Asia Eurasian cryospheric data archive by CrDAP

(Cryosphere Data Archive Partnership)
in JAMSTEC

Hironori Yabuki
Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

The First Asian CryoNet Workshop
For Cryosphere system research

Experimental Observational Data

Satellite Product

Scientist

Operation Station data

Model simulation data

Historical data
For Cryosphere system research

Experimental Observational Data

Satellite Product

Rader data

Scientist

cruise data

Operation Station data

Model simulation data

Remote sensing data

Historical data
• In order to understand Cryosphere system,
• necessary to **Data Archive**.
Asian Cryosphere Data Archive Project

- The archive system which coexists with a researcher and keeps useful data
- A data rescue is carried out with one big target.
- Maintenance and practical use of a product on satellite data
- It aims at becoming a Asia・Northern Hemisphere Cryosphere Data center.
Cryosphere Data Archive in JAMSTEC

- Cryosphere Data Archive Partnership (CrDAP)
  - The archive which coexists with a researcher and keeps useful data
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  - It aims at becoming a Asia Northern Hemisphere Cryosphere Data center.
Cryosphere Data Archive Partnership (CrDAP)

- **Purpose**
  - Builds the organization union which archives Cryosphere data.
    - Cryosphere, Arctic region, particularly in Asia in the world behind the data archive is one of the region have not been established.
    - There are too many data are lost, it is necessary to rescue the data.
  - **Collection and Archive data**
    - Cryosphere observation data archives of the Japanese project
  - **Establishment of the available system for using integration data.**
  - Research into cryosphere changes based on collection data.
JAMSTEC Observational Network Data

Asia • Northern Hemisphere Cryosphere region

- Target Dataset
  - **Snow Data**
    - Distribution, Snow Depth, Snow density, etc.
  - **Frozen ground, Permafrost Data**
    - Distribution, Ground Temperature, Ground Ice contents, etc.
  - **Glacier data**
    - Distribution, Glacier Inventory (Glacier shape, flow velocity, etc.)
CrDAP Task of Data Archive

- **Data rescue / Data collection**
  - Digitization support (Digitization of analog data)
  - Conversion to a various form and the various media

- **Meta data (catalog information) and Document management**
  - Base on ISO19115 or DIF Format (Global Change Master Directory)
  - Description detailed as basic information on data => Mate Data
    - Example: place, method, period, lock of Data, etc.
  - Basic information for understanding data => Document
  - Data Life-cycle Management

- **Data search service**
  - Search spatial at GUI, such as WebGIS
  - Text browsing using Meta data

- **Stable and long period service**
Data rescue

Visualization

Evaluation of water cycle dynamics over Eurasia

Arctic Environments change

Data and information service

JAMSTEC

Data Open

Internet
JAMSTEC Observational Network Data set

Tiksi: Meteorological Data (1997 – now)
Soil Moisture, Soil temperature (1997 – now)
60m borehole Data (2006 – now)

Yakutsk: Meteorological Data (30m tower) (1996 – now)
Soil moisture, Soil temperature (1996 – now)

Ulaanbaatar: Meteorological Data (30m tower) (2002 – now)
Soil moisture, Soil temperature (2002 – now)
30m borehole temperature data (2004 – now)

Mongol region: permafrost temperature measurement network (2010 – now)

Altai range: Meteorological data (2007- now)
<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
<th>Period</th>
<th>Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>134(27)</td>
<td>1950 — 2005</td>
<td>Air Temp.(Max, Min), Precipitation, Wind Speed, Wind Direction, RH, Snow Depth, Sunshine Duration, Air Press., Discharge</td>
</tr>
<tr>
<td>Mongol</td>
<td>52(20)</td>
<td>1961 — 2006</td>
<td></td>
</tr>
</tbody>
</table>

( ) Hydrological Station No.
Siberia Data Collection

- **Baseline Meteorological Data in Siberia (BMDS) Version 5.0**
  - 108 station
  - 1 January 1950 to 31 December 2005, daily.
  - Now preparation Ver.6 (until 2011)

- **Ground Surface and Soil Temperature in Siberia (GSSTS) Version 1**
  - Russia (77 stations)
  - 1 January 1985 to 31 December 1992, daily.

