IDS, Product and Service Status

UAW GGOS

Zurich, Switzerland

September 16, 2011
DORIS – last news

HY-2A successfully launched on August 15 2011.

Chinese oceanographic satellite

DORIS and GPS instruments switched on on August 31.

DORIS converged in less than 5h and works nominally.

DORIS data will be provided to IDS once the final orbit is reached (Dec.)
Network (as of 2011)

DORIS stations co-located with other IERS techniques (VLBI, SLR or GNSS)
IDS – status

Components:
- 2 Data Centers: IGN, CDDIS
- 7 Analysis Centers: ESA, Geoscience Australia, NASA/GSFC, Geodetic Observatory Pecny, INASAN, IGN, CNES/CLS (LCA)
- 1 Combination Center (CNES/CLS)

Activities:
- ACs regularly deliver products to DC. Weekly sinex evaluation by CC every quarter. Work in progress at CC to produce weekly combined solutions
- ACs work to include Cryosat-2 (5/7)
- Working group on DPOD2008, extension set of ITRF2008 to include new stations (ch. P. Willis)

GB: ToR revised, approved by IAG EC, applied end of current term (end 2012)

Next events:
- Analysis Working Group meeting, May 2012, Prag, Czech Republic
- IDS workshop, October 2012, Venice, Italy
What could be the IDS information/data/products useful for the GGOS users?

What is DORIS?

What about the network?
Maps http://ids-doris.org/network/maps.html
Network on Google Earth http://ids-doris.org/network/googleearth.html
Sitelogs http://ids-doris.org/network/sitelogs.html
Station Events http://ids-doris.org/system/doris-stations-events.html

What about the constellation?
System Events http://ids-doris.org/system/doris-system-events.html

What/where are the data, what/where are the products?
IDS data structure and formats http://ids-doris.org/analysis-documents/struct-dc.html
Quality of the data?
  CNES POE statistics http://ids-doris.org/system/poe.html
  CNES MOE statistics http://ids-doris.org/system/moe.html
  Events impacting the data http://ids-doris.org/system/events-impacting-data.html

Quality of the products?

Tools for users?
  Plottool: an interactive tool to plot time series of station coordinates and CNES POE post-fit residuals (soon online)

How to use the data?
  Documents http://ids-doris.org/analysis-documents.html
About the stations
**DORIS stations (SITE LOGS)** (http://ids-doris.org/network/sitelogs.html)

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### Site logs

- EVEB200812.LOG (current, see below)
- EVEB200707.LOG
- EVEB200701.LOG
- EVEB200507.LOG
- EVEB200405.LOG

### Other pictures

- EVEB-112a

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### Site news

No news.

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### Site location information

#### Site name
EVEREST

#### Site DORIS number
21501

#### Host agency
EV-K2-CNR Committee

#### City
Near the Everest base camp

#### State or province

#### Country
NEPAL

#### Tectonic plate (PB2002)
Eurasia

#### Geological information

#### Geographical coordinates (ITRF):
- North Latitude: 27° 57' 29"
- East Longitude: 86° 48' 47"
- Ellipsoid height: 4962 m
- Approximate altitude: 5050 m

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### DORIS antenna and reference point information

#### Four character ID
EVER

#### Antenna model
Starco 12290 type

#### Antenna serial number
17

#### IERS DORIS number
215018001

#### CNES/IGN number
215011

#### CTDP number
28

#### Date installed (dd/mm/yy)
22/05/1982

#### Date removed (dd/mm/yy)

#### Antenna support type
0.3 meter tower

#### Installed on
Rock

#### Height above ground mark
0.722 m
Network on Google Earth (http://ids-doris.org/network/googleearth.html)

KML file to open with Google Earth
http://ids-doris.org/documents/doris/stations/DORIS_stations_2010-02-02.kmz
Please find here after, information about DORIS DATA / STATION EVENT:
* Site : Easter Island
* Mnemo : EASB
* Event Start : 2011/01/14
* Event End : 2011/07/05
* Type of Event : beacon failure
* Consequence on data : data gap
* Comment : The beacon has been replaced and the new one has been working nominally since July 05, 2011.

