



Doris network status and future missions



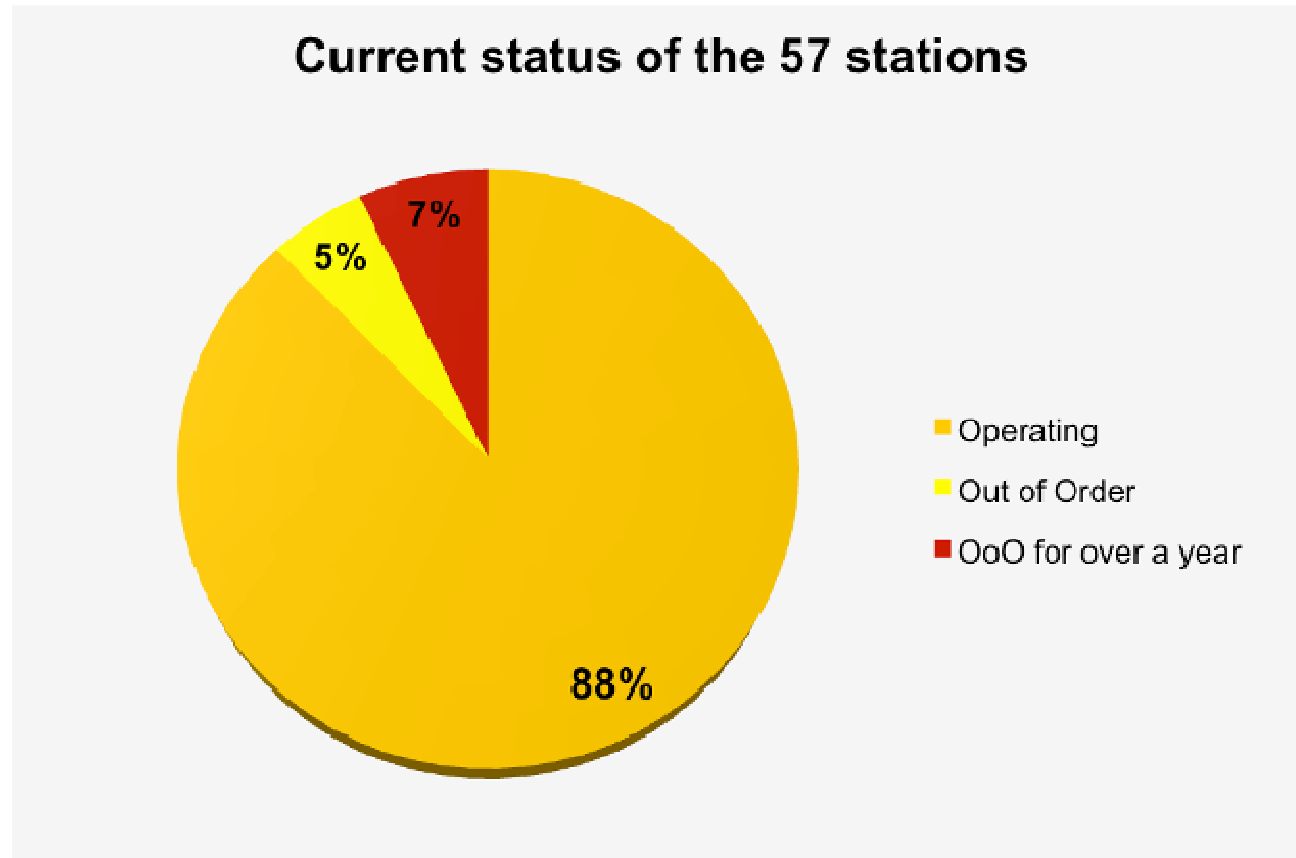
P. Ferrage (CNES)
J. Saunier (IGN)

2. DORIS NETWORK EVENTS 2012



2012	Station	Event
January	All	New coordinate and velocity set (DPOD/ITRF2008)
February	<i>Rikitea</i> <i>Sal – Réunion - Kitab</i>	<i>Beacon replacement</i> <i>Remote control system installation</i>
March	All <i>Reykjavik</i> French West Indies Rio Grande	New set of site logs (major data updating and revision) <i>Beacon replacement</i> Reconnaissance in Guadeloupe and Martinique (IGS colocation) Antenna replacement (position unchanged)
April	Futuna <i>Terre Adélie</i>	Major renovation + local tie survey (new GNSS station 'FTNA') <i>Equipment upgrade (3.1) + Maser and antenna replacement</i>
May	Greenbelt <i>Everest</i>	Renovation (antenna raising and equipment replacement) <i>Remote control system installation</i>
June	Tristan Da Cunha Metsähovi	Major renovation + local tie survey Renovation + local tie survey (new REGINA station)
August	Port Moresby	Renovation (antenna raising and equipment replacement)
September	<i>Djibouti</i>	<i>Beacon replacement + remote control system</i>
October	Jiufeng	Renovation + local tie survey (new REGINA station)
December	Mahé	Antenna moving (40m) Beacon 3.2

