

7 - 9 December, 2010

Hitotsubashi Memorial Hall, Tokyo, Japan



ISAR-2 Symposium Summary

The Second International Symposium on the Arctic Research (ISAR-2) was successfully held on 7-9 December 2010 at Hitotsubashi Memorial Hall in Tokyo, Japan in order to discuss the Arctic System in a Changing Earth. The total number of participants was 228 from 15 countries.

The ISAR-2 was organized by the National Committee of IASC (Science Council of Japan) and ISAR-2 International Organizing Committee. The ISAR-2 was also co-organized by National Institute of Polar Research (NIPR), Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan Aerospace Exploration Agency (JAXA) and International Arctic Research Center (IARC) with support from the International Arctic Science Committee (IASC), Climate and Cryosphere Project (CliC/WCRP), IFES-GCOE, Hokkaido University and Center for Computational Sciences (CCS), University of Tsukuba.

The discussions highlighted the following three topics:

1) Changing Arctic System and Global Influence.

We focused on the changes and interaction between ocean, atmosphere, cryosphere and terrestrial system including biosphere/carbon, and the influence on the global and surrounding regional environment through atmosphere and ocean processes.

2) Warming in the Arctic: Anthropogenic or Natural Variability.

Observational evidence indicates the highest sensitivity of the Arctic to the global change. Part of the Arctic warming may be caused by the increasing anthropogenic greenhouse gases, but a considerable amount of the Arctic warming may have been caused by natural variability, including fluctuations by the internal nonlinear dynamics of the Earth system. We discussed the latest understanding on the cause of the Arctic warming from a wide range of interdisciplinary studies in the Arctic.

(3) International Cooperation of Arctic Research and IPY

The focus of ISAR-2 was not only placed on scientific issues, but also planning, execution, cooperation, data management of Arctic researches. While discussing the influence of the Arctic on the Asian climate, scientists from neighboring countries to the Arctic were encouraged to participate in the international monitoring networks. We discussed the latest update of International and Asian networks, and legacy from the IPY projects.

Public lectures were designed for the general public in the same venue on 6th December, 2010, with the general theme: "How is the Arctic climate change understood?" This event used simultaneous translation of the presentations. The number of participants was 130, including approximately 50 ISAR-2 participants.

Public Lecture

Second International Symposium on the Arctic Research (ISAR-2)

Organized by

Committee on Earth and Planetary Sciences, Subcommittee for International Affairs (National Committee for IASC). Science Council of Japan, and International Organizing Committee of ISAR-2

How is the Arctic climate change understood?

6 December, 2010 18:00-20:00

Hitotsubashi Memorial Hall, Hitotsubashi 2-1-2 Chiyoda-ku, Tokyo

The lecture are proceeding in simultaneous interpretation system. Entrance fee is free. The application will be closed with the first 400 peoples. Show your ID card at the entrance.

Program



Dr. Atsumu Ohmura (Professor Emeritus of Eidgenössische Technische Hochschule, ETH)

Climate warming controversy in the Arctic

There are two widely voiced opinions in the Arctic concerning the global warming. The opinions are that a part of the Arctic is presently cooling, and that glaciers in the Arctic are advancing. Therefore, sometimes Arctic is used to disprove the ongoing climate warming. These statements will be examined in light of the most up-to-date observational data and be rebuttal to the two opinions. Further, a possible cause of the ongoing climate change

Dr. Larry Hinzman (Director of International Arctic Research Center, IARC, professor of University of Alaska, Fairbanks)

Permafrost and hydrological systems in the changing





Dr. David Hik (President of International Arctic Science Committee, IASC, and professor of University of Alberta) Observing terrestrial ecosystems in changing Arctic

Changes in temperature, snow and ice-cover, and nutrient availability exert major influences on terrestrial ecosystems in the Arctic. The recently concluded 4th International Polar Year facilitated a short-term boost for international research, providing detailed new Arctic. Foreseeing and mitigating the ecological consequences of future climate

> Access: Jimbocho Station by Hanzomon-line, Shinjuku-line, Mita-line and Takebashi Station by Tozai-line



Co-organized by

National Institute of Polar Research (NIPR), Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan Aerospace Exploration Agency (JAXA), International Arctic Research Center (IARC)

Supported by

International Arctic Science Committee (IASC), Climate and Cryosphere Project (CliC/WCRP), IFES-GCOE Hokkaido University. CCS University of Tsukuba

Second International Symposium on the Arctic Research (ISAR-2) Secretariat National Institute of Polar Research, Japan Agency for Marine-Earth Science and Technology

http://www-arctic.nipr.ac.jp/isar2/publiclec



Publication

The papers presented at the symposium will be published in a special issue of *Polar Science*, Elsevier Publ. The deadline of submission is the end of March (now extend the deadline to the end of May), 2011. The special issue will be published by the end of January, 2012.



