INSTITUT NATIONAL
DE L'INFORMATION
GÉOGRAPHIQUE
ET FORESTIÈRE

IDS

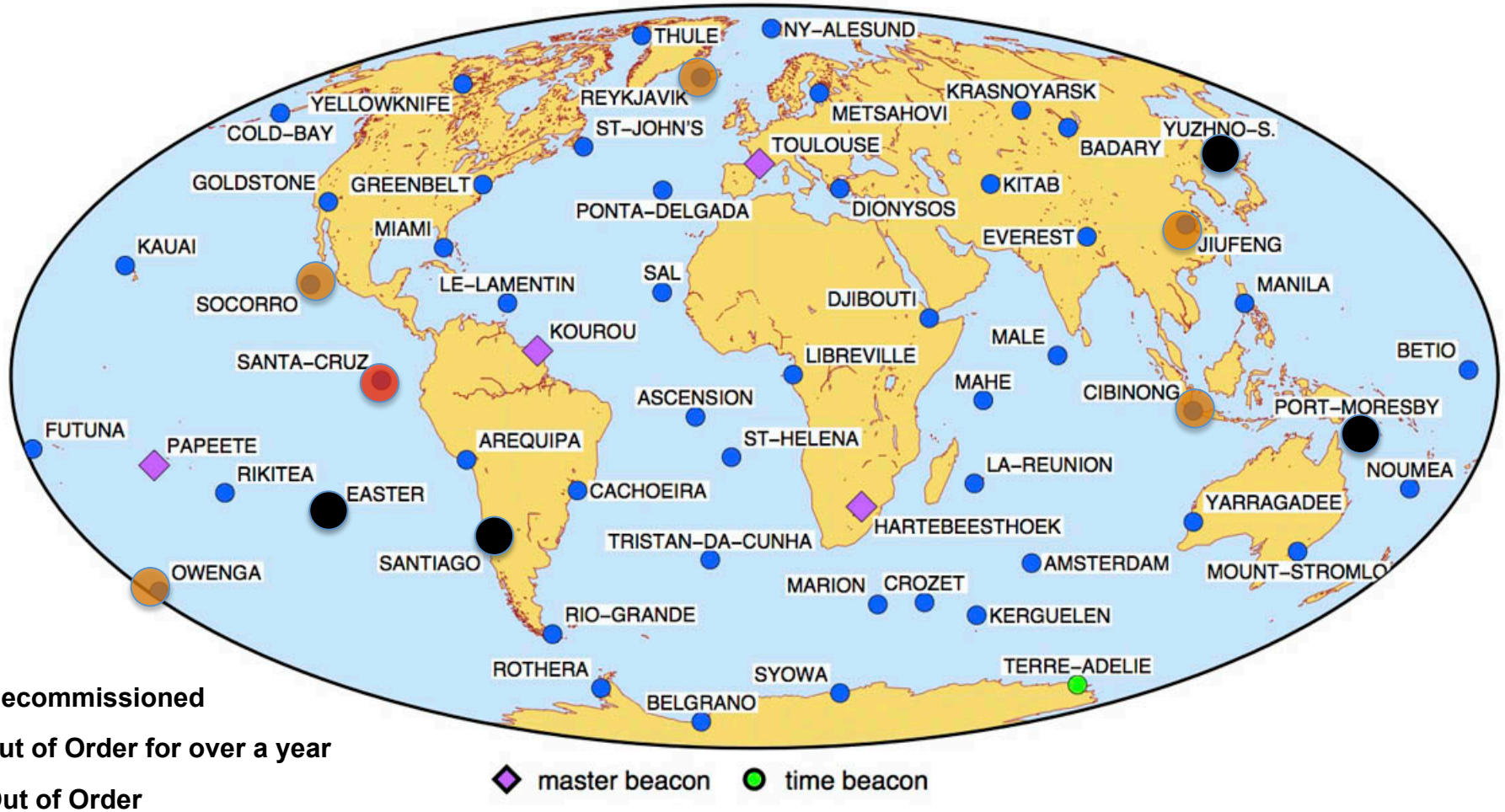
DORIS NETWORK STATUS

OCTOBER 2015

JEROME SAUNIER, IGN - FRANCE

OPERATIONNAL STATUS

58 stations of which: 10 beacons are out of order (4 decommissioned)



