



# IGS

The International GNSS Service (IGS):

*Providing openly available GNSS data and products that benefit science and society.*

Gary Johnston (Geoscience Australia), IGS Governing Board Chair  
Allison Craddock (NASA JPL), IGS Central Bureau Director



# IGS Mission

*The International GNSS Service provides, on an openly available basis, the highest- quality GNSS data, products, services in support of the terrestrial reference frame; Earth observation and research ; Positioning, Navigation and Timing (PNT); and other applications that benefit the scientific community and society.*





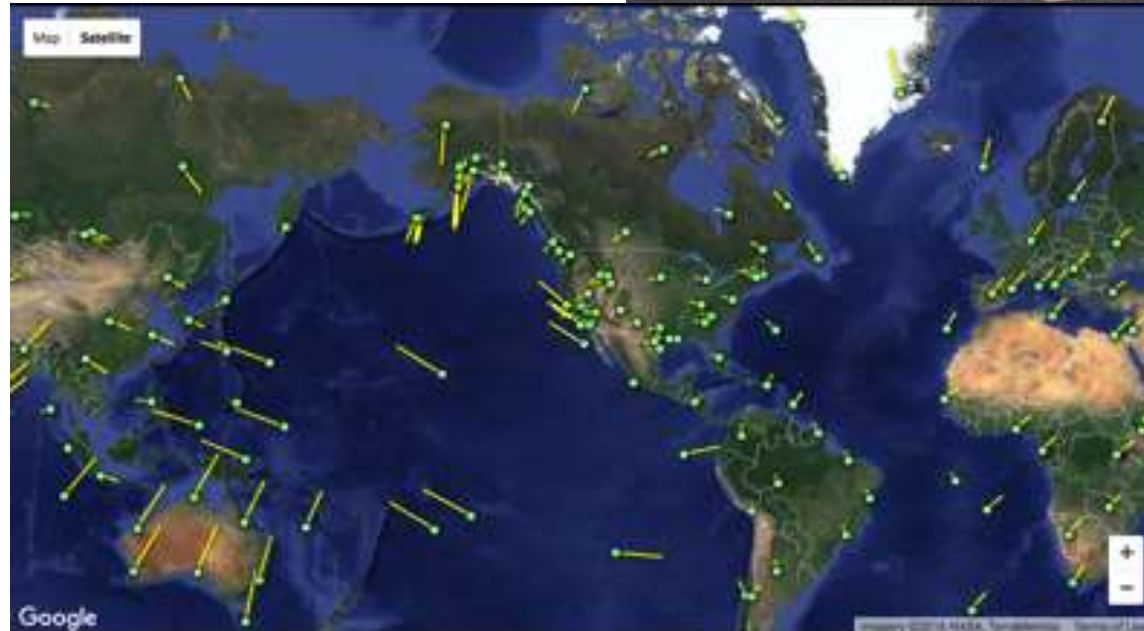
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# Goals

- Serve as the premier source of the highest-quality GNSS related standards and conventions, data and products, openly available to all user communities.
- Attract leading-edge expertise to pursue challenging, innovative projects in a collegial, collaborative, and creative culture.
- Incorporate and integrate new developments, systems, technologies, applications, and changing user needs into IGS products and services.
- Facilitate the integration of IGS into the International Association of Geodesy (IAG) Global Geodetic Observing System (GGOS) and other more broadly based Earth observing, geodetic, and global navigation systems and services.
- Maintain an international federation with committed contributions from its members, and with effective leadership, management, and governance.
- Promote the value and benefits of IGS to society, the broader scientific community, and in particular to policy makers and funding entities.



- IGS (GNSS) is one of four Space Geodesy International Services and Techniques Very Long Baseline Interferometry (VLBI)
  - Satellite Laser Ranging (SLR)
  - Doppler Orbitography by Radiopositioning Integrated on Satellite (DORIS)\*
  - Global Navigation Satellite Systems (GNSS)
- Data used in Terrestrial Reference Frame determination and access
- GNSS Sites included in regular Position/Velocity Time Series



\* Developed/operated by CNES in cooperation with CRGS and IGN



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# Products

The IGS collects, archives and distributes GNSS observational data sets of high quality to satisfy the objectives of a wide range of scientific and other high-end applications and experimentation. These data sets are used by the IGS to generate the following data products:

