International Doris Service

IDS REPORT 2010

GGOS Bureau for Networks & Communications

Vienna, Austria.

April 6, 2011

Outline

1. **Satellite Constellation Status**
2. **Network Status**
3. **DORIS/VLBI interference**

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DORIS Constellation Status - Current Missions

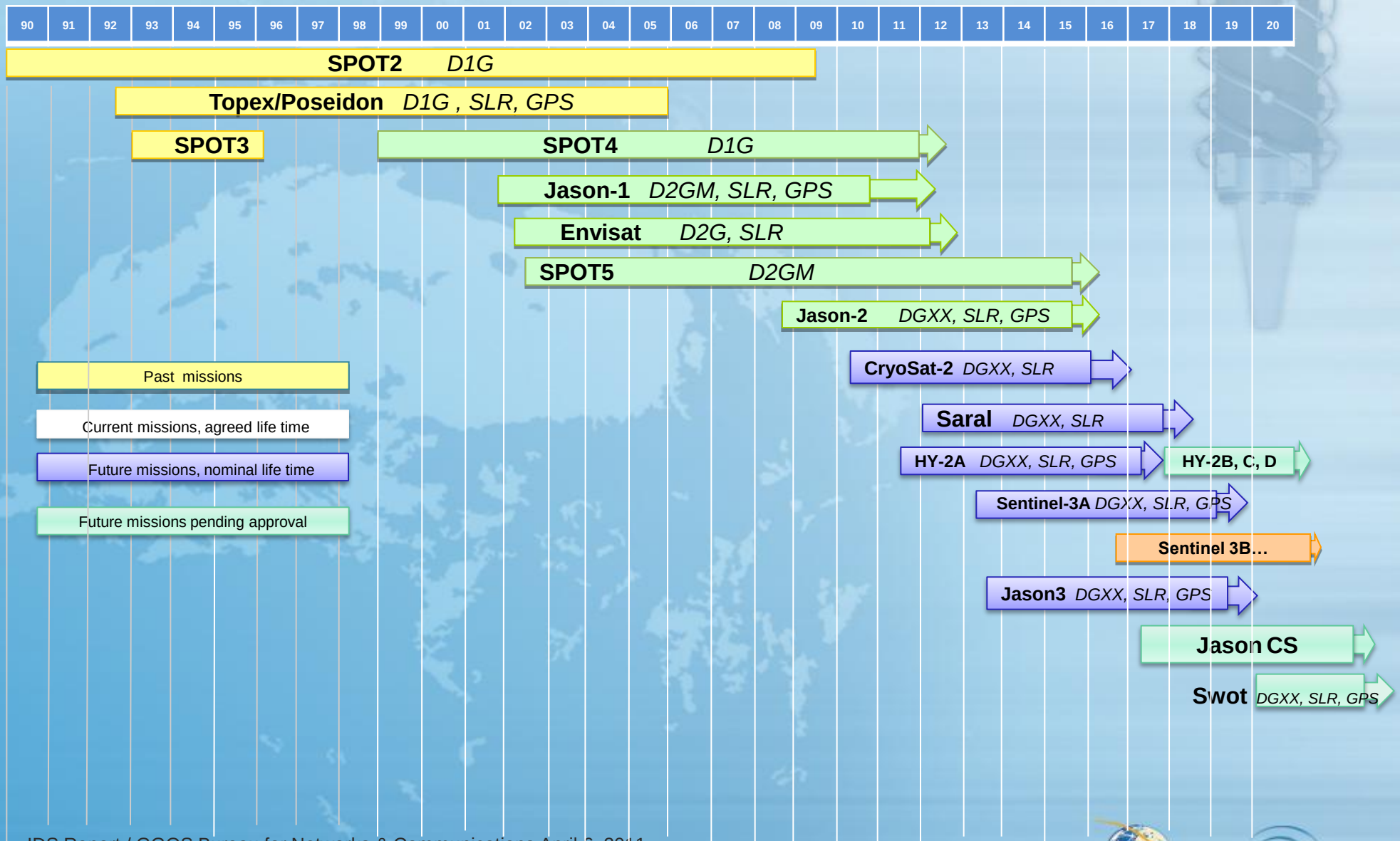
- **CRYOSAT-2 (ESA): 717 km, 92°** — **April 8, 2010 ➔ end 2013, (DGXX + LRA)**
- **JASON-2** (CNES/NASA): 1336 km, 66° — June 2008 ➔ end 2013, (DGXX+LRA+GPS)
- **ENVISAT (**ESA): 800 km, 98.5° — March 2002 ➔ 2013, (D2GM + LRA)
  (Oct 2010: orbit change: altitude reduction -17.4 km)
- **SPOT5** (CNES): 830 km, 98° — May 2002 ➔ 2015 (D2GM only)
- **JASON-1** (CNES/NASA) 1336 km, 66° — Dec 2001 ➔ 2012 (D2G+LRA+GPS)
- **SPOT4** (CNES): 830 km, 98° — March 98 ➔ 2012

