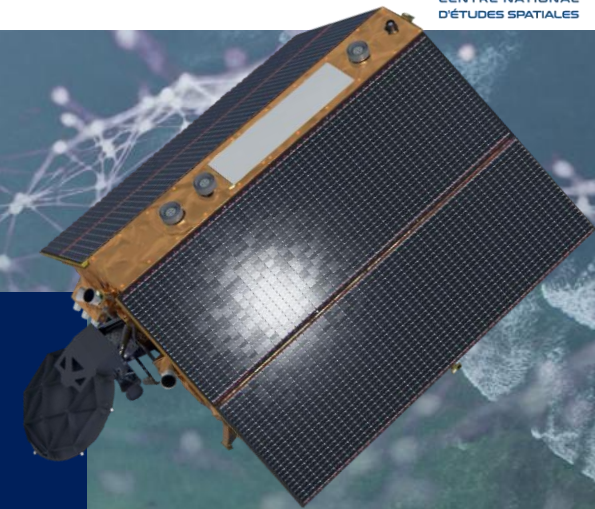


IDS news

Laurent Soudarin (CLS, France), Cécile Manfredi (CNES, France)



Outline

- ❑ IDS Working Groups
- ❑ Capacity building
- ❑ Data dissemination
- ❑ Verification of CoP and CoM values
- ❑ Documentation
- ❑ DOI assignement
- ❑ Iono Product
- ❑ Publications
- ❑ Web site

IDS Working Groups

IDS Workshop

Working Group **Integrated Clock Corrections for DORIS** (created in June 2024)

Chair: Patrick Schreiner (GFZ, Germany)

Aim: to deal with the behavior of the DORIS clocks, exploiting DORIS clock co-locations both in space and on ground.

*See presentations by
P. Stepanek and A. Mezerette*

Working Group **NRT ionospheric application** (created in November 2024)

Chair: Ningbo Wang (AIR/CAS, China)

Aim: to advance the use of NRT DORIS data for ionospheric research applications

*See presentation by
K. Zhang*

Working Group **Tropospheric Products** **NEW !**

Chair: Samuel Nahmani (IGN/IPGP, France)

Aim: to coordinate scientific assessment of tropospheric products derived from DORIS observations

*See presentation by
A. Pollet*

Working Group **Outreach** **In preparation**

Proposed chair and co-chair: Maria Tsakiri (NTUA, Greece) and Karine Le Bail (Chalmers TU, Sweden)

Aim: to expand the visibility, accessibility, and impact of the International DORIS Service and of the DORIS technique by engaging scientific, educational, policy, and public audiences

Capacity building

IDS Workshop

Presentations of the DORIS system and IDS products at summer schools

- June 2025: Sirgas Virtual School “Terrestrial Reference Frame. Geodynamic and Atmospheric Monitoring 2025”
Recorded presentation “DORIS contributions in ITRF and EOP estimation.” (English and Spanish versions)

- July 2025: [1st GGOS IberAtlantic Summer School](#)
Presentation “Introduction to DORIS”

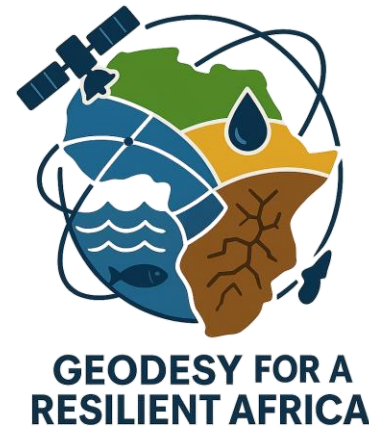
- November 2025: DORIS days 2025 (Athens, Greece)
Two days of lectures and guided practical sessions using Jupyter Notebook

- June-July 2026: Geodesy for a Resilient Africa Summer School
DORIS session:

- Introduction to the four space geodetic techniques
- The DORIS system and its principles
- DORIS scientific applications in geodesy
- The International DORIS Service

IDS Website:

- new section **Capacity building** including material of the DORIS days, access to Jupyter Notebooks, presentations at summer schools.



