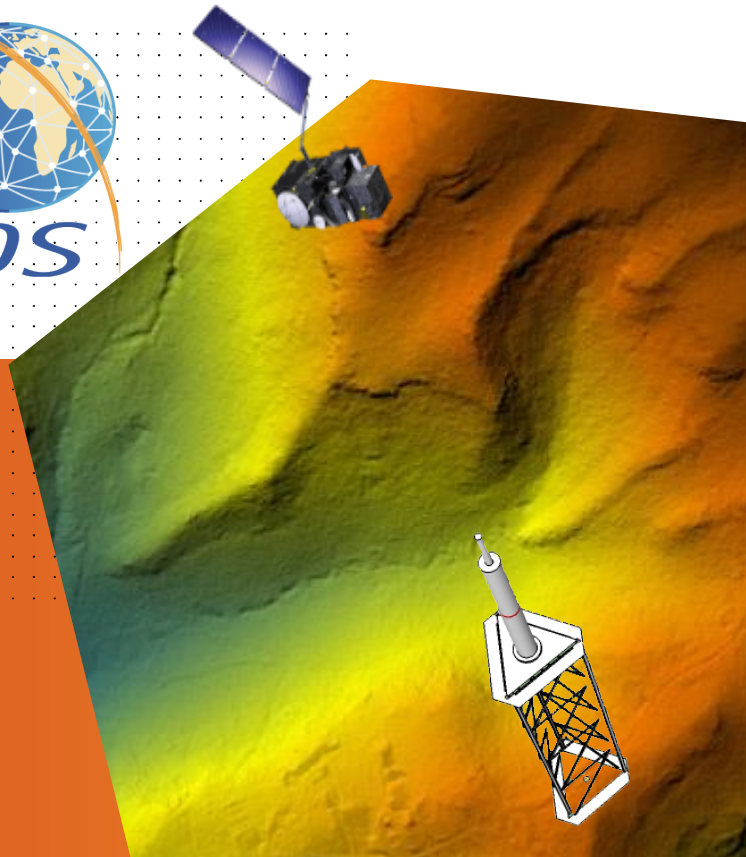


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# DORIS NETWORK STATUS REPORT

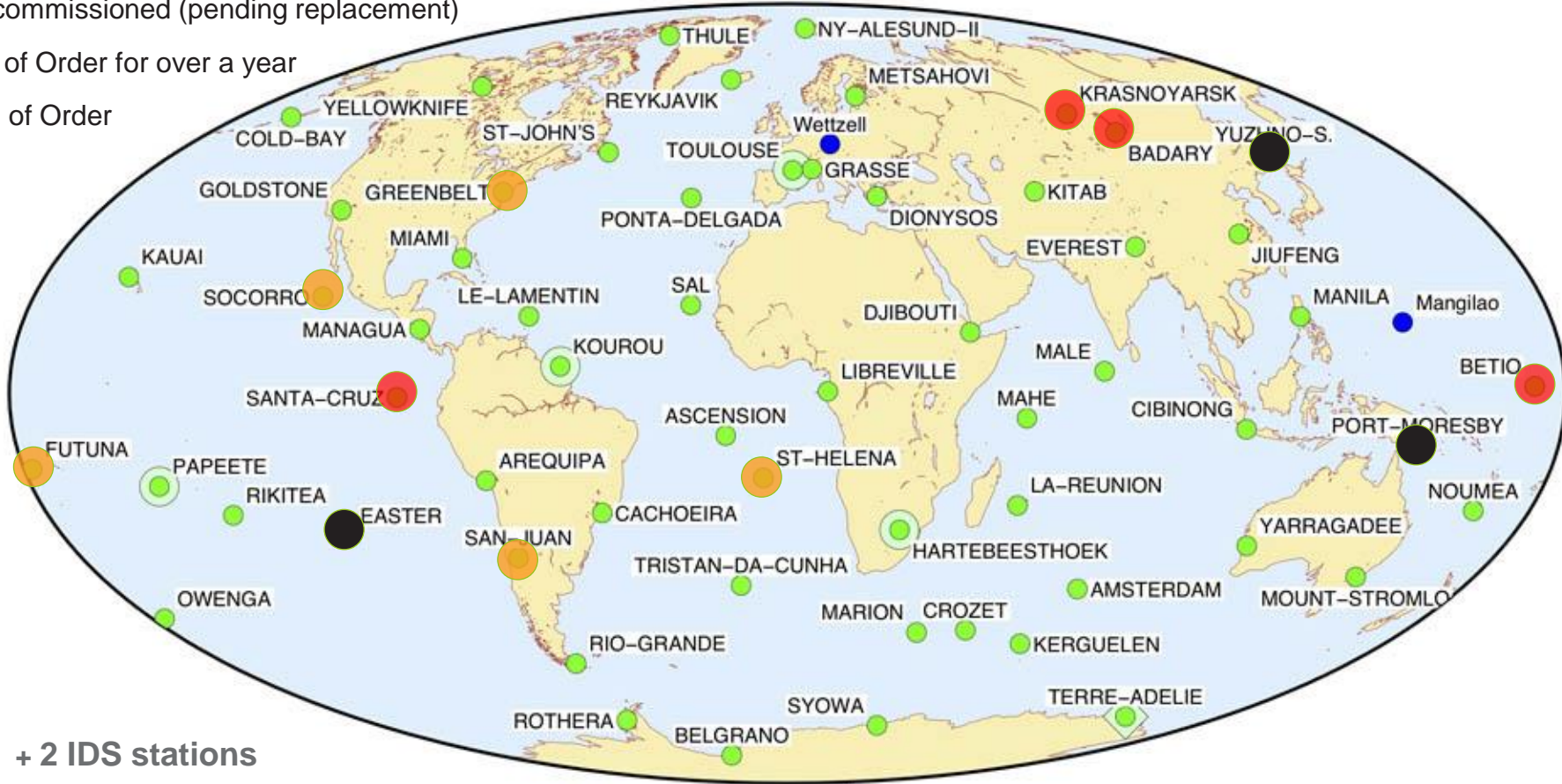
IDS Analysis Working Group Meeting  
Munich, 4 April 2019

