



# Status and plans of the International DORIS Service



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new version launched in May 2025 ! It's brand new! #idsdoris

The International DORIS Service (IDS) was created in 2003 as an IAG service to federate the research and developments related to the DORIS technique, to organize the expected DORIS contribution to IERS and GGOS, and to foster a larger international cooperation on this topic. IDS pursues its mission by following the four themes of its strategic plan:

## ❖ Expanding the community

New groups have joined forces with IDS in recent years, bringing new processing capabilities or wishing to become involved in DORIS processing in the medium term. These new forces are also paving the way for new applications.

### ○ Two new working groups (WG) set up in 2024:

- The “**Integrated Clock Correction Strategies for DORIS**” WG is led by Patrick Schreiner (GFZ, Germany) and aims to address the behavior of DORIS clocks, exploiting DORIS clock co-locations in space and on ground. The goal is to derive methods to better model the behavior of DORIS USO and reduce a source of systematic error in the DORIS technique.

- The “**NRT ionospheric applications**” WG, led by Ningbo Wang (AIR/CAS, China), is the continuation of the “NRT data”. Its aim is to advance the use of Near-Real Time (NRT) DORIS data for ionospheric research applications.

### ○ Scientific and technical collaborations with NTUA, IIT Kanpur, DGFI-TUM

- Strengthened ties with IAG services: several members of the IDS Governing Board are strongly involved in GGOS, ILRS, IGS

## ❖ Facilitating access to DORIS and IDS

### ○ Distribution of NRT data

DORIS/RINEX data have been provided with a maximum latency of 3 hours since February 2021 for Jason-3, since July 2024 for the other eight missions.

Next: complete the NRT dataset with extrapolated orbits

### ○ Tools available for data analysis

- RINEX conversion kit provided by GRGS (access on the IDS website)

Next: Jupyter Notebooks developed by NTUA for data analysis practicing

- DORIS presentations at SIRGAS virtual school (June 2025) and at 1st GGOS Iber Atlantic summer school (July 14, 2025)

Next: DORIS days 2025 (see opposite)

## ❖ Improving infrastructure and treatment

### ○ New application: Using NRT DORIS data for an independent and external validation of existing GNSS-based ionosphere models

The high-quality dual-frequency phase observations of the DORIS system provide a valuable source of information for global ionospheric analysis. Since August 2025, NRT DORIS data from Jason-3 have been routinely used by the IGS Real-Time Service to monitor the accuracy of different RT-GIM products with a latency of about 24 hours (<https://igs.org/rtm/monitoring/>).

## ❖ Advancing technology

One of the objectives of this theme is to gain a better understanding of the behavior of DORIS oscillators through external observations.

- Connections to an atomic clock to access the frequency of the on-board oscillator. **Done for Grasse (2013), Ny-Alesund II (2022), Wettzell (2022), Yellowknife (2023); ongoing for Greenbelt.** Other potential sites: Kauai, Syowa, Hartebesthoek, Yarragadee, and future sites Katherine, Kanpur.

- Connection of DORIS receiver with GNSS onboard receiver to model USO's rapid variations, particularly in the SAA area, using estimated GNSS clocks. **Done on Sentinel-3A&B, Sentinel-6A**

- Connect DORIS stations to GNSS stations to measure USO's frequency by GNSS: action taken by CNES to connect the DORIS and REGINA stations (CNES GNSS network) at co-located sites where possible (21 potentially).