- High accuracy GNSS satellite ephemerides and related information
- Earth rotation parameters
- Coordinates and velocities of the IGS tracking stations
- GNSS satellite and tracking station clock information, timescale products
- Ionospheric information
- Tropospheric information



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# Components

- Networks of tracking stations
- Data Centers (DCs)
- Data Center Coordinator (DCC)
- Analysis and Associate Analysis Centers (ACs, AACs)
- Analysis Center Coordinator (ACC)
- Working Groups, Pilot Projects (WG, PP)
- Coordinators for products or components, e.g., Reference Frame, Network, Real-time, Timing, etc.
- Central Bureau (CB)
- Governing Board (GB) and Committees, including: Executive Committee (EC), Infrastructure Committee (IC), Standing Elections Committee (SEC).
- Associate Members





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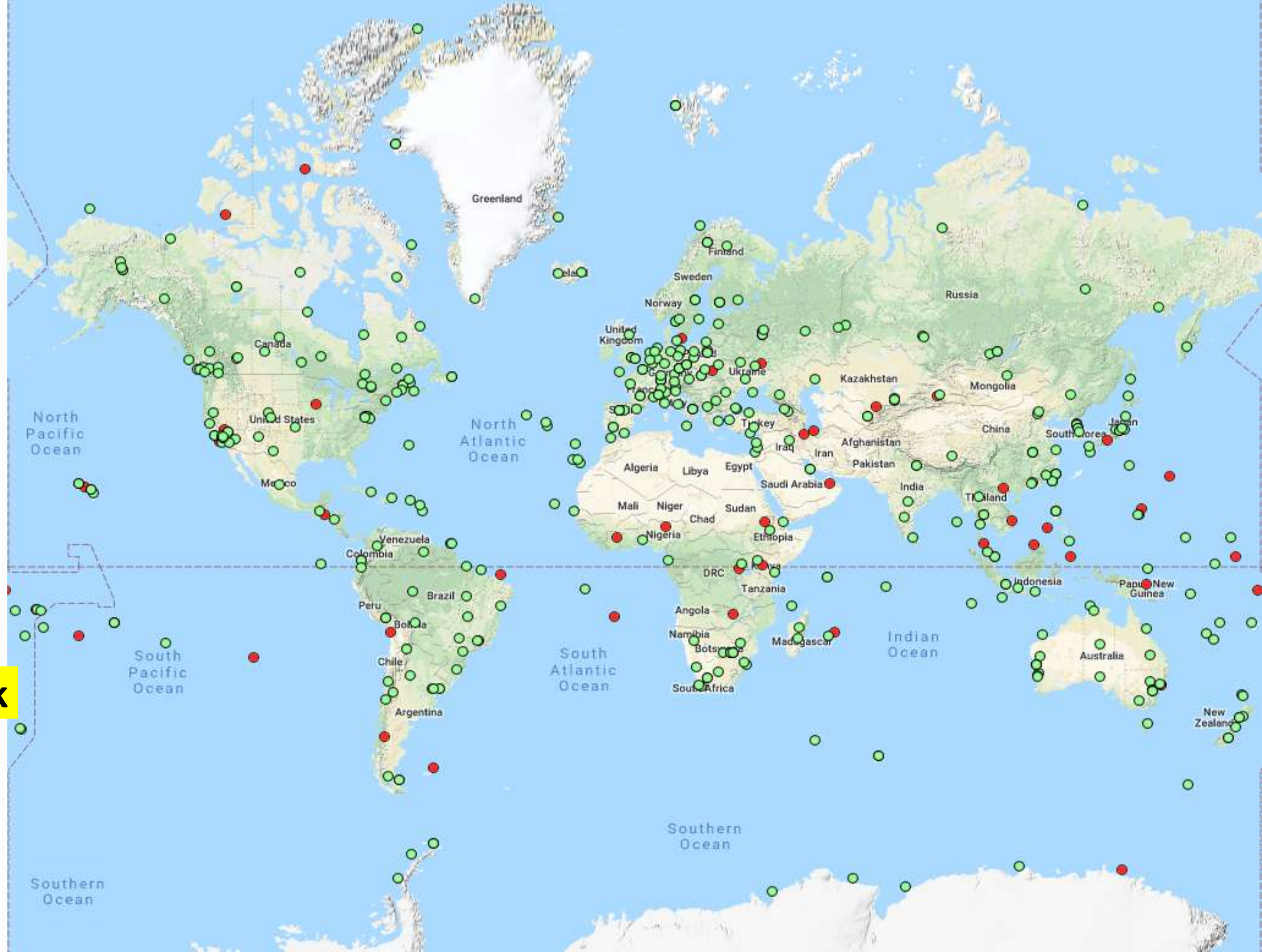
# Ground Station Network

