GFZ POTSDAM

The Electronic Geophysical Year

International Association of Geodesy

20 CODATA'06 1966 2006 20th International CODATA Conference Beijing, China — October 2006

GFZ ISDC portal

–

Unique door to data and information

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(4) Hochschule Neubrandenburg (*O. Volgmann, St. Lowisch*)

Outline

- Business case – Management of scientific data
- Features and architecture of the ISDC portal
- ISDC portal user and archive statistics
- Presentation of the new portal
  (http://isdc.gfz-potsdam.de)
- ISDC product philosophy
- Definition of ISDC products
- ISDC product metadata (DIF standard)
- The future of the ISDC portal

Business Case

Complete management of products (data + metadata)

by providing different services for

- data providers (scientists and engineers)
- data users (scientists, pupils and students, decision makers, other interested parties, …)
- project management (scientific and administrative staff)

for grand geoscientific projects and missions

=> Information System and Data Center

(ISDC portal, http://isdc.gfz-potsdam.de)

ISDC portal homepage: isdc.gfz-potsdam.de

GFZ POTSDAM

INFORMATION SYSTEMS AND DATA CENTER

Global Earth Science Data

Welcome to ISDC - Information System and Data Center, rit - MyAccount | Logout

Home
PN Administration

Information
Projects in ISDC
Product Types
Documents
Software
FAQ
Links
Education
Statistics

Data Access
How to get data

MyRetrieval
Product Browser
MyDirectory
MyRequests

MyAdmin
CHAMP-Admin
MyMonitor

Collaboration
MyAccount
Forum
Contact

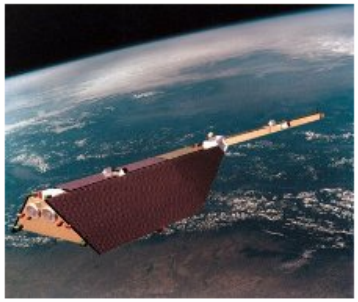
There are 1 registered user online.

You are logged-in as **rit**.

W3C XHTML 1.0

Report Bug

Welcome to the Information System and Data Center for geoscientific data



ISDC's online service portal is an access point for all manner of geoscientific geodata, its corresponding metadata, scientific documentation and software tools. The majority of the data and information, the portal currently offers to the public, are global geomonitoring products such as satellite orbit and Earth gravity field data as well as geomagnetic and atmospheric data for the exploration. These products for Earths changing system are provided via state-of-the art retrieval techniques. The ISDC portal's design and the operation is a project of the ISDC-team within the GFZ's Data Center. We invite you to use our services and they will benefit your scientific work. If you have any queries while using the site, please use the ?-Symbol to get context-sensitive help. Try it now ?.

New Features and Documents |

The Product Type description section is now available. New documents describing the ISDC are accessible in the "Document" section.
Read full article: 'New Features and Documents'

ISDC

Posted by: rit on Sep 22, 2006 - 03:46 PM

New GRACE SDS Newsletter |

The GRACE Science System Monthly Report August 2006 prepared by Frank Flechtner (GFZ Potsdam) is available now.
Read full article: 'New GRACE SDS Newsletter'

GRACE

Posted by: rit on Sep 15, 2006 - 02:26 PM

New ISDC Collaboration Project |

In cooperation with the ICGEM at the GFZ Potsdam a new ICGEM ISDC service will be established. Read full article: 'New ISDC Collaboration Project'

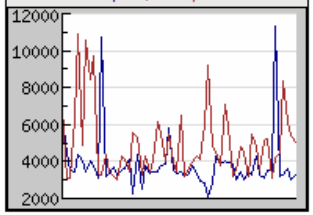
ICGEM

Posted by: rit on Aug 15, 2006 - 12:39 PM

Personal Block
favorite product types :
CH-AI-3-ATM
CH-AI-3-IVP
CH-AI-3-TCR
CH-AI-3-WVP

Request Limits (24h)
count (50/2000)
size (102 MB/2 GB)

Data Flow Graph (last 60d)
Input / Output



Forum
- **ISDC**
  - General discussions
  - Bug-Reports
  - Questions
- **CHAMP**
  - Atmosphere/Ionosphere
  - Magnetic/Electric Field
  - Orbit/Gravity
  - General
- **GRACE**
  - Orbit/Gravity
  - General
- **GGP**
  - General
- **GGOS**
  - General
- **GGSP**
  - General

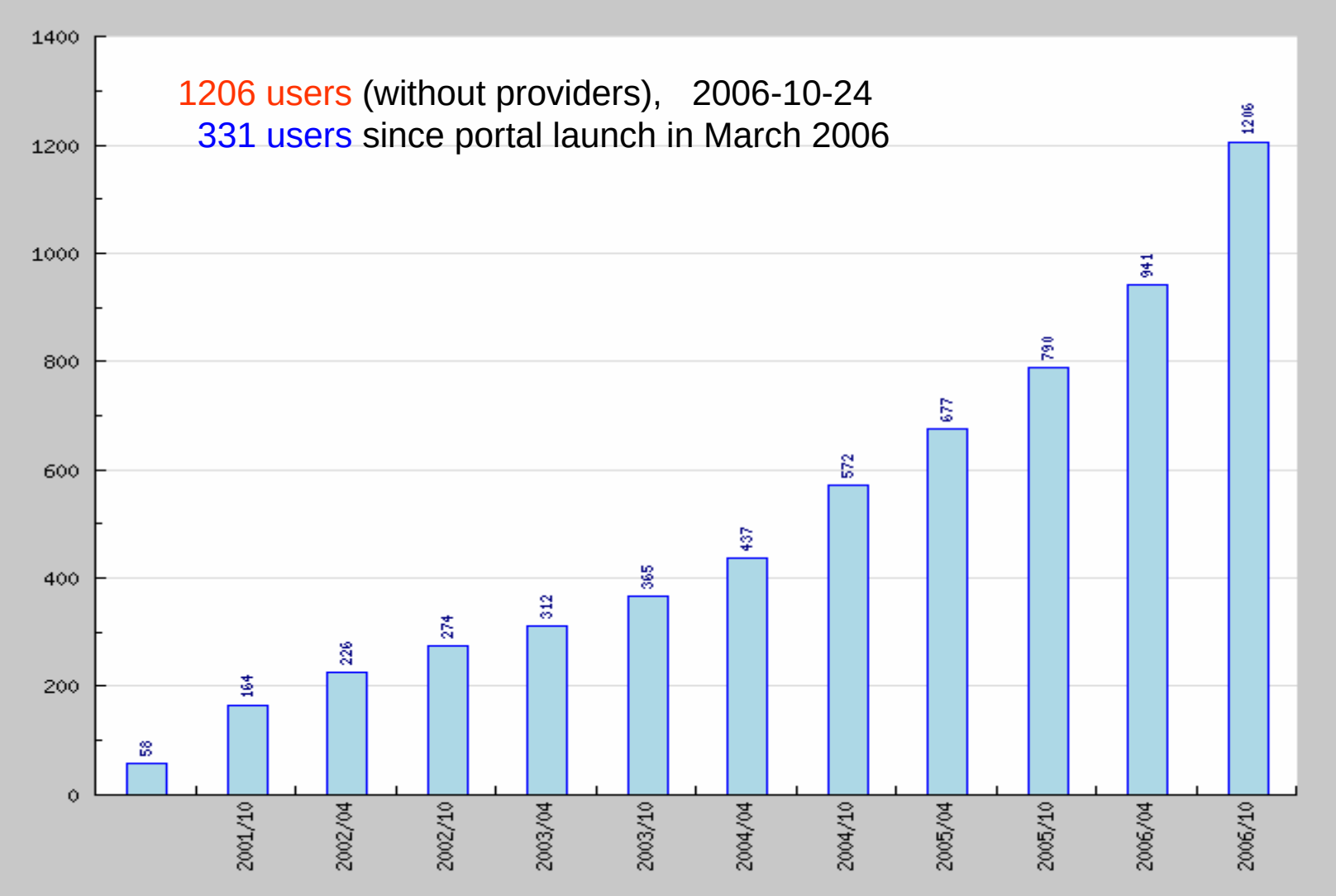
ISDC portal statistics

- 265 different product types
  - covering geodesy, geophysics, atmosphere and ionosphere parameters
  - data are from satellites (CHAMP, GRACE, SAC-C, GPS) and from ground stations (GPS, Laser, SG, …)
  - different status of processing (level 0 – level 4)
- 10 million products (> 5 TB data volume)
- app. 5000 products (10.000 files) daily data flow
- 1179 users and user groups (304 after the launch of the portal in March 2006)

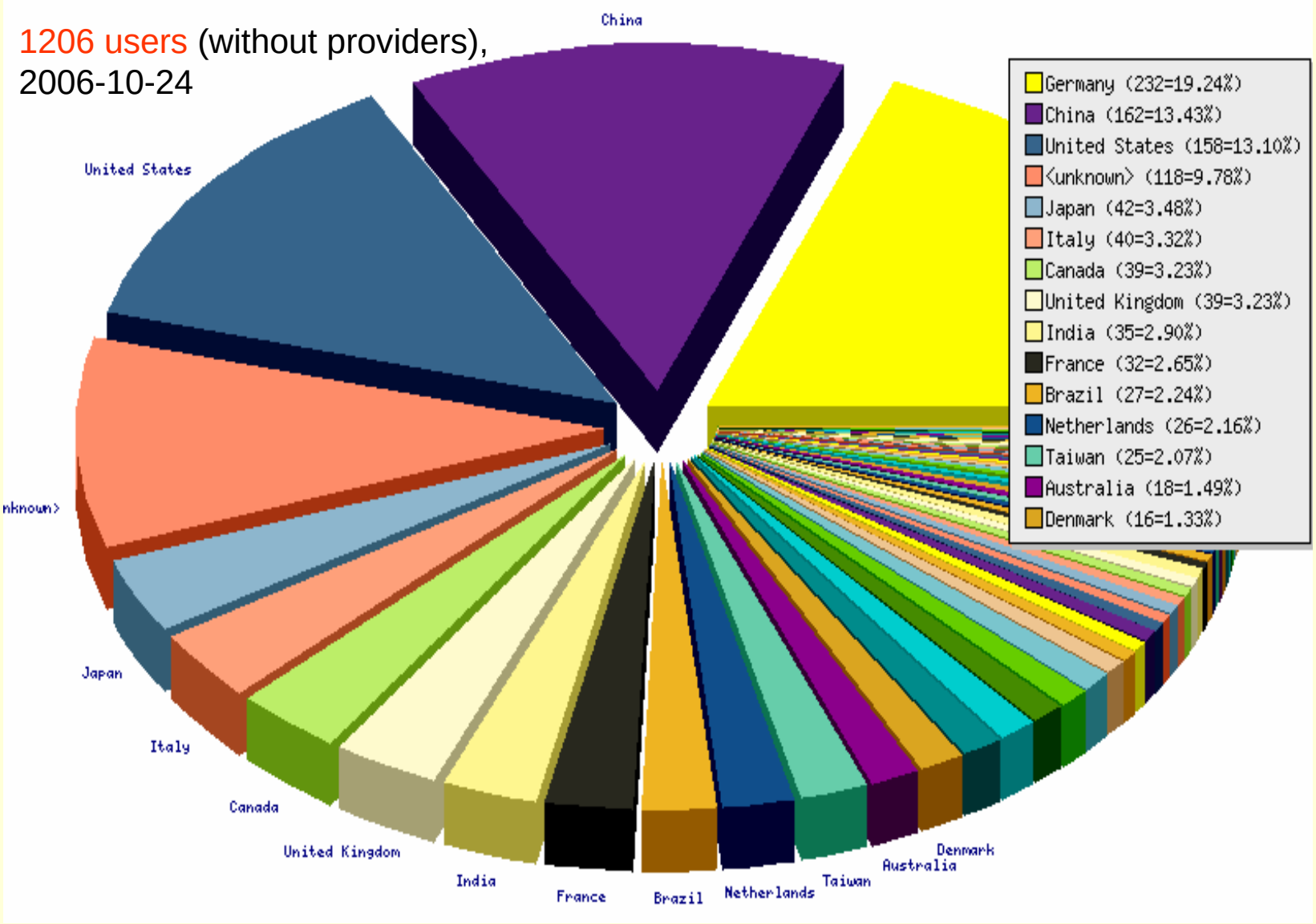
ISDC portal – Product Types: isdc.gfz-potsdam.de/product_types

