IDS Report

Activities over the past year and expectations over the next two years

GGOS Bureau for Networks and Observations
San Francisco, 13 December 2016

JEROME SAUNIER, IGN (IDS representative to GGOS-BNO)
CO-LOCATION = PERMANENT OBJECTIVE THROUGHOUT THE NETWORK DEPLOYMENT AND EVOLUTION (30 YEARS)
NETWORK STATUS

- 45 CO-LOCATIONS OUT OF 57 DORIS SITES
CONTINUOUS HIGH NETWORK AVAILABILITY (OVER 85% IN 2016)

DORIS network activity from January 1993

Number of weeks

- operating
- out of order
RECENT NETWORK EVENTS

- Mar. 2016: station re-location at Owenga, Chatham Island, New-Zealand (site refurbishment)
- Apr. 2016: new station installing to near IGS « MANA » at Managua, Nicaragua
- Jun. 2016: station re-location at Kitab, Uzbekistan (major renovation to get better visibility)
- Sep. 2016: new station at Wettzell, 4th geodetic site including all four of the techniques

After many **DORIS-VLBI compatibility tests** through varying the distance, the azimuths and elevations of the telescope and placing RF barriers, some basic principles has been established:

- Maximum distance between the two instruments, ideally 300-400m
- At shorter distance, no direct visibility using local topography or RF blocking structures (the maximum gain lobe of the VLBI antenna must never point towards the DORIS antenna)
- The received power has its maximum in the direction of the DORIS antenna at low elevations (< 20°)
- Obstacles between the antennas (hills, buildings, RF blocker) attenuate the signal up to ~ 20 dB
- Reflections at objects (trees, buildings) strongly contribute to the total received power (RHCP ~ LHCP)

For further information, see Thomas Klügel presentation:
ids-doris.org/meetings/ids-meeting.html > 2016 > IDS Workshop
NETWORK EVOLUTION

**SHORT TERM (NEXT 6 MONTHS):**
- San Juan, AR: new station installing in place of Santiago *(3 techniques site)*
- Easter Island, Chile: relocating (hosting migration)
- Guam, US: new station to near IGS station, GUUG

**LONGER TERM (2017-2018):**
- Katherine, AS: new station installing in place of Port-Moresby *(3 techniques site)*
- Ny-Ålesund, Spitzberg, Norway: relocating (new *4 techniques site*)
- Changchun, CN: new station installing in place of Sakhalinsk *(3 techniques site)*
- Reykjavik, IS: station relocating (site closure)
- Papenoo, Tahiti, FR: new *4 techniques site* under construction
FUTURE DEVELOPMENTS

- **4TH GENERATION DORIS GROUND BEACON**
  - New electronic components; new architecture
  - Antenna cables allowing to install it up to 50m from the beacon
  - Initial deployment could start mid 2019

- **MONUMENT STABILITY MONITORING**
  - “Assessment of the DORIS network monumentation” (10.1016/j.asr.2016.02.026)
  - Equipping sites with control points and targets to carry out stability monitoring surveys

- **DORIS / VLBI RF COMPATIBILITY**
  - Investigation for RF blockers or absorbers
DORIS: A SECURE FUTURE OVER AT LEAST THE NEXT 15 YEARS

On board instruments:
D1, D2, DX, DXs: DORIS/versions, S: SLR, G: GNSS
IDS ELECTIONS

- Frank Lemoine, new Analysis Center representative has been designated as the Chair of the IDS GB for 2017-2020

PUBLICATION OF SPECIAL ISSUE ON DORIS, ADV. SPACE RESEARCH

- Scientific Applications of DORIS in Space Geodesy
- Vol 58, Number 12, Dec 15, 2016
- Edited by Frank G. Lemoine, Ernst J.O. Schrama

IDS NEWSLETTER

- Launch in Apr. 2016
- 2 newsletters already on-line at ids-doris.org/report/newsletter.html
- Newsletter#3 (in preparation) will focus on the IDS Workshop (La Rochelle, Nov. 2016)

NEXT IDS MEETINGS

- IDS AWG, in London (UCL), May 2017
- IDS Retreat under preparation