



Paris, France

March 23-24, 2009

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**GOVERNING BOARD MEETING  
Paris, Bureau des longitudes, March 23-24, 2009**

**AGENDA:**

- L. Soudarin : review of previous list of actions
- P. Ferrage : update on DORIS instruments and satellites
- H. Fagard: network status
- C. Noll: DORIS data, Jason-2 new format and revised time tagging, orbits, quaternion
- L. Soudarin: IDS report to IERS for 2008
- F. Lemoine: IVS anniversary meeting
- P. Willis : DORIS Special Issue
- F. Lemoine : recent progress in IDS combination
- F. Lemoine : DORIS satellite orbits (future steps?)
- L. Soudarin: IDS Web pages
- P. Willis : STCD format
- P. Willis : IDS terms of reference (do we need to prepare a revision?)
- P. Willis : DORIS ionospheric product (how to generate users?)
- P. Willis : information on DORIS-related peer-reviewed publications
- F. Lemoine : DORIS analysis workshop in 2010
- P. Willis : next IDS GB meeting

**MAIN DECISIONS :**



**ATTENDEES:**

Pascale Ferrage, Frank Lemoine, Michiel Otten, Laurent Soudarin, Pascal Willis

Excused

IERS representative, Herve Fagard, Carey Noll, John Ries

<b>Review of actions</b>	See updated xls file "IDS actions_2009_03_27"	
<b>update on DORIS instruments and satellites</b>	<p>See Pascale's presentation in appendix.</p> <p>About RINEX file dating with PANDOR (better accuracy: 5<math>\mu</math>s <math>\rightarrow</math> 1<math>\mu</math>s): it is planned to observe PANDOR operational functioning in 2009, and if it works nominally, the CNES/SSALTO could provide new RINEX files using PANDOR dating function.</p> <p>Before that, Pascale Ferrage will send to LCA and IGN some Rinex files (7 daily files) re-dated with PANDOR. This will allow ACs to perform comparisons with their solutions (current_Rinex vs PANDOR_Rinex)</p>	
<b>Network: status of beacons, future stations</b>	<p>Status of beacons in the above presentation in appendix</p> <p>IDS station: Riyadh: planned for September 2009 Tamanasset: end of 2009 or 2010. It could be an opportunity to install and validate the new beacon 3.2</p>	
<b>Doris data and products</b>	<p>DORIS data, Jason-2 new format and revised time tagging, orbits, quaternion: See Carey's presentation in appendix.</p> <p><b>Put online the revised document "IDS data structure and formats"</b></p>	<b>CB</b>
<b>IDS report to IERS for 2008</b>	<p><b>It is important to finalize the IDS report 2006-2008 for April</b> before the DORIS Directing Committee (May 5, 2009) Even if some AC participations are not</p>	<b>CB</b>

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	<p>available.</p> <p>The document will be printed and sent to all IDS components (representatives and heads) , DORIS host organism, IAG, GGOS, IERS, IGS, IVS, ILRS, ... <b>A list will be proposed to GB by email.</b></p> <p>The call for participation to the IDS annual report 2009 shall be sent on Dec 2009.</p>	<p><b>CB</b></p>
<p><b>IVS anniversary meeting</b></p>	<p>Frank Lemoine is ready to present IDS status next Wednesday at IVS 10<sup>th</sup> anniversary in Bordeaux. Thanks to him for his efforts and his invaluable contribution.</p>	
<p><b>DORIS special issue in Advances in Space Research 2009</b></p>	<p>About 23-30 papers are expected. Today, 22 papers seem to be confirmed, while 13 others are still uncertain. No article has been submitted yet.</p> <ul style="list-style-type: none"> <li>- C. Jayles "DORIS/Jason2, .." shall be submitted very soon,</li> <li>- JM Lemoine "about SAA model and Jason1/Jason2.." will certainly not be submitted since JML has no budget yet, to perform the study.</li> <li>- It is recommended to group the "IDS general paper" and the paper relative to" Data flow and IDS web" (Carey/Laurent)</li> </ul>	
<p><b>recent progress in IDS combination</b></p>	<p>See AWG minutes of meeting, Paris, Mars 23-24, 2009.</p> <p><a href="http://ids.cls.fr/html/report/meetings/AWG200903.html">http://ids.cls.fr/html/report/meetings/AWG200903.html</a></p>	
<p><b>DORIS satellite orbits (future steps?)</b></p>	<p>The ACs will be asked to send their orbit in sp3 format (if possible), and <b>Pascale Ferrage will address a Change Request to CNES/SSALTO in order to provide IDS with POE orbits in sp3 format.</b></p>	<p><b>P. Ferrage</b></p>
<p><b>IDS Web pages</b></p>	<p>See Laurent's presentation in appendix.</p> <p><b>CB should send a mail to GB which summarizes the last major updates on IDS web (combination page, mission page, AWG page, new GB, AC updated list, macromodels spot/envisat... )</b></p> <p>Pascal Willis suggests having a photograph gallery on the IDS web, where anyone could put and get photographs. This will be facilitated after the change of web editor, which is planned for the mid-end 2009.</p> <p><b>Pascale Ferrage will check on CNES side the possibility and the constraints to present photograph gallery on IDS web.</b></p>	<p><b>CB</b></p> <p><b>CB</b></p>
<p><b>STCD</b></p>	<p>The STCD format is very valuable for plotting, investigating... but it should be extended in order to be more open, useful and applicable not only for localisation but also for other users, and common to all services: Add meta data in header as file identifier, use xml ...</p> <p><b>Pascal Willis proposes to:</b></p> <ul style="list-style-type: none"> <li>- <b>Contact the GGOS about that topic.</b></li> <li>- <b>create a working group (composed of other services representatives, web specialists, users)</b></li> <li>- <b>address this point to the next GGOS steering committee meeting (week 50, just before AGU in san Francisco)</b></li> </ul>	<p><b>P. Willis</b></p>
<p><b>IDS terms of reference</b></p>	<p>Some steps of the last election of our GB were a little confused, so it seems necessary to update the IDS Terms of Reference (simplify the process of the elections..).</p>	



