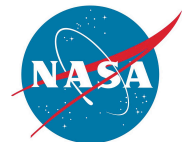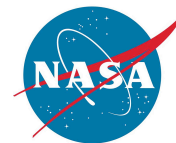# ARCHIVE AND DISTRIBUTION OF DORIS DATA AND PRODUCTS IN SUPPORT OF THE IDS

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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
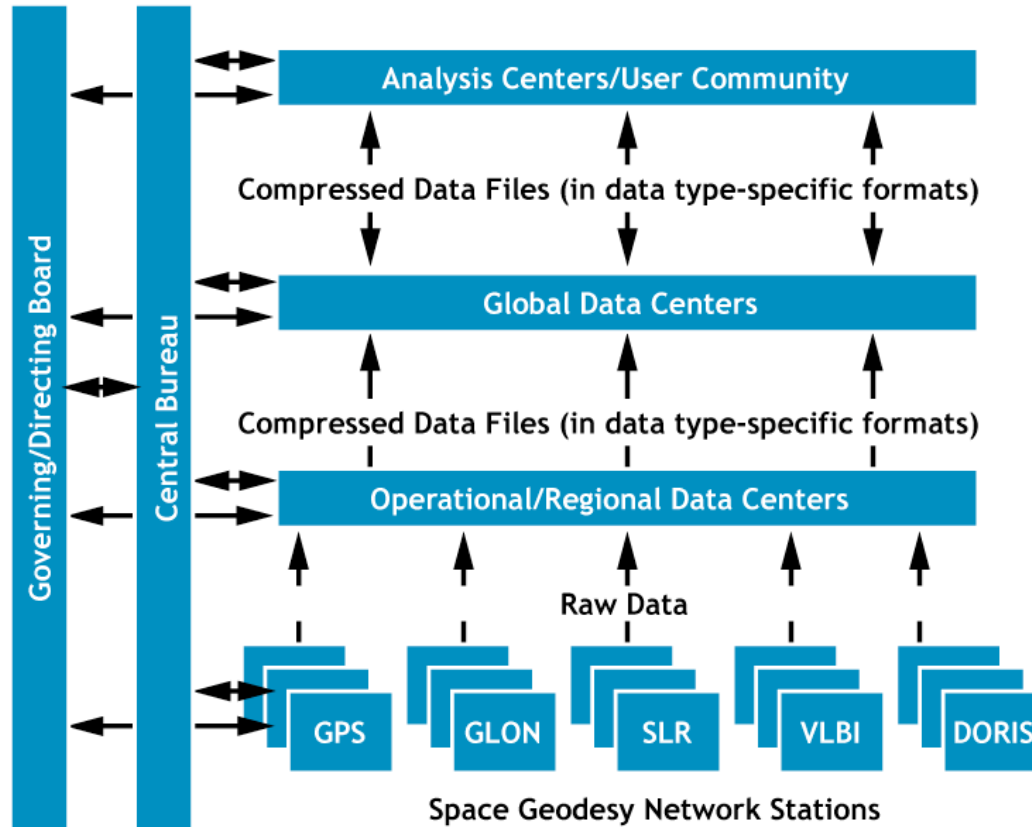
Network Stations
    Continuously operational
    Timely flow of data

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
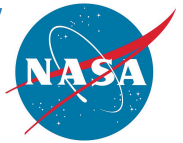   Facilitate communications
    Coordinate activities

Governing Body
    General oversight of service
    Future direction

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 2002campaign 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**

