DORIS NETWORK STATUS

MAY 2016

JEROME SAUNIER, IGN - FRANCE
59 stations of which: 10 beacons are out of order (4 decommissioned)

Out of Order for over a year:
- Yuzhno-Sakhalinsk (11/2005)
- Santa Cruz (06/2009)
- Santiago (05/2013)
- Port-Moresby (06/2013)
NETWORK AVAILABILITY

- **5 MAINTENANCE OPERATIONS SINCE THE BEGINNING OF 2016**
- **MAINTAINED OVER 85% OF OPERATING STATIONS SINCE 2012**

Network Availability 2016

From CNES/SALP data
<table>
<thead>
<tr>
<th>2016 2015</th>
<th>Station</th>
<th>Event</th>
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</table>
| May      | TRJB    | Mariana Islands **Mariana Islands**  
Tristan da Cunha **Tristan da Cunha**  
**Reconnaissance with a view to installing new station**  
**Beacon replacement** |
| Apr.     | MNAC    | Managua **Managua**  
**New site** |
| Mar.     | OWFC    | Owenga  
Hartebeesthoek  
**Station re-location (80m North-West)**  
**Tracking oscillator replacement** |
|          | HBMB    |        |
| Feb.     | MIAB    | Miami  
**Beacon replacement** |
| Jan.     | CIDB    | Cibinong **Cibinong**  
**Beacon replacement** |
| Dec.     | KRBB    | Krasnoyarsk  
Amsterdam  
**Beacon replacement**  
**Beacon replacement**  
**Equipment replacement (antenna + beacon)** |
|          | AMWB    | Ponta Delgada |
|          | PDOC    |        |
| Nov.     | OWEC    | Owenga  
Cachoiera  
**Beacon replacement**  
**Beacon replacement** |
|          | CADB    |        |
| Oct.     | SAPC    | Sal  
Jiufeng  
**Antenna re-location (shift of 5 m)**  
**Antenna replacement** |
|          | JUIB    |        |
NETWORK EVOLUTION

SCHEDULED IN 2016

- Kitab, UZ: major renovation (station moving 200 m to get better visibility) > June 2016
- Santiago, CHL: station re-location in Argentina, San Juan (SLR+GNSS) > September 2016

UNDER PLANNING

- Port-Moresby, PNG: station re-location in Australia, Katherine (GNSS+VLBI)
- Easter Island, CHL: station re-location 5km away, near IGS station “ISPA”
- Ny-Ålesund, NOR: station re-location 3 km away (co-location GNSS+SLR+VLBI)

UNDER CONSIDERATION

- Reykjavik, ISL: station re-location to get better performance
- Northern Asia: new site in place of Yuzhno in Manchuria (CHN) or Kamchatka (RUS)
- Tahiti, French Polynesia: new 4 techniques site project
IDS STATIONS: WETTZELL(GE)

- DECEMBER 2014: 3 OPTIONS FOR THE DORIS ANTENNA
- FROM APRIL 2015: VLBI/DORIS COMPATIBILITY TESTS
  - Performed by BKG with assistance from CNES
  - Possibilities for mitigating RFI (distance, existing shields, absorbers) are not sufficient: the received power exceeds LNA saturation point by 25dBm. => see EGU Session G2.2 Poster « Towards a four technique GGOS site: VLBI-DORIS compatibility tests at Wettzell » by T. Klügel et al.
- APRIL 2016: CNES/IGN/BKG MEETING AT WETTZELL: FIRST REVIEW
  - Antenna location re-examined: 2 options using existing shields
  - Use of a prediction software to turn the beacon to stand-by mode when there is no DORIS-equipped satellites passing over
  - From May 30th to June 27th: tests on real-conditions from one of the exact location
- GOAL: INSTALLATION AND COMMISSIONING IN SEPTEMBER 2016
IDS STATIONS: MARIANA ISLANDS (US)

- 2 options: Guam or Saipan
- GNSS + tide gauge co-location in both cases
- reconnaissance in May 2016
- final decision in September on the basis of the negotiation outcome with the host agencies
IDS STATIONS: SEJONG (KOR)

- Fundamental site project
- GNSS and VLBI already operational; managed by NGII
- SLR: installed last July (re-location); managed by KASI
- NGII still reluctant to host DORIS
- Alternative option: Gamak mountain co-location SLR and GNSS
- Intended reconnaissance in 2017
**CO-LOCATIONS**

- **DORIS STATIONS CO-LOCATED WITH OTHER IERS TECHNIQUES**

=> 3/4 stations co-located with GNSS; 10 with SLR; 7 with VLBI
CO-LOCATION WITH VLBI

- **ANTICIPATE DORIS/VLBI RF INTERFERENCES**
  - Before VLBI antenna installation

- **BASIC PRINCIPLES FOR ANY SITE LAYOUT:**
  - No direct visibility between DORIS and any VLBI antenna (using local topography and RF blockers structures)
  - Maximum distance between DORIS and VLBI (>150 m; ideally 300-400 m)
  - Difference in height between DORIS and VLBI: the radiated emission from DORIS is lower at low elevation
  - Ground installation of the DORIS antenna (better for shield erection and local ties)
NEWS

- **ITRF WEBSITE OVERHAUL**
  - New website by mid-summer 2016 with similar functionality as the previous one
  - New web-services: time series handling, data downloading, coordinates and velocities computing, earthquakes impact… by the end of 2016

- **GGOS BUREAU OF NETWORKS AND OBSERVATIONS**
  - 2 meetings a year (last one at EGU last April)
  - “Network Status and Projection” presentation prepared by JS given by GM
  - Contribution to “Site requirements for GGOS Core Sites” document
  - Info: Alexander Neidhardt (TUM, Head of GNSS-VLBI team at Wettzell) is writing a book on “Applied computed science for GGOS observatories”