



# IDS REPORT 2014

*IERS Directing Board Meeting  
San Francisco, California USA*

*December 14, 2015*



# DORIS Constellation Status - Current Missions (5)



Satellite	Agencies	Altitude (km)	Inclin.	Dates
<b>DGXX Receiver (7 channels)</b>				
Jason-2	NASA/CNES/EUMET SAT/NOAA	1336	66°	June 2008 → 2017
Cryosat-2	ESA	717	92°	April 2010 → 2017
HY-2A	CNSA, NSOAS	960	99°	August 2011 → 2014
SARAL	ISRO, CNES	800	98.5°	Feb. 2013 →
<b>DGM Receiver (2 channels)</b>				
<b>SPOT-5</b>	<b>CNES</b>	<b>830</b>	<b>98°</b>	<b>May 2002 → ~May 2015.</b>

- **SPOT-5: To be Decommissioned, ~May 2015.**

# DORIS Constellation Status - Future Missions

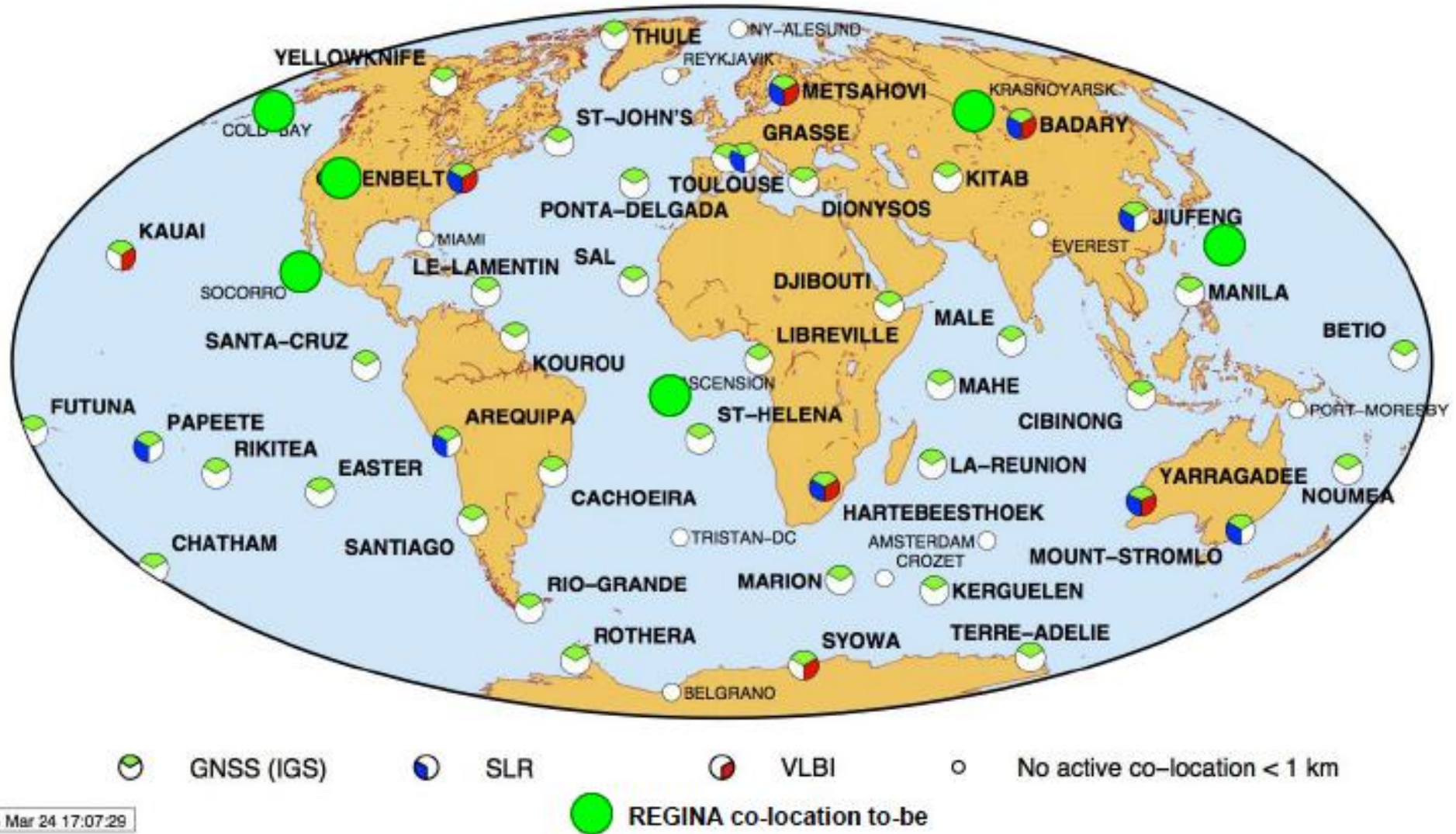


Satellite	Agencies	Altitude (km)	Inclin.	Dates
<b>DGXX Receiver (7 channels)</b>				
Sentinel-3A, Sentinel-3B	ESA	814	98.6°	2015, 2017
Jason-3	NASA/CNES/EUMETSAT/NOAA	1336	66°	2015 → 2020
HY-2B, C, D	CNSA,	960	99°	2014, 2016, 2018 (3 yrs) (?)
Jason-CS A,B	EUMETSAT/NOAA	1336	66°	2019, 2025
SWOT	NASA/CNES	970	78°	2020

- **Jason-3: Launch, originally March 31, 2015, is now delayed due to launch vehicle issues. Launch this summer?**