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	<p>Pascal Willis proposes to:</p> <ul style="list-style-type: none"> <li>- Create a small working group to review the Terms of Reference and propose a draft at AGU meeting (week 51).</li> <li>- This group could be composed of:           <ul style="list-style-type: none"> <li>• Mike Pearlman (Chair of the group, ILRS CB)</li> <li>• Carey Noll</li> <li>• Laurent Soudarin</li> <li>• Bern Richter (IERS CB)</li> </ul> </li> </ul>	<p>P. Willis</p>
<p><b>DORIS ionospheric product</b></p>	<p>How to find users? IDS Ionospheric products seem not to be really used; it may be dangerous to leave the situation in this state.</p> <p>A group should be made up to think about this topic, JJ Valette could participate. The use of CITRIS data and Jason2 absolute TEC should restart the activity.</p>	<p>P. Willis / JJ Valette</p>
<p><b>information on DORIS-related peer-reviewed publications</b></p>	<p>Concerning new peer-reviewed publications, the GB decides to inform by DORISmail as early as possible (as soon as DOI is available). A second email will be sent as soon as the exact page numbers are available. In order to limit the number of such emails, it is recommended to group the emails every one or two months, when needed.</p>	
<p><b>Next IDS GB Meetings &amp; AWG</b></p>	<p><b>The Next IDS GB meeting</b> is planned on December (week 51) at AGU meeting in San Francisco. Pascal Willis will propose a date and a place as soon as the AGU program is available.</p> <p>Before that, if needed, a <b>GB meeting</b> could take place during EGU meeting (19-24<sup>th</sup> of April 2009)</p> <p><b>The next IDS Analysis Working Group meeting</b> is scheduled in spring 2010, possibly in Darmstadt (ESA/ESOC). Michiel Otten will check the opportunity. Toulouse/CNES is also a possibility.</p>	