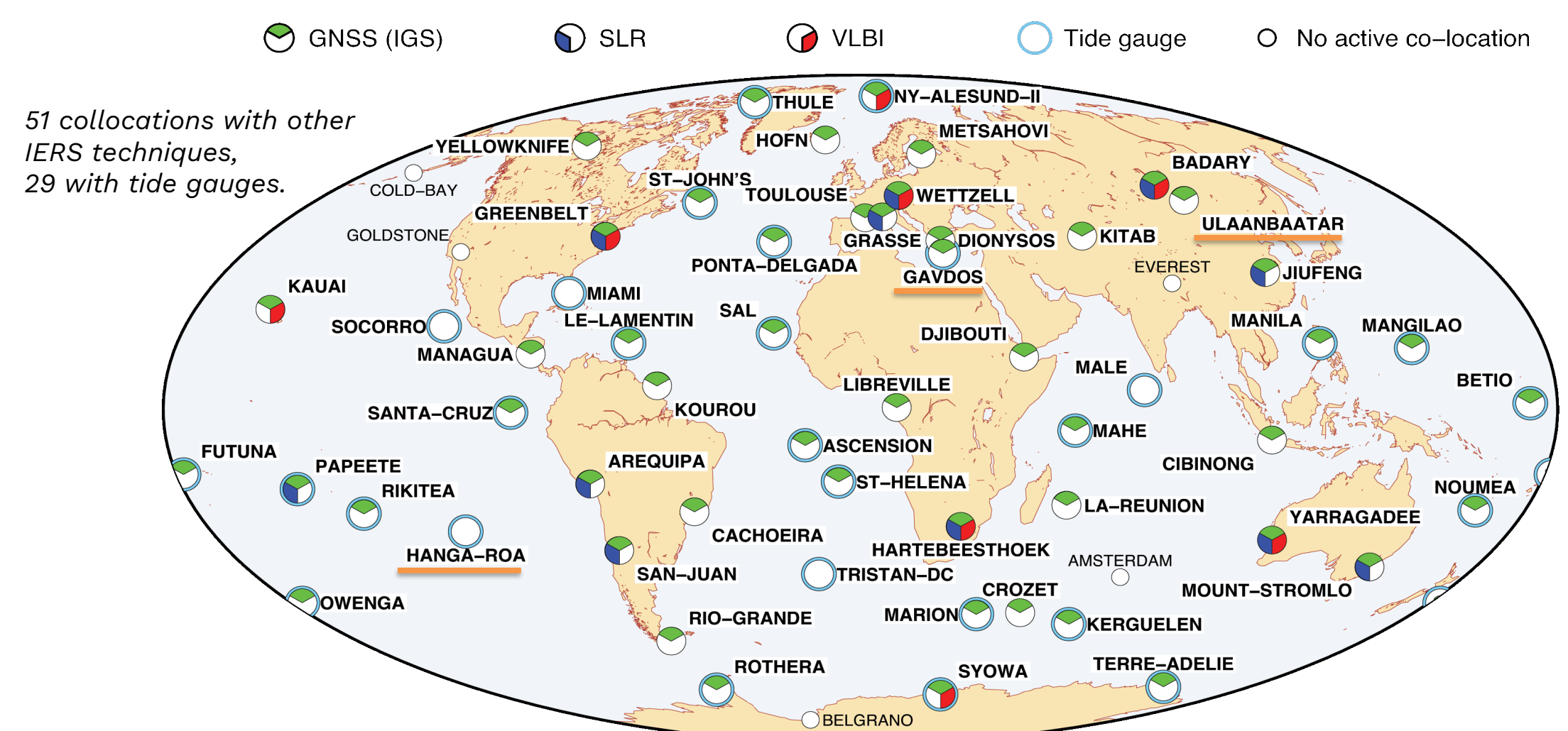
## Come and join the IDS Community

- Attend an IDS meeting
  - IDS Workshop (next meeting associated with OSTST in 2026)
  - Analysis Working Group meeting (**next: Nov. 6&7 2025 in Athens, Greece**)
- Participate to a « DORIS Days » seminar: see opposite
- Join or propose an IDS Working Group (troposphere, SAA, ...)
- Become an IDS Analysis Center (AC) or Associate Analysis Center (AAC)
- Work on a research topic with IDS collaborators

## What's new on DORIS

### DORIS network

DORIS has a globally distributed network of **61 permanent stations**. Densification to about 70 stations is currently underway.



Three new sites were added over the last two years:

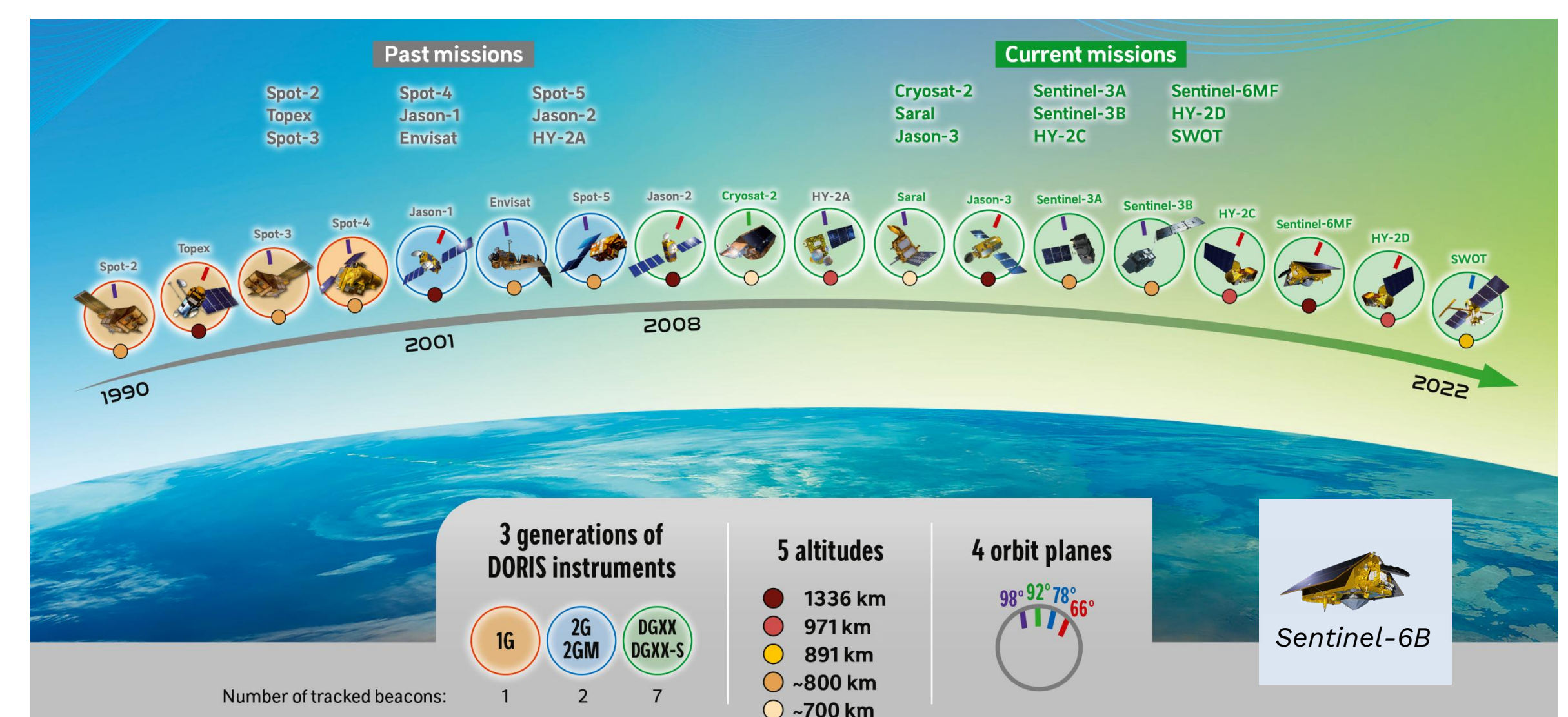
- Hanga Roa (Easter Island, Chile)
- Gavdos Island (Crete, Greece)
- Ulaanbaatar (Mongolia)

See Jérôme Saunier's presentation “DORIS Network status and outlook” Th. 4 Sep. 09:45 Borgo Room - G06

**Coming soon: Kanpur** (India), in the frame of a collaboration of IDS with IIT Kanpur for the development of DORIS data analysis

### DORIS constellation

**9 satellites are in operation**, all with DORIS/DGXX-S, and **4 planned** in the next two years: **Sentinel-6B** (Nov. 2025); **HY-2E, HY-2F, Sentinel-3C** (2026)



**GENESIS (2028):** all four geodetic techniques on one dedicated satellite at 6000 km altitude

In April, **ESA and the French Space Agency CNES signed a contract confirming that DORIS will join the mission**. A DGXX model suited to this mission will be supplied by CNES. IDS fully supports this project and together with CNES experts, is involved in the Genesis Science Exploitation Team.



## DORIS days 2025: two days of lectures and hands-on sessions on November 3&5

The IDS is organizing a new edition of the “DORIS Days” designed to offer both a foundational and hands-on experience with DORIS and the IDS community, tailored especially to early-career researchers and students

### Day 1 – Monday, 3 November (second half of UTC day, **online only**)

The first day will include a series of introductory and advanced presentations on the DORIS system, IDS, precision applications, and associated tools and products. All speakers on this day will deliver their talks remotely.

### Day 2 – Wednesday, 5 November (full day, hybrid with **in-person participation strongly encouraged**)

This day is dedicated to practical, hands-on sessions. Each block will consist of a short theoretical lecture and a guided practical session using Jupyter Notebook.

Venue: **National Technical University of Athens, Athens, Greece** – Zografos Campus, School of Rural Surveying & Geoinformatics Engineering

Free registration and information at

<https://ids-doris.org/ids/meetings/ids-meetings.html>

Scan QR code for registration →

