

The IGS - in support of GNSS applications in the frame of GGOS

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Markus Bradke^{3a, D}, Thomas Herring^{4, E}, and Ryan Ruddick^{3b, F}

¹ IGS Governing Board ^a Chair, ^b Vice-Chair, and ^c Executive Secretary

² IGS Central Bureau ^a Acting Director

³ IGS Infrastructure Committee ^a Chair, ^b Vice-Chair

⁴ IGS Analysis Center Coordinator Team

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^B Earth Sciences New Zealand, Wellington, New Zealand

^C NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, U.S.A.

^D GFZ Helmholtz Centre for Geosciences, Potsdam, Germany

^E Massachusetts Institute of Technology, Cambridge, MA, U.S.A.

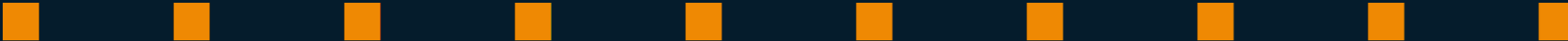
^F Geoscience Australia, Canberra, Australia



IGS INTERNATIONAL
GNSS SERVICE



EGU General Assembly
3–8 May 2026; Vienna, Austria



The IGS - in support of GNSS applications in the frame of GGOS

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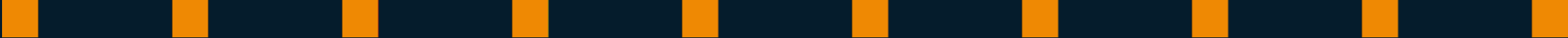
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#

About the IGS

The mission and vision...



IGS INTERNATIONAL
GNSS SERVICE

Providing highest-possible quality
GNSS data, products and services...



KARR00AUS
Karratha, Australia
Photo courtesy of Geoscience Australia



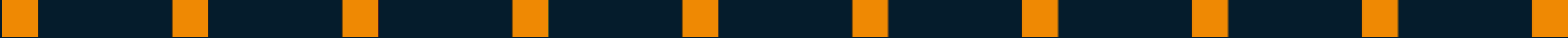
IGS

INTERNATIONAL
GNSS SERVICE

**...on a free and openly available basis
to the benefit of science and society.**

HOB200AUS
Hobart, Australia

Photo courtesy of Geoscience Australia



#

IGS Components

Many people do help to generate the IGS products...

IGS Network

530+

stations in

125+

countries/regions

440+

multi-GNSS stations

(with at least four GNSS)

To explore all stations, visit
<https://network.igs.org/>.



IGS Data and Analysis Centers

Data Centers

Provide observations and other relevant files



Analysis Centers

Computing products

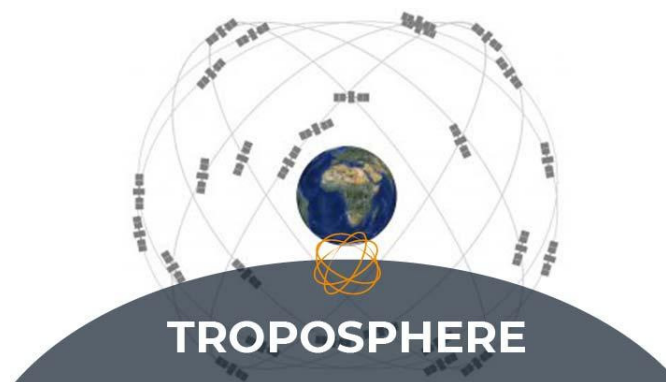
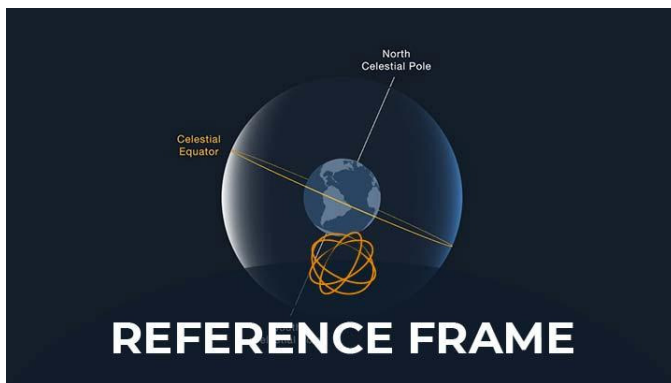


