NEESPI Science and Data Support Center for Hydrometeorological Information in Obninsk, Russia

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Baseline Meteorological Data in Siberia (BMDIS) Version 4

Fig. 1. Meteorological stations

Fig. 2. Number of stations over years

Fig. 3. Russian State Data Fund

Fig. 4. List of meteorological elements

Reflecting the long history of ecological and geophysical research in the region, there are numerous archival geophysical datasets that have been collected for routine monitoring or for special studies. In many cases, these data have little distribution or visibility outside of the host country or institution.

One of the priorities of NEESPI is to identify these datasets and promote their distribution to address the science goals of the NEESPI Initiative. During the NEESPI implementation, different types of in-situ information will be used: hydrometeorological socio-economic, land-cover, and land-use data. Each type of these data has its peculiarity in collection, archiving, and pre-processing.

The system of hydrometeorological observations within the former Russian Empire and USSR has been established over a lengthy period of time. The number of major synoptic stations over Russia and the former USSR varied from ~100 in the past decade of the 19th century to a maximum of ~3500 in 1985. At that time, however, precipitation was measured at ~11,000 locations. Presently, in Russia there are ~1900 synoptic stations (Fig. 1,2,3).

RIHMI-WDC has the largest collection of in-situ meteorological data for the Russian territory, which is the main part of Northern Eurasia. The information from these stations is routinely archived at the State Data Fund in several special "archive" formats (Fig. 4).

However, this information is not used for research purposes directly.

Instead, it serves as a baseline source for specialized sub-arrays to address particular tasks (e.g., such WMO programs like GEWEX-GAME-Siberia II or WMO/ICU/INTernational Polar Year, INTAS Project SCONE (Fig.5,6)). These data sets may be considered as baseline ones for NEESPI purposes.

The scientific potential of the baseline archive is significant and should be utilized by the NEESPI researchers.

Parallel to the direct data flow from meteorological stations to the State Fund, the second data flow exists – an operational ("real-time") data through the Global Telecommunication System – mostly for weather forecasting needs. These data also can be used for NEESPI purposes but only "near-real time" data, i.e., after initial quality control. The "near-real time" data are available within a month or so. These data are, however, less reliable and should be later replaced by the State Data Fund information.

The third data source for NEESPI is represented by data arrays accumulated during various research projects, field expeditions/experiments, etc. These data are property of institutions, private firms, but very infrequently of "Principal Investigators". Therefore, access to these data for scientific community can be very difficult.

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Description of Meteorological Elements
- Mean air temperature
- Maximum Air Temperature
- Minimum daily air temperature
- Precipitation amount
- Minimum relative air humidity
- Water vapor pressure
- Saturation deficit (Humidity deficit)
- Average wind speed
- Total and low cloud amount
- Sea level air pressure
- Sunshine duration
- Minimum ground surface (soil or snow cover) temperature
- Snow depth
- Extent of snow coverage

Fig. 5. GAME Siberia

Fig. 6. INTAS-project 01-0077 (2002-2006)

«Snow Cover Changes Over Northern Eurasia during the last century: circulation consideration and hydrological consequences» (SCONE)

INTAS teams:
- Finnish Meteorological Institute (FMI), Helsinki, Finland (overall co-ordination)
- Norwegian Meteorological Institute (DNMI), Oslo, Norway
- Global Precipitation Climatology Centre (GPCC), Offenbach, Germany
- Max Planck Institute for Meteorology (MPI), Hamburg, Germany

NIS-Teams:
- Institute of Geography, Russian Academy of Sciences (IZRAS), Moscow, Russia
- All-Russia Research Institute of Hydrometeorological Information, (RIHMI), Obninsk, Russia
- Arctic and Antarctic Research Institute (AARI), St. Petersburg, Russia
- Institute of Geography, Kazakhstan Academy of Sciences (IGKAS), Almaty, Kazakhstan

DATABASES & SOURCES

"GROUND_STATE" data set 
"COMPLEX_DATA"
Norway

"COMPLEX_DATA" set 
"SNOw_DEPTH_DATA"
"SNOw CHARACTERISTICS MEASURED ON FIXED PATHS"
Kazakhstan

"COMPLEX_DATA" set 
"SNOw_DEPTH_DATA"
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Kazakhstan

DATABASE OF SNOW CONSTITUENT PART OF THE SPRING RIVER FLOOD
DATA FROM THE NORTHERN STATIONS

Background
- Mean air temperature
- Maximum Air Temperature
- Minimum daily air temperature
- Precipitation amount
- Minimum relative air humidity
- Water vapor pressure
- Saturation deficit (Humidity deficit)
- Average wind speed
- Total and low cloud amount
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