DORIS DATA CENTERS
New Developments

◆ New archive structure implemented at data centers in January 2003

◆ Description at *http://lareg.ensg.ign.fr/IDS/doc/struct_dc.html*

◆ 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
CDDIS

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

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
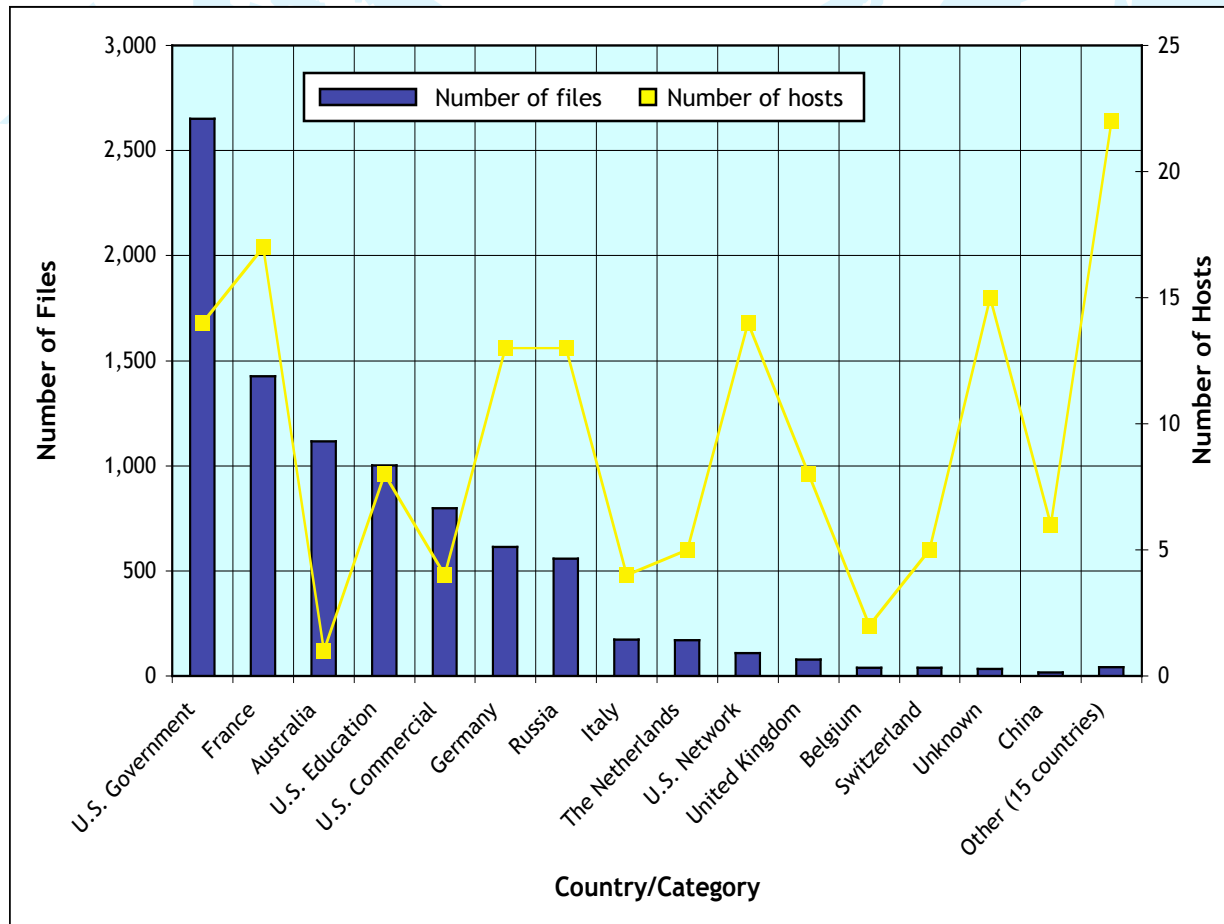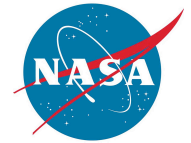
ARCHIVE CONTENT
Directory Structure

Directory	File Name	Description
Data Directories		
/doris/data/*sss*	*sss*data*MMM*.*LLL*.Z	DORIS data for satellite *sss*, cycle number *MMM*, and version *LLL*
	sss.files	File containing multi-day cycle filenames versus time span for satellite *sss*
/doris/data/*sss*/sum	*sss*data*MMM*.*LLL*.sum.Z	Summary of contents of DORIS data file for satellite *sss*, cycle number *MMM*, and file version number *LLL*
Product Directories		
/doris/*prodtype*/*ccc*/	orbits/*ccc*/ *cccsssVV*.b*XXDDD*.e*YYEEE*.sp1.*LLL*.Z	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*
	sinex_global/*cccWWuVV*.snx.Z	Global SINEX solutions of station coordinates for analysis center *ccc*, year *WW*, content *u* (d=DORIS, c=multi-technique), and solution version *VV*
	sinex_series/*ccc*/ *cccYYDDDtuVV*.snx.Z	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*
	stcd/*cccWWtu*/ *cccWWtuVV*.stcd.*aaaa*.Z	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*
	geoc/*cccWWtuVV*.geoc.Z	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*
	eop/*cccWWtuVV*.eop.Z	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*
	iono/*ccc*/*sss*/ *cccsssVV*.*YYDDD*.iono.Z	Ionosphere products for analysis center *ccc*, satellite *sss*, solution version *VV*, and starting on year *YY* and day of year *DDD*.
Information Directories		
/doris/cb_mirror		Mirror of IDS central bureau files

USAGE OF DORIS ARCHIVE AT CDDIS
(CDDIS 2002)