Producer	Product Type	Mission	Section	Description	Retrieval	Product Browser
Christoph Förste	CH-AI-1-FID	CHAMP (internal)	AI	High rate GPS ground tracking data *This data set comprises GPS high rate ground data of a sample rate of 1 sec, generated by decoding the original measurement data. This raw data passed no quality control.*	Retrieval	Product Browser
Christoph Förste	CH-AI-1-GPS-01S	CHAMP	AI	High rate GPS ground tracking data, sample rate 1 Hz (1h-Files per station, Rinex 2.20)	Retrieval	Product Browser
Christoph Förste	CH-AI-1-HR	CHAMP	AI	High rate CHAMP GPS-SST data (1d-Files, Rinex 2.10) *Decoded high rate CHAMP GPS-SST data (Occultation Data), sample rate 50 Hz*	Retrieval	Product Browser
Christoph Förste	CH-AI-1-MR	CHAMP	AI	Medium rate CHAMP GPS-SST data (1d-Files, Rinex 2.10) *TDecoded medium rate CHAMP GPS-SST data (Occultation Data), sample rate 1 Hz.*	Retrieval	Product Browser
Torsten Schmidt	CH-AI-2-PD	CHAMP	AI	Atmospheric excess path delay (ASCII, tbd.) *Calibrated atmospheric excess path of the single occultation events*	Retrieval	Product Browser
Torsten Schmidt	CH-AI-2-TAB	CHAMP	AI	Occultation tables (ASCII, tbd.) *Tables of the occultation events, per day*	Retrieval	Product Browser
Torsten Schmidt	CH-AI-3-ATM	CHAMP	AI	Atmospheric parameters (ASCII, tbd.) *Vertical profiles of atmospheric parameters (dry air), derived from Occultation measurements*	Retrieval	Product Browser
Norbert Jakowski	CH-AI-3-IVP	CHAMP	AI	Vertical electron density profiles (ASCII, tbd.) *Ionospheric vertical profile / vertical profile of electron density*	Retrieval	Product Browser
Norbert Jakowski	CH-AI-3-TCR	CHAMP	AI	Occultation link related TEC data (uncalibrated) (ASCII, tbd.) *Link related TEC, from GPS Receiver onboard CHAMP*	Retrieval	Product Browser
Torsten Schmidt	CH-AI-3-WVP	CHAMP	AI	Water vapour parameters (ASCII, tbd.) *Vertical profiles of atmospheric parameters for moist air, derived from Occultation measurements*	Retrieval	Product Browser
Martin Rother	CH-ME-2-ASC-BOOM	CHAMP	ME	Boom Attitude Data (1d-Files, CHAMP data format) *Preprocessed and calibrated quaternions from the Boom Advanced Stellar Compass*	Retrieval	Product Browser
Martin Rother	CH-ME-2-FGM-FGM	CHAMP	ME	Preprocessed Vector Magnetometer Data (Sensor System) (1-d Files, CDF) *Preprocessed FGM (vector magnetometer) data, all local corrections with latest available parameter set, in FGM1 sensor system*	Retrieval	Product Browser

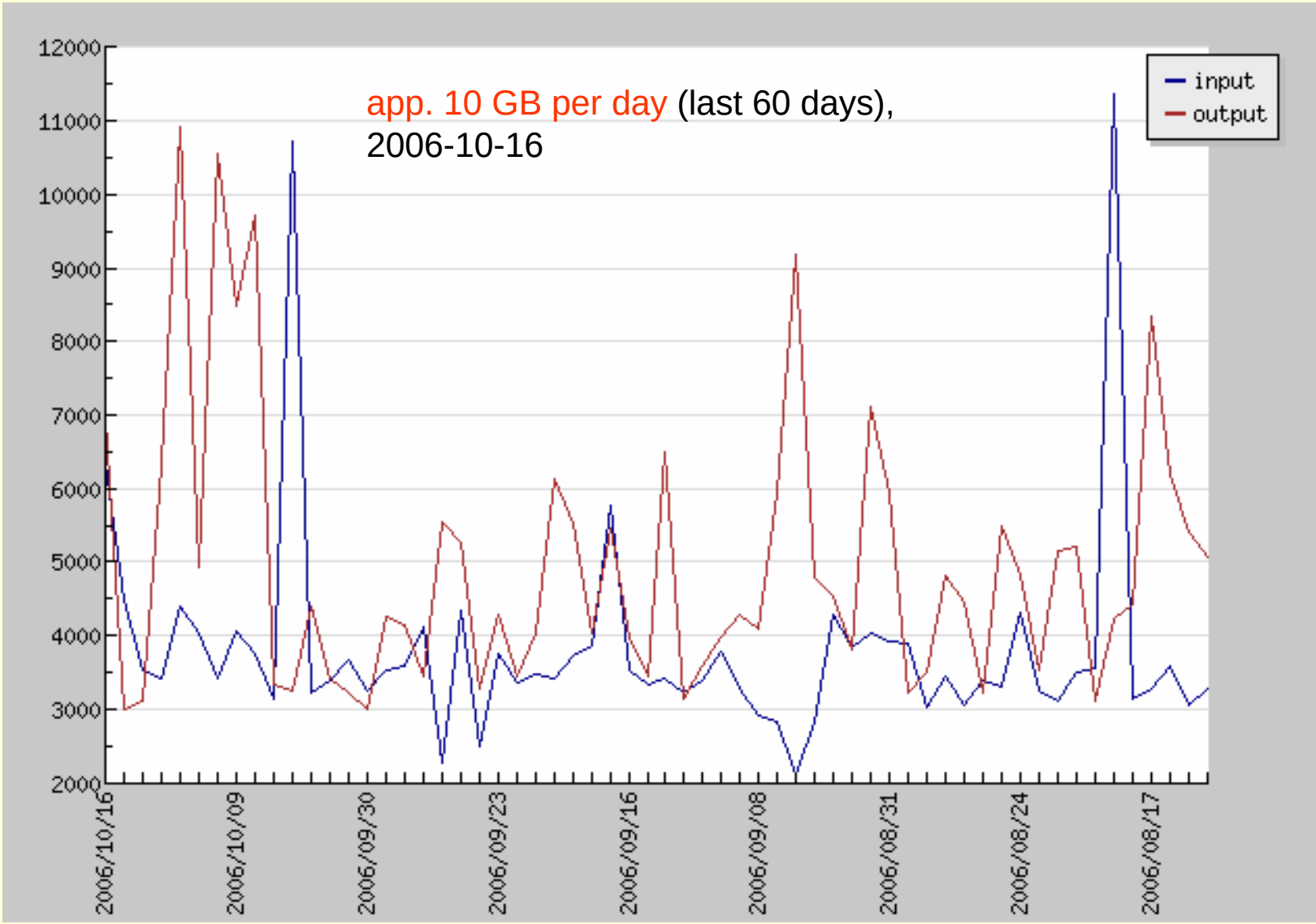
ISDC user development statistics



ISDC user - country statistics



ISDC data flow statistics



ISDC portal features (1)

- User registration and authentication
  Sign on/Login
- Data access grant management
  MyAdministration
- Personalization (projects, products, RSS Feeds …)
  MyAccount
- Content and document management
  Documents
- (Meta)Information about product types in ISDC
  Product Types
- Data mining (product type specific query forms)
  MyRetrieval

ISDC portal features (2)