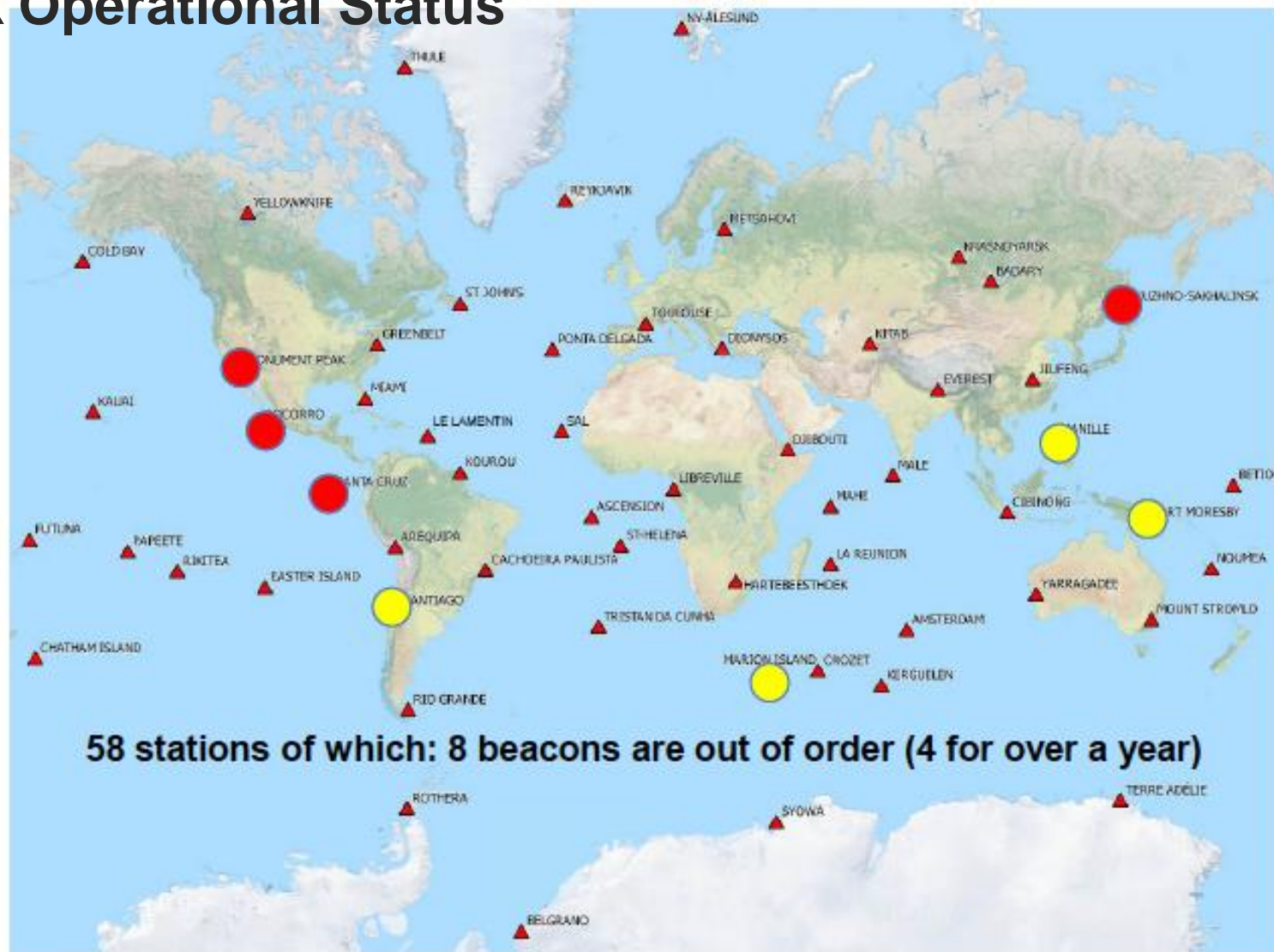


# Current DORIS tracking network (Dec. 2014)



GM 2014 Mar 24 17:07:29

# Network Operational Status



## Out of order for over a year:

→ Santa Cruz (06/2009); Socorro (10/2009);

→ Monument Peak (02/2010); Yuzno-Sakhalinsk (11/2005) – Both these stations will not be reinstated, but replaced with alternate stations.