Data: Sentinel-6B

- ❑ Sentinel-6B: launched on November 17, 2025

Type	Files	Repository
DORIS data	daily RINEX and RINEX NRT	CDDIS and IGN DCs
Orbits	POE and extrapolated *	CDDIS and IGN DCs
History files	maneuver, mass and CoM	IDS BC ftp
Ancillary	quaternions	soon at Copernicus browser ?
Documents	characteristics POD, macromodel	IDS website, not before the end of the calibration phase in November 2026

- ❑ HY-2C and HY-2D orbits in the POE-G* standard available since February

- ❑ HY-2E, Sentinel-3C: next upcoming missions

* For POE with POE-G standards (Jason-3, Sentinel-3, Sentinel-6, HY2C&D) and extrapolated orbits, the precision is extended with one digit in 'P' and 'V' blocks (f14.7 instead of f14.6 in standard sp3c). See readme file.

Data: NRT dataset

type	satellites	file cover	delivery	format	repository	comments
DORIS data	all current missions	2-3 hours	every 2 to 3hr	DORIS/RINEX	IGN	CDDIS in October
Extrapolated orbits	all current missions	4 days from current day	daily	sp3c*	IGN, CDDIS	replace NRT orbits

* precision extended

NRT DORIS/RINEX

- ❑ Outages in the RINEX NRT production chain from May 14 to May 18 and from June 1 to June 16.
- ❑ A consolidated and monitored chain is being developed. Ready in October, including uploads to CDDIS
- ❑ RINEX NRT files are now named according to the IDS naming convention

4-day extrapolated orbits

- ❑ Extrapolated orbits are derived from the SSALTO MOE orbits and created for all ten current missions
- ❑ On day D, a file created a few hours after 0h is provided with the orbit from D 0h to D+5 0h.
- ❑ Directories: doris/products/orbits/ssa/<sss>/**EXTRAPOLATED**/
Naming convention: **ext**<sss>30.bXXDDD.eYYYYE. d__.sp3.LLL.Z
- ❑ The uploading to IGN of the so-called “NRT orbits”[◦] is now stopped.
 - created on the flow by Triode (Diode-like ground component) for only 7 missions and uploaded only to IGN

Data: Swot quaternions and solar panel

IDS Workshop

Quaternions

Format	Status	archive	comment
netcdf	Abandonned (S1 2025)	None (removed from IGN)	+: high temporal resolution -: heavy files
« jason-3 like »	Routinely uploaded	IGN (complete) CDDIS (completed in 2026)	files with a duration < 1.5 hr → many gaps between the files → several gaps > 1 day (unknown reasons)

Solar panel angles

Format	Status	archive	comment
xml	Routinely uploaded	IGN (complete) CDDIS (from Nov. 2025)	+: daily files -: heavy files; see notes 1 and 2
« jason-3 like »	Under evaluation by AWG	None at this time	column format similar to that of the Jasons dates in TAI, instrumental correction added Objective: to replace xml files

- ☐ Note 1 (documented): **instrumental correction to be added in xml**: +0.2° to SP 1 angle, -0.2° to SP 2 angle
Bias due to a small misalignment on the platform and not included in the angles extracted from the telemetry.
- ☐ Note 2 (falsely documented): **dates in TAI in xml**
Documentation says UTC because ISO code in files is for UTC but misused → to be updated if « jason-3 like » format not adopted

Verification of Phase Center and CoM values

Consistency check of DORIS phase center positions and satellite center-of-mass positions between the macromodel document “DORIS satellites models implemented in POE processing” and the documents titled “Characteristics for the POD” and “Modeling of Instruments 1G, 2G, 2GM.”

→ **Some inconsistencies found for the phase centers with possible impact on DORIS scale factor**

Satellite	CoP	Current values (m)	Corrected values (m)	Comments
Sentinel-3A	2GHz	X: 1.570 Z: 1.076	X: 1.569 Z: 1.071	-5mm in Z
	400MHz	X: 1.570 Z: 0.910	X: 1.569 Z: 0.905	-5mm in Z
Sentinel-3B	2GHz	X: 1.570 Z: 1.076	X: 1.569 Z: 1.069	-7mm in Z
	400MHz	X: 1.570 Z: 0.910	X: 1.569 Z: 0.896	-14 mm in Z
Swot In KSFM reference frame = POD reference frame !!	2GHz	X: +0.0002 Y: 0.5441 Z: 2.7777	X: -0.0002 Y: 0.5446 Z: 2.7971	+20 mm in Z
	400MHz	X: +0.0002 Y: 0.5441 Z: 2.6117	X: -0.0002 Y: 0.5446 Z: 2.6311	

→ See Olivier’s presentation on Wed, Jun 24, 12:00

→ To be discussed at AWG meeting

→ If approved, corrections will be reported in the next version of the document “Macromodels”

Documentation

- ❑ New file:
 - List of stations with external time and frequency references

- ❑ New document:
 - HY-2D input data for Precise Orbit Determination

- ❑ Updated versions:
 - HY-2C input data for Precise Orbit Determination (added DORIS description)
 - Jason-3 characteristics for POD activities
(correction of a sign error reported by DGFI-TUM. Thank you for your feedback!)