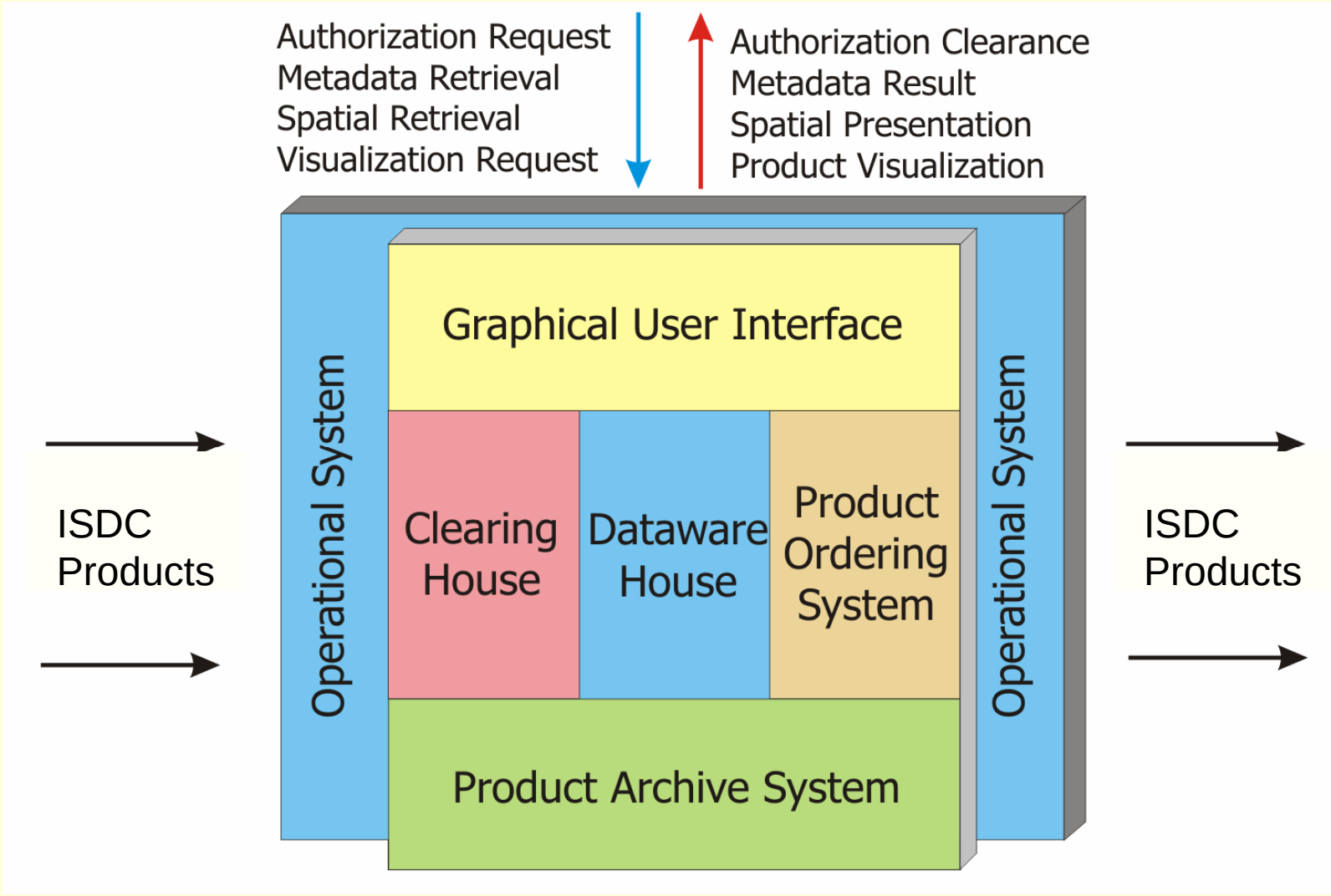
- Data provision monitoring
  MyRequests
- Directory browsing
  MyDirectory
- ISDC user and dataflow statistics
  Statistics
- Data visualisation*
- User forum
  Forum
- Portal and data management administration
  MyAdmin

*planned

ISDC portal product search

- Search attributes
  - Time (start date, stop date of time series)
  - Space (longitude, latitude, altitude)
  - Location, station, instrument (product type dependent)
  - Very specific product type dependent parameter
- Search methods
  - Retrieval using query forms in MyRetrieval
  - Batch mode using PRL file (product id request listing)
  - Virtual product browser with Product Browser

ISDC architecture

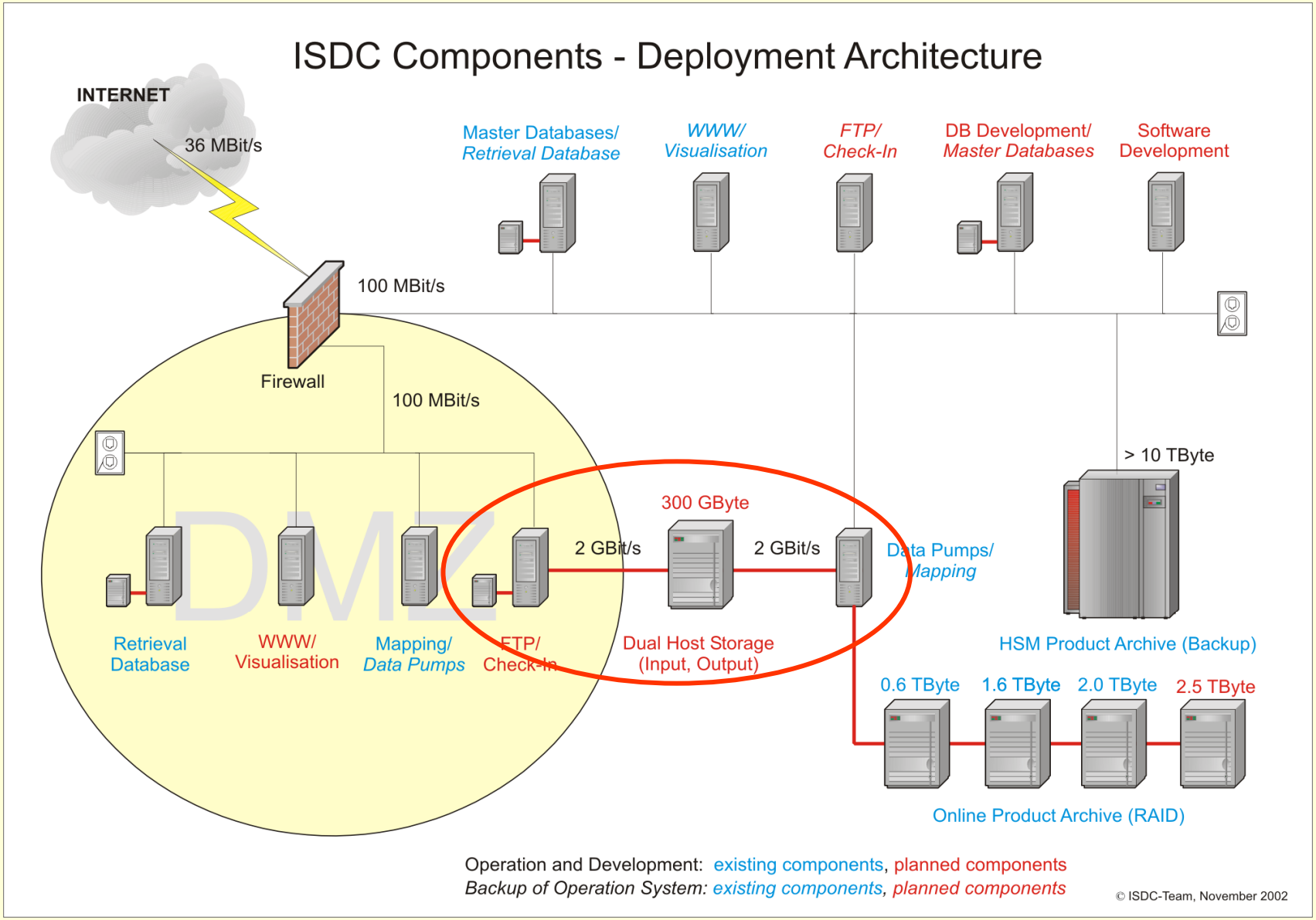


ISDC server and storage systems

- PostNuke 0.7.6.1 portal framework (open source)
- Sybase 12.5 and mySQL databases
- Apache 2.0.54 WWW Server
- Wu FTP Server (1x Intranet, 1x Extranet)
- UMN-Map Server
- Application Server (product management)
- 12 TB raidsystem-based Online Product Archive (OPA)
- Long-term data archive based on Hierarchical Storage Management (HSM) system (> 100 TB)
- 1 TB high speed SAN connecting FTP server and OPA

- SUN workstations, UNIX Solaris 10 (zone architecture)

ISDC main system components deployment



ISDC collaboration projects: isdc.gfz-potsdam.de/projects

ISDC portal – CHAMP ISDC homepage: isdc.gfz-potsdam.de/champ

MyRetrieval | Product Browser | Product Description | Document List | Documents

CHAMP Project

The GFZ CHAMP (CHAllenging Mini-satellite Payload) low earth orbit satellite, mainly designed and operated by different German companies and institutions has been launched in July 2000.

CHAMP Project Homepage

CHAMP is providing for the first time simultaneously highly precise gravity and magnetic field measurements over a 8 years period. This allows the tracing of spatial and time variations of both fields for a long time. The provision of regularly radio occultation measurements of the atmosphere and ionosphere are used in a pre-operational phase for weather prediction and space weather monitoring purposes.

MyRetrieval | Product Browser | Product Description | Document List | Documents

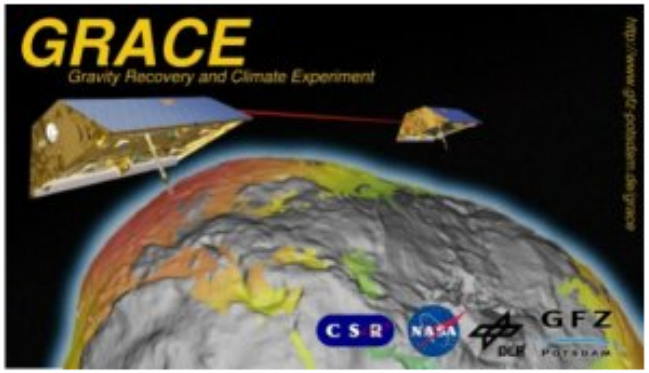
ISDC portal – GRACE ISDC homepage: isdc.gfz-potsdam.de/grace

GRACE

MyRetrieval | Product Browser | Product Description | Document List | Newsletter | Documents | Software

GRACE Project

The GRACE satellites, launched March 17, 2002, are designed to produce new models of the Earth's gravity field with unprecedented accuracy. The estimates of the time variations in the gravity field obtained from GRACE, in conjunction with other satellite and in-situ data, and geophysical models, can provide improved measurements of deep ocean currents, ocean bottom pressure, sea level rise, sea ice mass variation and distribution, soil moisture, groundwater transport, and land ensity.



GRACE Project GFZ Homepage
GRACE Project UTCSR Homepage
GRACE Project JPL Homepage

PO.DAAC Archive

GRACE is a joint partnership between the National Aeronautics and Space Administration (NASA) in the United States and Deutsches Zentrum Fuer Luft und Raumfahrt (DLR) in Germany. Prof. Byron Tapley of The University of Texas Center for Space Research (UTCSR) is the Principal Investigator (PI), and Prof. Christoph Reigber of the GeoForschungsZentrum (GFZ) Potsdam is the Co-Principal Investigator (Co-PI).

The GRACE scientific products are divided in two catagories:
- Orbit & Gravity Field Products
- Atmosphere & Ionosphere Products.

ISDC portal – GGSP ISDC homepage: isdc.gfz-potsdam.de/ggsp

ggsp

MyRetrieval | Product Browser | Product Description | Document List | Documents

The Galileo Geodetic Service Provider Prototype

The establishment of the Galileo Reference Service Provider (GRSP) is a project funded within the sixth framework programme of the European Union. Call number 2420 of the second call for proposals asked for the "Implementation of Galileo Geodetic Service Provider Prototype".

GGSP Project Homepage

The target of the Galileo Geodetic Service Provider (GGSP) is the development of the Galileo Terrestrial Reference Frame (GTRF) and the establishment of a service with data, products and information for the potential Galileo users. The project started in July 2005 and will finish probably at the end of 2008.

This portal is to inform the public about the progress of the project. In a later stage it will offer a variety of information in different specifications.