Top Users in 2002

Institution	No. of Files
NASA JPL, USA	2,512
Geosciences Australia	1,115
IGN, France	955
Ohio State, USA	855
TRW, USA	792
DGFI, Germany	513
RAS, Russia	353
CLS, France	274
CNR, Italy	168
CNES, France	166
T.U. Delft, Netherlands	166
NASA GSFC, USA	139
INASAN, Russia	134
Network	110
NCL, UK	73
U. Texas, USA	69
APL, USA	60
OMA, Belgium	40
Other	374
Totals:	8,866 files from 151 hosts

DELAY IN DELIVERY OF DORIS DATA
(All Satellites, 01/2000-02/2003)
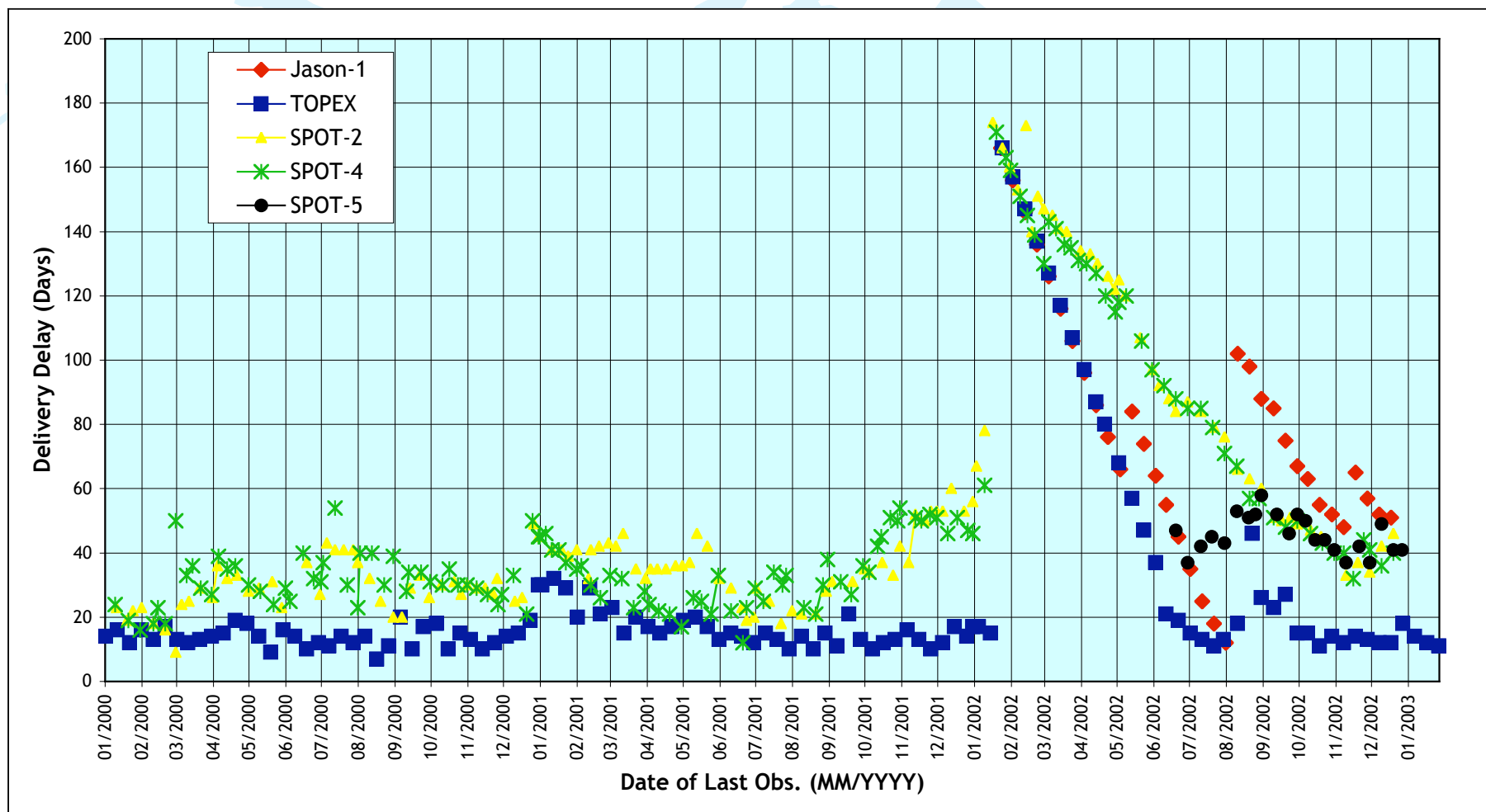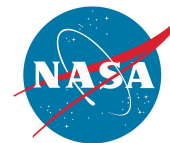
Note: Spikes in TOPEX and Jason-1 data delivery in mid to late 2002 due to replacement data

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?

◆ **Contacts:**

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