2. NETWORK AVAILABILTY

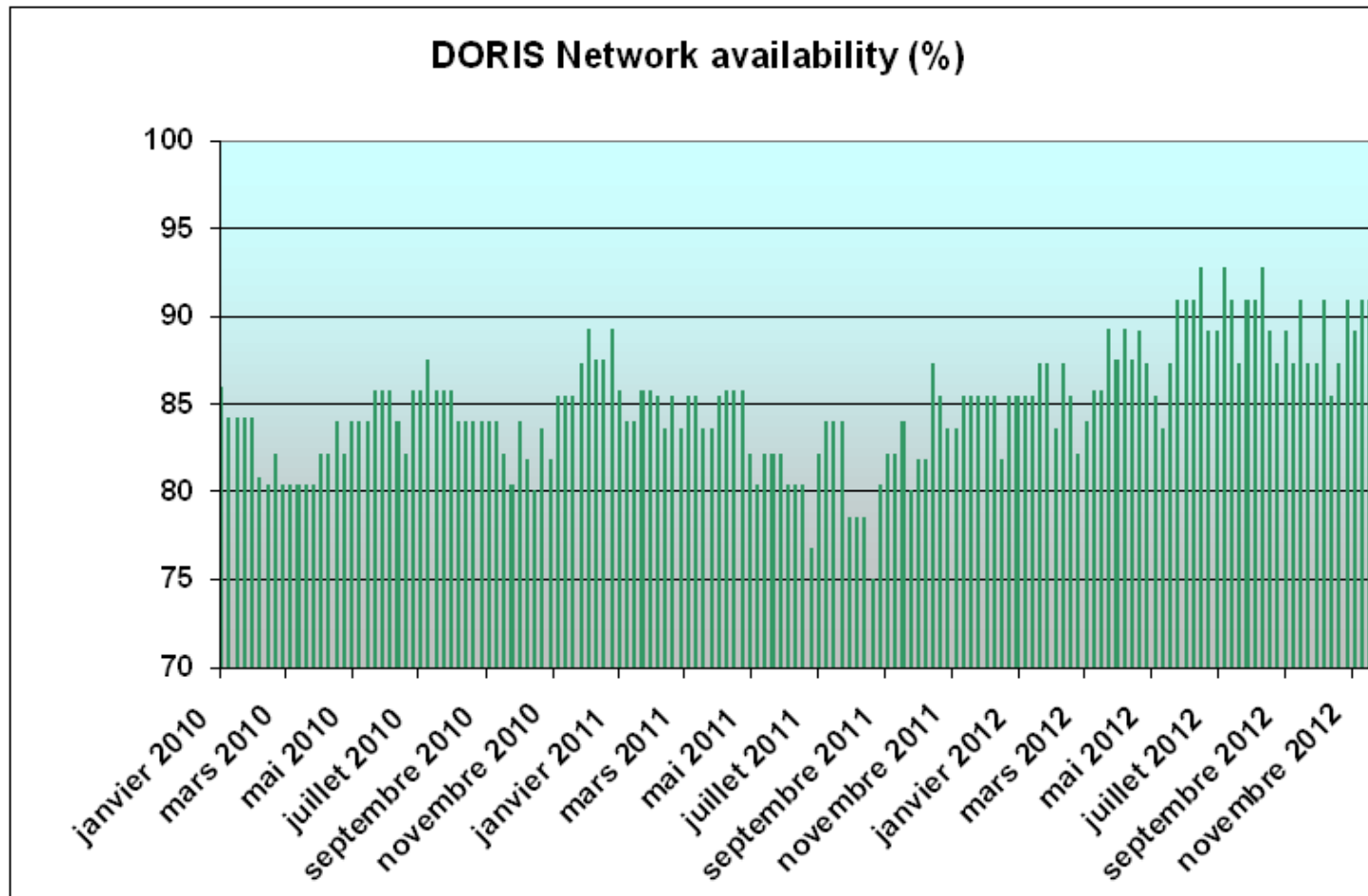


Out of Order for over a year:

Yuzhno-Sakhalinsk (11/2005), Santa Cruz (06/2009), Socorro (10/2009), Monument Peak (02/2010)

2. NETWORK AVAILABILITY

- RESULT OF THE JOINT EFFORT OF CNES AND IGN
- 28 BEACONS OUT OF 56 REPLACED IN 3 YEARS



2. NETWORK EVOLUTION



■ SHORT RUN (NEXT 6 MONTHS)