AIUB bkg GFZ POTSDAM ESOC OPERATIONS CENTRE IGN

Natural Resources Canada

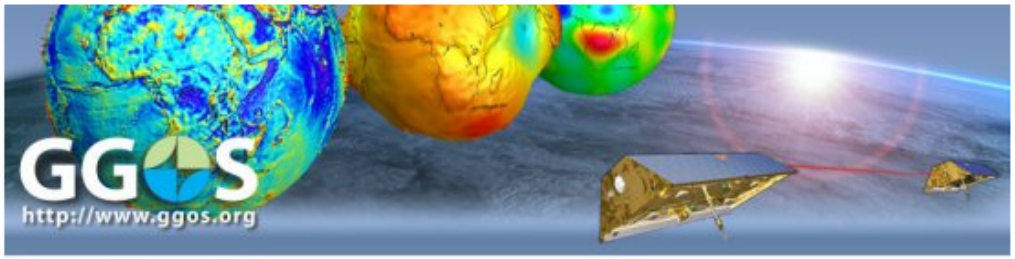
ISDC portal – GGOS ISDC homepage: isdc.gfz-potsdam.de/ggos

GGOS

MyRetrieval | Product Browser | Product Description | Document List | Documents | Software

GGP Project

GGOS Project Homepage



- Welcome
- GGOS
- Working Groups
- Meetings
- Downloads
- Links to IAG Services
- Links Organizations/Institutions
- Member Login
- Sitemap
- Search
- Legal Notice

IAG's Global Geodetic Observing System

GGOS is the Global Geodetic Observing System of the International Association of Geodesy (IAG). It provides observations of the three fundamental geodetic observables and their variations, that is, the Earth's shape, the Earth's gravity field and the Earth's rotational motion.

GGOS integrates different geodetic techniques, different models, different approaches in order to ensure a long-term, precise monitoring of the geodetic observables in agreement with the Integrated Global Observing Strategy (IGOS). GGOS provides the observational basis to maintain a stable, accurate and global reference frame and in this function is crucial for all Earth observation and many practical applications.

GGOS contributes to the emerging Global Earth Observing System of Systems (GEOSS) not only with the accurate reference frame required for many components of GEOSS but also with observations related to the global hydrological cycle, the dynamics of atmosphere and oceans, and natural hazards and disasters. GGOS acts as the interface between the geodetic services and external users such as GEOSS, IGOS-P, and United Nations authorities. A major goal is to ensure the interoperability of the services and GEOSS.

With this the geodetic community can provide the global geosciences community with a powerful tool consisting mainly of high quality services, standards and references, and of theoretical and observational innovations.

© GGOS (Pages still under Development, welcome to comments, text and picture content, which should be sent to weisse@gfz-potsdam.de or post comments into the Open Forum), Last update: 14:53 26/10 2005

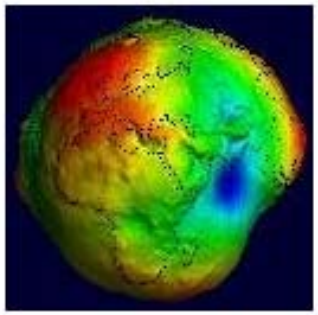
ISDC portal – ICGEM ISDC homepage: isdc.gfz-potsdam.de/icgem

ICGEM

MyRetrieval | Product Browser | Product Description | Document List | Documents

ICGEM Project

The ICGEM at the GFZ Potsdam is one of six centres of the International Gravity Field Service (IGFS) of the International Association of Geodesy (IAG). The ISDC is starting a cooperation with the ICGEM in order to improve the quality of data and services by collecting and associating specific metadata to the gravity field models. Another objective of the cooperation is the integration of this gravity field products into the ISDC catalog system and archives. Both web sites, the ICGEM offering excellent gravity model viualisation services as well the planed ICGEM ISDC will exist in parallel.



ICGEM Project Homepage

In the current ICGEM ISDC project phase all available and appropriate metadata to the gravity model data are collected and checked. Within the second phase standardised gravity model data metadata documents in the DIF format will be prepared. After a carful metadata review process, the "new" gravity model products (now consisting of data and metadata) will be transfered to the ICGEM ISDC. In the last phase the ISDC catalog will be updated and the new products will be stored in the ISCD archives. From this moment the users can search and access the data using the ICGEM ISDC catalog retrieval and data delivery services.

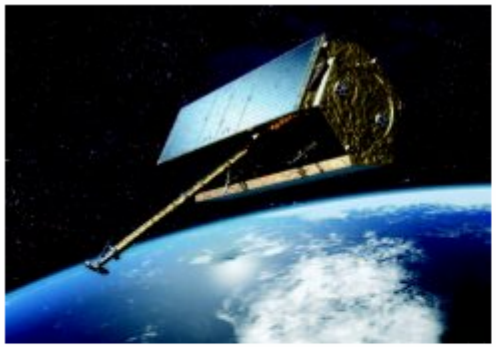
ISDC portal – TSX TOR ISDC homepage: isdc.gfz-potsdam.de/tor

TERRA SAR

MyRetrieval | Product Browser | Product Description | Document List | Documents

TerraSAR-X TOR Project

TerraSAR-X (TSX), the first German long-duration radar mission, is being realized in the frame of a public-private partnership between the German Aerospace Center (DLR) and Astrium GmbH. The spacecraft will carry as primary instrument an X-band imaging system and a high-performance antenna system, enabling different operational modes. The spacecraft will be injected into a sun-synchronous, circular dusk-dawn orbit at approximately 514 km altitude. The launch is foreseen for the end of October 2006 from the cosmodrome Baikonur. The mission is designed for a five year lifetime.



TerraSAR-X Project Homepage

The satellite payload will generate and down-link X-band SAR raw data, which will be processed on ground to generate X-band SAR basic products. Both partners will use SAR data and basic products for their respective fields of interest, DLR for standard science applications, Astrium for the commercial market. TSX SAR data for the science community will be made available by the DLR CAF in Oberpfaffenhofen. GFZ Potsdam and the CSR in Austin are collaborating in providing a precise dual frequency GPS flight receiver to the mission to enhance the quality of the scientific SAR products. GFZ Potsdam, the CSR in Austin and the Technical University Berlin are in particular interested and will collaborate in the precision processing of TerraSAR-X SAR data for environmental, geophysical and hydrological investigations.

ISDC portal – GGP ISDC homepage: isdc.gfz-potsdam.de/ggp

MyRetrieval | Product Browser | Product Description | Document List | Newsletter | Documents | Software

GGP Project

The GGP (Global Geodynamic Project) is a long term initiative in order to establish a world wide network of super conducting gravimeter (SG) stations by the voluntary consolidation of unique observatories using such devices.

GGP Project Homepage
International Center of Earth Tides
GWR Instruments, Inc.

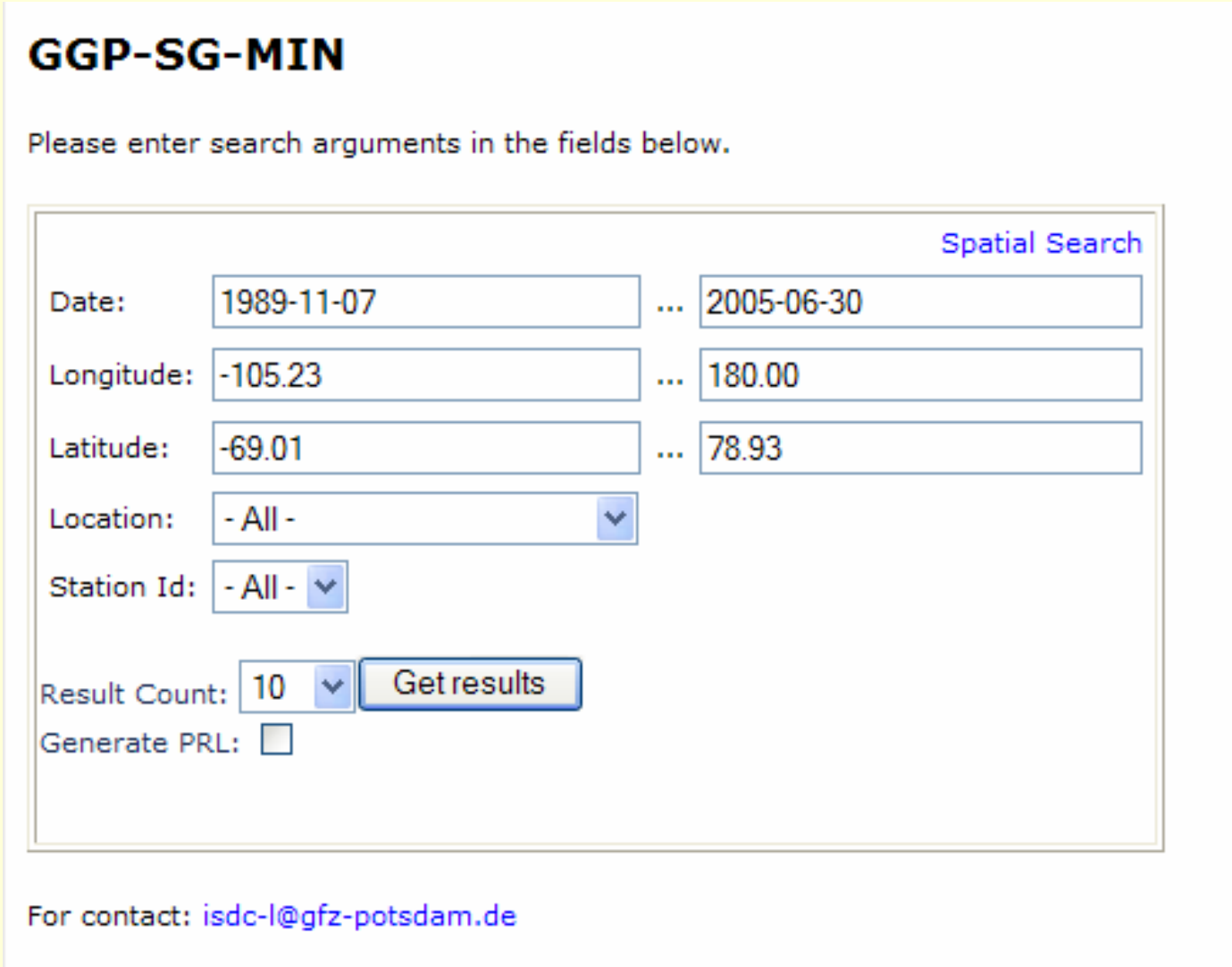
GGP ISDC (old)

The first phase of the project ran from July 1997 to July 2003. The second phase continuing this project will last until 2007. The high accuracy gravity data are used for study of global motions of the entire Earth as well as for the estimation of local gravity effects caused by atmospheric pressure and groundwater. By the start of high accurate satellite gravity missions CHAMP and GRACE, the SG data got a new impact for the validation and calibration of these missions.

