



# IGS REFERENCE FRAME STATIONS

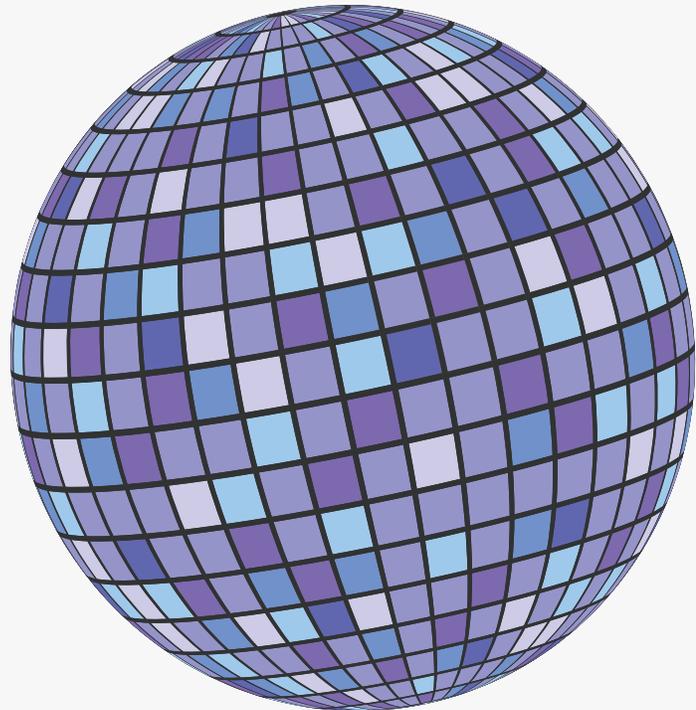
The International GNSS Service (IGS) collects and analyses Global Navigation Satellite System (GNSS) data, such as GPS, to produce a range of geodetic products. These products enable global positioning and timing at the highest possible accuracy through modernized datums aligned with the ITRF, and are used extensively in a diverse range of applications.

## *The International Terrestrial Reference Frame (ITRF)*

The ITRF provides the foundation for nearly all ground-based and space-based observations in Earth system science and supports a variety of applications, such as: land surveying, floodplain mapping, navigation, precision agriculture, and location-based services. The primary challenge driving advances in geodesy is the study of long-term Earth system processes, such as tectonic deformation, and indicators of global climate change, including sea-level rise and ice sheet melting.

While these processes are often imperceptibly slow, they are singularly important to society and simply could not be monitored and understood without the precise observations acquired through global geodetic networks.

The IGS contribution is fundamental and vital to the ITRF construction, bridging the three other techniques by co-locating all VLBI and SLR and more than half of DORIS sites with GNSS instruments. The IGS publicly available geodetic products, together with the reference frame stations allow further densifying and providing a universal access to the ITRF.



The ITRF is an accurate and standard frame for referencing positions at different times and in different locations around the world. ITRF is the basis for modern national geodetic systems and the metrological basis for any position based information, including mapping, 3D modeling, and GIS.

The IGS is a component of the  
**Global Geodetic Observing System**  
<http://www.ggos.org>



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Each reference frame station plays a valuable role in contributing to and accessing the ITRF, and may be considered some of the highest-quality GNSS stations in the world. This quality directly impacts the level of accuracy that can be achieved by using the ITRF.



### Advantages to supporting a Reference Frame Station

There are numerous advantages for an organization or station operator to support the IGS reference frame station network, including:

- Increased accuracy of the reference frame in the organization's region of interest;
- Enhanced ease and accuracy of connections to the reference frame;
- Increased accuracy of global positioning products, such as satellite orbits and clock products;
- and more accurate alignment of the reference frame of that region/country to the ITRF.



### Main Requirements for Reference Frame Stations

Requirements for IGS reference frame stations include: a high-quality monument on stable crustal bedrock with excellent sky visibility; a long observing history; high-quality, consistent, continuous, and complete raw data; minimal changes to equipment and its surroundings; and a commitment to keep the station operating for as long as possible.

These requirements are stringent in order to ensure reliable measurements around the world for projects such as sea-level change, which occurs at the millimeter level. Limitations in a reference frame negatively impact the accuracy of numerous scientific and positioning applications, especially in the region immediately surrounding the station.

Full requirements are detailed in the IGS Site Guidelines:  
<http://bit.ly/ITRFguide>