Analysis Center Coordinator

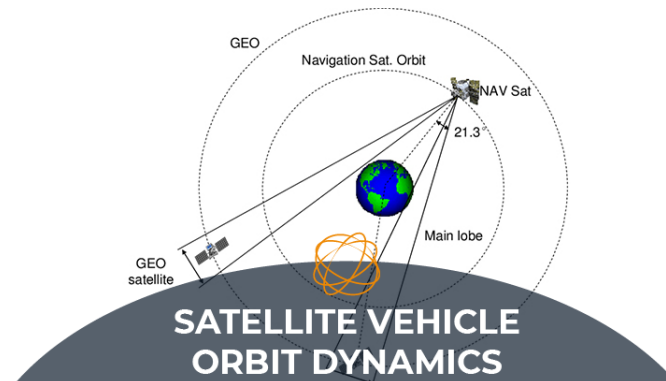
Compare and combine AC products



IGS Committees (1/2)

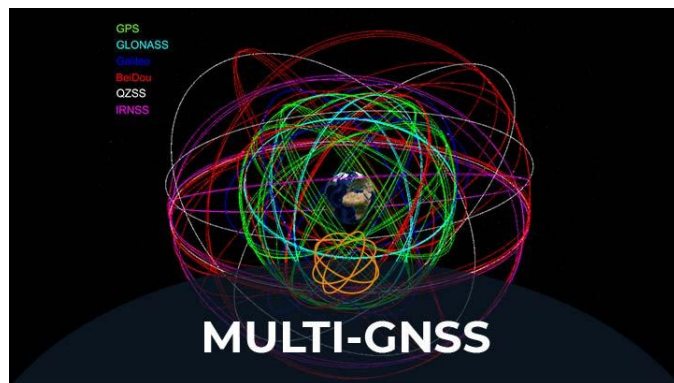


IGS Committees (2/2)



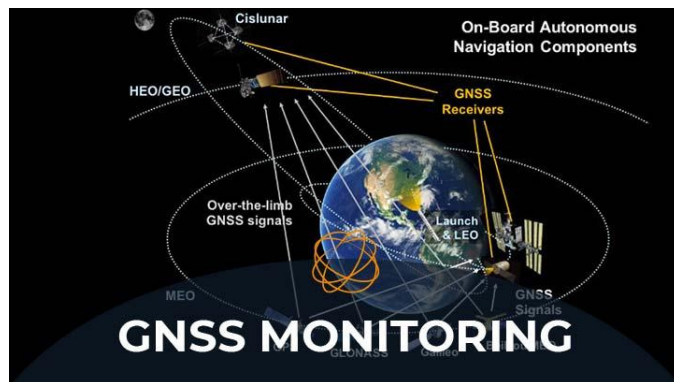
Bias and Ambiguity Resolution

IGS Pilot Projects and Working Groups



Hosted by IAG at
<https://geodesy.science/idea/working-groups/igs/>

IDEA:
inclusivity, diversity, equity, and accessibility



IGS Central Bureau

The Central Bureau is responsible for the executive management of the IGS following policies set by the IGS International Governing Board. Coordination of the IGS Network, management of the Central Bureau Information System and IGS website, and IGS outreach activities are also carried out by the Central Bureau.



Scott Luthcke

NASA, Central Bureau Director



Camille Martire

NASA Jet Propulsion Laboratory
California Institute of
Technology, Central Bureau
Deputy Director

 [Send Message](#)



Robert Khachikyan

Raytheon Technologies, Central
Bureau Information Systems
Manager



David Maggert

EarthScope Consortium, IGS
Network Coordinator



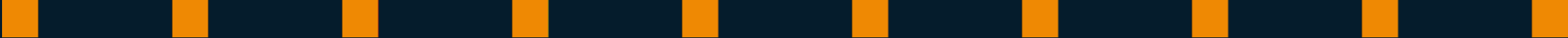
Mara Figueroa Berroca

NASA Jet Propulsion Laboratory
California Institute of
Technology, Governing Board
Executive Secretary



David Stowers

NASA Jet Propulsion Laboratory
California Institute of
Technology, CBIS Advisor



#

Formats and Standards

non-commercial, scientifically driven and manufacturer-neutral organization

IGS Data Standards

Improving Service Quality and International Collaboration



<https://igs.org/wg/rinex/>

The IGS establishes and maintains **data exchange standards** that enable **seamless and interoperable data transfers** among a broad variety of equipment and applications.