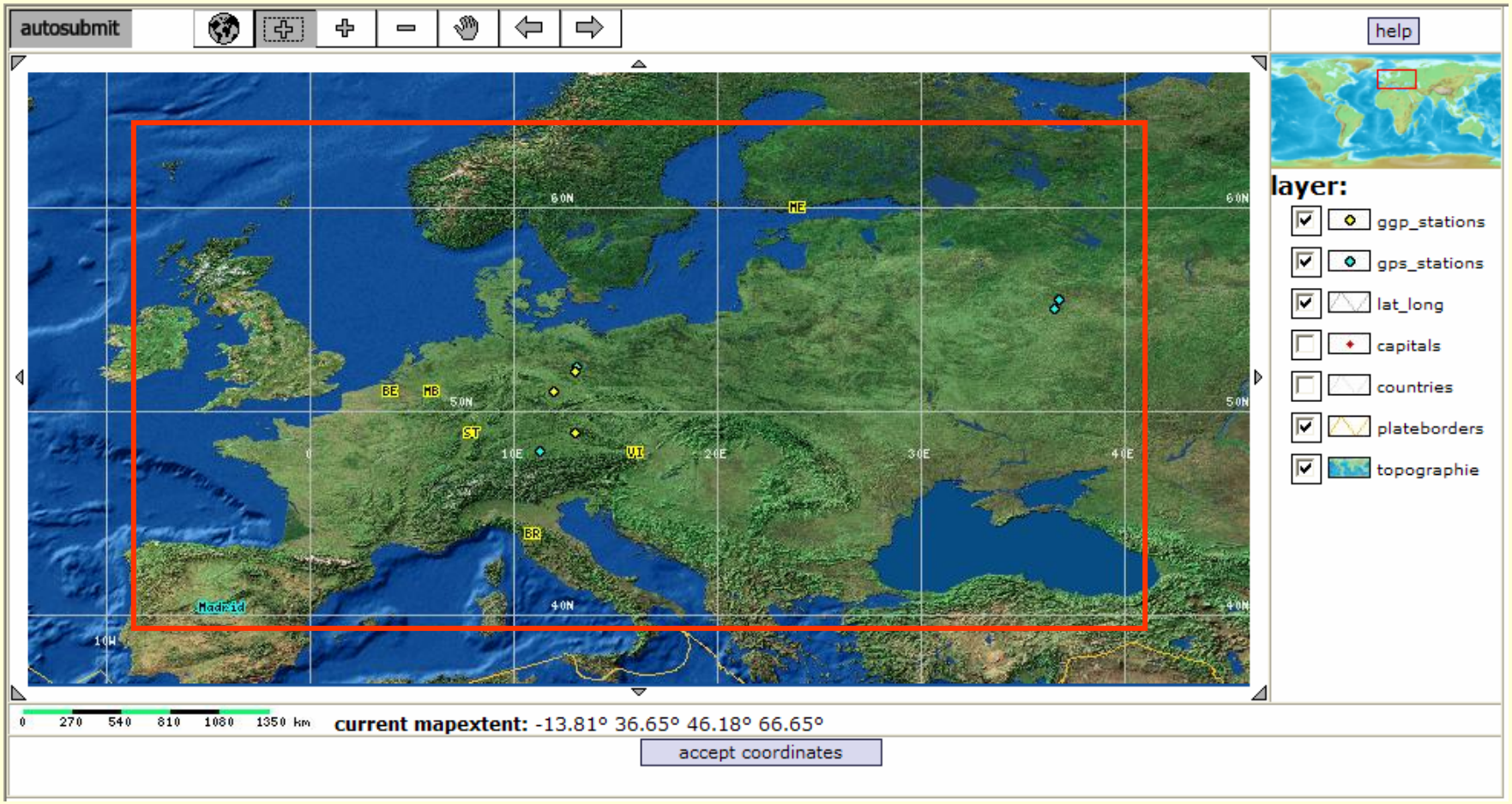
MyRetrieval | Product Browser | Product Description | Document List | Newsletter | Documents | Software

Print this | Send this | Hits: 69 | Edit this

GGP SG minute data – MyRetrieval query form



GGP SG minute data – Spatial search



GGP SG minute data - MyRetrieval result page and request sent confirmation

Results

Result-No. 1 to 10.

next 10

#	Get	View Info	Entry ID	Access Level
1	☐	Info	GGP-SG-MIN+ba000100	30
2	☐	Info	GGP-SG-MIN+ba000200	30
3	☐	Info	GGP-SG-MIN+ba000300	30
4	☐	Info	GGP-SG-MIN+ba000400	30
5	☐	Info	GGP-SG-MIN+ba000500	30
6	☐	Info	GGP-SG-MIN+ba000600	30
7	☐	Info	GGP-SG-MIN+ba000700	30
8	☐	Info	GGP-SG-MIN+ba000800	30
9	☐	Info	GGP-SG-MIN+ba000900	30
10	☐	Info	GGP-SG-MIN+ba001000	30

File Types: all Send Mail for: all

Request all on this page Request selected

next 10

[Execution Time: 0.22s]

Request sent

following Products are being delivered:

GGP-SG-MIN+ba000100
GGP-SG-MIN+ba000200
GGP-SG-MIN+ba000300
GGP-SG-MIN+ba000400
GGP-SG-MIN+ba000500
GGP-SG-MIN+ba000600
GGP-SG-MIN+ba000700
GGP-SG-MIN+ba000800
GGP-SG-MIN+ba000900
GGP-SG-MIN+ba001000

View actual status

[Execution Time: 0.12s]

ISDC portal – MyRequests

My Requests:

Reload

To download your files connect with your Username/Password-combination to following FTP-Server on Port 21:
ftp://berndritschel@lore.gfz-potsdam.de in the subdirectory 'data'

Here your last 20 requests are shown:

number	mode	count	size	status	error	date
19926	RET	30/30	19.97 MB	finished (mail sent)	none	Mar 27 2006 5:06PM
18836	RET	0/25	0.00 Byte	finished (mail sent)	25 file/s missing	Mar 6 2006 1:45PM
18809	RET	0/0	0.00 Byte	finished (mail sent)	none	Mar 3 2006 7:49PM
18808	BRO	0/0	0.00 Byte	finished (mail sent)	none	Mar 3 2006 7:47PM
18807	RET	0/0	0.00 Byte	finished (mail sent)	none	Mar 3 2006 7:35PM
18791	RET	0/0	0.00 Byte	finished (mail sent)	none	Mar 3 2006 11:01AM

MyDirectory Browser

Current Directory: /isdc/user/berndritschel/data

Change Directory to:

REQUEST (stores PRL-Files)

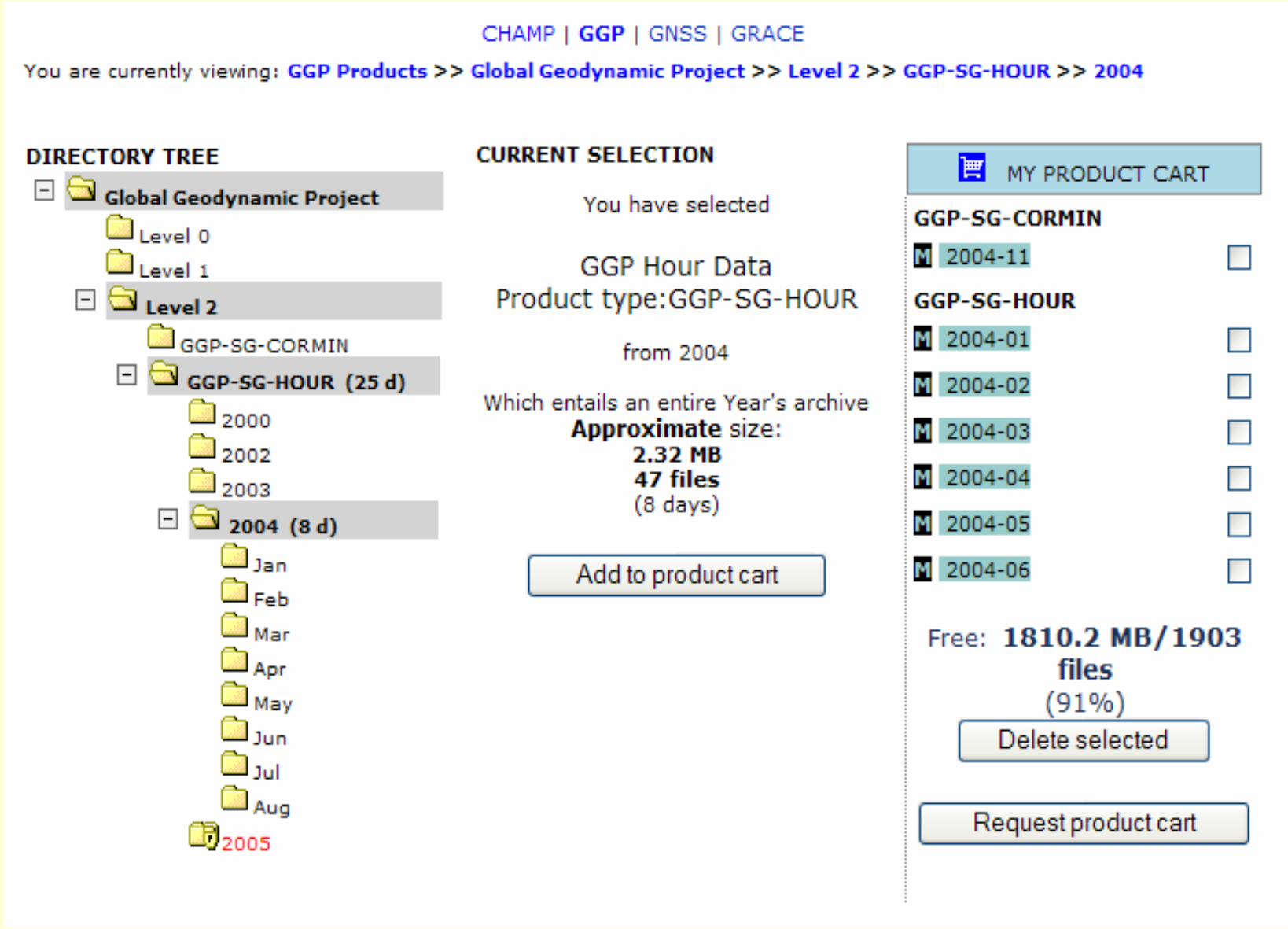
DATA (here you find your requested Data-Files)