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

# NETWORK ACTIVITY

- 📍 Good overall performance of the network
- 📍 Mahé restarted on November 14<sup>th</sup>, 2018 after 3-yr outage

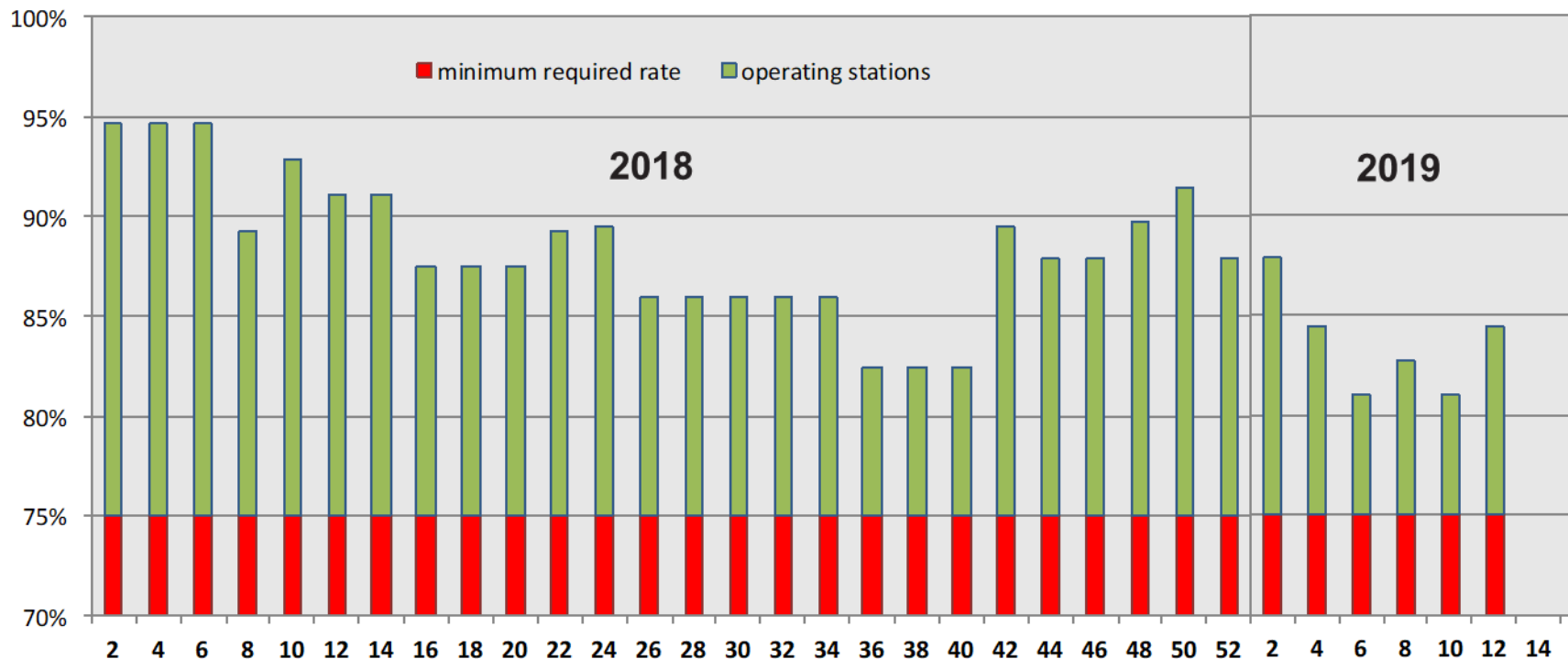
## Network activity 2018

■ active ■ out of service



# NETWORK AVAILABILITY

- 📍 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

2018	Station	Event
Feb.	ROXC BADB KRBB	<b>Rothera</b> <b>Badary</b> <b>Krasnoyarsk</b> <b>Station relocation</b> and local tie survey <b>Shutdown</b> for indefinite period <b>Shutdown</b> for indefinite period
Apr.	MLAC	<b>Mangilao</b> <b>Station installation</b> and local tie survey
Aug.	RISC	<b>Rio Grande</b> <b>Equipment replacement</b> after 2 years in downgraded mode
Sep.	SJUC	<b>San Juan</b> <b>Station installation</b>
Oct.	SVAC	<b>Ny-Alesund II</b> <b>Station relocation</b>
Nov.	MAIB	<b>Mahé</b> <b>Restarting</b> after a 3-years outage (equipment replacement)



ROXC



MLAC



SJUC



SVAC



MAIB