Applications: basic receiver data,
integrated GNSS solutions,
satellite orbits, station coordinates,
atmospheric parameters, *etc.*

IGS standards greatly facilitate international collaborations and the interdisciplinary contribution of GNSS to Earth sciences, but also industry and even system providers. .

IGS Station Guidelines

Based on **30+ years of expertise**, the IGS developed **guidelines** to ensure **stability, efficiency, and accuracy** in the long-term operation of GNSS ground stations.

These **high specification standards** enable the **highest possible quality** for IGS data and products.

The IGS **strongly recommends** that new GNSS stations and upgrades follow the IGS Guidelines.



The IGS CORS Guidelines are available in: Arabic, Chinese, English, French, German, Portuguese, and Spanish



IGS Products

provide the geodetic basis for monitoring the system Earth and
enable a quasi-infinity number of applications

IGS Products

Ephemerides

Satellite Orbits

real-time available ✓

Satellite Clocks

real-time available ✓

Station Clocks

real-time available ✓

Reference Frame

Earth Rotation
Parameters

Station Position and
long-term velocities

Geocenter
Coordinates

Local and regional
Deformations

Path Correction

Ionospheric Maps

real-time available ✓

Ionospheric ROTI

Tropospheric
Zenith Delays

Code and Phase
Biases

Latencies:

Final

highest quality

weekly

Rapid

high quality

daily

Ultra-Rapid

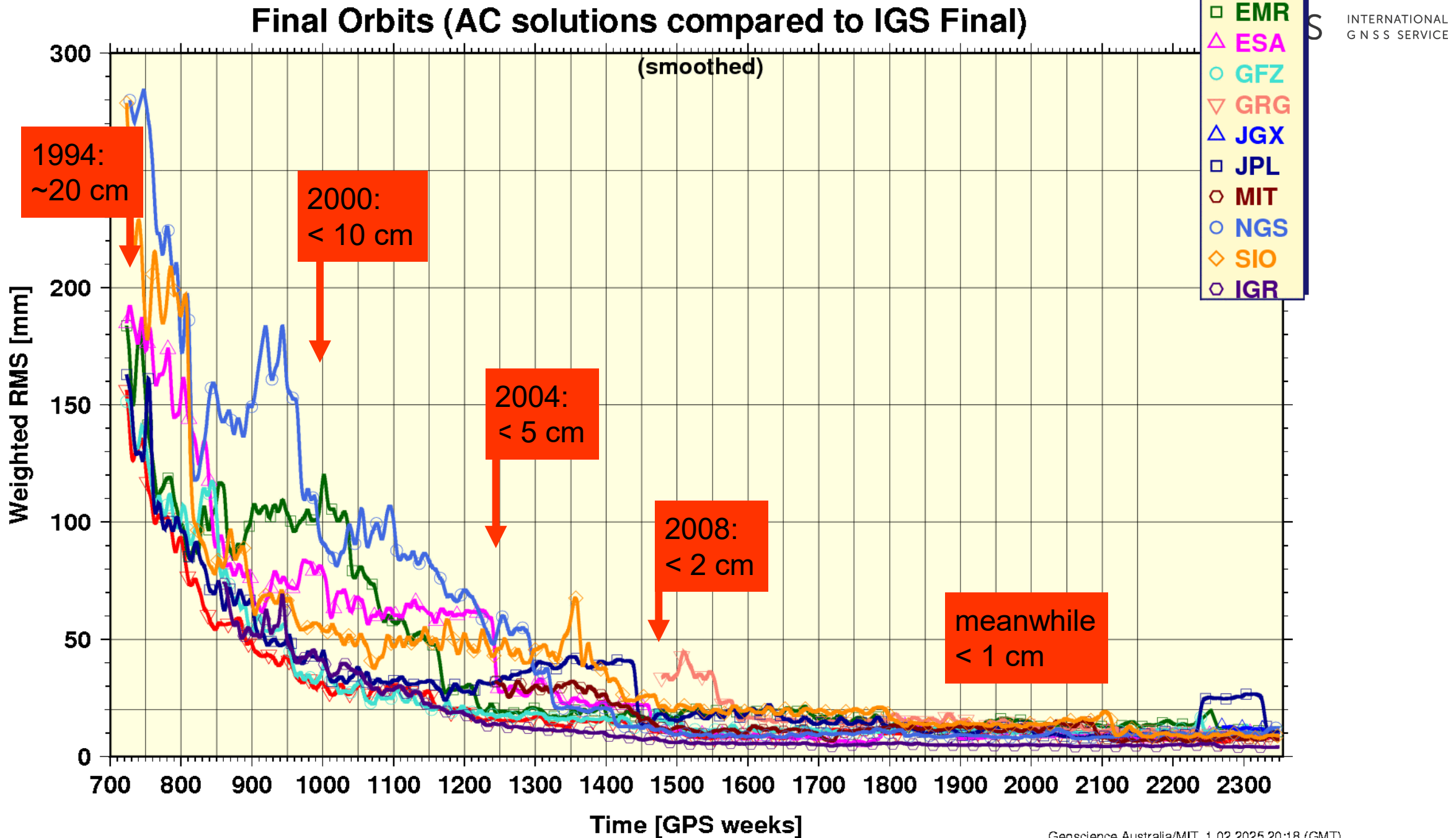
medium quality

sub-daily

Real-Time

basic quality

real-time





IGS Events

IGS Workshops and conferences:

- exchange between the IGS components, with the user community
- additional events for output for capacity building

Culture of “Friendly Competition”



Culture of “Friendly Competition”





The IGS are **people**

- from over **350 self-funding** agencies, universities, and research institutions;
- in **118 countries/regions** worldwide;
- working together on a **voluntary basis** to provide high-precision GNSS products to an ever-expanding global user community.

The regular exchange is essential for progress and success of the IGS!

Pictures from the IGS Symposium&Workshop 2024 in Bern (CH)

Next IGS Workshop



- Coming soon: <https://www.igs-workshop-2026.com/>

[HOME](#)[GENERAL INFORMATION](#) ▾[REGISTRATION](#)[PROGRAM](#)[ABSTRACT](#)[CONTACT](#)



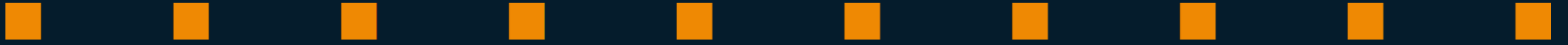
Archived at <https://igs.org/tour-de-ligs/>

Tour de l'IGS



The **Tour de l'IGS** is a series of virtual workshops on relevant topics to the IGS membership, stakeholders and GNSS community in general. This event occurs 1-2 times a year.

1. Reprocessing campaign
2. Infrastructure
3. GNSS processing using IGS products
4. BDS Constellation Spotlight
5. GNSS for Natural Hazards
6. Galileo Constellation Spotlight
7. Spotlight on Africa