- Mahé: antenna moving, local tie survey (new GNSS station)
- St John's: major renovation

■ LATER

- Chatham: station moving (host agency office move in June)
- Goldstone: new station in place of Monument Peak
- Miami: definitive shutdown (interferences with TV-mobile)
- Hokkaido: new station in place of Sakhalinsk, co-location GNSS+VLBI
- Major renovations: Socorro, Kitab, Easter

■ 4th generation beacons

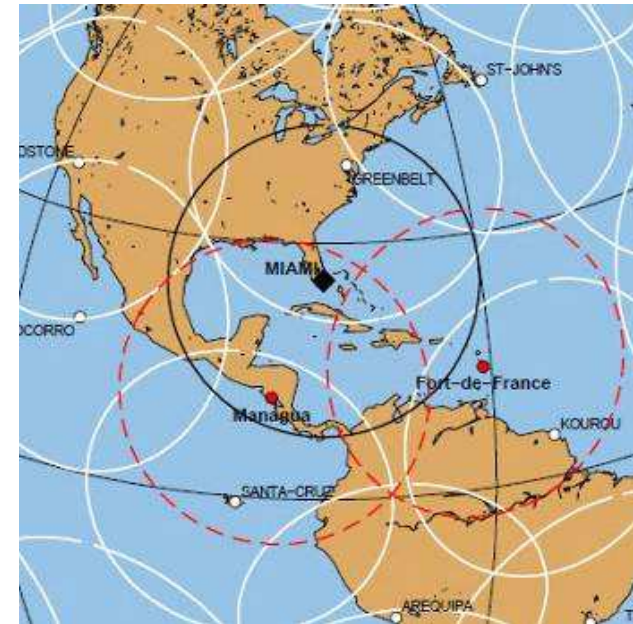
- maintain in operational conditions of the Network until at least 2025
- study started , development 2014 - 2015
- deployment from 2016

2. NETWORK DENSIFICATION



■ NEW STATIONS

- Fr. West Indies : installation planned in early 2013
- Chichijima: installation planned in 2013
- Nicaragua: under negotiation, co-location GNSS
- Korea: under negotiation with KASI, co-location GNSS+SLR+VLBI
- Wake island (Marshall): under consideration