Filename	Filesize	
GGP-SG-MIN+ba000100.dif	2074	[Download]
GGP-SG-MIN+ba000100.ggp	1607527	[Download]
GGP-SG-MIN+ba000100.zip	417565	[Download]
GGP-SG-MIN+ba000200.dif	2074	[Download]
GGP-SG-MIN+ba000200.ggp	1503847	[Download]
GGP-SG-MIN+ba000200.zip	393714	[Download]
GGP-SG-MIN+ba000300.dif	2074	[Download]
GGP-SG-MIN+ba000300.ggp	1607527	[Download]
GGP-SG-MIN+ba000300.zip	418695	[Download]
GGP-SG-MIN+ba000400.dif	2074	[Download]
GGP-SG-MIN+ba000400.ggp	1555687	[Download]
GGP-SG-MIN+ba000400.zip	407414	[Download]
GGP-SG-MIN+ba000500.dif	2074	[Download]
GGP-SG-MIN+ba000500.ggp	1607527	[Download]
GGP-SG-MIN+ba000500.zip	419076	[Download]

ISDC portal – MyDirectory details for GGP SG minute data (request-id: 19926)

GGP-SG-MIN+ba000600.dif	2074	[Download]
GGP-SG-MIN+ba000600.ggp	1555687	[Download]
GGP-SG-MIN+ba000600.zip	406609	[Download]
GGP-SG-MIN+ba000700.dif	2074	[Download]
GGP-SG-MIN+ba000700.ggp	1607527	[Download]
GGP-SG-MIN+ba000700.zip	418110	[Download]
GGP-SG-MIN+ba000800.dif	2074	[Download]
GGP-SG-MIN+ba000800.ggp	1607774	[Download]
GGP-SG-MIN+ba000800.zip	421304	[Download]
GGP-SG-MIN+ba000900.dif	2074	[Download]
GGP-SG-MIN+ba000900.ggp	1557084	[Download]
GGP-SG-MIN+ba000900.zip	405867	[Download]
GGP-SG-MIN+ba001000.dif	2074	[Download]
GGP-SG-MIN+ba001000.ggp	1608932	[Download]
GGP-SG-MIN+ba001000.zip	419058	[Download]

GGP products - virtual Product Browser



ISDC portal – Input Monitor

Input Monitor

Select mission:

CHAMP

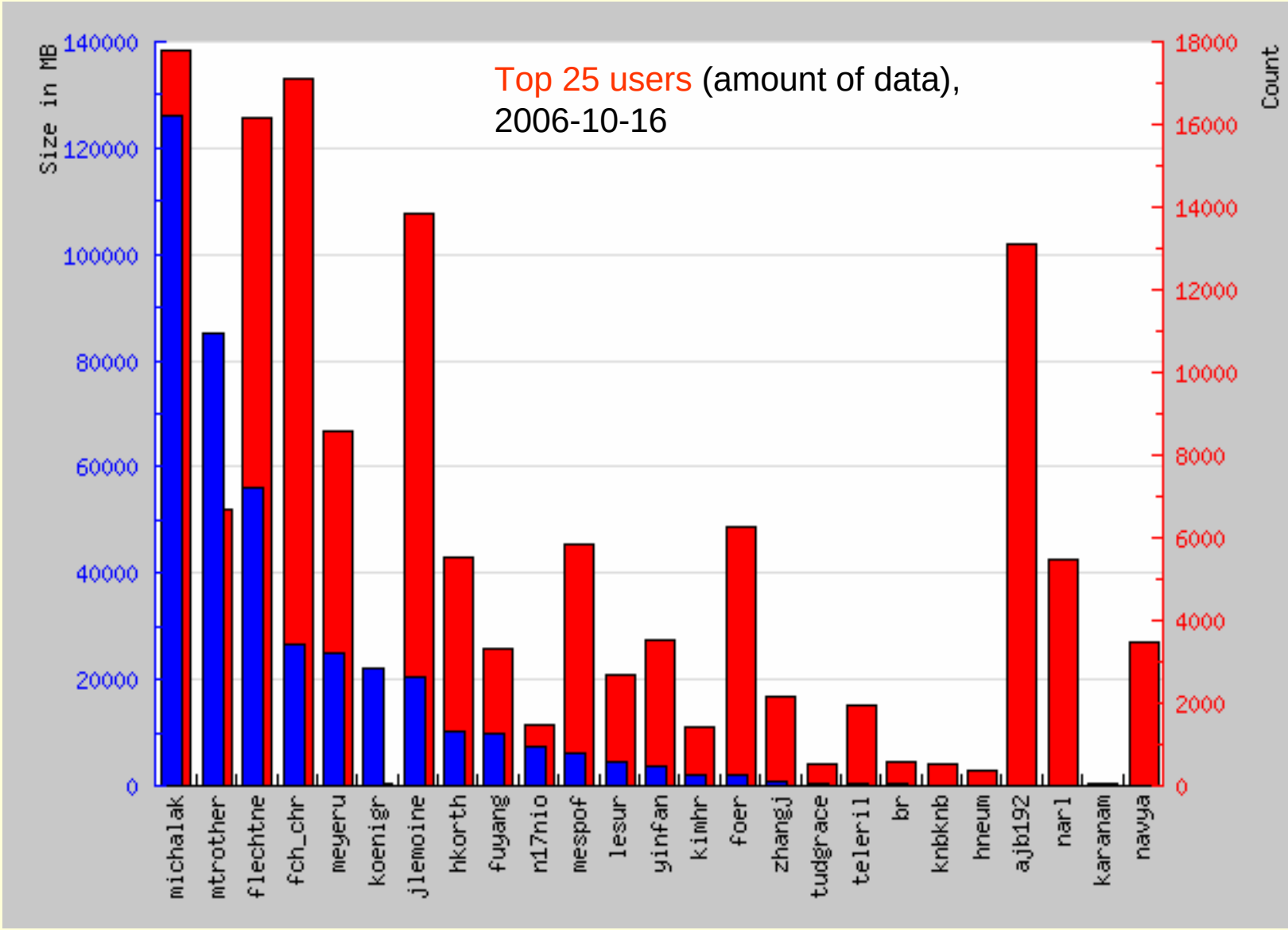
◉	**Last ISDC Action**	3 day	☐ errors only
○	**Interval**	2006/03/30 10:21:40 - 2006/04/02 10:21:40 [yyyy/mm/dd hh:mm]	50 rows
○	**Product type**	CH-AI-1-FID	Show
○	**Entry_ID**		

Reload

[Back|Next]

entry id	status	date
iCH-OG-3-USO-BAP-CHA+2006_091_16	checkin finished	2006/04/02 10:16:27
iCH-OG-3-USO+TDS-CHA_2006_091_16	checkin finished	2006/04/02 10:16:07
CH-OG-3-USO+CTS-CHA_2006_091_16	checkin finished	2006/04/02 10:15:43
iCH-OG-3-USO-BAP-GPS+2006_091_06	checkin finished	2006/04/02 10:15:26
CH-OG-3-USO+CTS-GPS_2006_091_06	checkin finished	2006/04/02 10:07:08
iCH-OG-3-USO+TDS-GPS_2006_091_06	checkin finished	2006/04/02 10:07:08
CH-AI-1-FID+yakt_2006_092_05_00	checkin finished	2006/04/02 09:25:11
CH-AI-1-FID+usud_2006_092_05_00	checkin finished	2006/04/02 09:25:10

ISDC portal – Data Delivery Monitor



General Documents | Pictures

Science for Kids - Kids for Science

The necessity to encourage children and students to deal with modern science and technology as well as the general liability for scientists and engineers to invest in public outreach and education compose the ideas of a 2-years cooperation project -Science for Kids- between the Data Center of the GFZ Potsdam and a grade of school of the Weinberg-Gymnasium Kleinmachnow. The project objectives are both the transfer of scientific and technical knowledge by colleagues of the Data Center ISDC-Team and teacher of the high school to the students and the creation of -Science for Kid- Web pages by the project participants for children and students. The scientific frame of the project activities are the objectives and results of the satellite projects CHAMP and GRACE and the appropirate Information Systems and Data Center (ISDC) designed and operated by the ISDC Team.