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Acronym</th>
<th>DOMES</th>
<th>Date of event or source</th>
<th>Information provided</th>
<th>Source</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-07-31</td>
<td>Rikitea</td>
<td>RIMB</td>
<td>92301S004</td>
<td>EVENT</td>
<td>RIMB START</td>
<td>dorismail 0769</td>
<td></td>
</tr>
<tr>
<td>2011-07-31</td>
<td>Rikitea</td>
<td>RILB</td>
<td>92301S003</td>
<td>EVENT</td>
<td>RILB END</td>
<td>dorismail 0769</td>
<td></td>
</tr>
<tr>
<td>2011-07-29</td>
<td>Noumea</td>
<td>NOXB</td>
<td>92701S004</td>
<td>EVENT</td>
<td>NOXB START</td>
<td>dorismail 0768</td>
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<tr>
<td>2011-07-27</td>
<td>Noumea</td>
<td>NOWB</td>
<td>92701S003</td>
<td>EVENT</td>
<td>NOWB END</td>
<td>dorismail 0768</td>
<td></td>
</tr>
<tr>
<td>2011-07-05</td>
<td>Easter-Island</td>
<td>EASB</td>
<td>41703S009</td>
<td>EVENT</td>
<td>data gap (beacon failure) END</td>
<td>dorisstations 2011/08/08</td>
<td>The beacon has been replaced and the new one has been working nominally since July 05, 2011</td>
</tr>
<tr>
<td>2011-05-30</td>
<td>Terre-Adelie</td>
<td>ADFB</td>
<td>91501S003</td>
<td>EVENT</td>
<td>ADFB END</td>
<td>dorismail 0754</td>
<td></td>
</tr>
<tr>
<td>2011-05-30</td>
<td>Terre-Adelie</td>
<td>ADGB</td>
<td>91501S004</td>
<td>EVENT</td>
<td>ADGB START</td>
<td>dorismail 0754</td>
<td></td>
</tr>
<tr>
<td>2011-05-30</td>
<td>Terre-Adelie</td>
<td>ADFB</td>
<td>91501S003</td>
<td>EVENT</td>
<td>invalid data (problem of maser &amp; antenna failure) END</td>
<td>dorisstations 2011/06/08</td>
<td></td>
</tr>
<tr>
<td>2011-05-09</td>
<td>Noumea</td>
<td>NOWB</td>
<td>92701S003</td>
<td>EVENT</td>
<td>data gap (beacon replacement) START</td>
<td>dorisstations 2011/05/13</td>
<td></td>
</tr>
</tbody>
</table>
About the DORIS constellation
DORIS System Events  (http://ids-doris.org/system/doris-system-events.html)

<table>
<thead>
<tr>
<th>Date</th>
<th>Origin</th>
<th>Consequence</th>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011/09/05 22:52:58</td>
<td>On board</td>
<td>All data available</td>
<td>JASON1</td>
<td>Orbit Maintenance Maneuver (end : 2011/09/06 01:52:14 TAI)</td>
</tr>
<tr>
<td>2011/08/28 09:59:56</td>
<td>On board</td>
<td>All data available</td>
<td>JASON2</td>
<td>Orbit Maintenance Maneuver (end : 2011/08/28 10:00:47 TAI)</td>
</tr>
<tr>
<td>2011/08/23 00:38:33</td>
<td>On board</td>
<td>All data available</td>
<td>ENVISAT1</td>
<td>Orbit Maintenance Maneuver (end : 2011/08/23 00:38:35 TAI)</td>
</tr>
<tr>
<td>2011/08/17 22:46:22</td>
<td>On board</td>
<td>All data available</td>
<td>ENVISAT1</td>
<td>Orbit Maintenance Maneuver (end : 2011/08/18 00:26:59 TAI)</td>
</tr>
<tr>
<td>2011/08/11 00:55:16</td>
<td>On board</td>
<td>All data available</td>
<td>ENVISAT1</td>
<td>Orbit Maintenance Maneuver (end : 2011/08/11 02:35:32 TAI)</td>
</tr>
</tbody>
</table>
About the data quality
DORIS statistics - CNES/SOD POE orbits (http://ids-doris.org/system/poe.html)

2011 - POE global statistics

2011 - CRYOSAT2 POE statistics

Global statistics per satellite

Statistics per station

Statistics per satellite

SPOT4

SPOT5

JASON1

JASON2

ENVISAT

CRYOSAT2
History of events impacting the data
(http://ids-doris.org/system/events-impacting-data.html)

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005/09/27</td>
<td>On-board acquisition: minimum elevation angle at 12 deg except: 15 deg for TLHA and KRYB 20 deg for EWEB + ADEB + AEBM, FAIB, METB, PZEB, RIEOB, ROTTB, SPJMB, SYPB, THUB, YELB POE pre-processing (unchanged): threshold at 12 deg =&gt; still no data under 12 deg POE GDRB. This new configuration is set up on 2005/09/27. Wrt to the previous one, an additional bias of +6.0 microseconds is applied to the onboard Doppler time transits of chain 1 from 2005/09/27. Onboard Doppler time transit new values for chain 1: 400 MHz: 71.73 + 6.0 = 77.73 microseconds 2 GHz: 49.09 - 6.0 = 56.09 microseconds. No more flagged data between 6 and 12 deg, only data over 12 deg in data files starting from file sp5data133.</td>
</tr>
</tbody>
</table>
About the product quality
IDS time series of station coordinates
(http://ids-doris.org/network/ids-station-series.html)