- ❑ In preparation
 - Update of « Swot characteristics for POD processing »
(correction of an error in the position of the antenna's origin)

DOI assignment for indexing and citation

The Central Bureau uses CNES DOI service to gradually assign DOI to several collections of documents:

- **Products**

DORIS dSTEC, IDS Contribution to ITRF2020, GSC std2400 orbits

- **Reports**

All IDS annual activity reports have a DOI and a landing page.

- **Abstracts** of IDS Workshops

Done for 2024, 2022, 2018.

- **Notes**

DOI assigned to several documents (see list).

- **Lectures**

The DORIS days editions are referenced with one DOI

- **Softwares**

The Jupyter Notebooks of DORIS days 2025 are referenced with one DOI

→ To be continued

List of documents with DOI

System models and description

- DORIS satellites models
- DORIS system ground segment models
- Modelling of the DORIS instruments 1G and 2G
- Modelling of the DORIS instruments 2GM
- Interface specification between the DORIS network beacons and the onboard instrument

POD characteristics

- HY-2A input data for Precise Orbit Determination
- HY-2C input data for Precise Orbit Determination
- HY-2D input data for Precise Orbit Determination
- Jason-3 characteristics for POD activities

Data Format:

- Format DORIS 1.0
- Format DORIS 2.1
- Format DORIS 2.2
- Format RINEX/DORIS
- Jason1&2&3 / Descriptions of the quaternion and solar panel files

POE standards

- Standards GDR-B
- Standards GDR-C
- Standards GDR-D
- Standards GDR-E
- Standards POE-F
- Standards POE-G

Product: dSTEC DORIS

IDS Workshop

DORIS dSTEC product provides **differential slant total electron content** observations derived from dual-frequency DORIS measurements collected by LEO satellites.

They represent the change in slant TEC along a continuous DORIS observation arc.

- The dataset covers the period from 2015 to present
(cs2, h2c, h2d, ja3, s3b, s6a, srl, swo)
- It provides independent data for validating different ionospheric models and maps
Ex: NRT DORIS/RINEX from Jason-3 used by IGS Real-Time Service for routine validation of RT-VTEC maps

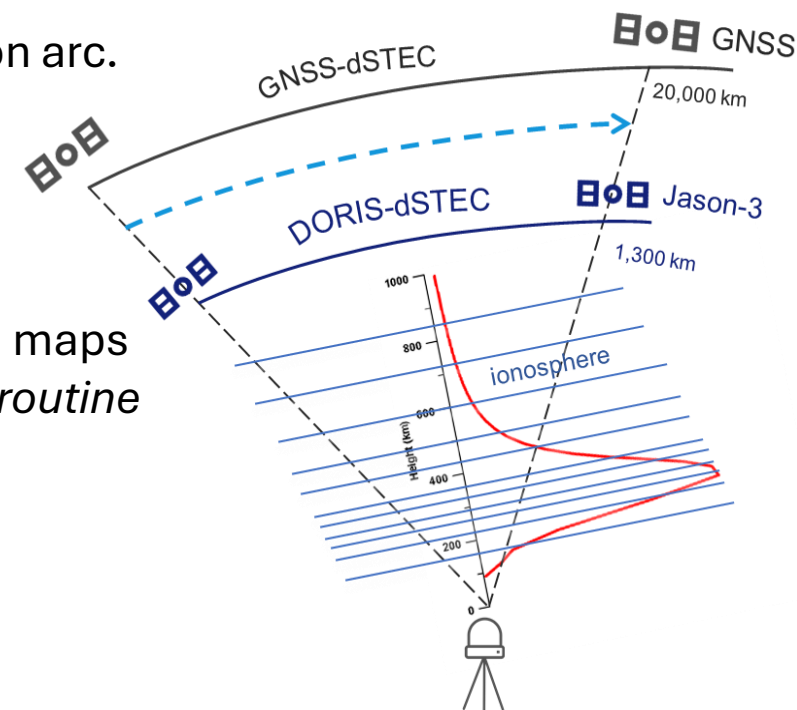
DOI: 10.24400/312072/i01-2026.001

Product access: publicly accessible from the CAS data center

<https://data.bdsmart.cn/pub/product/iono/doris/dstec/>

Planned: availability on IDS DCs

Contacts: Ningbo Wang (chair of IDS WG on NRT DORIS Ionospheric Applications)



