ARCHIVE AND DISTRIBUTION OF DORIS DATA AND PRODUCTS IN SUPPORT OF THE IDS

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ARCHIVE AND DISTRIBUTION OF DORIS DATA AND PRODUCTS IN SUPPORT OF THE IDS

- Data Center Overview
- Archive Structure
- Data and Product Availability
- Users of DORIS Data
- Future Plans/Issues
- Contact Information
IDS DATA CENTERS

Two proposal received and accepted for IDS data centers:
- Crustal Dynamics Data Information System (CDDIS), NASA GSFC, Greenbelt, MD USA
- Institut Géographique National (IGN), Paris France

CDDIS is a dedicated data center supporting the international space geodesy community since 1982

The CDDIS serves as one of the primary data centers for the following IAG services:
- International GPS Service (IGS)
- International Laser Ranging Service (ILRS)
- International VLBI Service for Geodesy and Astrometry (IVS)
- International DORIS Service (IDS)
- International Earth Rotation Service (IERS)

CDDIS has archived DORIS data since launch of TOPEX/Poseidon in 1992

The IGN data center also involved in the IGS and DORIS since 1992 nearly complete with implementation of “revitalized” IDS data center
DATA FLOW FOR IAG SERVICES

Network Stations
- Continuously operational
- Timely flow of data

Data Centers
- Interface to network stations
- Perform QC and data conversion activities
- Archive data for access to analysis centers and users

Analysis Centers
- Provide products to users
  (e.g., station coordinates, precise satellite orbits, Earth orientation parameters, atmospheric products, etc.)

Central Bureau
- Management of service
- Facilitate communications
- Coordinate activities

Governing Body
- General oversight of service
- Future direction

Space Geodesy Network Stations

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DORIS DATA AND PRODUCT FLOW
(CDDIS)

- CNES deposits data in incoming disk area on CDDIS host computer
- IDS analysis centers deposit product files in incoming disk area on CDDIS computer; individual AC accounts to be implemented soon
- Automated routines peruse incoming data and product areas for new files and archive to public disk areas
- Software to mirror IGN and IDS central bureau files to be implemented soon
- Summaries generated from DORIS data files and loaded into Oracle data base
- Data base information includes satellite, site, time span, and number of observations per pass
- Data base used to generate reports on DORIS data holdings at CDDIS
- During 2002, over eighty groups in over 20 countries have accessed DORIS data and information from the CDDIS
DORIS DATA AND PRODUCT FLOW
(IGN)

- Software to mirror CDDIS and IDS central bureau is implemented:
  - Data and 2002 campaign directory are obtained through CDDIS
  - Central Bureau information are obtained at ftp.cls.fr
  - Products are obtained from AC deposits or CDDIS

- IDS analysis centers can deposit product files in incoming disk area
  on IGN computer at ftp://lareg.ensg.ign.fr

- Automated routines peruse incoming data and product areas for
  new files and archive to public disk areas

- Procedures to get data directly from CNES have to be determined

- No database used on IGN side; no summaries files generated

- Software to generate reports on DORIS data/products holdings at
  IGN have to be implemented

Statistics on IGN FTP sever use will be available soon
New archive structure implemented at data centers in January 2003

Description at

Main directories (CDDIS):
- ftp://cddisa.gsfc.nasa.gov/pub/doris/data for all data
  - Subdirectories by satellite code
  - New filenaming convention
- ftp://cddisa.gsfc.nasa.gov/pub/doris/products for all products
  - Subdirectories by product type and analysis center
- Documentation files for each data type, product type, and solution
- ftp://cddisa.gsfc.nasa.gov/pub/doris/cb_mirror
  - Mirror of IDS Central Bureau information files
DORIS ARCHIVE CONTENT

Data

- CDDIS and IGN currently archive DORIS data from five operational satellites: TOPEX, SPOT-2, SPOT-4, SPOT-5, Jason-1; ENVISAT expected soon

- Historic archive of SPOT-3 data also available

- CDDIS data files are mirrored at IGN data center

- Data are stored in multi-day (typically 10-day) cycle files

- Data available ~10 days after the last observation day (TOPEX and JASON-1); longer for SPOT

- Files approximately two Mbytes in size (UNIX compressed)