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## **APPENDIX**

**DORIS status (P. Ferrage presentation)**

**Doris data and products (C. Noll presentation)**

**IDS WEB (L. Soudarin presentation)**

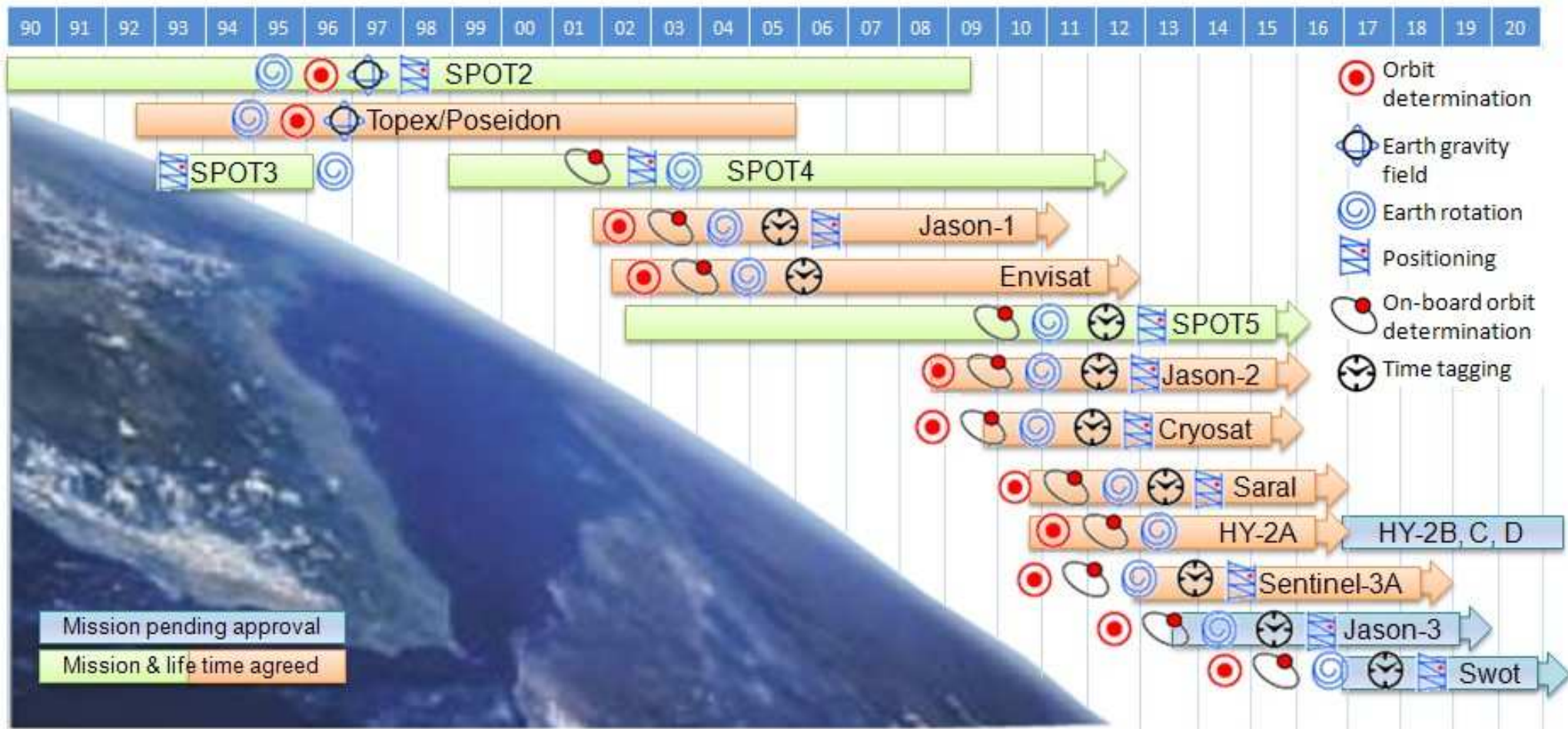


# Doris futur missions

- ◆ CRYOSAT-2 (ESA) – F. Schiavon: November 2009, Dniepr, 3.5 years, (DGXX + LRA)
- ◆ PLEIADES (DGA) - M. Dejus: 2010 (2nd launch Soyouz Kourou),  
2nd satellite : + 10-18 mois
- ◆ SARAL/ALTI-KA (ISRO) - P. Sengenès: end 2010, ( 5 years), (DGXX + LRA + GPS)
- ◆ HY2A (CNESA) – M. Dejus: mid 2010, (3 years),( DGXX+LRA+GPS)  
... puis HY2B, 2C, 2D... to be confirmed
- ◆ SENTINEL3A (GMES) – N. Picot: Nov 2012, (7 years),(DGXX+LRA+GPS), Sentinel 3B:  
2017, ... 3C, 3D: to be confirmed
- ◆ JASON3 (Eumetsat/NOAA/CNES) : to be confirmed in 2009, foreseen for 2013,  
(DGXX+LRA+GPS),
- ◆ SWOT (Surface Water Ocean Topography) : TBC , end 2016  
(DGXX+LRA+GPS)