Publications

❑ Activity report 2025 is out and available on the IDS website
<https://doi.org/10.24400/312072/i02-2026.001>

❑ IDS newsletter #12 issued in December 2025

This issue contains the following articles:

- On a mission from DORIS in the Himalayas (by Jérôme Saunier, IGN)
- The host agency in short: Everest (by Francesca Steffanoni, EvK2CNR)
- Sentinel-6B: DORIS is on (by Cécile Manfredi, CNES)
- IDS was in Athens (by Laurent Soudarin, CLS)

➤ Have a proposal for an article? Contact the Central Bureau.

➤ Find these publications and previous issues on the IDS website by scanning the QR code and following these paths:



🏠 [Home](#) / [Resources](#) / [IDS publications](#) / [IDS Activity Reports](#)

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IDS Workshop

Web site

IDS Workshop

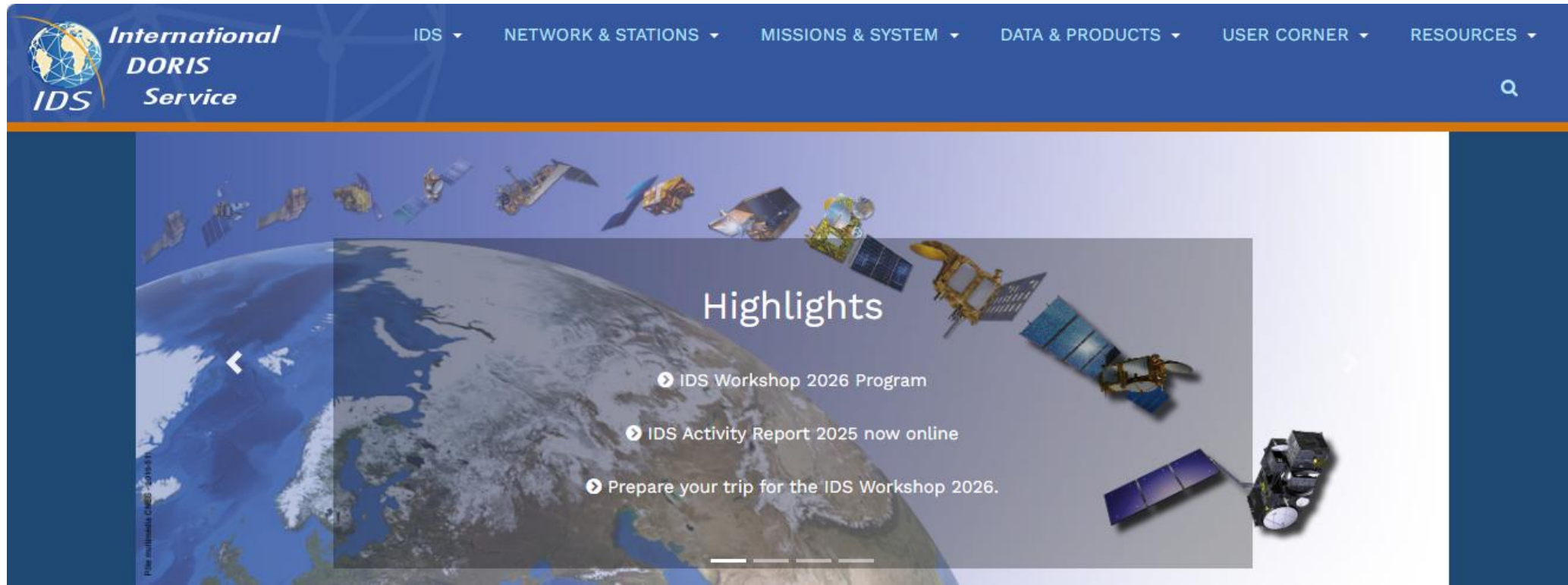
New version published in May 2025

- New structure to make the website clearer to users
- Six sections: IDS, Network & Station, Missions & System, Data & Products, User corner, Resources
- No more than 2 levels (section > level 1 > level 2)
- Some new features: day convertor, maps of visibility circles and tracks, ...