- Decommissioned
- Out of Order for over a year
- Out of Order

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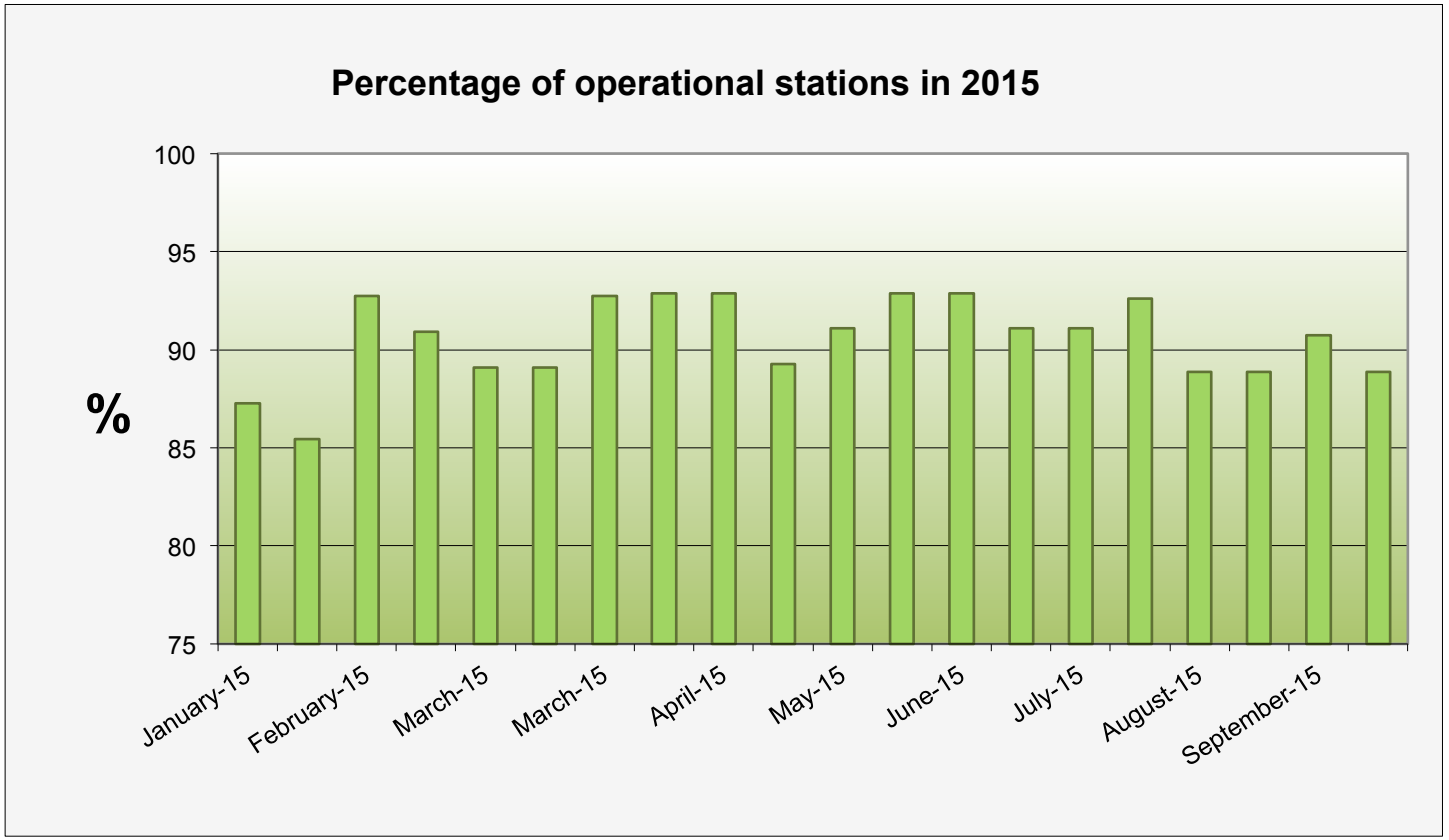
Out of Order for over a year:

Yuzhno-Sakhalinsk (11/2005), Santa Cruz (06/2009), Santiago (05/2013), Port-Moresby (06/2013)

NETWORK AVAILABILITY

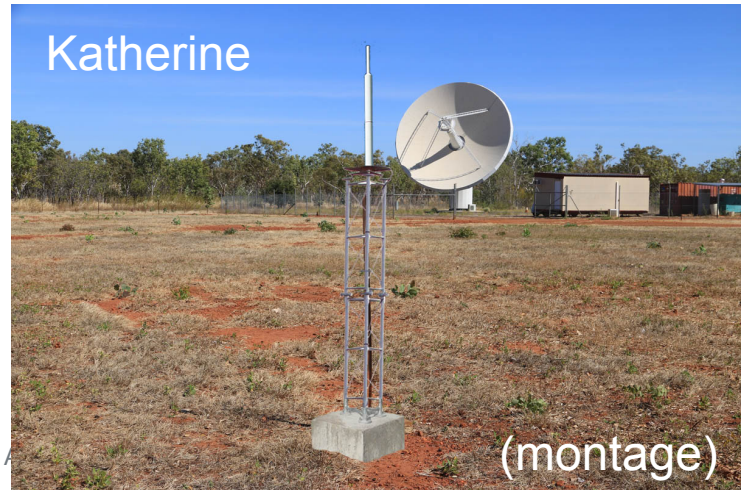
- 12 MAINTENANCE OPERATIONS SINCE THE BEGINNING OF 2015
- CONTINUED GOOD LEVEL OF THE NETWORK AVAILABILITY