<table>
<thead>
<tr>
<th>The DORIS stations list</th>
<th>ign09wd01</th>
<th>lca05md01</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td><strong>Country</strong></td>
<td><strong>Code</strong></td>
</tr>
<tr>
<td>AMSTERDAM</td>
<td>France (T.A.A.F.)</td>
<td>AMSA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AMSB</td>
</tr>
<tr>
<td>AMTB</td>
<td></td>
<td>AMTB</td>
</tr>
<tr>
<td>AMUB</td>
<td></td>
<td>AMUB</td>
</tr>
<tr>
<td>AMVB</td>
<td></td>
<td>AMVB</td>
</tr>
<tr>
<td>AREQUIPA</td>
<td>Peru</td>
<td>AREA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AREB</td>
</tr>
<tr>
<td>ARFB</td>
<td></td>
<td>ARFB</td>
</tr>
<tr>
<td>ARLIT*</td>
<td>Niger</td>
<td>ARLA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ARMA</td>
</tr>
<tr>
<td>ASCENSION</td>
<td>U.K. (South Atlantic Ocean)</td>
<td>ASDB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASEB</td>
</tr>
</tbody>
</table>
STCD: IDS format for STation Coordinate Differences time series

Exchange format based on SINEX blocks

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FILE/REFERENCE

DESCRIPTION: JPL/DORIS Analysis Center

OUTPUT: Weekly position residuals

CONTACT: Pascal Willis <pascal.willis@ign.fr>

SOFTWARE: Gipsy/Oasis II (Jet Propulsion Laboratory, Caltech)

HARDWARE: PC - Linux

INPUT: All satellite DORIS data

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FILE/REFERENCE

REFERENCE:


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FILE/COMMENT

- FIELDS - modified julian date, dX, dY, dZ, sX, sY, sZ, dEast, dNorth, dUp, sEast, sNorth, sUp

- UNITS - all position residuals in millimeters

REFERENCE SYSTEM - ITRF2005 using IGS08a02 for transformation

EARTH ELLIPSOID - flattening factor: 298.2572235 equatorial radius: 6378137.0 m

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SITE/ID

*Code_ Station Name_ Station Description_ Longitude_ Latitude_ Height

kols A 404243003 D ROKKE PARK 200 20 04.7 22 07 23.0 1163.0

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SOLUTION/APPROPRIATE

*Index_ Type_ Code_ Solsn_ Ref Epoch_ Unit_ Estimated Value_ Std Dev

1_ STA1_ kols A_ 05:001:432:00 w_ 2_ -5,434,661,007,099,006_ 0.000000+00

1_ STA2_ kols A_ 05:001:432:00 w_ 2_ -2,054,594,561,005,006_ 0.000000+00

1_ STA3_ kols A_ 05:001:432:00 w_ 2_ 2,387,488,888,280,006_ 0.000000+00

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SOLUTION/APPROPRIATE

*5690.5_ -37.2_ 122.8_ 16.5_ 63.6_ 75.8_ 52.1_ -103.6_ -20.1_ 70.3_ 49.2_ 71.0

5609.5_ 40.3_ 146.0_ 66.6_ 70.0_ 152.1_ 61.8_ -150.9_ 66.6_ 13.1_ 103.3_ 58.7_ 70.9

5613.5_ 37.9_ 155.6_ 57.6_ 71.5_ 55.2_ 53.8_ -159.1_ 38.1_ 15.8_ 99.4_ 48.2_ 63.0

5619.5_ -20.9_ 199.9_ 62.5_ 15.2_ 18.2_ 12.9_ -166.3_ 72.7_ -12.9_ 18.6_ 12.8_ 14.7

5626.5_ -34.1_ 208.4_ 86.4_ 12.9_ 15.1_ 11.4_ -208.4_ 74.9_ -13.7_ 16.2_ 11.3_ 12.8

5633.5_ -35.2_ 178.9_ 50.4_ 12.5_ 16.3_ 11.6_ -100.0_ 65.1_ -5.0_ 16.6_ 11.5_ 12.6

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Reference:

Plottool: a new tool soon online

An interactive tool to plot time series of station coordinates and CNES POE post-fit residuals (soon online)

POE statistics (poetool)
Time series of station coordinates (stcdtool)

Many functions:
- adding station and system events
- statistics
- editing
- export
...
POE statistics (poetool)
Time series of station coordinates (stcdtool)
Future developpements

Combination center:
create STCD, Gif and Plottool files for the IDS combined products
  Coordinate times series
  Geocenter, scale
  EOP

Station information:
add earthquakes history in the vicinity of the DORIS stations (USGS bulletins)
complete the list of the station events (beacon change, OUS change…)