New move on the research promotion of Arctic Environmental Research in Japan

Tetsuo Ohata (Japan Agency for Marine-Earth Science and Technology, Yokosuka) Tetsuzo Yasunari (Nagoya University, Nagoya) Takashi Yamanouchi (National Institute of Polar Research, Tokyo) and Hiroyuki Enomoto (National Institute of Polar Research, Tokyo)

1. Background of Arctic Region Research in Japan

Japanese scientists initiated their research in Arctic from the 1950s, and it has become institutional study since 1990.

- (1) Scientific interest on the state and the drastic changes in the Arctic region.
- (2) Arctic Region is one of the key regions for global change.
- (3) Need to improve the expression of Arctic in global/regional models.

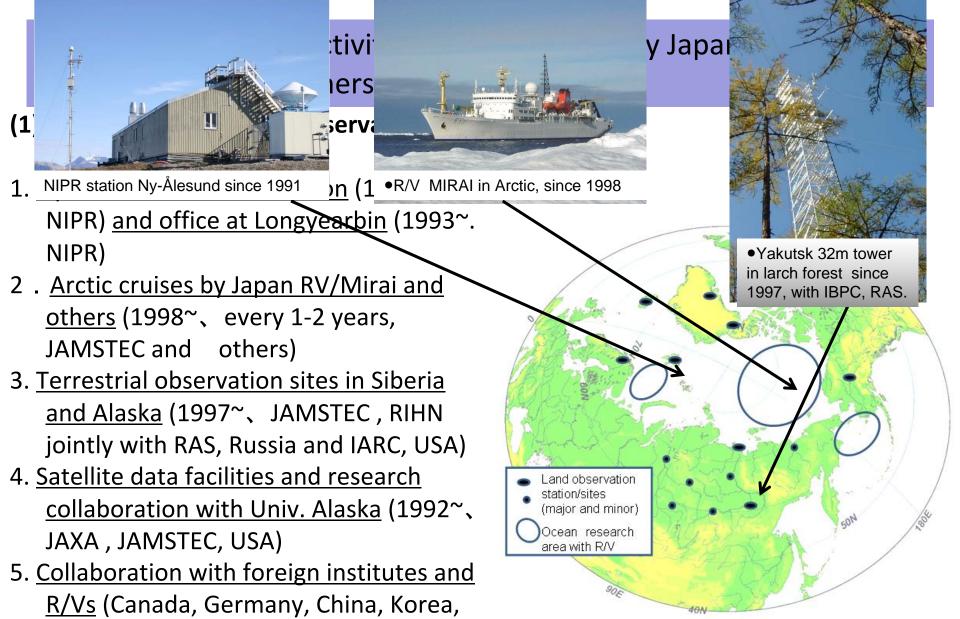
2. Main Institutes in Japan on Arctic Region Research

- (1) National Institute of Polar Research (NIPR)
- (2) Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
- (3) Japan Aerospace Exploration Agency (JAXA)
- (4) Universities: Hokkaido University and others
- (5) Other Agencies (NIES, MRI, Meteorological Agency and others)

3. Ongoing Research themes in Japan

(Selected from the IPY2007-2008 Report of Japan for Arctic Region)

- (1) Atmospheric Science
- (2) Ocean and Sea Ice
- (3) Hydrology, Permafrost and Snow Cover
- (4) Ice Sheets and Glaciers
- (5) Marine Bio-geochemical Processes
- (6) Terrestrial Biology
- (7) Satellite Data Application
- (8) Coordination Activities



Norway and others).

Position of land and land-based observation and oceanic observation by Japanese Institutes north of 60°N.