DORIS Constellation Status - Future Missions

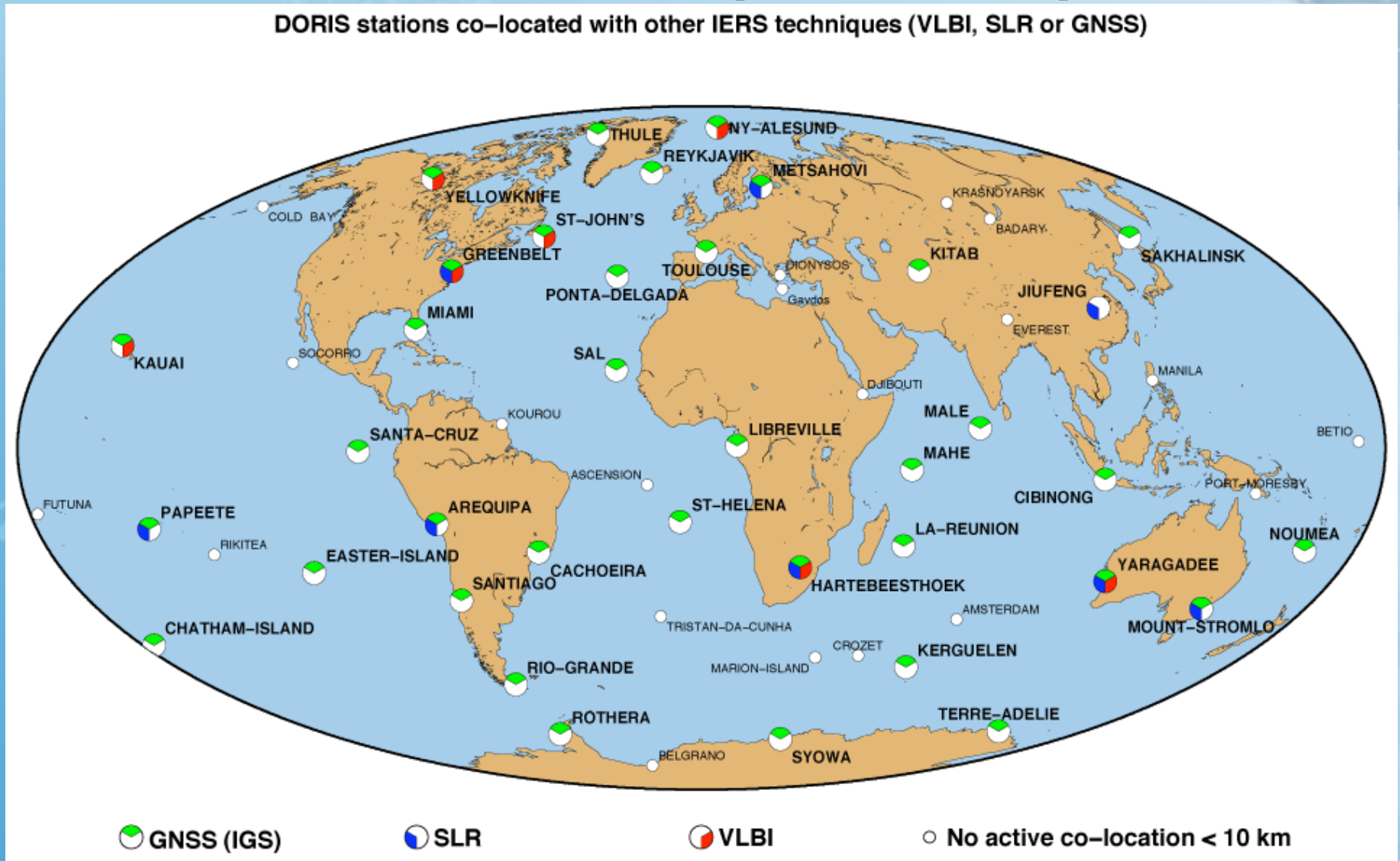
- **HY2A (CNSA)** : 963km, 99.3° — July 2011, (3 years), (DGXX+LRA, GPS)
  … then HY2B, 2C, 2D…
- **SARAL/ALTI-KA (ISRO)** : 800km, 98.5° — End 2011, (5 years), (DGXX + LRA)
- **SENTINEL3A (GMES)** : 814km, 98.6° — April 2013, (7 years), (DGXX+LRA+GPS),
  - **Sentinel 3B**: 2017
- **JASON-3 (Eumetsat/NOAA/CNES)** : 1336 km, 66° — summer 2013 (DGXX+LRA+GPS),
- ***JASON-CS* (Eumetsat/ESA/CNES)*** *: 1336 km, 66°* — *2017*
- ***SWOT* (NASA/CNES)*** *: 970km, 78°* — *2020 (DGXX+LRA+GPS),*