509 sites

142 organizations

45 countries

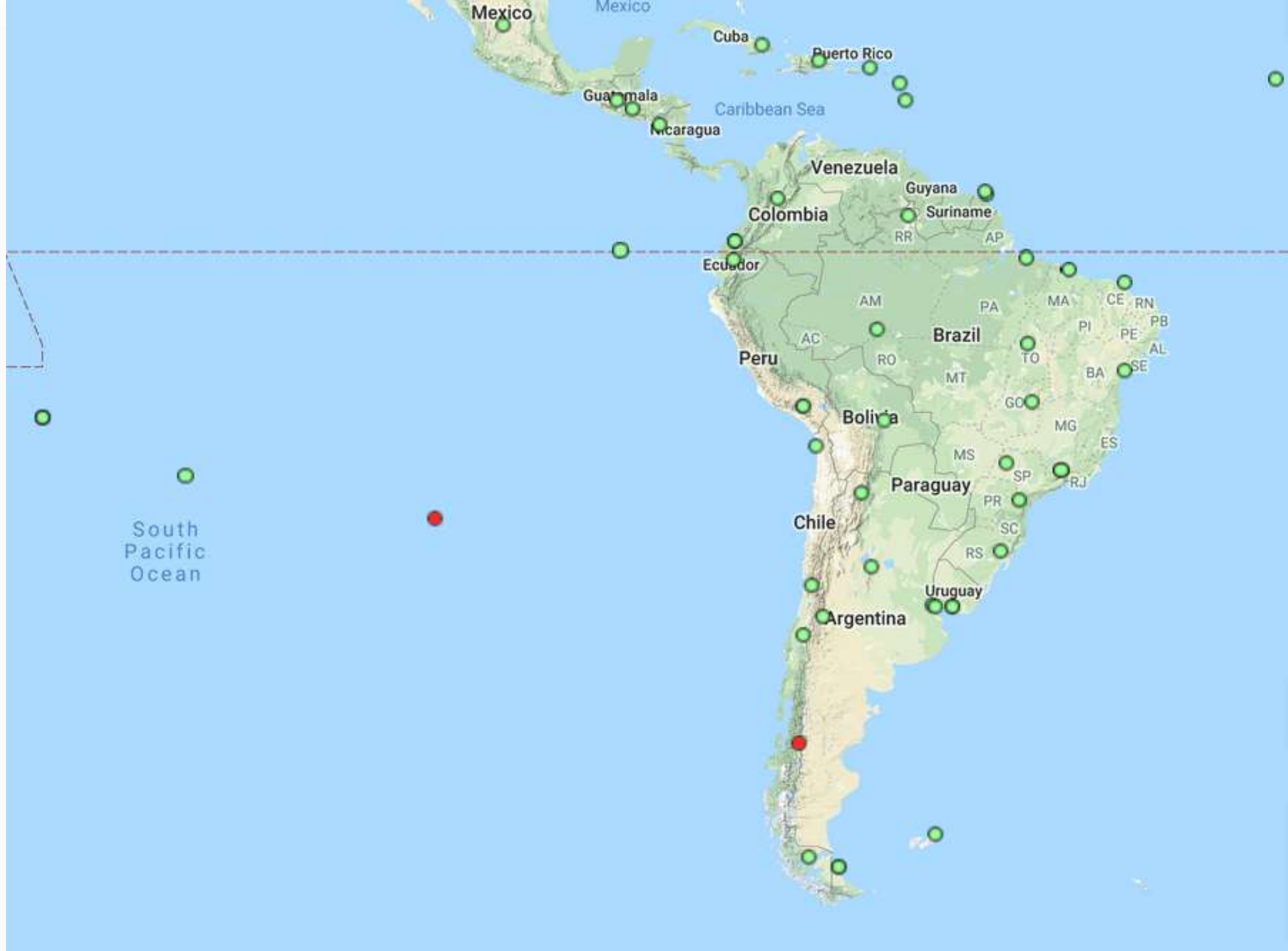
[www.igs.org/network](http://www.igs.org/network)