# Constellation DORIS



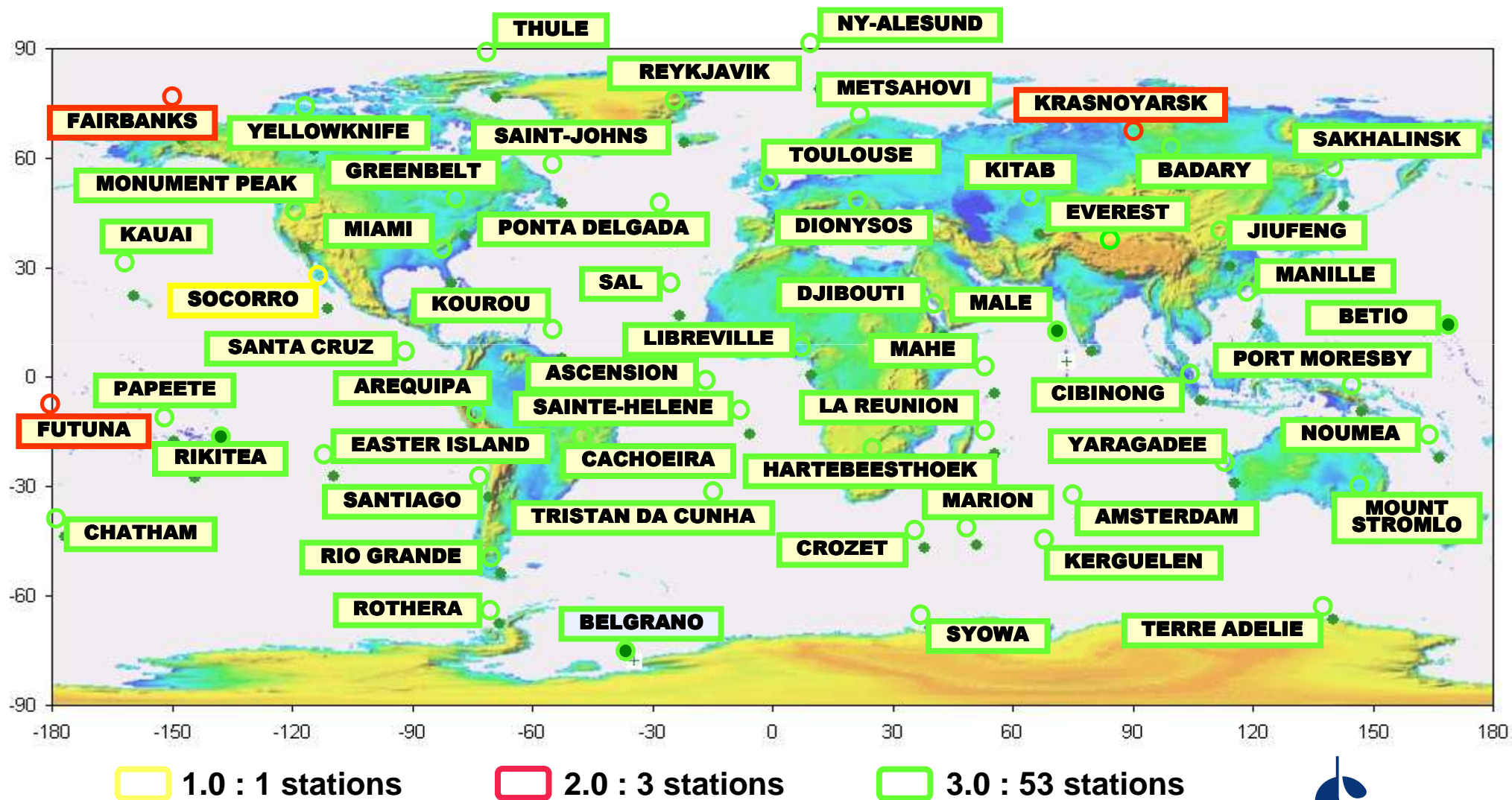


## DORIS beacon status

- ◆ Today 57 beacons (53 V3.0 with 49 ON, 3 V2.0 with 1 ON , 1 V1.0 ON) :
- ◆ Unavailable beacons:
  - ◆ Russian beacons : Badary, Krasnoyarsk et Yuzhno: beacons have been sent
  - ◆ Futuna (2.0) problem with PC -> study to replace the beacon with a V3.0
  - ◆ SAL, MAHE, (MALE) : some difficulties
  - ◆ Tristan Da Cunha : renovation in progress
  - ◆ RIKITEA: antenna displacement (June 4th 2008) : tower replaced, should be re-activated soon
  - ◆ Pont Delgada : USO problem



# DORIS NETWORK







# Beacon improvements

## ◆ Remote control beacon:

**Reactivity improvement** : decrease dependence on host agency => Only 2 open days to re-start a beacon in nominal mode.