- New DORIS data format (V2.1) to accommodate new DORIS receiver implemented for all data since 15-Jan-2002
### DORIS ARCHIVE CONTENT

<table>
<thead>
<tr>
<th>Satellite</th>
<th>Time Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPEX/Poseidon</td>
<td>25-Sep-1992 through present</td>
</tr>
<tr>
<td>SPOT-2</td>
<td>31-Mar through 04-Jul-1990</td>
</tr>
<tr>
<td></td>
<td>04-Nov-1992 through present</td>
</tr>
<tr>
<td>SPOT-3</td>
<td>01-Feb-1994 through 11/09/1996</td>
</tr>
<tr>
<td>SPOT-4</td>
<td>01-May-1998 through present</td>
</tr>
<tr>
<td>SPOT-5</td>
<td>11-Jun-2002 through present</td>
</tr>
<tr>
<td>Jason-1</td>
<td>15-Jan-2002 through present</td>
</tr>
<tr>
<td>ENVISAT</td>
<td>Launch 14-Mar-2002; data not yet released to data centers (available since 23-Apr-2002)</td>
</tr>
</tbody>
</table>
DORIS ARCHIVE CONTENT

Products

- Archived by data type and Analysis Center (AC)
  - Station coordinates (SINEX)
    - Global
    - Time series (daily, weekly, monthly)
  - Geocenter variations
  - Orbits
  - Ionosphere products
  - EOP (X, Y, UT1-UTC rate)
  - Etc.

- ACs (and three-character code) responding thus far:
  - Center for Space Research (csr) USA, J. Ries
  - Institute of Applied Astronomy (iaa) Russia, E. Yagudina
  - Institut Géographique National/JPL (ign) France, P. Willis
  - INASAN (ina) Russia, S. Tatevian
  - LEGOS/GRGS-CLS (lca) France, J.-F. Crétaux
  - SSALTO (ssa) France, G. Tavernier
DORIS ARCHIVE CONTENT

Products

- **Products archived thus far (subdirectory name):**
  - **IGN**
    - TRF-origin time series (geoc)
    - Global SINEX solutions (sinex_global)
    - Time series of SINEX solutions, weekly and monthly (sinex_series)
    - EOP time series (eop)
  - **LCA**
    - Orbits, Jason-1 (orbits)
    - Time series of SINEX solutions, monthly (sinex_series) †
  - **SSA**
    - Ionosphere (iono)
    - Time series of SINEX solutions, weekly and monthly † (sinex_series)
    - Station coordinates time series (stcd)
  - **SOD**
    - Time series of SINEX solutions, weekly (sinex_series) †
  - **INA**
    - Time series of SINEX solutions, weekly (sinex_series) †

Note: † indicates product delivered as part of 2002 analysis campaign
<table>
<thead>
<tr>
<th>Directory</th>
<th>File Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Directories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/doris/data/sss</td>
<td>sssdataMMM.LLL.Z</td>
<td>DORIS data for satellite sss, cycle number MMM, and version LLL.</td>
</tr>
<tr>
<td></td>
<td>sss.files</td>
<td>File containing multi-day cycle filenames versus time span for satellite sss.</td>
</tr>
<tr>
<td>/doris/data/sss/sum</td>
<td>sssdataMMM.LLL.sum.Z</td>
<td>Summary of contents of DORIS data file for satellite sss, cycle number MMM, and file version number LLL.</td>
</tr>
<tr>
<td><strong>Product Directories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/doris/prodtype1/ccc/</td>
<td>orbits/ccc/cccssVV.bXXDDD.eYYEEE.sp1.LLL.Z</td>
<td>Satellite orbits in SP1 format from analysis center ccc, satellite sss, solution version VV, start date year XX and day DDD, end date year YY and day EEE, and file version number LLL.</td>
</tr>
<tr>
<td></td>
<td>sinex_global/cccWWVuVV.snx.Z</td>
<td>Global SINEX solutions of station coordinates for analysis center ccc, year WW, content u (d=DORIS, c=multi-technique), and solution version VV.</td>
</tr>
<tr>
<td></td>
<td>sinex_series/ccc/cccYDDDuVV.snx.Z</td>
<td>Time series SINEX solutions for analysis center ccc, starting on year YY and day of year DDD, type t (m=monthly, w=weekly, d=daily) solution, content u (d=DORIS, c=multi-technique), and solution version VV.</td>
</tr>
<tr>
<td></td>
<td>stcd/cccWWtuVV/cccWWtuVV.stcd.aaaa.Z</td>
<td>Station coordinate time series SINEX solutions for analysis center ccc, for year WW, type t (m=monthly, w=weekly, d=daily), content u (d=DORIS, c=multi-technique), solution version VV, for station aaaa.</td>
</tr>
<tr>
<td></td>
<td>geoc/cccWWtuVV.geoc.Z</td>
<td>TRF origin (geocenter) solutions for analysis center ccc, for year WW, type t (m=monthly, w=weekly, d=daily), content u (d=DORIS, c=multi-technique), and solution version VV.</td>
</tr>
<tr>
<td></td>
<td>eop/cccWWtuVV.eop.Z</td>
<td>Earth orientation parameter solutions for analysis center ccc, for year WW, type t (m=monthly, w=weekly, d=daily), content u (d=DORIS, c=multi-technique), and solution version VV.</td>
</tr>
<tr>
<td></td>
<td>iono/ccc/sss/cccssVV.YYDDD.iono.Z</td>
<td>Ionosphere products for analysis center ccc, satellite sss, solution version VV, and starting on year YY and day of year DDD.</td>
</tr>
<tr>
<td><strong>Information Directories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/doris/cb_mirror</td>
<td>Mirror of IDS central bureau files</td>
<td></td>
</tr>
</tbody>
</table>
 USAGE OF DORIS ARCHIVE AT CDDIS  
(CDDIS 2002)