2. REGINA PROJECT

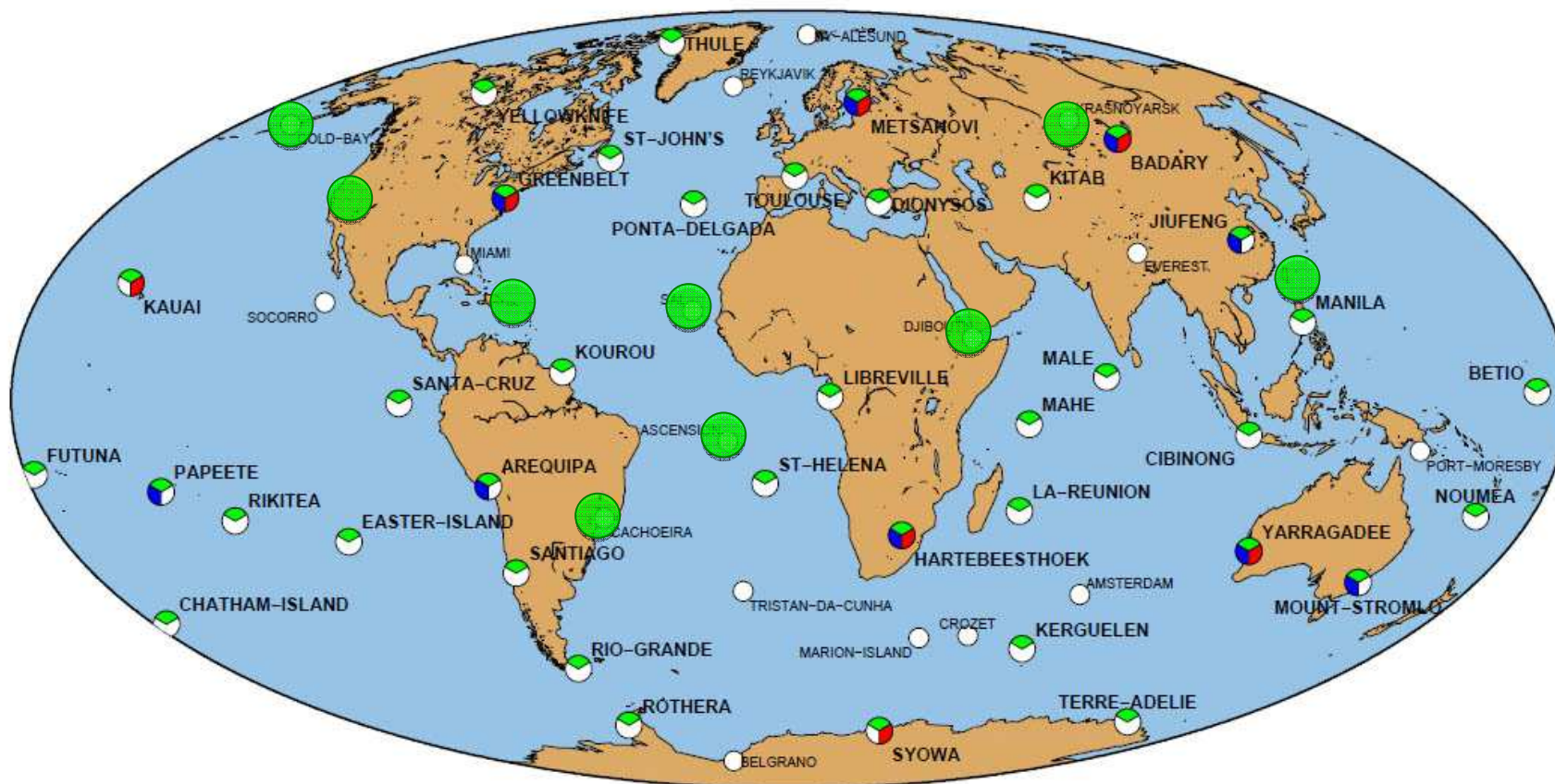


- “RÉSEAU GNSS POUR L’IGS ET LA NAVIGATION”
 - Global network of over 30 stations, based on DORIS network, well distributed
 - Project launched by CNES with the support of IGN
 - Main objectives:
 - Global multi-GNSS real-time network:
 - Positioning: real-time determination of orbits and clocks
 - Contribution to: IGS, EUREF, ITRF

- REGINA AND DORIS
 - Contribution to ITRF: co-location GNSS/DORIS
 - Improvement of the local tie survey accuracy
 - Opportunity to strengthen contacts with host agencies

2. NETWORK DENSIFICATION

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



GNSS (IGS)

SLR

VLBI

No active co-location < 1 km

REGINA GNSS co-location contribution (end of 2014)

RFI issues with DORIS



- Status presented in IDS workshop, Venice, September 2012:

see http://ids-doris.org/images/documents/report/ids_workshop_2012/IDS12_s4_Ferrage_FrequencyPermitsRFIIssues.pdf

- Preliminary Conclusions:

- with Geodetic techniques:

- GNSS: **no interference with GPS**, to be confirmed with Galileo TM stations
- SLR : **no interference**
- VLBI : **no interference**: thanks to IVS and VLBI teams , the problem is solved at Yarragadee, Syowa and Badary:

Tests successfully performed, no more DORIS interruption for VLBI geodetic runs. → letter from Dirk Behrend, IVS Coordinating Center

Director: http://ids-doris.org/documents/report/IVS_letter_doris-vlbi_aug2012.pdf

- VLBI2010 : **risk of interference**, DORIS/VLBI2010 RFI studies are underway at Greenbelt/GGAO .
- With other systems :
 - **No interference** with ARGOS and SVOM
 - **RFI** with radio-sounding system **but recommendation easy to implement**

DORIS current missions: 6 in orbit



- HY2-A (CNSA, NSOAS): 960km, 99° August 2011 → mid 2014(DGXX+LRA+GPS)
- CRYOSAT-2 (ESA): 717 km, 92° April 2010 → end 2013 (DGXX + LRA)
- JASON2 (NASA/CNES): 1336 km, 66° June 2008 → 2013 (DGXX+LRA+GPS)
- SPOT5 (CNES): 830 km, 98° May 2002 → 2015 (DGM)
- JASON1 (NASA/CNES): 1336 km, 66° Dec 2001 → 2013 (DGM+LRA+GPS)
- SPOT4 (CNES): 830 km, 98° March 98 → mid 2013 (D1G)

Future DORIS missions



- **SARAL/ALTI-KA (ISRO)** : 800km, 98.5° **February 2013** (5 years),
- **SENTINEL3A (GMES)** : 814km, 98.6° **mid 2014**, (7.5 years + 5)
 ■ Sentinel 3B: **2017**
- **JASON-3 (Eumetsat/NOAA/NASA/CNES)** : 1336 km, 66° **mid 2014** (5 years)
- **HY2B C*, D *** **2014, 2016, 2018** (3 years)
- **JASON-CS* (Eumetsat/NOAA)** : 1336 km, 66° **2017** (7 years)
 ■ Jason-CS (B): **2023** (7 years)
- **SWOT* (NASA/CNES)** : 970km, 78° **2020** (3 years)

* *Mission pending approval*

DORIS missions