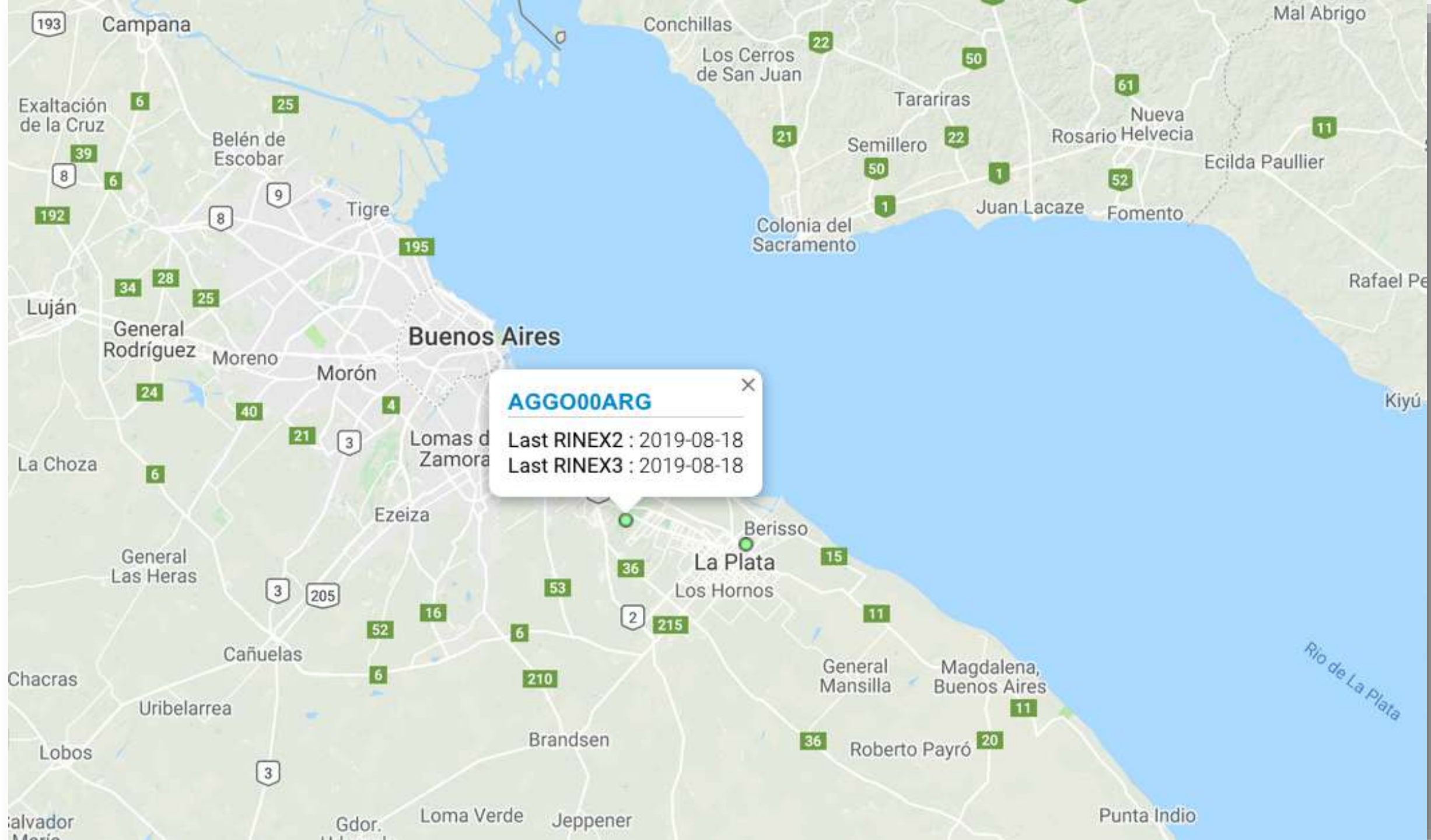
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# IGS Network Stations in Latin America









# Network

[Information](#)