Science for Kids

Kooperation zwischen GFZ Potsdam und Weinberg-Gymnasium Kleinmachnow

Science for Kids Homepage

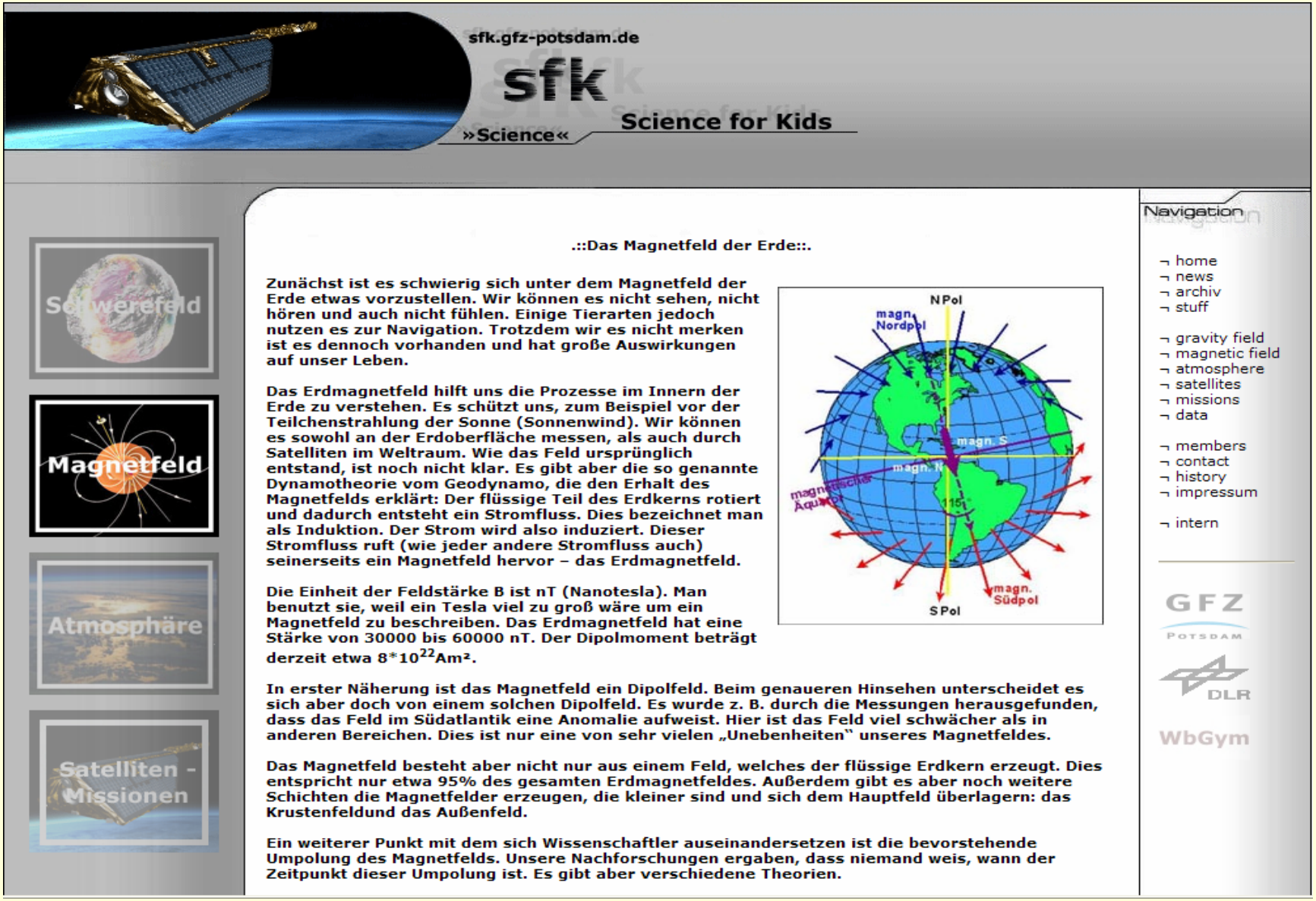
Weinberg-Gymnasium

ISDC portal

-

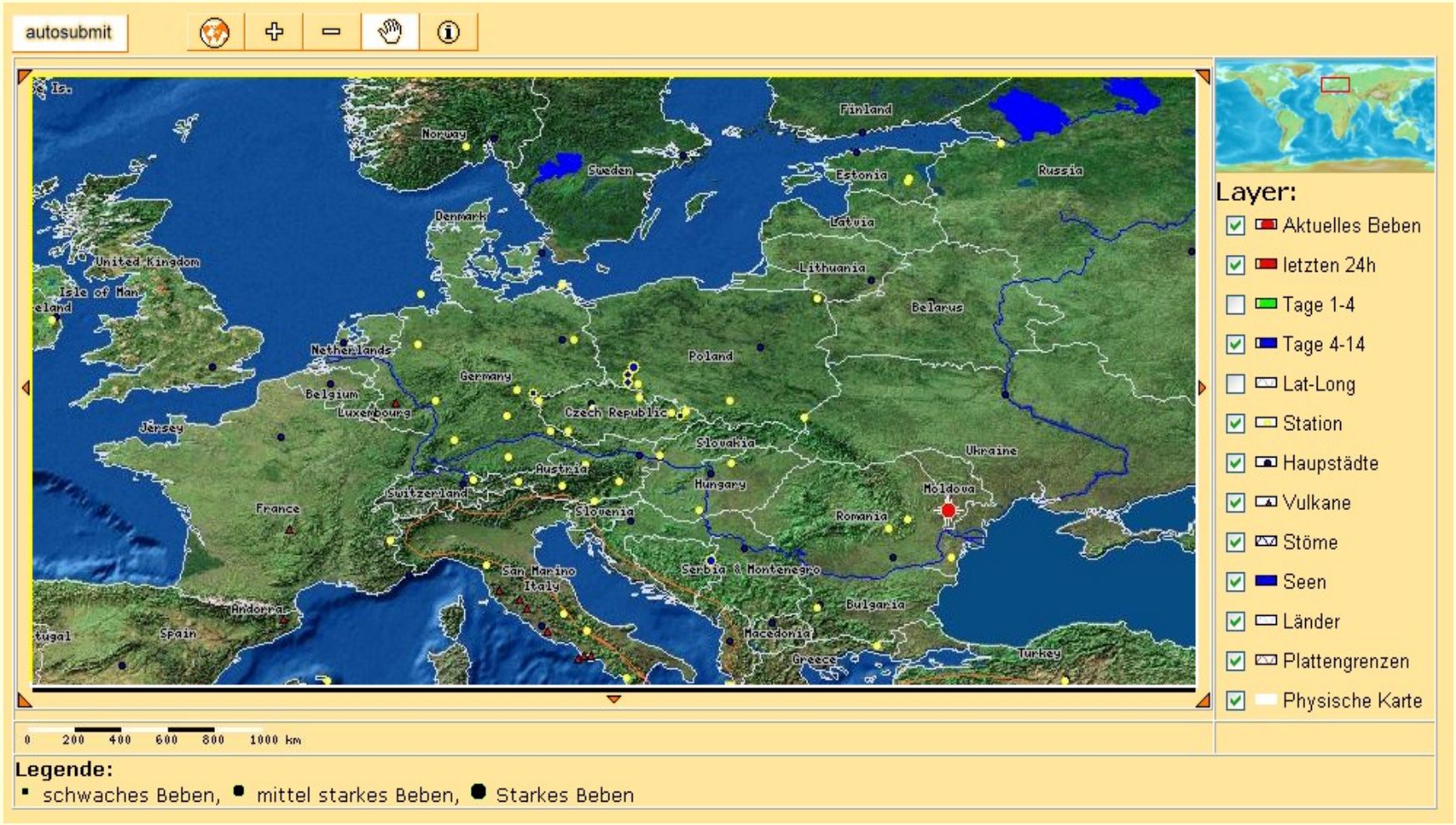
Education and public outreach

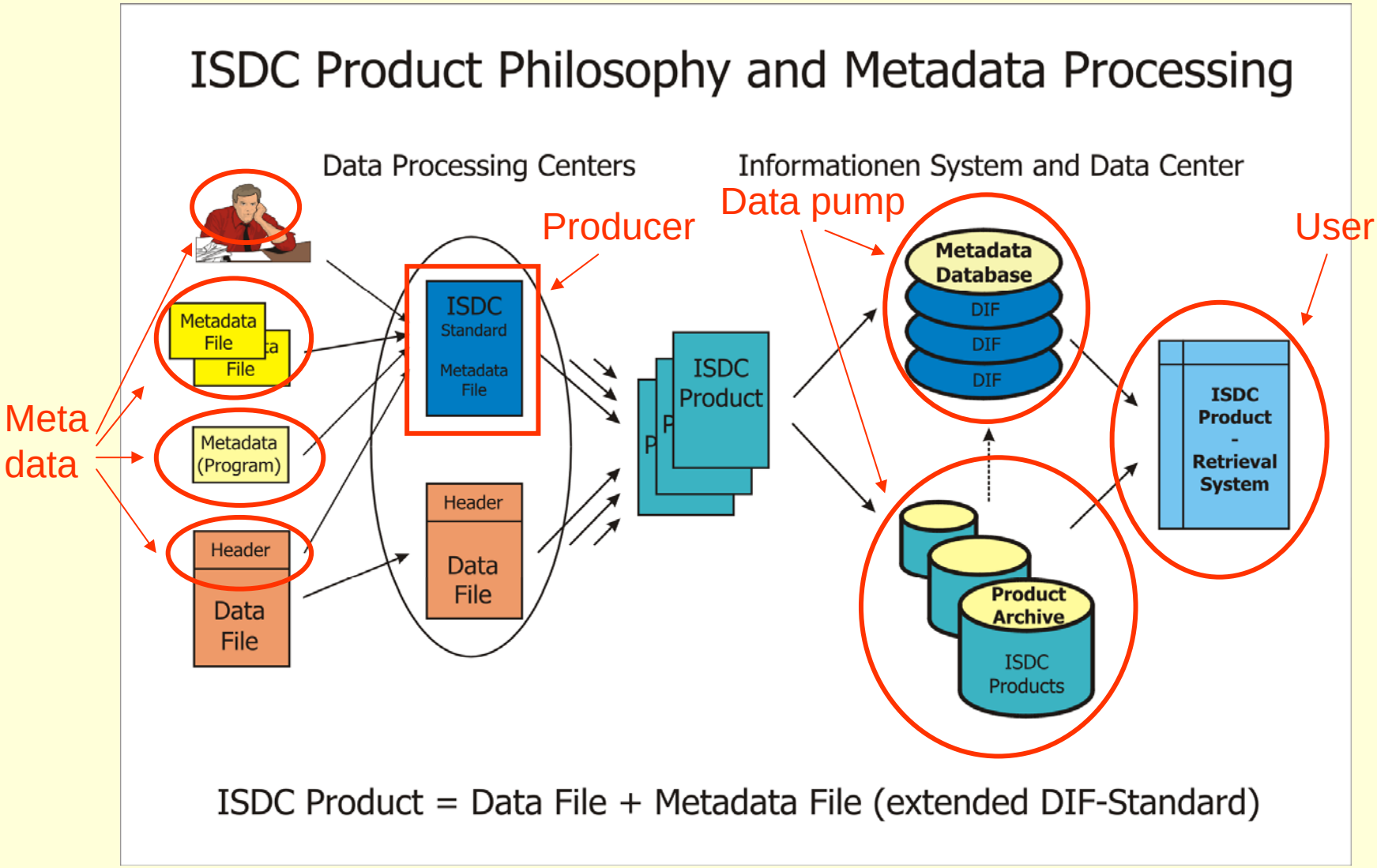
Students project (Gymnasium in Kleinmachnow): sfk.gfz-potsdam.de



Earthquake Events GIS Application

Diploma thesis of Stefan Lowisch (Hochschule Neubrandenburg)





ISDC Metadata Standard = Parent DIF (V. 9.0) + Extended Child DIF(s)*

http://gcmd.nasa.gov/User/difguide/difman.html

*in preparation

Metadata for Global Earth Gravity Field Models (GEGFM)

List of possibly metadata attributes for GEGFM

- Entry_Id, Entry_Title (unique identifier and title)
- Personnel (Author of Model, Author of DIF)
- Science Keywords (Earth Gravity Field, ….)
- Temporal Coverage
- Spatial Coverage (global, regional, local)
- Temporal and Spatial Resolution (1 year, 1 month, … 1 °, ?)
- Data Source (satellite tracking data, gravity data, altimetry data)
- Quality (description)
- Reference (list of publications)
- Data Centers (IGFS, ICGEM, ISDC)
- Representation (Spherical Harmonic Coefficients, Maximum Degree of the Expansion)
- Grid (Geoid, Gravity Anomalies, Gravity Disturbances)
- Calculation Method, Software Package
- DOI (Digital Object Identifier)
- …

Parent DIF V. 9.0
Child DIF (extended)

Metadata Example for GEGFM - unique models

GRIM4S4 Metadata from the header of the data file

```
Schwintzer P., Reigber Ch., Barth W., Massmann F.H., Raimondo J.C.,
Gerstl M., Bode A., Li H., Biancale R., Balmino G., Moynot B.,
Lemoine J.M., Marty J.C., Barlier F., Boudon Y.;
GRIM4Globale Erdschwerefeldmodelle;
Zeitschrift für Vermessungswesen, 117, 227247, 1992

product_type                    gravity_field
modelname                       GRIM4s2
earth_gravity_constant          0.3986004400E+15
radius                          0.6378136000E+07
max_degree                          50
errors                          formal
```

Entry-Id, Entry-Title, Personnal, Data Source, Resolution, Quality, Reference, Data Center, Science Keywords, …