**Objective:** mid 2010 , 20 terminals deployed (Sal, Terre Adelie first)

## ◆ 3.0 improvements:

**3.1: robustness improvement, functioning simplified**

**3.2: reduce mask and multi-path** (cable length up to 200m with deported amplifier close to antenna)

**Objective: end of 2009**

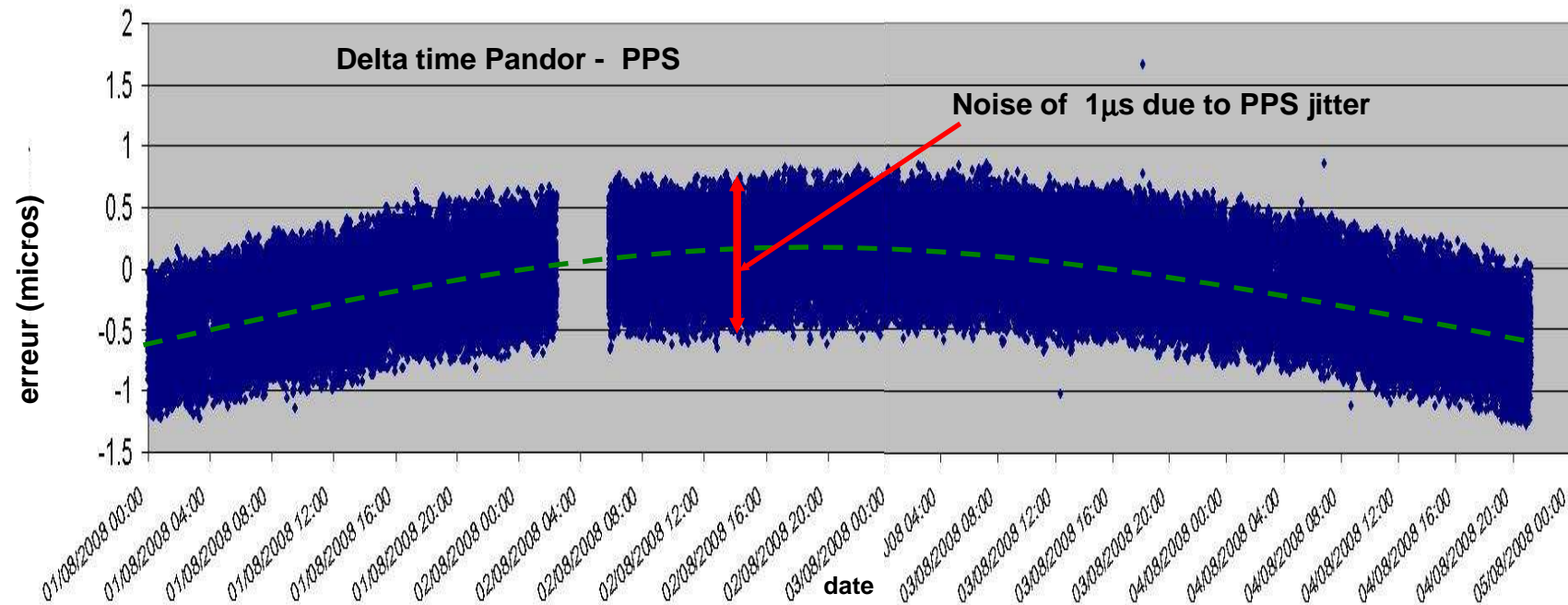


## RINEX file - new dating with PANDOR

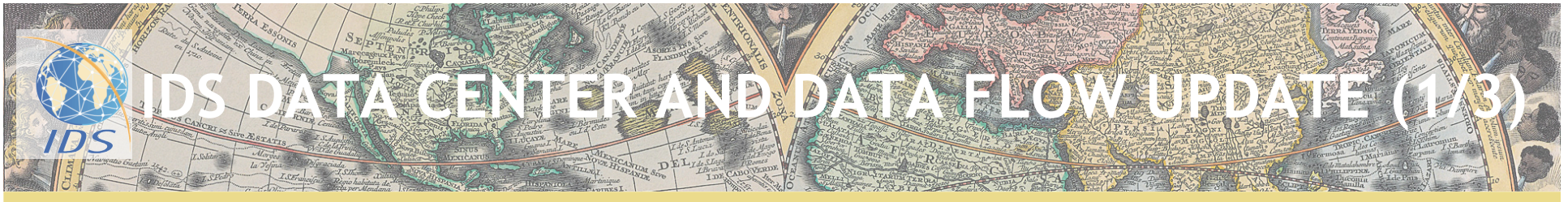
- ◆ Determine the links of the on board reference time/frequency with the on ground DORIS system ref time (USO instruments and beacons) in TAI.
- ◆ The new date is the result of a least mean square system in which the link of one beacon with TAI is known with high accuracy (Master beacon = reference beacon)
- ◆ Global solution : multi-satellites et multi-beacons
- ◆ → New RINEX files delivery to IDS with PANDOR dating: is envisaged for end of 2009 (with re-processing).