(*) on board DORIS pending approval

DORIS CONSTELLATION SUMMARY



Network (as of 2011)



Network permanent improvements

- Standardization of the station configuration
- Respect for system requirements :
- Installation of a remote management system (Iridium) :
  - today 18 stations, 10 more expected in 2011, …
- Beacon model 3.0 deployement completed
- New beacon models 3.1 & 3.2 improve reliability and robustness
- Maintenance operation on each master beacon every year
- Monitoring and analysis of the DORIS signal integrity continuously performed:
  - Maintain beacon network availability and signal quality
  - Simplify and accelerate detection of defaults,
  - Identify possible improvements on the network.

➔ Network availability : always over 75% since 2005 (mean 85%)

➔ Defaults are mostly detected and corrected before they impact users

Active Network issues

- Goldstone, Replacement for Monument Peak.
- Riyadh : New DORIS station, awaiting frequency clearances.
- Tamanrasset, Algeria
- New station under consideration for Chichijima, Japan
- DORIS-VLBI colocation (next slides)

DORIS/VLBI compatibility

- **Plan experiment to determine degree of interference and come up with plan or formula for how DORIS might be "safely" co-located at VLBI locations:** *Action item from both the IDS and IVS Governing Boards*

- **DORIS/VLBI compatibility status**
  - **current VLBI (s-X band, no broadband ➔ no interference with DORIS**
    http://ivscc.gsfc.nasa.gov/publications/gm2010/ilin.pdf
  - **VLBI2010: Hyastack study (C. Beaudoin) ➔ risk of interference**
    - Distance required: **500m** between DORIS and VLBI antennas
    - To find a solution (small building?) to reduce the DORIS signal towards VLBI without creating multipath.
    - Sutdy to be continued

DORIS/VLBI compatibility

- Current status of co - located DORIS/VLBI to be confirmed

Yarragadee	Australia	Current VLBI (no broadband) or VLBI2010? : TBC VLBI antenna 130m from DORIS one
Badary	Russia	Current VLBI (no broadband) / no interference
Ny-Alesund	Norway	VLBI2010 is planned, in progress
Matsahovi	Finland	VLBI2010 planned (2014?)
St Johns, Yelownife	Canada	Nothing is planned yet
Papeete / Rikitea	Tahiti	What is planned?
Ponta Delgada	Azores	VLBI2010 is planned, in progress

DORIS/VLBI

- **ACTION PLAN**
- **Current study Hyastack at GGAO, C. Beaudoin) to be continued**
- **Telecon NASA/GSFC – Hyastack - CNES organized by F. Lemoine to:**
  - manage a measurement test campaign at Greenbelt using a dedicated DORIS antenna (mobile)
  - Define a strategy and coordination between IDS and IVS on that topic
  - Inform IDS as soon a VLBI station is planned to be intalled near a DORIS station

THANK YOU!

http://ids-doris.org