



Collaboration opportunities with NIPR in the Arctic and Antarctic

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- Founded on Sep 29, 1973
- Mandate: 'Comprehensive Research and Observations on the Polar Region'
- One of 17 inter-university research institute in Japan, under MEXT (Ministry of Education, Culture, Sports, Science and Technology)
- Annual Budget: ~4 billion JPY (excluding Ice Breaker 'Shirase')
- ~250 employee, ~90 professors, scientists
- A member of SOKENDAI ('Graduate University for Advanced Studies') ~20 PhD students



About NIPR

National Institute of Polar Research Organization Chart







- NIPR is one of four institutes under ROIS (Research Organization of Information and Systems)
 - NIPR, NII (National Institute of Informatics), ISM (Institute of Statistical Mathematics), NIG (National Institute of Genetics)
- Data science/open science becomes one of our priorities as a member of ROIS



About NIPR







NIPR Research Priorities, Projects

Antarctic: JARE since 1956 (initiated by Science Council of Japan)

currently JARE Phase X (2022-2028) annual budget: ~1.3-1.5 billion JPY

 Arctic: projects since 1970's, GRENE(2011-15), ArCS(2015-19), ArCS II(2020-2025) annual budget: ~1 billion JPY



NIPR Infrastructure (Antarctic)

- Antarctic stations
 - Syowa (Year around)
 Accommodate 100 people in summer and 30 in winter.
 Approx. 60 budlings.
 - Dome Fuji (Seasonal)
 Inland traverse capability
- Icebreaker "SHIRASE"
 80 expeditioners & 1,000 tons
 Science platform in the sea ice











NIPR Polar Infrastructure (Arctic)





Bi- and multilateral Partnerships

25 countries, 55 institutions



54. Swiss Polar Institute



Exchange of Scientists

Swiss academia contributes to fostering excellent Japanese polar scientists



Atsumu Ohmura [Climatology and Glaciology] Professor Emeritus, ETH (ETH Zurich) Advisory Board member of NIPR

Hiroyuki Enomoto [Climatology and Glaciology] Professor, Vice Director-General of NIPR PhD (ETH Zurich)

Kenji Kawamura [Paleoclimatology (Ice core)] Associate Professor of NIPR Post-doctoral fellow (University of Bern, 2002 - 2004)

Abe-Ouchi Ayako [Paleoclimatology (Modeling)] Visiting professor of NIPR, Professor, The University of Tokyo, PhD (ETH Zurich)



Shedding light on climate change over the past million years

Near Dome Fuji Station, which is located approximately 1,000 km inland from Syowa Station, there may be ice that contains the environmental histories over a million years. Analyzing ice core samples that are collected by drilling columns of ice from the interior part of the ice sheet can tell us about changes in the temperature and atmospheric composition going back a million years.

To investigate the changes in the Antarctic ice sheet and global environment from paleoenvironmental perspectives, the researchers conduct the coring of ice, land, lakebed, and seafloor, as well as the observation of glaciers.







Elucidating the mechanisms of ice sheet basal melting and biogeochemical cycles

If global warming alters even a small part of the ice sheet, the result could have a significant impact on global sea levels in the future. Accurately predicting future increases in sea level requires observations of the current situation to determine if the Antarctic ice sheet is changing, and research to determine the causes and effects of such changes.

We have learned that 'warm seawater' is melting the ice from below the Totten Glacier and other parts of the edges of the East Antarctic ice sheet. Onboard "Shirase", scientists are using the latest technologies to observe how this warm seawater is altering the edge of the ice sheet.



Hot water drilling system to investigate the process of glacier discharge into the ocean



Examining the general circulation of the atmosphere and the effects from space on the Earth's environment

Atmospheric phenomena appear at various spatiotemporal scales around the Earth and at a wide range of altitudes. These phenomena are considered to impact each other and create a large-scale atmospheric circulation, which is referred to as 'general circulation of the atmosphere' and is considered to be the main cause of climate change. Antarctica is both the starting point and the end point of general circulation of the atmosphere, and is therefore considered to play a key role in atmospheric dynamics that influence the Earth's climate.

PANSY is the largest atmospheric radar in the Antarctic region. This project went into full-scale operation in 2015. A network of 1,045 antennas spanning the size of a baseball stadium operates as a single atmospheric radar.



An international auroral optical observation network covering the polar cap region at high latitudes including Dome Fuji, Amundsen-Scott South Pole, McMurdo, and Zhongshan.



Super-pressure can fly at approximately the same altitude for long periods. Since they are advected by in-situ winds, their trajectories can cover a wide area in the Antarctic region.

All-Japan project on the Arctic Research





NIPR's own program

- NIPR International Internship Program for Polar Science (graduate student, 14-90 days)
 Still in time for the visit by March 2024.
- •NIPR Visiting professor (3 months)

JSPS program

- Postdoc Fellow (up to 2 years)
- Short-term visitor (less than 2 months)
- Long-term visitor (2 10 moths)



Annual NIPR symposium

Abstract submission just closed (03:00 UT on Sep 15, 2023): Sorry!



 The 14th Symposium on Polar Science

 14 - 17 November, 2023

 第14回極域科学シンポジウム

 2023年11月14日(火)~11月17日(金)

https://www.nipr.ac.jp/symposium2023/



Participation of Japanese atmospheric scientists in the GreenFjord Project

International joint research between Swiss and Japanese institutions has been performed to investigate the roles of Arctic natural aerosols on the climate system and ecosystems in the Arctic. In this July, three atmospheric scientists [Yutaka Tobo (NIPR), Kouji Adachi (MRI), and Sho Ohata (Nagoya Univ.)] visited the GreenFjord site in Narsaq (Greenland) and performed field measurements with Dr. Julia Schmale's team.



Thank you!