# PANDOR performance

- ◆ Delta ( TAI PANDOR - TAI on board Jason2)
- ◆ Reference TAI time : top 1Hz (PPS) delivered every second TAI by the GPS receiver (= on board TAI datation)
- ◆ the top 1Hz PPS presents a jitter of  $\pm 500$  ns,  $\rightarrow$   $1\mu$ s of noise on the observed delta.



◆ delta = TAI PANDOR date – TAI REF



- ◆ Data center directory structure and file naming documentation reviewed; CB to implement revised documentation on IDS Web site
- ◆ Few modifications required at data centers; mainly affects future files (e.g., ancillary data)
- ◆ Main directory structure at data centers:
  - /doris/data: data in DORIS and RINEX formats
  - /doris/products: all derived products
  - /doris/ancillary: other information to help in use of data
    - ◆ Quaternions
    - ◆ Other TBD
  - /doris/cb\_mirror: copy of files from IDS CB ftp site
- ◆ Quaternions (Jason-1 and -2) to be delivered to data centers starting in July 2009







- ◆ SPOT-4 data reissue:
  - Files from 1998 contain an erroneous offset correction (Pascal, et al, 2005)
  - Data reissue TBD, Action: CNES/SSALTO?
- ◆ Jason-2 update:
  - Data archived in DORIS and RINEX formats
    - ◆ /doris/data/SSS/: data in DORIS format
    - ◆ /doris/data/SSS/YYYY: data in RINEX format
  - Revision in data time tagging (date in filename vs. date in contents) requires update of previously issued files in RINEX format
  - Initial version to be retained at data centers: /doris/data/ja2/YYYY/v001 (should files be renamed using new convention?)
  - Reissued data to be archived using new file naming convention: SSSrxYYDDD.LLL.Z (sss=satellite, YY=year, DDD=day of year, LLL=version)
  - Reissue delayed; delivery of current data to commence ~06-Apr-2009, older data supplied ~May 2009
  - DORISMail to be issued by CB

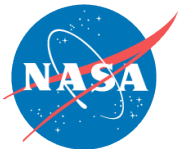






## ◆ Orbit products

- Format to be defined? SP3?
- Operational ACs:
  - ◆ lca (en1, ja1, ja2, sp2, sp3, sp4, sp5, top)
  - ◆ gsc (en1, sp2, sp3, sp4, sp5)
- Test AC:
  - ◆ grg (en1)
  - ◆ ign (en1, ja1, sp2, sp3, sp4, sp5, top)
  - ◆ ina (en1, ja1, sp2, sp3, sp4, sp5, top)
- Actions
  - ◆ Finalize format and file naming conventions
    - Resubmit (or rename) operational products using these conventions
  - ◆ Define schedule to make other contributions operational
  - ◆ Combined product





*Analysis Working Group, 23-24 March 2009*

## **Central Bureau**

## IDS web pages

New pages:

- Combination
- AWG 2009/03

Updates pages: Governing Board, Analysis Centers,  
Meeting Calendar, Sitelogs « ITRF2005 »

See also Aviso Web site: missions, applications...

In preparation:

Structure, What's New, POE and MOE statistics, Station  
Events

# New IDS web pages



**International  
DORIS  
Service**

Search for...

| Site map | FAQ | Mails | Bibliography |  
| Sitemaps | System events | MOE statistics | POE statistics | Time series |

 Printable version

| What's new on IDS | What's new on DORIS |



**Acknowledge IDS:**  
Whenever your use of IDS data or products results in a publication, please include a proper [citation](#).

 [Information on the next Analysis Working Group Meeting in Paris, March 23-24 2009](#)

 [Status of the current and future DORIS constellation as on January 2009](#)

 [IDS contribution to ITRF2008](#)