A problem? A question?

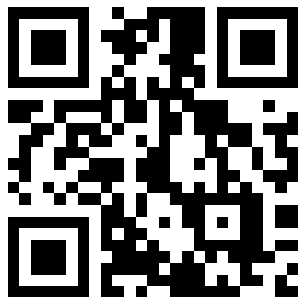
Can't find the information you're looking for?

→ contact ids.central.bureau@ids-doris.org



Come and join the IDS community!

IDS Workshop



Flash here to visit the
IDS website

<https://ids-doris.org>

Contacts for more information

IDS Central Bureau:

ids.central.bureau@ids-doris.org

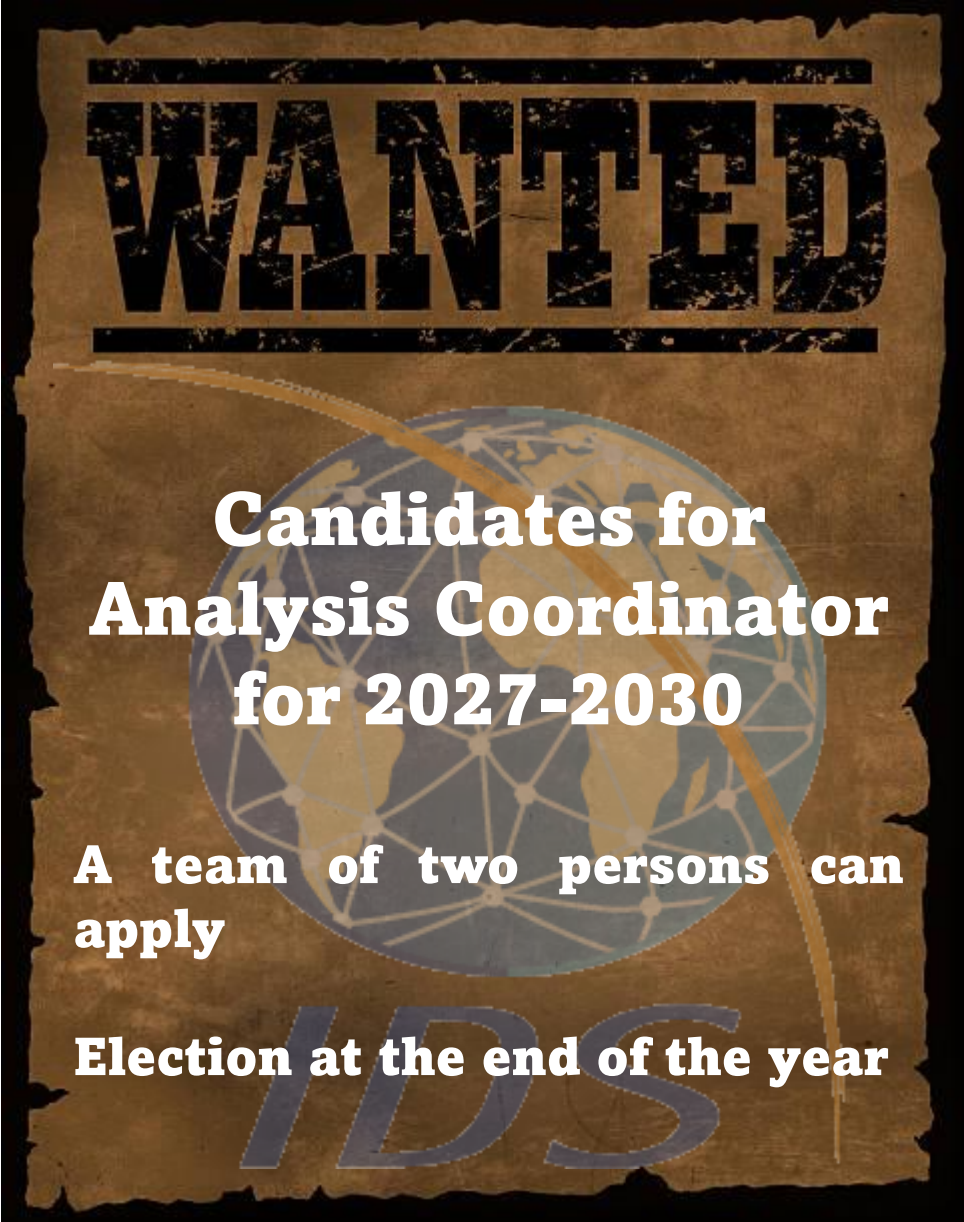
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IDS Analysis Working Group Meeting
Sainte Mandé, France; Nov 28-29, 2023

The IDS is looking for...