# NETWORK EVENTS 2019

2019	Station		Event
Jan.	GONC	<i>Goldstone</i>	<i>Beacon replacement</i>
	HEMB	<i>St-Helena</i>	<i>Service interruption: beacon shelter rebuilding until April</i>
Feb.	JIWC	<i>Jiufeng</i>	<i>Beacon replacement</i>
Mar.	KEVC	<i>Kerguelen</i>	<i>Antenna replacement</i>
Apr.	GRFB	<i>Greenbelt</i>	<i>Beacon replacement</i>
	FUUB	<i>Futuna</i>	<i>Beacon replacement</i>

## 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



## Wetzell:

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

# NETWORK EVOLUTION



## 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)

4<sup>th</sup> 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

## 4<sup>th</sup> generation beacon deployment

Production models under manufacturing for mid 2019 deployment

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

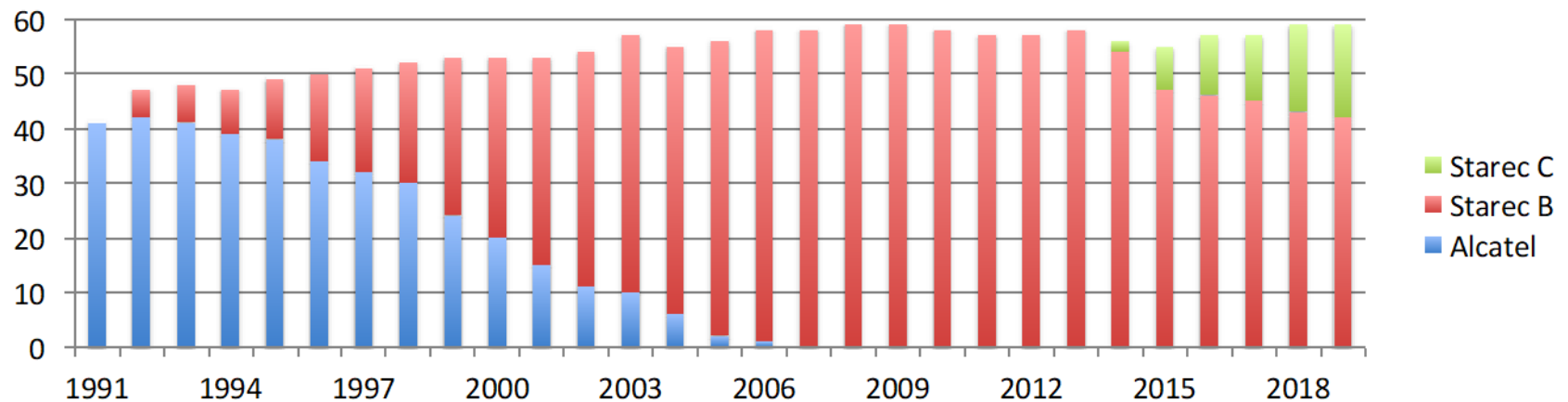
Opportunity to relocate antennas to get better visibility (cable length 50 m compared with 15 m before)