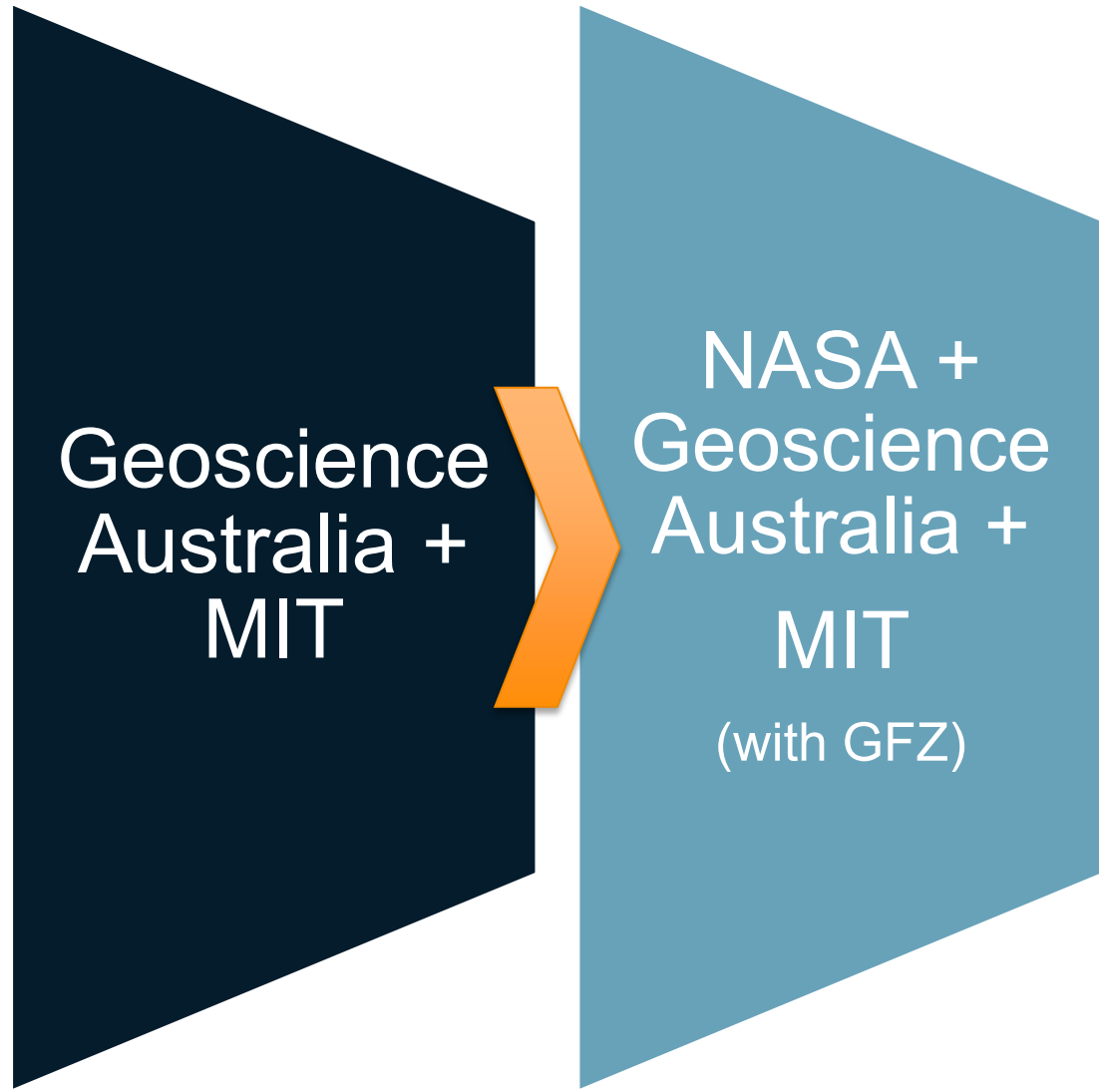
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Current and Future Developments in the IGS

What comes next?

Analysis Center Coordinator **Transition**

- After two years a new and modern environment for the combination software was established.
- The new environment is also capable for a **full multi-GNSS combination** of orbit, clock, and EOP products.