From CNES/SALP data

NETWORK EVENTS

2015	Station		Event
Sept.	CODB	Cold Bay	Future under threat: USCG withdraws its equipment next January
Aug.	SPJB	**Ny-Ålesund**	**Reconnaissance with a view to relocating the station**
	HBMB	*Hartebeesthoek*	*Beacon replacement*
	EASB	*Easter Island*	*Station removed*
July	KRWB	*Kourou*	*Tracking oscillator replacement*
	-	**N. Australia**	**Reconnaissance with a view to installing new station**
June	-	**Japan**	**Abandoned after failed negotiation on frequency clearance**
May	KRWB	*Kourou*	*Tracking oscillator replacement*



NETWORK EVOLUTION

SCHEDULED IN 2015

- Sal, CPV: major renovation (antenna re-location to get better visibility)
- Kitab, UZ: major renovation (station moving 200 m to get better visibility)
- Managua, NIC: new site in place of Miami (interferences with TV-mobile)

UNDER NEGOTIATION

- Easter Island, CHL: station re-location 5km away, near IGS station “ISPA” > 2016
- Santiago, CHL: station re-location in Argentina, San Juan (SLR+GNSS) > 2016
- Port-Moresby, PNG: station re-location in Australia, Katherine (GNSS+VLBI) > 2016
- Ny-Ålesund, NOR: station re-location 3 km away (co-location GNSS+SLR+VLBI) > 2017

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)

IDS STATIONS

- **WETTZELL, GE**
  - Reconnaissance in December 2014: 3 options for DORIS antenna.
  - First VLBI/DORIS compatibility tests performed by BKG last April.
  - Tests on real conditions performed by BKG and CNES last July.
  - No satisfactory solution: parcel of land is too small; signal attenuation too low

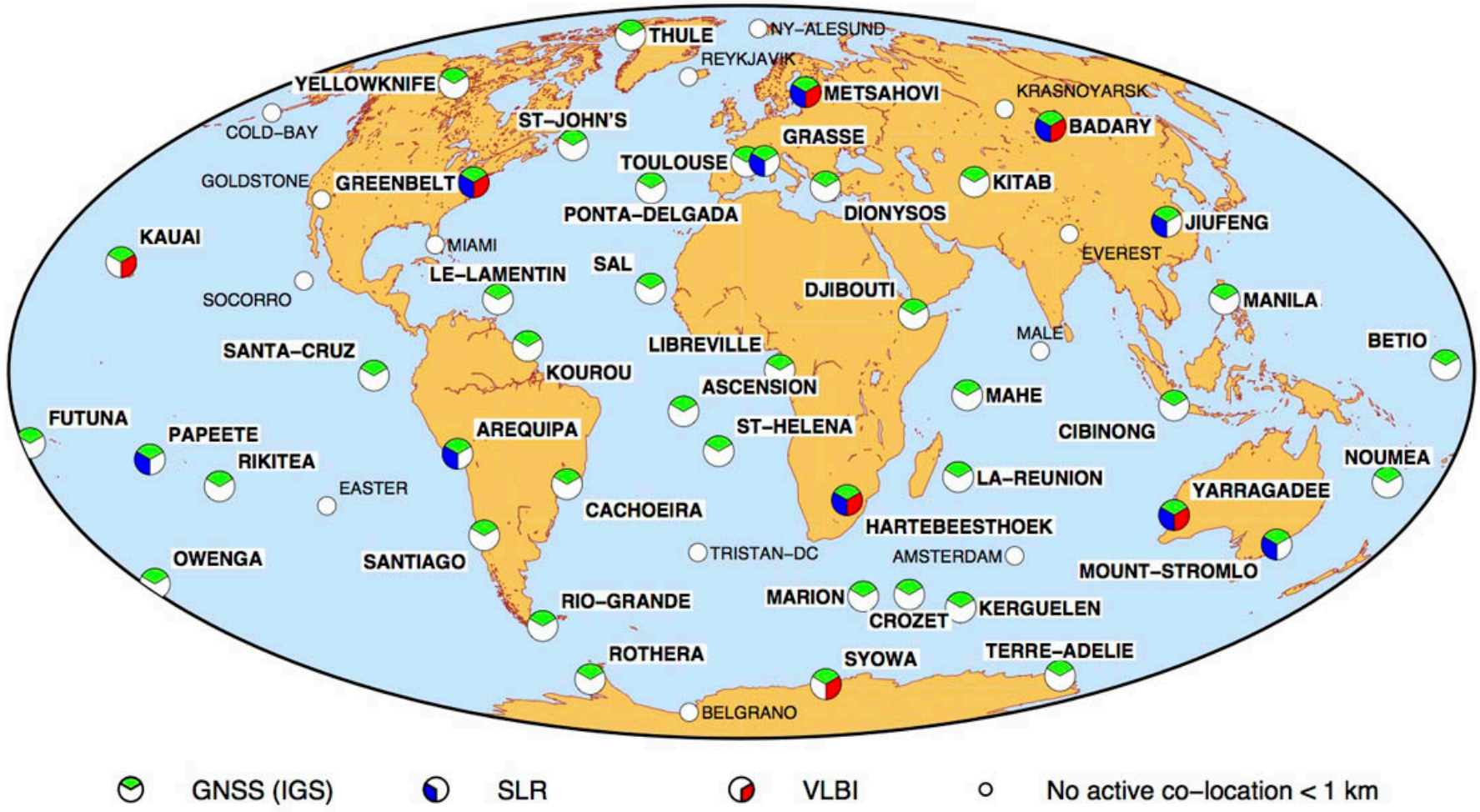
  => further experiments with absorber material or look around (1km) for another location

