Participation of the World Data Center for Solid Earth Physics in creation of distributed geophysical data resource in the Internet

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Geophysical Center of the RAS
WDC for Solid Earth Physics, Moscow is a division of the Geophysical Center of Russian Academy of Sciences.

The activity of the WDC for SEP is carried out according to the “Guide to the World Data Center System”.

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Main WDC functions according to “Guide”

- Data collection and archiving, data analysis, quality control, processing and long-time storage
- Data maintenance, preparation of inventory catalogues, meta-data documentation, etc.
- Data distribution - data exchange, execution of user requests, service of visitors, publication of data sets
- Use of new data technologies and software, use of INTERNET
- Assistance to educational programs, participation in research programs
About our users

- WDC for SEP serves scientists, students, researchers in our country and other countries
- Users prefer to take data sets from WDC in the form of separate (ASCII) files or selected from computer data base
- Some users request the results of data processing: statistics, spatial and temporal distributions, cross-sections and other products
Example: Spatial distribution of earthquake epicenters and depth cross-section
Since 1995 the Center has own Internet site and provides free access to Solid Earth physics information resource. Digital data, metadata, thematic and problem oriented databases are available on-line at this site. Special user interface is developed to provide comfortable means for finding, reviewing, visualization, and selection data in net and assignment them to user.
Welcome to the World Data Center for Solid Earth Physics in Moscow, Russia!

This website gives information on the WDC for SEP, Moscow, its archives and data bases for some geophysical disciplines, on-line data and possibility for data search, activity in some scientific projects and programs and on many related links.

The World Data Center for Solid Earth Physics, Moscow collects, stores, exchanges with other WDC's and disseminates a wide range of data on solid Earth physics disciplines. These data are used as the basis for fundamental and applied scientific researches and education. The WDC for SEP invites scientists, institutions and other authors and data generators to contribute data to our Center in order to make data more widely available to the scientific community.
Welcome to the World Data Center for Solid Earth Physics in Moscow, Russia!

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World Data Center for Solid Earth Physics, Moscow has existed since 1971 as the department of the Geophysical Center of the Russian Academy of Sciences and operates under the auspices of the National Geophysical Committee of the Russian Academy of Sciences. It is a part of the World Data Center System of the International Council for Science (ICSU). The activity of the WDC for SEP, Moscow is carried out according to the “Guide to the World Data Center System”. The WDC for SEP, Moscow maintains extensive archives of data on seismology, gravimetry, geomagnetism, geodynamics, recent movements, marine geology and geophysics, topography and so on.

The WDC for SEP provides access to all these data and also serves as an information and referral center because information on other data centers and data providers, interesting data sets, and data bases is collected along with data.

The WDC for SEP responds to data and information requests from users all over the world, and serves visitors from any country.

The WDC for SEP, Moscow co-operates with other WDC’s (WDC for SE, Boulder, WDC for MGO, Boulder, WDC for Seismology, Denver, WDC’s in China and others) and some analytical and special Centers (IOM, ECM, ICRM, GS FAS, ...). It is connected with many research institutes and permanent services in Russia and other countries.

The WDC for SEP is active in scientific projects and programs, both in International and in Russian.
Solid Earth Physics Data On-line

- Information on Seismological Stations
- Wave forms - Seismograms
- Phase Data - Seismological Bulletins
- Hypocenter Data - Earthquake Catalogs
- Catalogs of Gravity measured values
- Maps of the Earth’s gravity field and its anomalies
- Catalogues of measured values of Geomagnetic field elements
- Maps of isolines of Geomagnetic field elements
- Annual mean values of geomagnetic elements
- Catalogs of Heat Flow data
- Catalogs of paleomagnetic determinations of the ancient geomagnetic field elements
- Special Data Bases
Metadata Standard

At creation of databases and on-line resources the base of metadata is simultaneously formed in WDC. The metadata international standard of Federal Geographic Data Committee (FGDC) is used. It is most widespread for Digital Geospatial Metadata.
Structure of metadata base

List of Parameters describing a data set:

- identifier of a resource;
- name of a resource;
- author (person, organization, ... addresses);
- keywords;
- description of a resource, summary;
- discipline;
- kind of observation;
- territorial covering;
- time interval;
- areas of change of main parameters;
- bibliographic references;
Structure of metadata base
List of Parameters describing the same data set, as the Internet-resource

- organization providing access on-line;
- Internet-address;
- responsible person;
- date of creation of access to a resource;
- date of last updating;
- language;
- type;
- volume;
- description of a format of data
Database: Seismic Stations and Instruments of the Unified System of Seismic Observations in the CIS countries
Access to detailed station data on earthquakes

Access to detailed station data on earthquakes

Seismological Bulletin
Geophysical Survey RAS, Obninsk

Decade Seismological Bulletin preparing by the Central Experimental-Methodic Expedition og
The Geophysical Survey of the Russian Academy of Sciences encloses data on the main earthquake
hypocentral parameters and detailed station data for events with body wave magnitudes more than 4.0
for the territory of Russia and more than 4.5-5 for external territories.