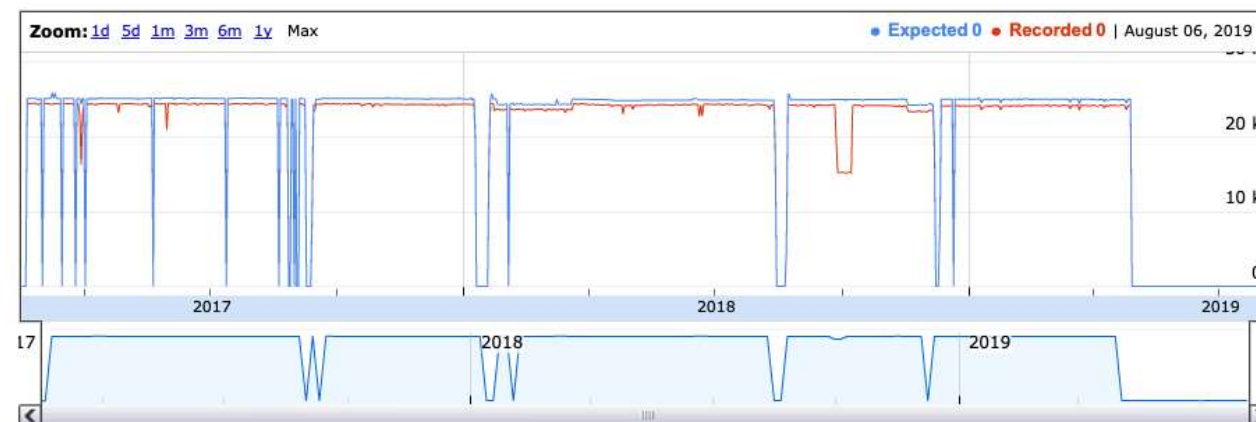
## AGGO00ARG Station Information - Site Page

SiteID	Receiver	Antenna	Calibration	Clock
AGGO00ARG	SEPT POLARX4TR	LEIAR25.R4 + LEIT	ROBOT	EXTERNAL CESIUM 1
Country	Argentina			
Station Log	<a href="#">aggo_20181206.log</a>			
DOMES Number	41596M001			
Constellation	GPS GLONASS Galileo BeiDou SBAS			
Data Center	BKG			