4. Background for the new move.

- (1) The planning and implementation of Arctic Research in Japan is not well organized, although quite many research works have been done and are anticipated in the near future.
- (2) Japan <u>acknowledged the importance of the drastic change in the Arctic Region</u>, does and will affect the regional and global, and also Japan's environment and economical activities.
- (3) The research community need to move fastly and efficiently, with enough funding to understand/predict the changes and influence.

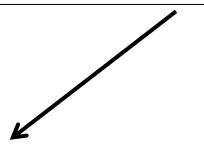
5. Promotion Activities at Ministry level (MEXT) in 2010.

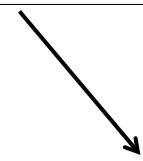
- (1) "Arctic Research WG" was established within Earth Observation Promotion Committee in MEXT in June, 2010.
- (2) 4 Meetings were held. Research Priorities, Collaboration Functions, Implementation Directions, Needed Actions were discussed at "Arctic Research WG", and is still going on.
- (3) One important intermediate conclusion, was the development of "Strategic Committee on Arctic Region" and "Japan Consortium for Arctic Research"
- (4) MEXT have obtained programmatic funding for Arctic Research from 2011FY.

6. Content of activity based on new fund

"Arctic Climate Change Research Program" (name tentative)

New fund of MEXT from 2011FY. (2011 ~ 2016)





Start of a Research Consortium

5 year project on "Arctic Climate Change Research"

based on designation of 1 ~ 2 core Institutes.

7. Japan Consortium on Arctic Environmental Research

(name tentative)

- <Organization>
- 1)Executive Committee
- 2)Secreatriat
- 3) Working Group on specific tasks

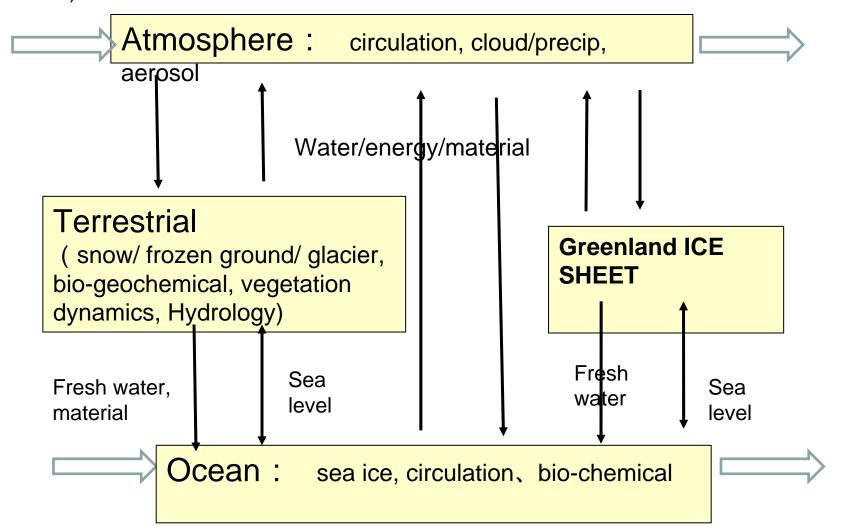
Functions:

- 1. Collecting and organizing <u>information</u> about Arctic Region Research and distribution of them.
- 2. Develop long-term research plan and show directions and priorities.
- 3. <u>Propose new research foundation</u>, such as observation infrastructure /network, and data archive system.
- 4. Enhance collaboration and specify responsibilities within research groups and institutes.
- 5. Act as interface of Arctic Research in Japan for domestic/international relation and research coordination, and public outreach.
- 6. Publication of various information and tasks.

10. Research: Climate system in Arctic

Water/enrgy/material cycle in the atmos-ocean-land system 2003)

(referred to SEARCH,



Research: Priorities in the new Arctic Research Project (tentative) (from Report of Arctic Research Examination Working Group, MEXT, 2010)

- (1) Improve understanding of the Arctic change, and predict the future, through development and improvement, and application of various numerical models such as Climate Models etc.
- (2) Monitoring and process studies in Arctic Region on the following topics.
- 1. Cause and process of the decrease of sea ice and its environmental influences to the atmosphere and ocean.
- 2. Characteristics of Cloud, Precipitation systems in the Arctic.
- 3. Behavior of Ice sheet and glaciers under Arctic warming and its resultant effects.
- 4. Permafrost degradation and hydrological, biological, and biogeochemical influences.