- **Hydrological and Ice Regime Data of River in Eastern Siberia (HIRDR)**
  - 106 stations in Lena River basin and other regions of Siberia.
  - From 1949 to 1992

- **Soil Water at Agricultural Stations in the Former USSR (SWAS-USSR)**
  - 115 stations in former USSR.
  - Three times monthly (8th, 18th, and 28th) from April to October (1964-1987)
Siberia Data Collection

- **Soil Water at Agricultural Stations in Russia and ex-USSR (SWAS-Russia) (Beta version)**
  - 951 stations (the longitude and latitude information is available at 898 stations) in Russia.
  - from April to October (1992 - 1996); Three times monthly (8th, 18th, and 28th)

- **Snow Depth and Density at Agricultural Stations in Russia and ex-USSR (SnAS-Russia) (Beta version)**
  - 1162 stations (the longitude and latitude information is available at 1097 stations) in Russia
  - Three times monthly (probably 8th, 18, and 28th) in winter (November to February) from 1992 to 1996.

- **Enhanced Radio Sonde Observation Level 1 Data (ERAOB)**
  - Yakutsk, Olekminsk, Viljujsk, Zhigansk, Aldan
  - April to September 2000.

- **GAME-Siberia Data Sets**
  - Tikis, Yakutsk, Tinda
  - Metrological data, Hydrological Data, Permafrost Data etc
  - 1997 to 2000

- **Phenological Photographs of Siberian Larch Forest from 1997 to 2000 at Spasskaya Pad, Republic of Sakha, Russia**
  - Yakutsk
  - Phenological Photographs of Siberian Larch Forest
  - from 1997 to 2000
Mongol Data Collection

- **Daily metrological data (31 Station from 1961 to 2006)**
  - Mean Air Temperature, Maximum Air temperature, Minimum Air Temperature, Vapor pressure, Relative Humidity, Wind Speed, Sunshine Duration, Precipitation, Snow Depth, Surface Temperature, Ground Temperature

- **3-hour metrological data (10 Station from start year to 2006)**
  - Mean Air Temperature, Maximum Air temperature, Minimum Air Temperature, Vapor pressure, Relative Humidity, Wind Speed, Sunshine Duration, Precipitation, Snow Depth, Surface Temperature, Ground Temperature (3 hourly or 6 hourly data)

- **Soil Moisture Data in Mongolia (20 station from 1987 to 2006)**
  - Soil Moisture: below 1m depth. 11-levels(0-5cm, 5-10cm, 10cm, 20cm, ..., 100cm)

- **Snow Survey data (33 station From 1987 to 2006)**
  - Snow depth and density (snow course observation)

- **Hydrological Data in Tuul River (22 station From 1961 to 2006)**
  - Water Level, Discharge: daily data
  - Temperature: monthly data
  - Ice Cover: 10-day in Autumn, Monthly in Winter, 10-day in Spring
  - Ice Phenomena: freezing date, opening date
Phenological Photographs of Siberian Larch Forest from 1997 to 2000 at Spasskaya Pad, Republic of Sakha, Russia
Cryosphere Data Archive Partnership (CrDAP) Collection

The aerial photographs of flight observation for Glacier inventory in Nepal Himalaya by the Glaciological Expedition of Nepal (GEN) from 1974 to 1978.
The glaciological study led by Nagoya University, called the Glaciological Expedition in Nepal (GEN), was conducted in the Nepal Himalaya region from 1973 to 1978. The goals of the project were to clarify the climatic conditions and glacier processes and to create a glacier inventory for the Nepal Himalaya region. Creation of a glacier inventory covering the vast Nepal Himalayas would have been impossible by ground-based observation. Furthermore, at that time, satellite imagery did not have the ability to identify glacier shapes. Thus, the GEN project conducted flight observations and took aerial photographs over the entire Nepal Himalaya glacier region. These aerial photographs were taken from 1974 to 1978.

DVD No.1

DVD No.2

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Cryosphere Data Archive Partnership (CrDAP)

Total: 87 datasets
1876 measurement point

- Meteorological: 15
- Stable Isotope: 7
- Model product: 8
- Satellite product: 4
- Ground Temp: 2
- Hydrological: 2
- Snow: 1
- Nepal Photo: 37
- Other Photo: 7
- Glacier: 1
- Other: 3

http://www.jamstec.go.jp/acdap/
Thank you attention

Our CrDAP has the potential to contribute to GCW and GEO

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