Top Users in 2002

<table>
<thead>
<tr>
<th>Institution</th>
<th>No. of Files</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASA JPL, USA</td>
<td>2,512</td>
</tr>
<tr>
<td>Geosciences Australia</td>
<td>1,115</td>
</tr>
<tr>
<td>IGN, France</td>
<td>955</td>
</tr>
<tr>
<td>Ohio State, USA</td>
<td>855</td>
</tr>
<tr>
<td>TRW, USA</td>
<td>792</td>
</tr>
<tr>
<td>DGF, Germany</td>
<td>513</td>
</tr>
<tr>
<td>RAS, Russia</td>
<td>353</td>
</tr>
<tr>
<td>CLS, France</td>
<td>274</td>
</tr>
<tr>
<td>CNR, Italy</td>
<td>168</td>
</tr>
<tr>
<td>CNES, France</td>
<td>166</td>
</tr>
<tr>
<td>T.U. Delft, Netherlands</td>
<td>166</td>
</tr>
<tr>
<td>NASA GSFC, USA</td>
<td>139</td>
</tr>
<tr>
<td>INASAN, Russia</td>
<td>134</td>
</tr>
<tr>
<td>Network</td>
<td>110</td>
</tr>
<tr>
<td>NCL, UK</td>
<td>73</td>
</tr>
<tr>
<td>U. Texas, USA</td>
<td>69</td>
</tr>
<tr>
<td>APL, USA</td>
<td>60</td>
</tr>
<tr>
<td>OMA, Belgium</td>
<td>40</td>
</tr>
<tr>
<td>Other</td>
<td>374</td>
</tr>
<tr>
<td>Totals:</td>
<td>8,866 files</td>
</tr>
</tbody>
</table>

Totals: 8,866 files from 151 hosts
DELAY IN DELIVERY OF DORIS DATA
(All Satellites, 01/2000-02/2003)

Note: Spikes in TOPEX and Jason-1 data delivery in mid to late 2002 due to replacement data.
FUTURE PLANS/ISSUES

- Efforts to enhance the DORIS data center at IGN in France nearly complete
  - Contacts Édouard Gaulué (Edouard.Gaulue@ensg.ign.fr)
- Inform user community of new filenaming convention and directory structure at IDS data centers
- Enhance procedures at both data centers to regularly compare data holdings
- Issue bi-monthly data holding reports through DORISMail
- Develop procedures to automatically mirror contents of IDS Central Bureau information directories at CDDIS and to get satellite data from source at IGN
- Continue to enhance the on-line product archive
- Resolve distribution of DORIS data from ENVISAT
- Ensure timely notification of replacement data sets to the user community
QUESTIONS?

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ftp://cddisa.gsfc.nasa.gov/pub/doris

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