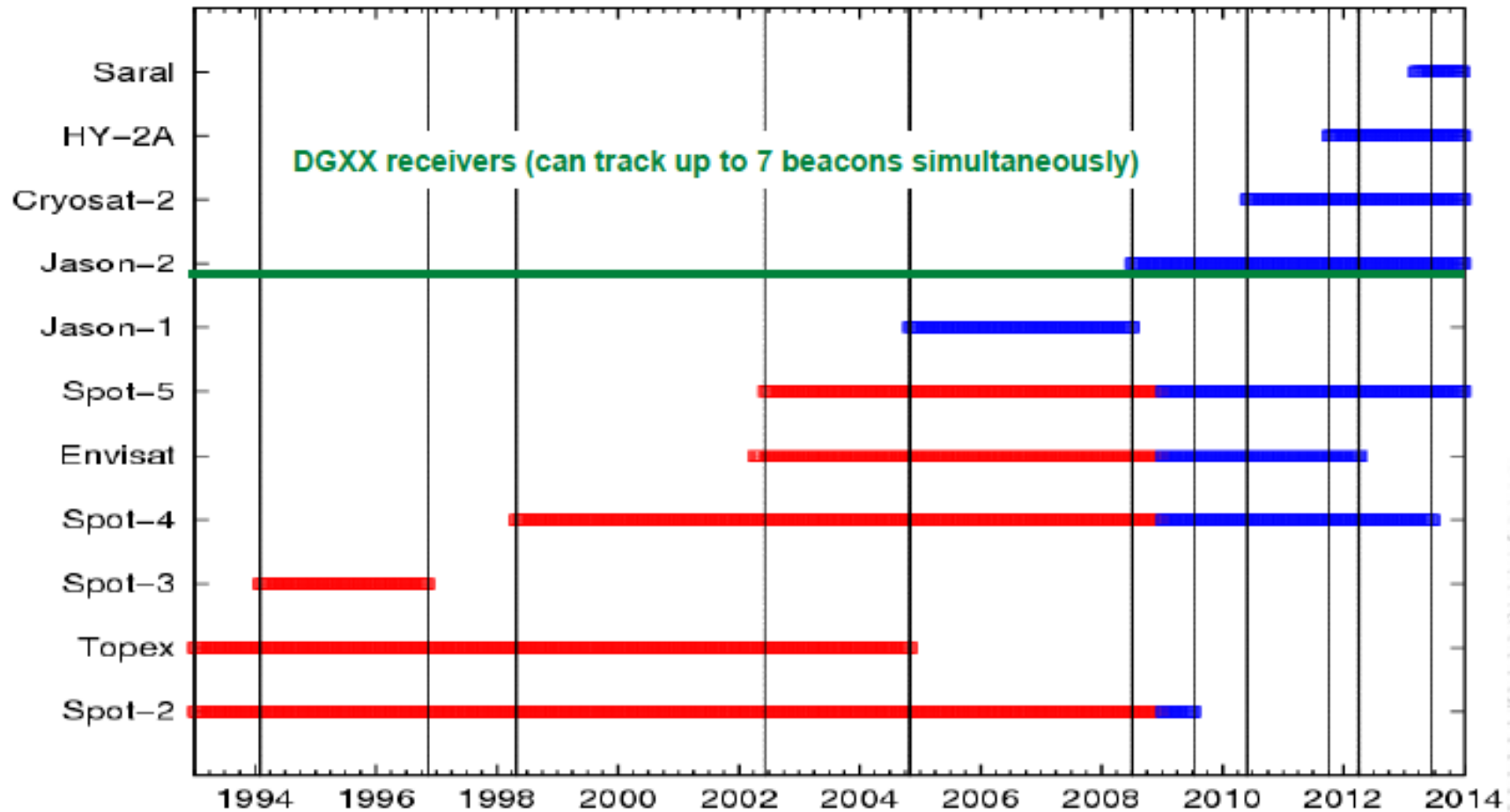
# Network evolution

- **SHORT TERM (Next 6 MONTHS):**
  - **Chatham, NZ:** re-location 18km SE (co-location with new GNSS station).
  - **Kitab, UZ:** major renovation (station re-location to get better visibility).
  - **Socorro, Mex.:** major renovation (station re-location to get better visibility).
- **LONGER TERM:**
  - **Goldstone, CA:** new station in place of Monument Peak. Early 2015. All Administrative approvals finally received.
  - **Miami, FL:** definitive shutdown (interference with mobile-TV relays).
  - **Managua, Nicaragua:** new station in place of Miami.
  - **Chichijima & Hokkaido, JA:** new stations waiting for frequency clearance.
  - **Easter Island (Chile).** Relocate to near IGS station, ISPA.
  - **Port-Moresby, PNG:** site to be closed. New location in Australia?
  - **Santiago:** site to be closed. Move to San Juan, Argentina?
- **IDS projects:**
  - **Guam, US:** Planning underway for new station, near IGS site.
  - **Wettzell:** IDS GB agrees to beacon deployment (new 4 technique site)

# Analysis Update

1. **Six active DORIS analysis centers (ESA, GOP, GSC IGN, INA, LCA). GFZ requested status of Associate Analysis Center. After examination of ToR, ToR will need to be modified to allow for AACs.**
2. **ITRF2013: Contributions of Analysis Centers for ITRF2013 have been validated. Combination Center has delivered several successive iterations to the IERS ITRF Combination Centers, latest (ids07) a few weeks ago.**
3. **Analysis Working Group meetings), Paris (March 2014).**
4. **DORIS Special Issue (Adv. Space Research). Due Date January 31, 2015. Theme: ITRF2013-related analysis and results. Co-editors (F. Lemoine and EJO Schrama). Follow-on to special issue in Adv. Space Res (2010).**
5. **IDS Workshop held in Konstanz, Germany, in conjunction with Jason-2 Ocean Surface Topography Science Team meeting (October 27-31, 2014). Papers online at <http://ids-doris.org/>**

# DORIS data in ITRF2013



➔ ITRF2013 = ITRF2008

+ Jason-1 (SAA corrected data) between Topex and Jason-2 only

+ Spot-5 SAA corrected from 2006

+ new missions (Jason-2, Cryosat-2, HY-2A\*, Saral\*)