=> main information according to DIF metadata standard are available

DIF V. 9.0 Metadata Example for GEGFM - time series

GX-OG-_2-GSM Metadata - Parent DIF V. 9.0 metadata file (xml version)

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
- <DIF xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:noNamespaceSchemaLocation="http://gcmd.gsfc.nasa.gov/Aboutus/xml/dif/dif.xsd">
    <Entry_ID>GX-OG-_2-GSM</Entry_ID>
    <Entry_Title>Static Field Geopotential Coefficients estimated from Satellite Data only</Entry_Title>
  - <Data_Set_Citation>
      <Dataset_Creator>Schmidt, Roland</Dataset_Creator>
      <Dataset_Title>Static Field Geopotential Coefficients estimated from Satellite Data only</Dataset_Title>
      <Dataset_Series_Name>GX-OG-_2-GSM</Dataset_Series_Name>
      <Dataset_Release_Date>2002-04-04</Dataset_Release_Date>
      <Dataset_Release_Place>Oberpfaffenhofen, GERMANY</Dataset_Release_Place>
      <Dataset_Publisher>GFZ Potsdam GRACE Science Data System</Dataset_Publisher>
      <Version>0001 - 0003</Version>
      <Data_Presentation_Form>digital data</Data_Presentation_Form>
      <Online_Resource>http://isdc.gfz-potsdam.de</Online_Resource>
    </Data_Set_Citation>
  - <Personnel>
      <Role>INVESTIGATOR</Role>
      <First_Name>BYRON</First_Name>
      <Last_Name>TAPLEY, PROF. DR.</Last_Name>
      <Email>tapley@csr.utexas.edu</Email>
      <Phone>+1-512-471-5573</Phone>
      <Fax>+1-512-232-2443</Fax>
    + <Contact_Address>
    </Personnel>
  + <Personnel>
  + <Personnel>
```

```
+ <Personnel>
- <Discipline>
    <Discipline_Name>EARTH SCIENCE</Discipline_Name>
    <Detailed_Subdiscipline>Geodesy</Detailed_Subdiscipline>
  </Discipline>
- <Parameters>
    <Category>EARTH SCIENCE</Category>
    <Topic>SOLID EARTH</Topic>
    <Term>GEODETICS/GRAVITY</Term>
    <Variable>GRAVITATIONAL FIELD</Variable>
  </Parameters>
  <ISO_Topic_Category>GEOSCIENTIFIC INFORMATION</ISO_Topic_Category>
  <ISO_Topic_Category>ELEVATION</ISO_Topic_Category>
  <Keyword>Gravity Field</Keyword>
  <Keyword>Geopotential Coefficients</Keyword>
  <Keyword>Model Data</Keyword>
+ <Sensor_Name>
- <Sensor_Name>
    <Short_Name>KBR</Short_Name>
    <Long_Name>K-Band Ranging system</Long_Name>
  </Sensor_Name>
+ <Sensor_Name>
+ <Sensor_Name>
- <Source_Name>
    <Short_Name>GRACE</Short_Name>
    <Long_Name>Gravity Recovery and Climate Experiment</Long_Name>
  </Source_Name>
- <Temporal_Coverage>
    <Start_Date>2002-03-17</Start_Date>
    <Stop_Date>2007-03-17</Stop_Date>
  </Temporal_Coverage>
  <Data_Set_Progress>IN WORK</Data_Set_Progress>
```

GX-OG-2_GSM

Parent DIF V. 9.0 metadata file (xml version) (cont.)

XML schema: dif.xsd

The future of the ISDC portal

- Thematic product access using metadata ontologies (semantic web) derived from product type dependent parent and child DIF V. 9.0 metadata documents
- Implementation of standardized ISO/OGC web services (using DEGREE) for networking information systems, catalogue services and open access libraries (Open Access Initiative)
- Development of new ISDC applications (e.g. visiualization, publication of data using DOI [unique identifier], …)
- Integration of new collaboration projects (e.g. ICGEM, TSX TOR, Galileo, GEOFON) and new products and services

=> To play an active role in the IAG GGOS project

- Integration of the ISDC system into the new GFZ web portal frame work and WDC Terra

IAG's Global Geodetic Observing System (GGOS)

IAG Services

GGOS Board

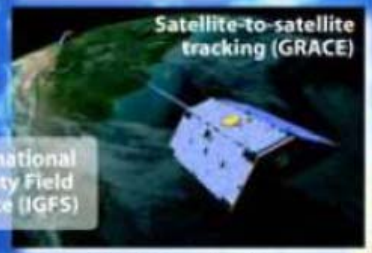
Science Council

Working Groups

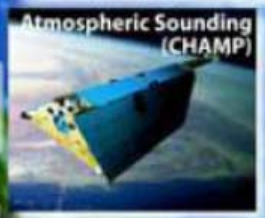
- Strategy and Funding
- Data and Information Systems
- Networks, Communications, and Infrastructure
- User Linkage and Outreach
- Publishing and Legal Matters
- Conventions, Analysis, and Modelling
- Missions

IAG services are based on more than 400 global observation stations.

Geodetic Space Techniques



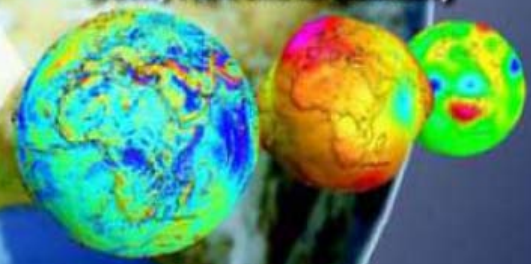
International Gravity Field Service (IGFS)



Products

Geometry and Kinematics

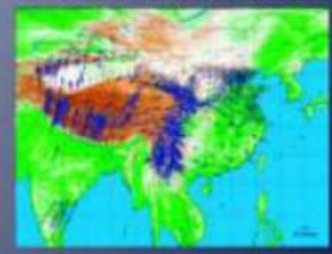
Gravity Field and its Variability



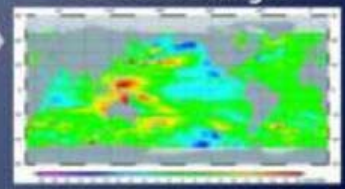
Earth Orientation and Rotation

Applications

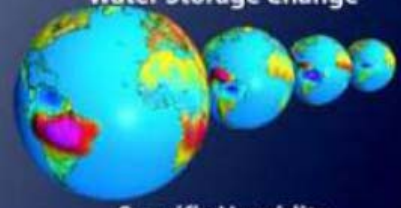
Positions and Velocities



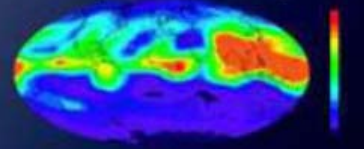
Sea Level Changes



Water Storage Change



Specific Humidity

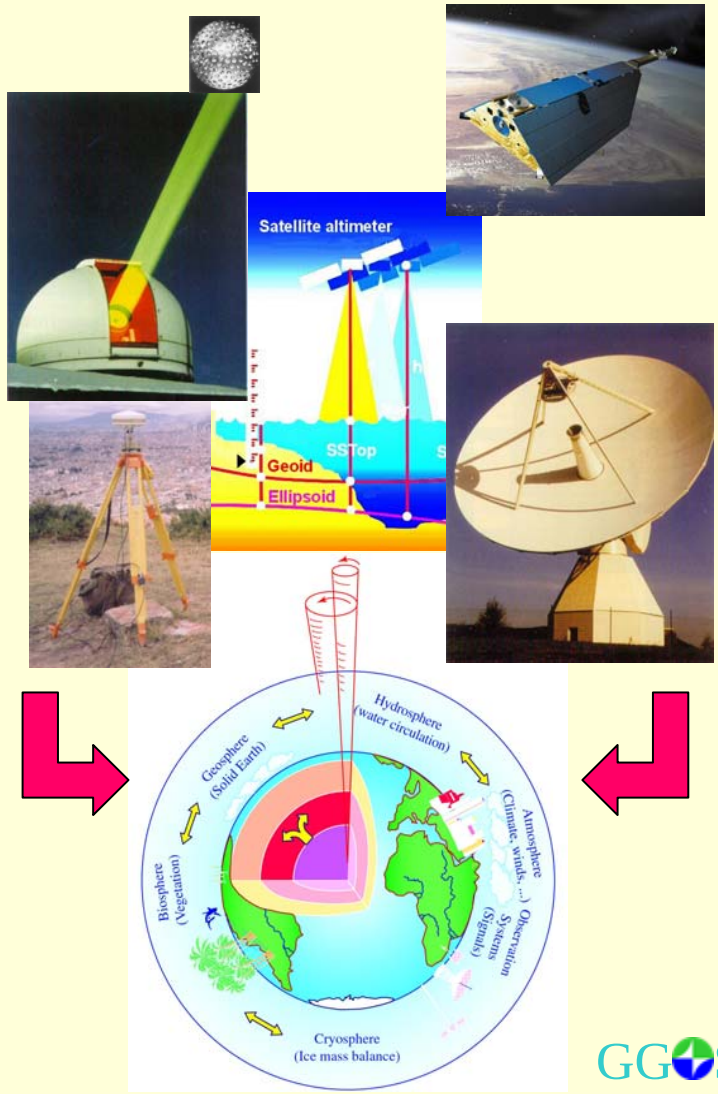


GGOS

http://www.ggos.org

The Vision of GGOS*

- GGOS integrates different geodetic techniques, different models, different approaches in order to achieve better long-term consistency, reliability and understanding of geodetic, geodynamic and global change processes.
- GGOS provides the scientific and infrastructure basis for all global change research in Earth sciences.



*H. Drewes, Ch. Reigber

GGOS

GGOS – Virtual Geodetic Observatory

- > 1000 different geodetic product types (covering all geodetic techniques and level of processing)
- > 100,000,000 data sets, > 100 TB of data (all over the world distributed)
- > 10.000 international users and user groups

GGOS – Virtual Geodetic Observatory

- Creating a standardized metadata catalog (e.g. DIF-based) for describing and identifying
  - Products (time series … global models)
  - Scientific (Web) services (IGS, ILRS, IERS, …)
  - Projects, platforms, instruments, techniques, processing S/W, persons, data center, …
  - Main fields of data usage by scientific keywords describing the content and use of data
  - References like related literature, applications, software, …
  - Different interfaces for data access

GGOS – Virtual Geodetic Observatory

- Offering (harmonized) ontology-based multi-domain metadata catalog
  - for thematic search and
  - for OGC/ISO/… compliant Web services
- Providing access links (using persistent identifiers)
  - to validated and
  - tailored products

  in (near)realtime for
  - all kind of usage and
  - all kind of users

GFZ POTSDAM

The Electronic Geophysical Year

International Association of Geodesy

20 CODATA'06 1966 - 2006
20th International CODATA Conference
Beijing, China — October 2006

Thank you very much for your attention!