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**IDS**

- Organization
- Data & Products
- Meetings
- Reports & Mails
- Contacts & Links

**DORIS system**

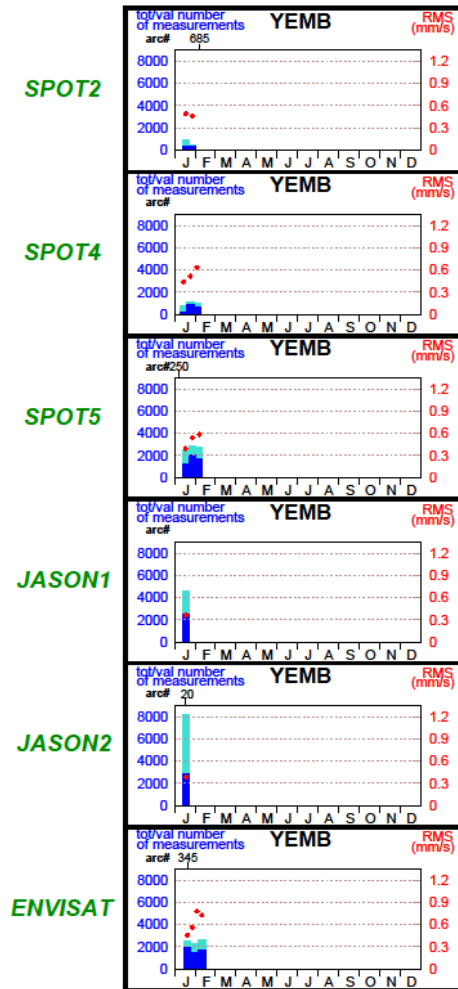
- Official web site
- Network
- System monitoring

**Analysis coordination**

- Presentation
- Combination
- Documents

# POE Statistics

2009 - POE statistics



2009 - JASON2 POE statistics (1/5)





## IDS report 2006-2008

- Organisation (G. Tavernier, P. Ferrage) / received
  - >>Central Bureau (L. Soudarin) / pending
- Data Flow Coordination (C. Noll) / received
- System and missions (P. Ferrage) / received
- Network (H. Fagard) / received
  - >>Analysis Coordination (F. Lemoine) / pending
- Analysis Centers:
  - >> CNES/CLS (L. Soudarin) / pending
  - >> ESA/ESOC (M. Otten) / pending
  - GOP (P. Stepanek) / received
  - Geoscience Australia (R. Govind) / received
  - IGN/IPGP (P. Willis) /received
  - INASAN (S. Kuzin) /received
  - >> NASA/GSFC (F. Lemoine) /pending
  - >> University of Newcastle (P. Moore)/ pending