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

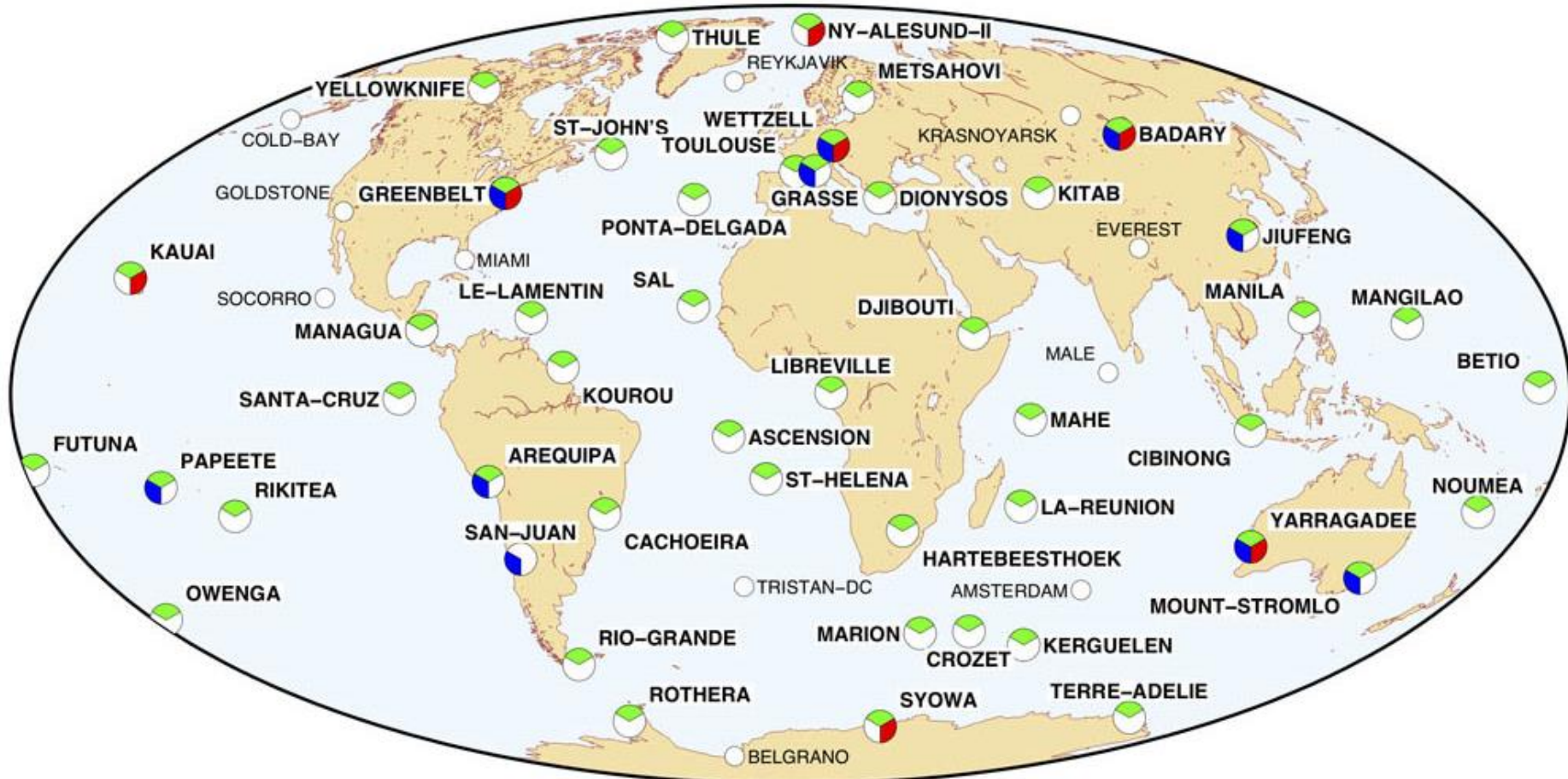
Key development: standard uncertainty of the 2GHz phase center in the vertical direction was reduced to 1 mm from 5 mm (Saunier & Tourain, 2016)

16 stations are now equipped with Starec C: 27% of the network



# NETWORK INFRASTRUCTURE: CO-LOCATION

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



GM 2019 Mar 22 17:02:49 This map was created by IGN-France

📍 today: 47 co-locations out of 59 DORIS sites



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