# DORIS data Modeling for ITRF2013

- **Main features**

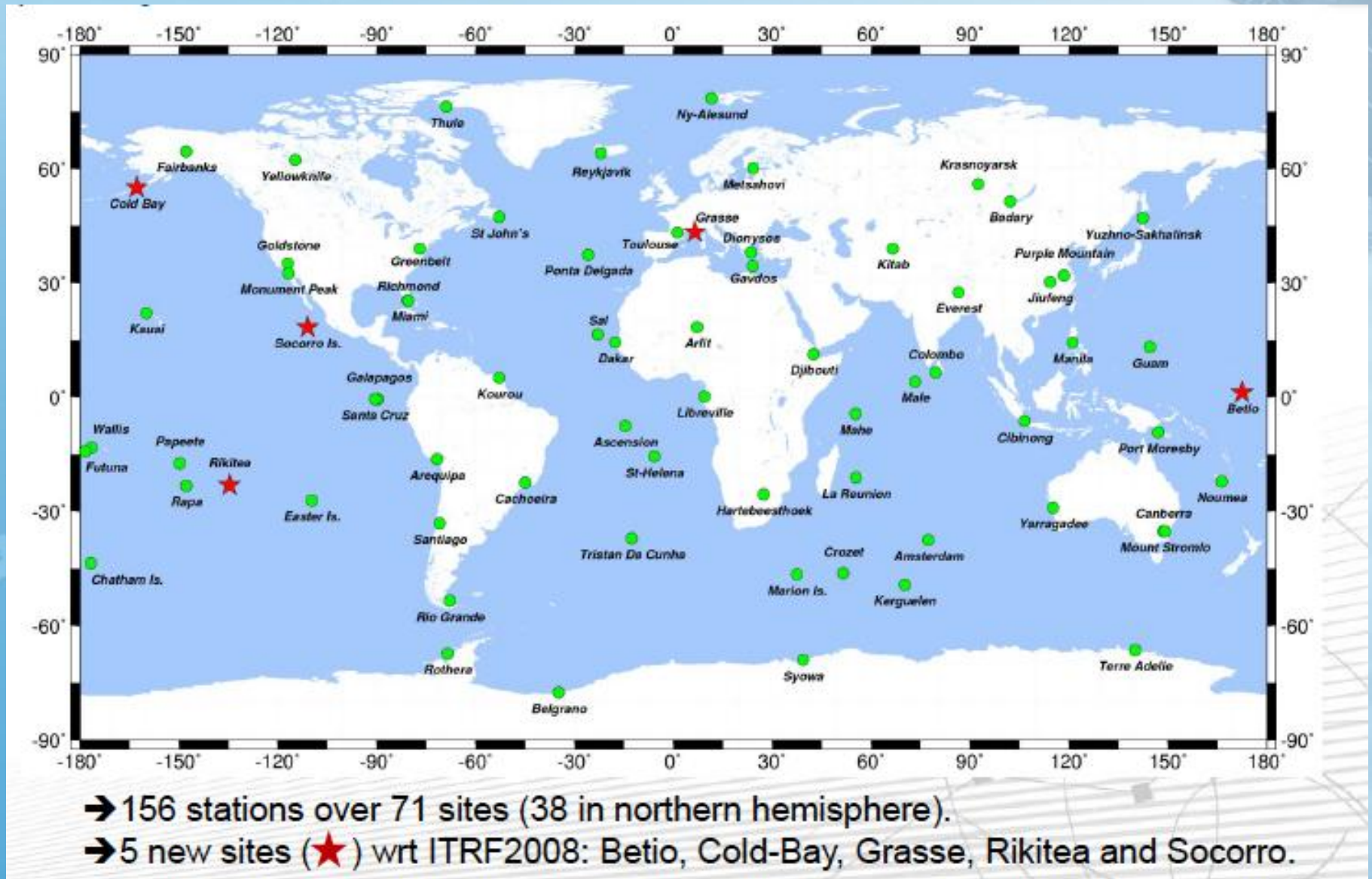
1. **Time variable Gravity field:** EIGEN-6S2 or GOCO02s (GRACE + GOCE model) + harmonic fit to 5x5 SLR-DORIS time series (Lemoine et al., 2011)
2. **Atmospheric loading:** Not applied, since not all the ACs can take it into account
3. **Nonconservative force models:** updated/improved as result of dedicated study initiated and managed by the IDS Analysis Coordinator
4. **Troposphere**
  - gradient estimation by some ACs (2-3 of 6 ACs)
5. **Beacon frequency offset:** now estimated by all the ACs
6. **Phase center antenna corrections** (PCV: Alcatel/Starec)

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# DORIS Network for ITRF2013



# ITRF2013 → ITRF2014

1. After polling the ACs, IDS Agrees to deliver SINEX files through ~September 4, 2014 to the IERS by the requested deadline, February 2015.

2. Data latency issues, and the requirement to wait for updated gravity solutions for the DORIS LEO satellites mean it is impossible to have the end-of-2014 data processed by February 2014. (Another issue is the need to compute SAA-model corrections to SPOT-5 -- and this is done in 3-4 month batches).

**For data through September 4, 2014 – this is already available, with the SPOT-5 SAA correction.**

2. Another requirement for IDS Analysis Centers, is to prepare for upcoming launch of Jason-3, Sentinel-3A. DORIS data will only be delivered in RINEX-like format – The ACs must all verify their processing of these observables as well as verify the content of their SINEX files. This is another reason the end-2014 data cannot be delivered to the IERS until much later in 2015.

# Next IDS Meetings

**IDW AWG, May 2015 (?). Location TBD.** One major topic will be assuring that all AC's can process DORIS/RINEX data, as for Jason-3, Sentinel-3A, - data only available in that format.

-> We will also try to answer questions related to the ITRF2013/2014 submission – for example the scale issue with the DORIS solution starting in 2012.

<http://ids-doris.org>