# Data gap monitoring

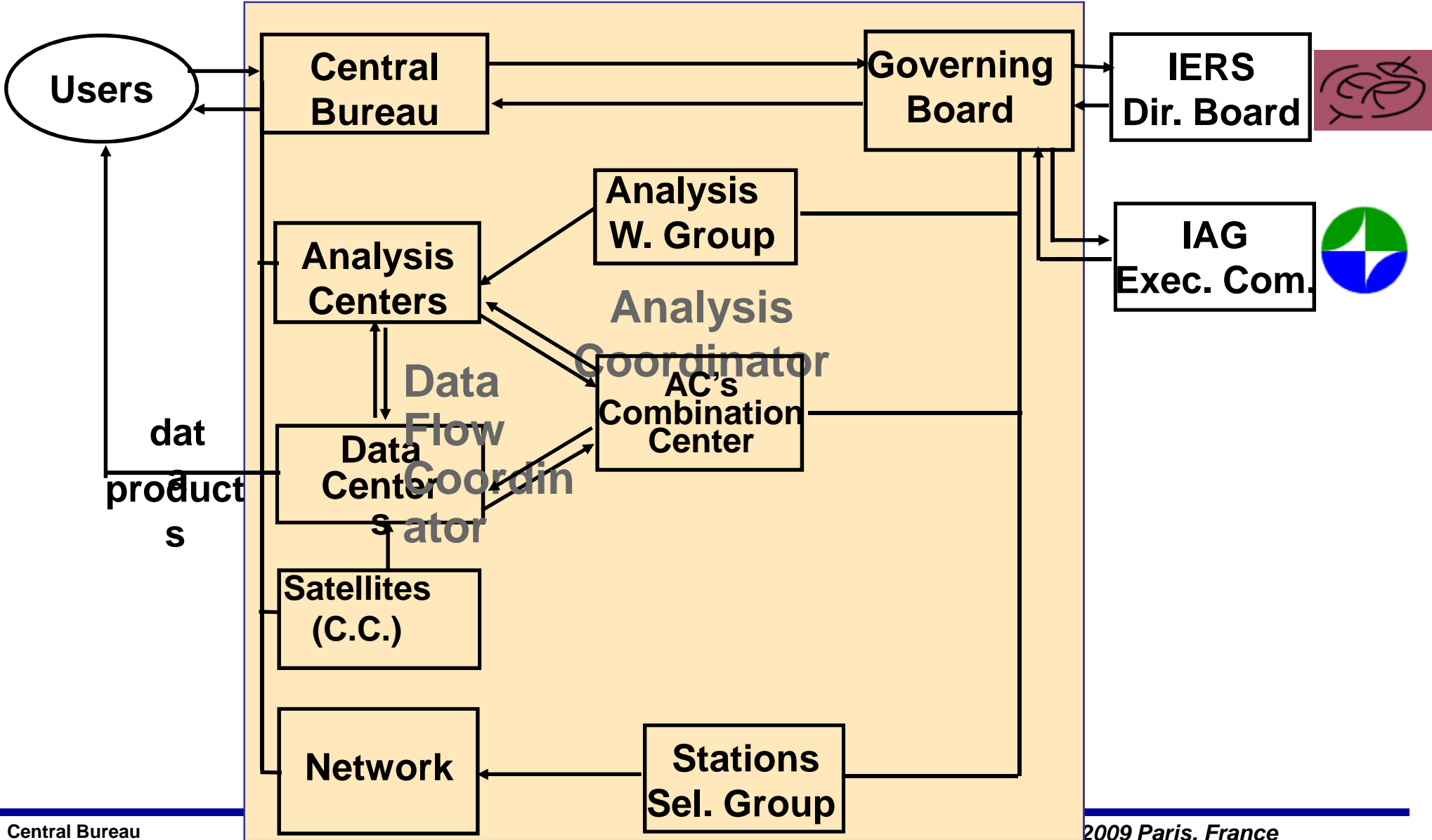
2009-Mar-09 03:30:34 UT

## DORIS data gap monitoring

Last delivered data : 10/02/2009 00:05

	Date of the last validated data	Gap (days) since the last validated data
		Green : < 7 days
		Orange : 7 to 30 days
		Red : > 30 days
ADFB	09/02/2009 22:34	0.06
AMUB	09/02/2009 17:52	0.26
ARFB	09/02/2009 15:35	0.35
ASDB	09/02/2009 23:03	0.04
BADB	19/01/2005 06:31	1482.73
BEMB	09/02/2009 22:42	0.06
BETB	09/02/2009 22:15	0.08
CADB	09/02/2009 13:56	0.42
CHAB	09/02/2009 22:26	0.07
CIDB	09/02/2009 16:16	0.33
CRPB	09/02/2009 21:07	0.12
DIOB	09/02/2009 21:31	0.11
DJIB	09/02/2009 19:45	0.18
EASB	09/02/2009 17:20	0.28
EVEB	09/02/2009 16:27	0.32
FAIB	09/02/2009 23:33	0.02
FUTB	15/12/2008 23:23	56.03
GAVB	01/08/2008 20:17	192.16
GREB	09/02/2009 16:59	0.30
GRJB	26/01/2009 00:42	0.35
HEMB	09/02/2009 21:16	0.12
HEMB	09/02/2009 23:00	0.05
JIUB	09/02/2009 14:50	0.39
KETB	09/02/2009 19:27	0.19
KIUB	09/02/2009 18:13	0.24
KOLB	09/02/2009 22:05	0.08
KRAB	25/11/2005 05:26	1172.78
KRVB	09/02/2009 13:50	0.43
LICB	08/02/2009 09:22	1.61
MAHB	28/01/2009 18:07	12.25
MALE	09/02/2009 18:02	0.25
MANB	09/02/2009 14:44	0.39
MATB	27/01/2009 08:32	13.65
METB	09/02/2009 21:39	0.10
MIBB	09/02/2009 17:01	0.29
MOCB	09/02/2009 18:44	0.22
MORB	09/02/2009 23:58	0.00
MSPB	10/02/2009 00:05	0.00
NOWB	09/02/2009 23:58	0.00
PATB	09/02/2009 20:38	0.14
PDMB	09/02/2009 23:16	0.03
RIKB	09/02/2009 19:00	0.21
REUB	09/01/2009 19:56	31.17
REZB	09/02/2009 23:23	0.03
RIQB	09/02/2009 15:45	0.35
ROUB	09/02/2009 15:50	0.34
SAKB	17/11/2005 15:51	1180.34
SALE	09/02/2009 23:10	0.04
SANB	09/02/2009 15:39	0.35
SCRB	09/02/2009 17:10	0.29
SODB	09/02/2009 18:45	0.22
SPJB	09/02/2009 23:26	0.03
SPJB	09/02/2009 23:19	0.03
SVPB	09/02/2009 22:44	0.06
THUB	09/02/2009 23:28	0.03
TLGB	09/02/2009 19:56	0.17
TRIB	31/07/2008 09:56	193.59
YASB	09/02/2009 16:09	0.33
YEMB	09/02/2009 21:51	0.09

# ORGANISATION



# Visits on the IDS web