## AGGO00ARG Quality

### Daily RINEX2 observations



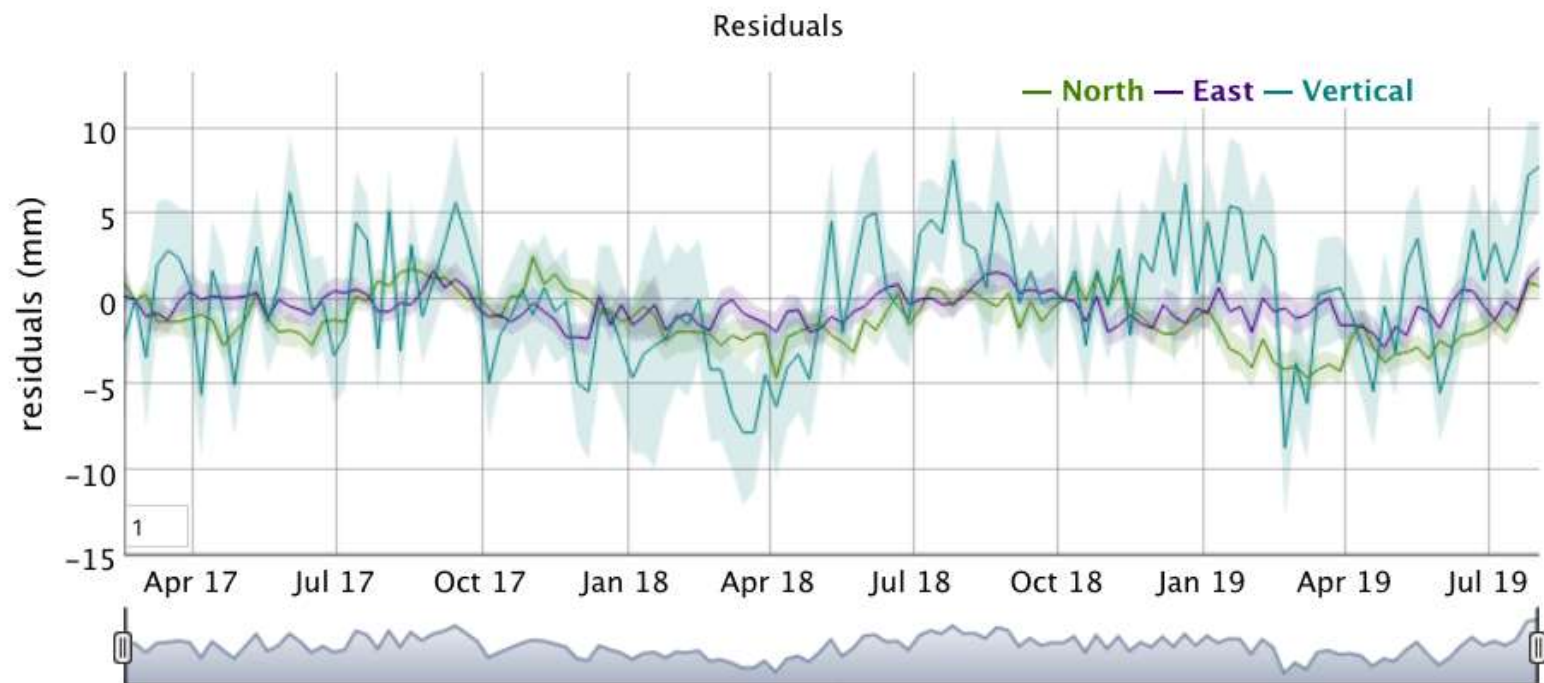
Receiver + Firmware

Antenna

2016-11-11 SEPT POLARX4TR - 2.9.6  
2018-12-06 SEPT POLARX4TR - 2.9.6-patch2

2016-11-11 LEIAR25.R4 LEIT





*The residual plots show the differences between weekly station position estimates (from the weekly IGS combined solutions) and the latest IGS cumulative solution piecewise linear [+post-seismic deformation] model. For more information on the IGS cumulative solution please see: <https://webigs.ign.fr/tfcc/en/solution/cumulative>*

#### AGGO00ARG Email Advisories

Email	Date	Sender	Subject
<a href="#">006597</a>	2018/12/06	Uwe Hessels	AGGO: Firmware update
<a href="#">006333</a>	2018/01/19	Uwe Hessels	AGGO: Data gap
<a href="#">006070</a>	2017/02/16	David Maggert	New IGS Station: AGGO

# IGS Working Groups

➤ Working for the continuous development of new applications and products through Working Groups and Pilot Projects

➤ Open Associate Member and Working Group Meetings held in years without IGS Workshop

Antenna

Bias and Calibration

Clock Products

Data Center

GNSS Monitoring (IGMA)

Ionosphere

Multi-GNSS

Precise Point Positioning with Ambiguity Resolution

Real-time

Reference Frame

RINEX

Space Vehicle Orbit Dynamics

Tide Gauge (TIGA)

Troposphere



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# Third Associate Member & Working Group Open Meeting

*“AMs in the AM”*

8 December 2019 - 9:00 AM

(Sunday prior to the AGU Fall Meeting in San Francisco)



# IGS Workshop 2020

## *“Science From Earth to Space”*

- 10-14 August 2020
- Boulder, Colorado, USA
- Additional information will be announced soon via:
  - IGSmal mailing list
  - IGS.org website
  - @IGSorg





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# Connect with IGS on Social Media

- Twitter @IGSorg
- Facebook
- LinkedIn
- Instagram



# How does the IGS Support United Nations Initiatives and Committees?



International Association of Geodesy (IAG)  
Global Geodetic Observing System (GGOS)

*Advancing our understanding of the dynamic Earth system  
by quantifying our planet's changes in space and time*



United Nations Committee of Experts on Global  
Geospatial Information Management (UN-GGIM)  
Subcommittee on Geodesy (SCoG)

*Promoting development of an accurate, sustainable, and accessible  
Global Geodetic Reference Frame (GGRF) to support science and society.*



United Nations Office for Outer Space Affairs (UNOOSA)  
International Committee on GNSS (ICG)

*Ensuring the best satellite based positioning, navigation and timing  
for peaceful uses for everybody, anywhere, any time.*



# IGS Participation in UN ICG



International Committee on  
Global Navigation Satellite Systems

- The International Committee is open to States Members of the United Nations, international organizations or international entities that are responsible for GNSS and their augmentations operating under governmental authority or involved in implementing or promoting GNSS services and applications.
- IGS is an Associate Member of ICG
- IGS Co-chairs the **ICG Working Group on Reference Frames, Timing, and Applications** with the International Association of Geodesy (IAG) and International Federation of Surveyors (FIG)