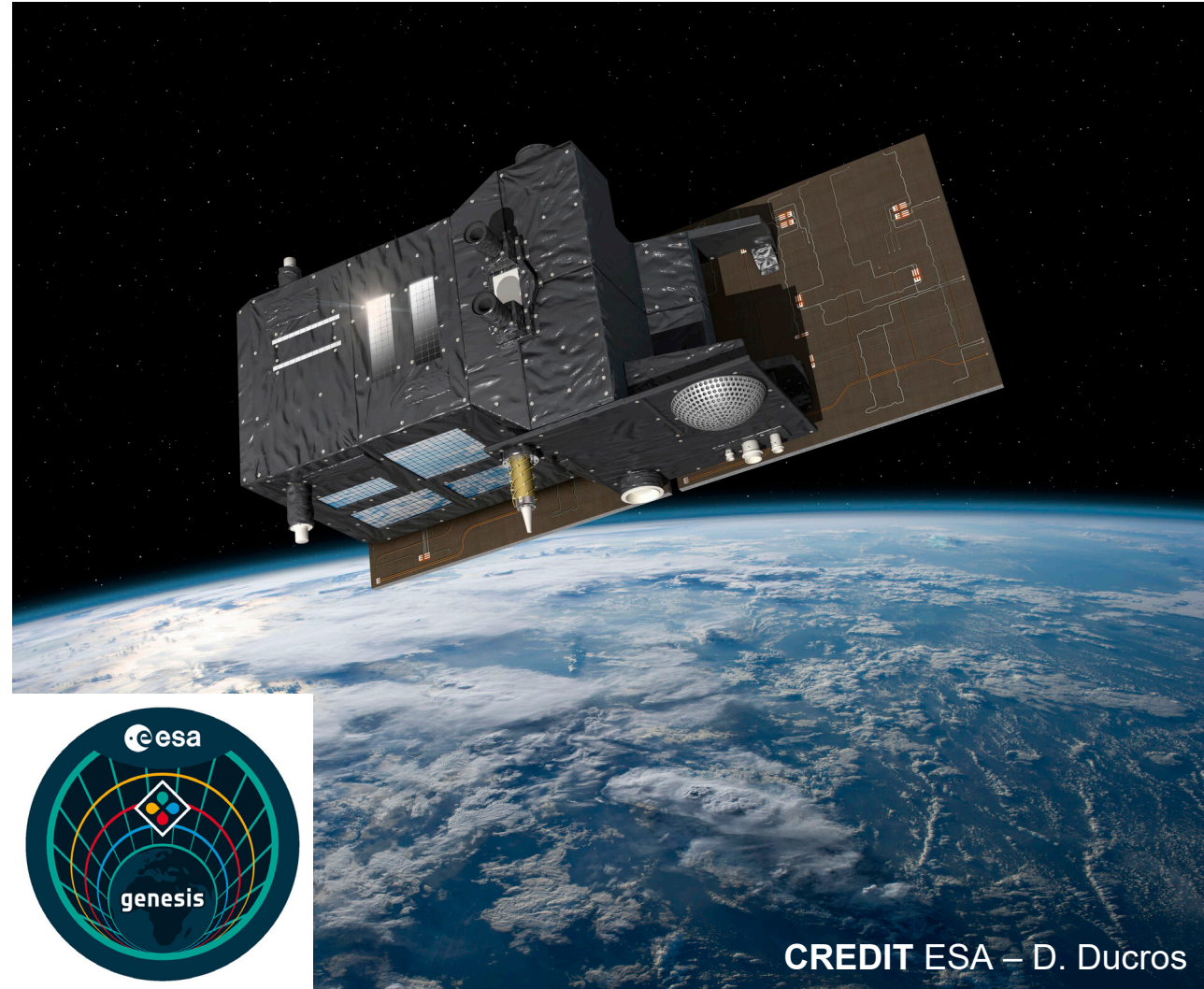


Geoscience
Australia +
MIT

NASA +
Geoscience
Australia +
MIT
(with GFZ)