- **GUAM, US**
  - IGS “GUUC” + tide gauge co-location
  - Reconnaissance in 2016

- **SEJONG, KOR**
  - Fundamental site project
  - GNSS and VLBI already operational; managed by NGII
  - SLR: installed last July (re-location); managed by KASI
  - DORIS: final technique to be installed (2016-17)

CO-LOCATIONS

- DORIS STATIONS CO-LOCATED WITH OTHER IERS TECHNIQUES



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

CO-LOCATIONS

- **CHOOSING A SITE: CO-LOCATION CRITERION HAS HIGH PRIORITY**
- **FUTURE CO-LOCATIONS IN 2016**
  - Managua: GNSS
  - Easter: GNSS
  - Wettzell: GNSS + SLR + VLBI
  - San Juan: GNSS + SLR
  - Katherine: GNSS + VLBI
- **FUTURE CO-LOCATIONS IN 2017-2018**
  - Ny-Ålesund: GNSS + SLR + VLBI
  - Sejong: GNSS + SLR + VLBI

CO-LOCATION WITH VLBI

- **A BIG CHALLENGE!**
- **DORIS-VLBI COMPATIBILITY TESTS:**
  => REDUCE THE DORIS SIGNAL POWER BELOW THE CRITICAL LEVEL
  - Greenbelt 2014: 10-15 dB attenuation obtained through experimental RF blocker
  - Wettzell 2015: required received power = -50 dBm; best result = -40 dBm
- **DIFFICULTIES**
  - VLBI receiving systems are more or less sensitive (various equipment)
  - RF environment affects the DORIS signal propagation
  - Distance: meeting the GGOS requirements for the site survey
  - Climate conditions: RF blockers are prohibited
  - Tests under real conditions are mandatory
- **TOGETHER TO DEFINE INSTALLATION REQUIREMENTS**
  - CNES & IGN
  - NASA/GSFC
  - BKG
  - Geoscience Australia
  - Kartverket

NEWS

- **IGN INVOLVED IN EURAMET PROGRAM**
  - European Association of National Metrology Institutes
  - Funding opportunities for local tie surveys and metrology R&D (EMPIR calls)
  - Work package aiming at improving ITRF TVs (under IGN responsibility)

- **ITRF WEBSITE OVERHAUL**
  - ITRF2014 will be published on the current ITRF website
  - New website by mid 2016

- **GGOS BUREAU OF NETWORKS AND OBSERVATIONS**
  - Site requirements for GGOS Core Sites
  - Document under review with the DORIS team contribution

ARTICLES IN PREPARATION RELATED TO THE NETWORK

DORIS SPECIAL ISSUE (ADV. SPACE RESEARCH)

- "DORIS Starec ground antenna characterization and impact on localization"
  C. Tourain (CNES), G. Moreaux (CLS), A. Auriol (CNES), J. Saunier (IGN)
- "Initiating an error budget of the DORIS ground antenna position – Genesis of the Starec antenna type C"
  J. Saunier (IGN), A. Auriol (CNES), C. Tourain (CNES)
- "Assessment of the DORIS Network Monumentation"
  J. Saunier (IGN)
- "VLBI/DORIS Compatibility tests at GGAO" (TBC)
  L. Hilliard (NASA), C. Beaudoin (MIT), B. Corey (MIT), C. Tourain (CNES), W. Petrachenko (NRCC)