUNAVARA Juha Mikael	Ph.D.
*	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

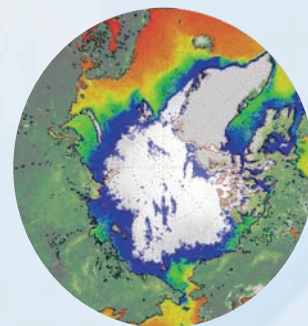


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◎*	Professor	SUGIYAMA Shin	Ph.D.
○	Associate Professor	PODOLSKIY Evgeny	Ph.D.
*	Professor	GREVE Ralf	Doctor of Natural Sciences
*	Associate Professor	IIZUKA Yoshinori	Ph.D.
*	Assistant Professor	MATOKA Sumito	Ph.D.

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)



◎	Specialty Appointed Associate Professor	HIRATA Takafumi	Ph.D.
○	Associate Professor	GARCIA MOLINOS Jorge	Ph.D.
*	Professor	FURUYA Masato	Ph.D.

International Collaboration Supporting Team

- Japan-Russia Joint Research Laboratories functioning as bases for international collaborative research
- 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



- ◎ OTSUKA Natsuhiko
- OHNISHI Fujio
- GARCÍA MOLINOS Jorge
- SAUNAVAARA Juha Mikael
- MIYAMOTO Yumiko

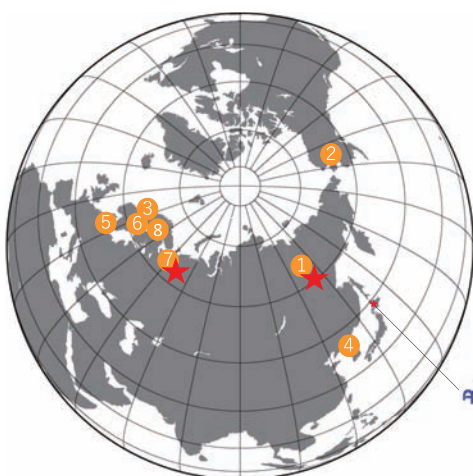
Industry-government-academia Collaboration Supporting Team

- Promoting setting issue and joint research that contribute to sustainable industrial use through industry-government-academia and interdisciplinary collaboration
- Providing the latest information on the Arctic region from industries, research institutions, and governmental offices by open seminars and promoting discussion
- Hosting lecture series on the Arctic issues for industry-government-academia communities
- Dissemination of results and discussions on business development from experts by hosting international symposia
- Expansion of Arctic communities by public relations, and open lectures for citizens



- ◎ TANAKA Masato
- SAUNAVAARA Juha Mikael
- OTSUKA Natsuhiko
- OHNISHI Fujio
- HIRATA Takafumi
- GARCÍA MOLINOS Jorge
- PODOLSKIY Evgeny
- MIYAMOTO Yumiko

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

Joint Research Laboratory

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

History



April	2015	Hokkaido University established the Arctic Research Center (ARC).
September	2015	National flagship project “Arctic Challenge for Sustainability (ArCS)” started.
April	2016	The Ministry of Education, Culture, Sports, Science and Technology approved “Japan Arctic Research Network Center” 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.
October	2016	Japan-Russia Joint Research Laboratories were established at the Arctic Research Center and North-Eastern Federal University in Yakutsk.
May	2019	Another Japan-Russia Joint Research Laboratory was established at Northern (Arctic) Federal University in Arkhangel'sk.

MAP



Hokkaido University Arctic Research Center

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E-mail arc_inform@arc.hokudai.ac.jp Tel 011-706-9074

- 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): 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/ARCHokkaidoU/>

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[Twitter] @ARC_HokkaidoU