IDS Workshop



WANTED

Candidates for Analysis Coordinator for 2027-2030

**A team of two persons can
apply**

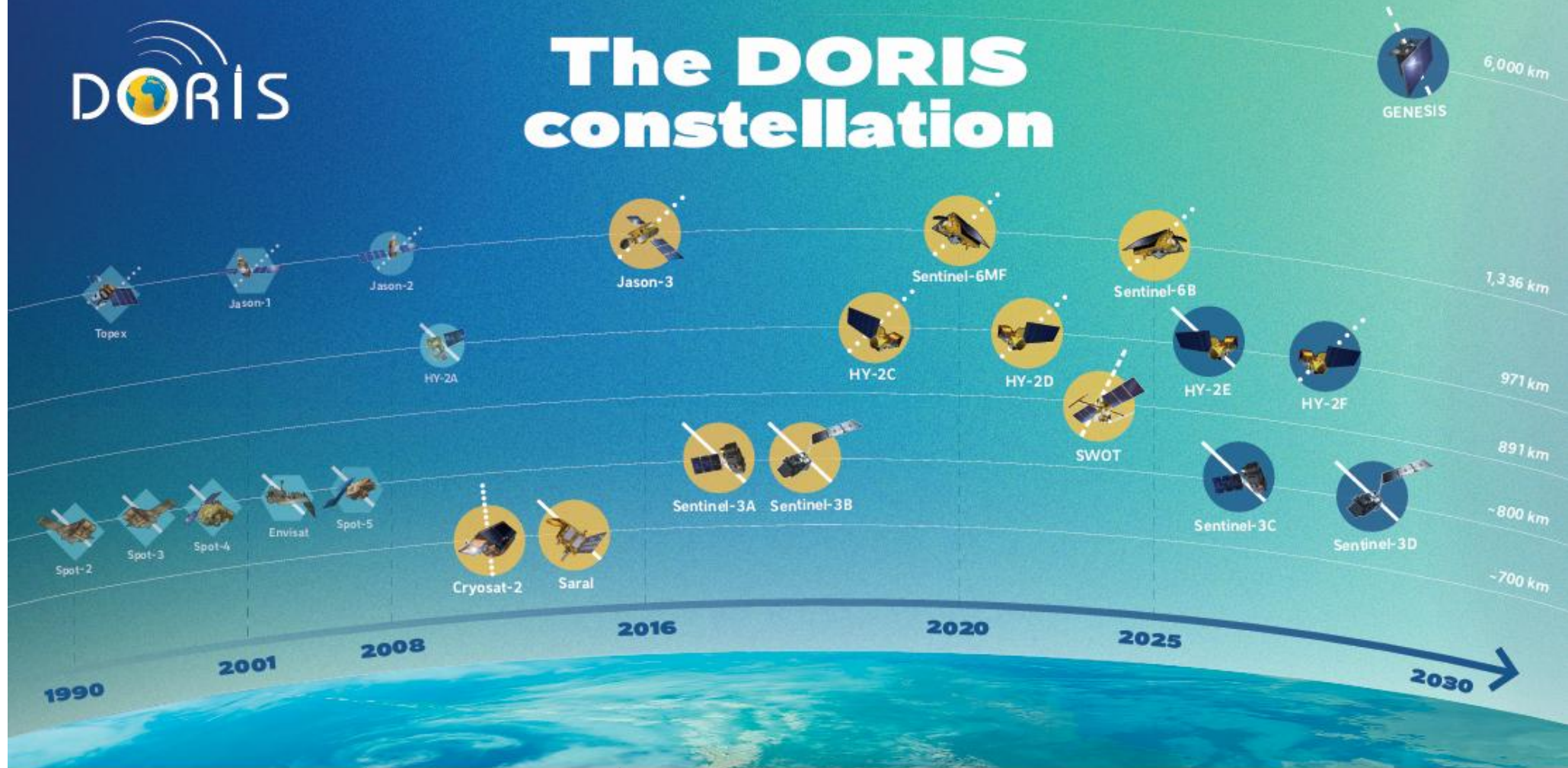
Election at the end of the year

IDS

Back-up



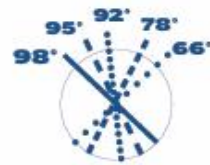
The DORIS constellation



3 GENERATIONS OF DORIS INSTRUMENTS



5 ORBIT PLANES



PAST MISSIONS

CURRENT MISSIONS

FUTURE MISSIONS

Spot-2 Topex	Spot-3 Spot-4	Jason-1 Envisat	Spot-5 Jason-2	HY-2A
Cryosat-2 Saral	Jason-3 Sentinel-3A	Sentinel-3B HY-2C	Sentinel-6MF HY-2D	SWOT Sentinel-6B
HY-2E Sentinel-3C	HY-2F Sentinel-3D	GENESIS		

IAG/GGOS geodesy cartoon competition

IDS Workshop

GEODESY CARTOON COMPETITION



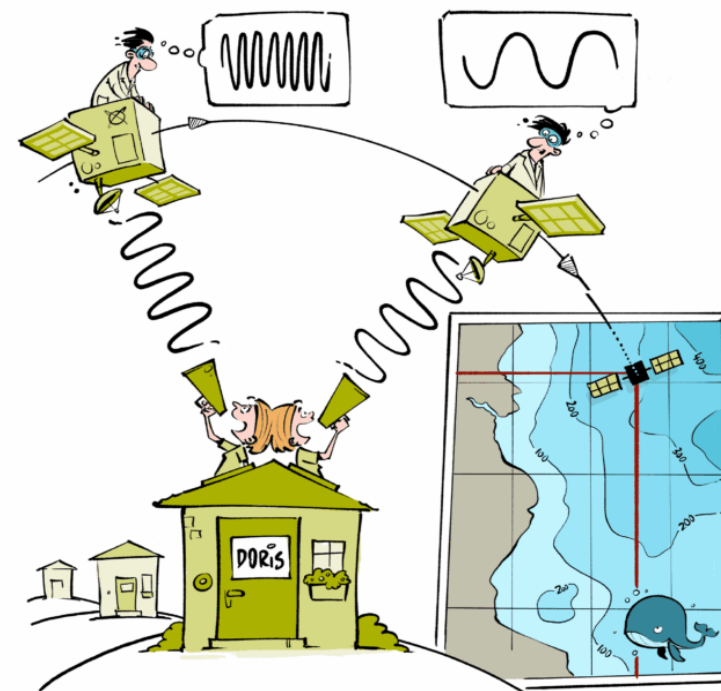
Cartoon competition organized by IAG and GGOS from September 2025 to March 2026 to illustrate geodesy through creative, humorous, and visually engaging cartoons.

The aim was to make complex geodetic concepts accessible to a broad audience and highlight their importance for society.

<https://geodesy.science/cartoon/competition/#winners>



DORIS knows where satellites are



