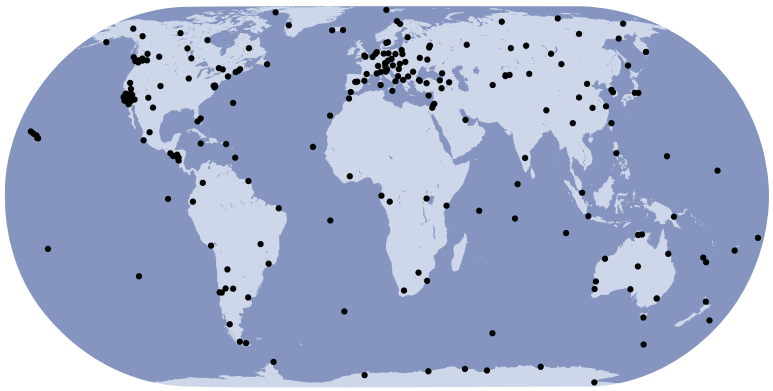
IGS

- A *federation* of over 200 *worldwide* national agencies, universities, and research institutions in more than 75 countries
- GPS satellite orbits to 5 cm — the *highest precision* in the world
- *Precise positions* (5 mm) for 300 worldwide reference stations
- All products mutually *consistent* in the IGS realization of the International Terrestrial *Reference Frame*
- Continuous development of *new applications* and products in Working Groups and Pilot Projects



The foundation of the International GPS Service (IGS) is a global network of over 300 permanent, continuously operating, geodetic-quality Global Positioning System (GPS) tracking sites. The station data are archived at three Global Data Centers and six Regional Data Centers. Eight Analysis Centers regularly process the data and contribute products to the Analysis Center coordinator, who produces the official IGS combined products. The Central Bureau is responsible for day-to-day management of the IGS following policies set by the IGS International Governing Board.

The IGS classic product set — satellite orbits, clocks, Earth rotation parameters, and station positions — is augmented by newer products borne from IGS Working Groups and Pilot Projects:

- Tropospheric zenith path delay
- Ionospheric grid total electron content
- Real time working group
- Precise time transfer
- GLONASS pilot project
- Low Earth orbiters
- Sea Level & Tide Gauges (TIGA)

The IGS reference frame coordinator determines tracking site coordinates and velocities in the International Terrestrial Reference Frame (ITRF), and organizes the IGS contribution to ITRF.

Central Bureau Information System	*http://igscb.jpl.nasa.gov*
CDDIS Global Data Center	*http://cddisa.gsfc.nasa.gov*
IGN Global Data Center	*http://igs.ensg.ign.fr*
SIO Global Data Center	*http://sopac.ucsd.edu*

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IGS Product Table

(GPS Broadcast Values Included for Comparison)

GPS SATELLITE EPHEMERIDES/ SATELLITE & STATION CLOCKS	ACCURACY	LATENCY	UPDATES	SAMPLE INTERVAL
Broadcast	~260 cm/~7 ns	real time		daily
Predicted (Ultra-Rapid)	~25 cm/~5 ns	real time	twice daily	15 min/15 min
Rapid	5 cm/0.2 ns	17 hours	daily	15 min/5 min
Final	<5 cm/0.1 ns	~13 days	weekly	15 min/5 min

Note: IGS accuracy limit based on comparisons with independent laser ranging results. The precision of Rapid and Final orbits is better.
Note: The precision of IGS Rapid and Final clocks are relative to the IGS timescale, which is linearly aligned to GPS time in one-day segments. The Broadcast and Ultrarapid clocks refer only to the GPS satellites.

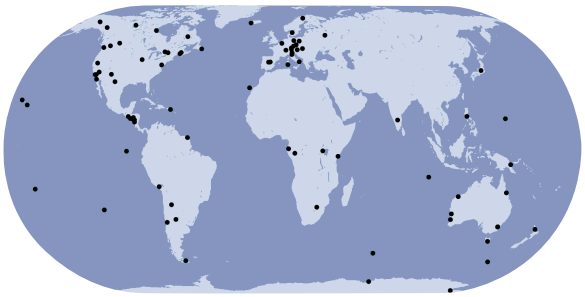
GLONASS SATELLITE EPHEMERIDES				
Final	30 cm	~4 weeks	weekly	15 min

GEOCENTRIC COORDINATES OF IGS TRACKING STATIONS (>130 SITES)				
Final Horizontal/Vertical Positions	3 mm/6 mm	12 days	weekly	weekly
Final Horizontal/Vertical Velocities	2 mm per yr/3 mm per yr	12 days	weekly	weekly

EARTH ROTATION PARAMETERS				
Rapid Polar Motion/Polar Motion Rates/Length-of-Day	0.2 mas/0.4 mas per day/0.030 ms	17 hours	daily	daily
Final Polar Motion/Polar Motion Rates/Length-of-Day	0.1 mas/0.2 mas per day/0.020 ms	~13 days	weekly	daily

Note: The IGS uses VLBI results to calibrate for the long-term behavior of LOD estimates.

ATMOSPHERIC PARAMETERS				
Final Tropospheric	4 mm zenith path delay	<4 weeks	weekly	2 hours
Ultra-Rapid Tropospheric	6 mm zenith path delay	2-3 hours	every 3 hours	1 hour
Ionospheric TEC Grid	under development			



The subnetwork of IGS stations contributing hourly data

International Association of Geodesy

FAGS

Federation of Astronomical & Geophysical Data Services

NASA

IGS outreach activities are organized by the Central Bureau, which is sponsored by the National Aeronautics and Space Administration (NASA) and managed for NASA by the Jet Propulsion Laboratory (JPL) of the California Institute of Technology.