Bulletin is available beginning from May, 1995 up to date in view ASCII files. Five different record
types can cover to one event:

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<th>Record Type</th>
<th>Record Identifier</th>
<th>Record Name</th>
</tr>
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<td>Head</td>
</tr>
<tr>
<td>2</td>
<td>Magnitude record</td>
<td>Magn</td>
</tr>
<tr>
<td>3</td>
<td>Comment</td>
<td>Comm</td>
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<tr>
<td>10</td>
<td>First Phase Record</td>
<td>StaP</td>
</tr>
<tr>
<td>11</td>
<td>Second Phase Record and Maximum</td>
<td>StaSComm</td>
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</table>

Length of each record is 80 bytes. | Format Description

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<th>Month</th>
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<th>Month</th>
<th>Year</th>
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Interactive Access to Earthquake Catalog

Java-applet

Data Request Form
Seismological Catalogue (Java-based Version)

Non-Java form

Data Request Form
Seismological Catalogue (Non-Java Version)

Time, magnitude, and depth intervals:
Start time, year
End time, year
Magnitude minimal
Magnitude maximal
Depth (km), minimal
Depth (km), maximal

Form of selected area:
- Rectangle
- Circle
- Polygon
- Global

Nodes
Latitude/Longitude

Last revision December 7, 2005
Example of filled inquiry form and selected data

Selected Data

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<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Latitude</th>
<th>Longitude</th>
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### Gravity Measurements on the World Ocean Area of Water

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<th>Profile length, miles</th>
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Format Description
Page providing access to Heat Flow data & example of selected data for Philippine Sea region

Global Heat Flow Data

Catalogs of Heat Flow Values - Publications
Maps of Heat Flow Isolines
Earth Heat Flow Data on-line

1. New Global Heat Flow Compilation
   Peneda H. N., Hunter S. J., and Johnson J. P.

2. Catalog of Heat Flow Data for East of Asia, Australia and W.
   Veselov D. V., Lipina E. N.
   Institute of Tectonics and Geophysics, Vladivostock, 1982.
Participation of WDC for SEP in Scientific Projects

World Data Center for Solid Earth Physics (Moscow, Russia) takes part in the Project “International Polar Year 2007-2008”

The Center has made a special site on which all data on Arctic and Antarctic regions available in our archives are presented.

At present this site is only in Russian.
Example: Seismological Data for Arctic
Earthquake spatial distribution and location of seismological stations
List of Gravity Catalogs & Maps for Arctic and Antarctic

- Булахов Ю.Д., Авсюк Ю.Н., Мартыненко А.М.
  Каталог гравиметрических определений в Антарктиде. 3139 пунктов, по 1960 год.//
  Институт Физики Земли АН СССР, Москва, 1962.

- Грушинский Н.П., Корякин Е.Д., Строев П.А., Лазарев Г.Е., Сидоров Д.В., Вирская Н.Ф.
  Каталог гравиметрических пунктов Антарктиды. 1955-1965 гг., 5493 пункта.//
  В кн.: Труды ГАИШ. т.42 (В.В.Нестеров, отв. ред.). Издательство Московского Университета.
  Москва, 1972, стр. 115-311.

- New Zealand Observations of Gravity in Antarctica during 1956/57, 1957/58 Summer
  Seasons. //Catalogue, 204 Stations./

- Bull C.
  Gravity Observations in the Koeltzlitz Glacier Area, Southern Victoria Land, Antarctica.
  //With Map, Scale 1:300 000.// Institute of Polar Studies, Ohio State University,
  Contribution N15, Columbus, 1962.

- Valores de Gravedad Obsevada, desde Base General Belgrano Hasta al Polo Sur. //Catalogo
Participation of WDC for SEP in Scientific Projects

WDC for SEP takes part in the Program InterMARGINS.

InterMARGINS is International and Interdisciplinary initiative concerned with all aspects of continental margin research.

Our participation in the Program is connected with studying active subduction zones of Pacific ocean.

Next slides describe Internet-Pages of our website on this Program.
Sea of Okhotsk
Japan Sea
Philippine Sea
Caspian Sea
DataBase:
Sedimentary basins of Philippine Sea region

Address: http://www.wdebs.ru/scp/sedimentary_basins/Philsea/Philsea.ru.html
DataBase:
Sedimentary basins of Philippine Sea region

North China Plain
Geological & Geophysical Data

Relief
Earthquakes
Seismological Profile

Data Format

Format Description for the Bathymetric Data

<table>
<thead>
<tr>
<th>POSITIONS</th>
<th>LENGTH</th>
<th>FORMAT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
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<td>6</td>
<td>(f6.3)</td>
<td>Latitude in degrees</td>
</tr>
<tr>
<td>8-14</td>
<td>7</td>
<td>(f7.3)</td>
<td>Longitude in degrees</td>
</tr>
<tr>
<td>17-21</td>
<td>5</td>
<td>(e5)</td>
<td>Depth in meters</td>
</tr>
</tbody>
</table>
Conclusion

At present the global distributed geophysical data resource is formed in the Internet. As indicated above the WDC for Solid Earth Physics introduces the network technologies into its activity and realizes the remote access to the WDC’s information resources.