Ground stations transmit radio signals to satellites. Using the Doppler effect, the DORIS system determines their precise orbit. Among other, these measurements ensure that satellite observations, such as sea level from radar altimetry, are accurately located.



Tom Fiedler
cartoonist

2nd place in category « Observation Techniques »

Tandem Phases

- Topex-Poseidon / Jason-1: 2002/01/15 (Jason-1's first cycle) - 2002/08/15 (Jason-1 behind Topex (AC), 70s apart)
- Jason-1 / Jason-2: 2008/07/04 - 2009/01/26 (Jason-2 behind Jason-1, 55s apart)
- Jason-2 / Jason-3: 2016/02/12 - 2016/10/02 (Jason-3 behind Jason-2, 80s apart)
- Jason-3 / Sentinel-6A: 2020/12/18 – 2022/04/07 (Jason-3 ahead Sentinel-6A, 30 seconds apart)
- Jason-3 / Sentinel-6A: (2nd tandem phase) 2025/01/30 - 2025/06/02 (Sentinel-6A ahead Jason-3, 1 minute apart)
- Sentinel-3A / Sentinel-3B: 2018/06/07 – 2018/10/16 (Sentinel-3B ahead Sentinel-3A, 30 seconds apart)
- Sentinel-6A / Sentinel-6B: scheduled 2025/12/18 - 2026/11/17 (Sentinel-6B ahead Sentinel-6A, 30 seconds apart)*