Developments within the IGS Analysis Centers

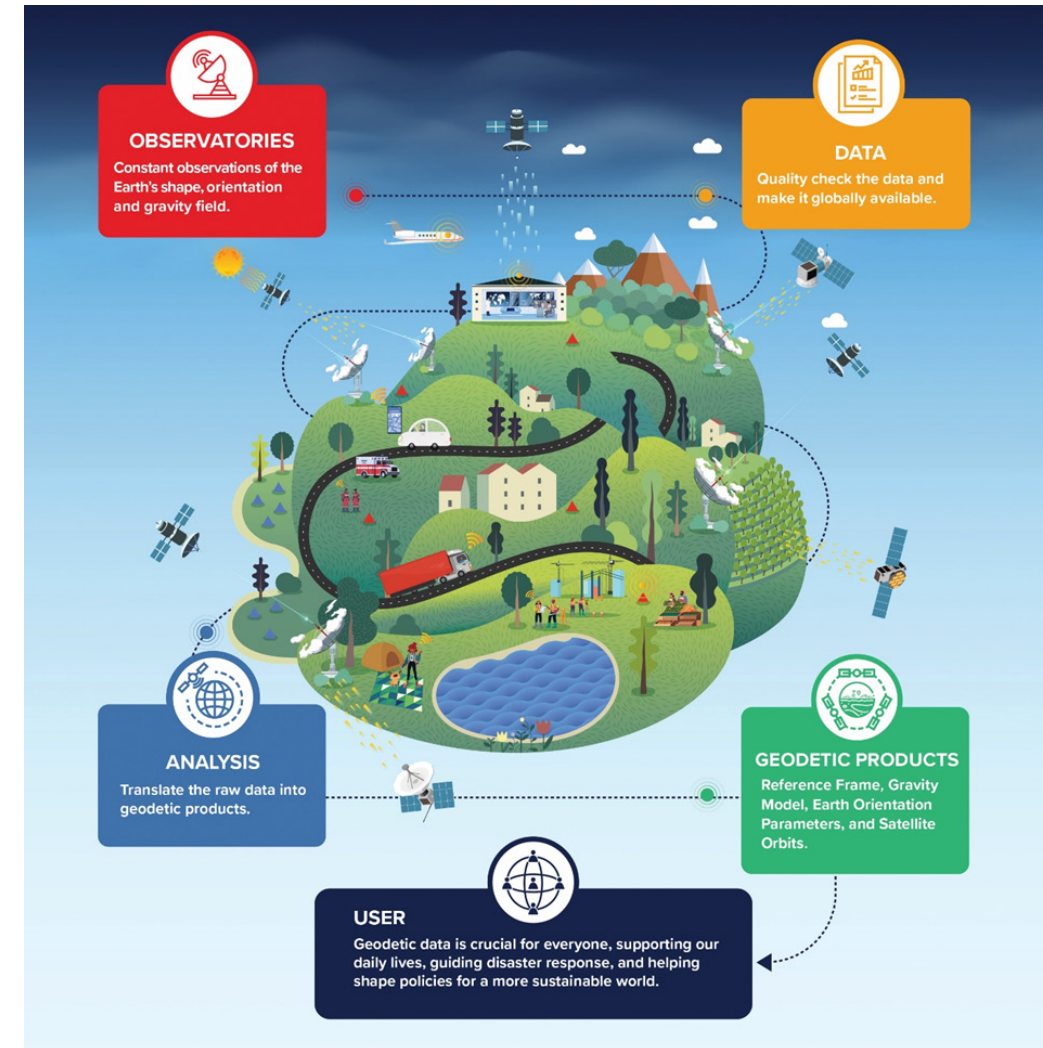
- Currently processing of **GPS+GLONASS+Galileo** in the operational products.
- **BDS-3 and QZSS** is under deployment.
- Many analysis centers are interested to include LEO satellites into their solutions.
- The **Genesis mission** from ESA is there of a special interest.

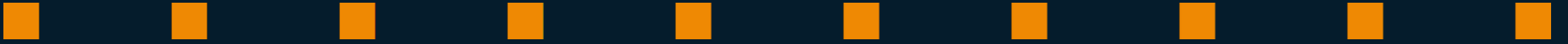


Supporting the Global Geodetic Supply Chain

Sustainability of IGS product generation:

- Chair of the product committees are backed-up by vice-chairs.
- Currently a secondary combination chain (Wuhan Combination Center) is under deployment.
- The culture based on open data and scientific “friendly competition” was essential for the success of the IGS in the past and need to preserves in the future.



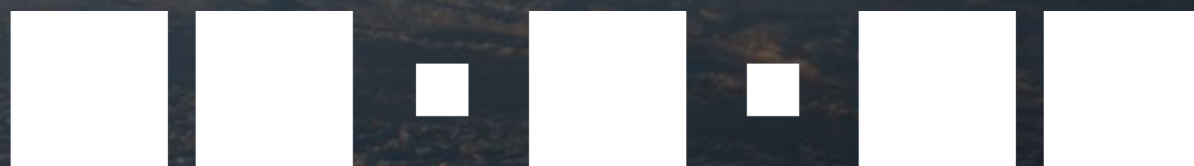


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Summary and Take-Home

What you should know about the IGS?

- The IGS is a **voluntary organization** providing the scientific community and the society with **high-precision standards and products** for GNSS data processing.
- The activities are driven by **scientific motivation** of the groups.
- When **using the IGS products** please provide **credits** to the people working every day for the IGS product generation.
- **We looking forward for new groups supporting our activities.**



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IGS.ORG**

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GNSS SERVICE

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