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Pan-Arctic observations in GRENE Arctic Climate Change Research Project and its successor

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We started a Japanese initiative – "Arctic Climate Change Research Project" – within the framework of the Green Network of Excellence (GRENE) Program, funded by the Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT), in 2011. This Project targeted understanding and forecasting "Rapid Change of the Arctic Climate System and its Global Influences." Four strategic research targets are set by the Ministry:
1. Understanding the mechanism of warming amplification in the Arctic;
2. Understanding the Arctic climate system for global climate and future change;
3. Evaluation of the impacts of Arctic change on the weather and climate in Japan, marine ecosystems and fisheries;
4. Projection of sea ice distribution and Arctic sea routes.
Through a network of universities and institutions in Japan, this 5-year Project involves more than 300 scientists from 39 institutions and universities. The National Institute of Polar Research (NIPR) works as the core institute and The Japan Agency for Marine- Earth Science and Technology (JAMSTEC) joins as the supporting institute. There are 7 bottom up research themes approved: the atmosphere, terrestrial ecosystems, cryosphere, greenhouse gases, marine ecology and fisheries, sea ice and Arctic sea routes and climate modeling, among 22 applications. The Project will realize multi-disciplinal study of the Arctic region and connect to the projection of future Arctic and global climatic change by modeling.
The project has been running since the beginning of 2011 and in those 5 years pan-Arctic observations have been carried out in many locations, such as Svalbard, Russian Siberia, Alaska, Canada, Greenland and the Arctic Ocean. In particular, 95 GHz cloud profiling radar in high precision was established at Ny-Ålesund, Svalbard, and intensive atmospheric observations were carried out in 2014 and 2015. In addition, the Arctic Ocean cruises by R/V "Mirai" (belonging to JAMSTEC) and other icebreakers belonging to other countries were conducted and mooring buoy observations were also carried out. The data retrieved during these observations was accumulated in the "Arctic Data archive System (ADS)" (https://ads.nipr.ac.jp/) and served with interfaces for analysis. In addition, modeling studies have been promoted from fundamental process model to general circulation model.
The successor of the project, ArCS (Arctic Challenge for Sustainability), which lays delivering emphasis on robust scientific information to stakeholders for decision making and solving problems, was started in FY2015. Within this project, a cooperative observation of black carbon are planned to be started at Cape Baranova Station (AARI, Rusia), Severnaya Zemlya, and new activities including emphasizing aerological observations are also planned to be started for contributing to "Year of Polar Prediction (YOPP)" of Polar Prediction Project (PPP/WMO). It will be desirable to have a future collaboration with IASOA.