DORIS NETWORK
STATUS REPORT

IDS Analysis Working Group Meeting
Munich, 4 April 2019

Jérôme Saunier, IGN - France
OPERATIONAL STATUS

📍 60 permanent stations of which: 9 beacons are out of order and 3 decommissioned

- Decommissioned (pending replacement)
- Out of Order for over a year
- Out of Order

+ 2 IDS stations

master beacon  time beacon  IDS station

IDS AWG, Munich, April 4th, 2019
Good overall performance of the network

Mahé restarted on November 14th, 2018 after 3-yr outage
At least 80% of the network stations have been operating throughout the period 2018-2019. Limited stock of spare equipment before the 4th generation beacon deployment (mid 2019).
# Network Main Events 2018

<table>
<thead>
<tr>
<th>Year</th>
<th>Station</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb.</td>
<td>ROXC</td>
<td><strong>Rothera</strong></td>
</tr>
<tr>
<td></td>
<td>BADB</td>
<td><strong>Badary</strong></td>
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<tr>
<td></td>
<td>KRBB</td>
<td><strong>Krasnoyarsk</strong></td>
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<tr>
<td>Apr.</td>
<td>MLAC</td>
<td>Mangilao</td>
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<tr>
<td>Aug.</td>
<td>RISC</td>
<td><strong>Rio Grande</strong></td>
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<td>Sep.</td>
<td>SJUC</td>
<td>San Juan</td>
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<tr>
<td>Oct.</td>
<td>SVAC</td>
<td>Ny-Alesund II</td>
</tr>
<tr>
<td>Nov.</td>
<td>MAIB</td>
<td>Mahé</td>
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## NETWORK EVENTS 2019

<table>
<thead>
<tr>
<th>Year</th>
<th>Station</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan.</td>
<td>GONC</td>
<td>Goldstone</td>
<td>Beacon replacement</td>
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<tr>
<td></td>
<td>HEMB</td>
<td>St-Helena</td>
<td>Service interruption: beacon shelter rebuilding until April</td>
</tr>
<tr>
<td>Feb.</td>
<td>JIWC</td>
<td>Jiufeng</td>
<td>Beacon replacement</td>
</tr>
<tr>
<td>Mar.</td>
<td>KEVC</td>
<td>Kerguelen</td>
<td>Antenna replacement</td>
</tr>
<tr>
<td>Apr.</td>
<td>GRFB</td>
<td>Greenbelt</td>
<td>Beacon replacement</td>
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<tr>
<td></td>
<td>FUUB</td>
<td>Futuna</td>
<td>Beacon replacement</td>
</tr>
</tbody>
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**In bold: main events**

In normal font: on-site operations carried out by IGN

*In italics: operational maintenance (equipment replacement) managed by CNES with the participation of Host Agencies*
UPDATE ON THE STATIONS DEDICATED TO IDS

Wettzell:
Into operation since September 2016
Good performance: 13th in the network ranking
BKG as IGN is involved in a EU-funded project “GeoMetre” dealing with metrology and surveying following the development at CNAM of an optical absolute distance meter that offset refraction fluctuations of the atmosphere: testing campaigns are planned at CERN and at OCA (Grasse)

Mangilao:
A year of continuous service completed since its commissioning in April 2018
Significant contribution to the coverage in Pacific area
Should be soon incorporated into the permanent network
=> IDS has to decide on another site for its second dedicated DORIS station
Scheduled in 2019:

May: **St John’s**, Canada: equipment replacement and local tie survey
Jun.: **Santa-Cruz**, Ecuador: (re)starting after 10-years outage; equipment shipping in progress
Sep.: **Badary, Krasnoyarsk**, Russia: restarting after 18 months of shutdown (pending frequency clearance)

**4th generation beacon deployment** from mid 2019

Short term (2019-2020):

**Dionysos**, Greece: relocating before site closure
**Easter island**, Chile: following site closure in 2015, relocation and hosting migration
**Changchun**, China (co-location GNSS + SLR): awaiting for government agreement

Longer term:

**Reykjavik**, Iceland: relocating before site closure; reconnaissance planned end of June 2019
**Katherine**, Australia (co-location GNSS + VLBI): awaiting for the VLBI upgrade
**Papenoo**, French Polynesia (co-location GNSS + SLR + VLBI): budgeting under way
**NETWORK EQUIPMENT**

4th generation beacon deployment

Production models under manufacturing for mid 2019 deployment

Up-to-date electronic components: to be operational up to 2033

Opportunity to relocate antennas to get better visibility (cable length 50 m compared with 15 m before)

**Gradual replacement of Starec antennae B type with C or D type**

Key development: standard uncertainty of the 2GHz phase center in the vertical direction was reduced to 1 mm from 5 mm (Saunier & Tourain, 2016)

16 stations are now equipped with Starec C: 27% of the network
today: 47 co-locations out of 59 DORIS sites

NETWORK INFRASTRUCTURE: CO-LOCATION

- GNSS (IGS)
- SLR
- VLBI
- No active co-location < 1 km

This map was created by IGN–France
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