

International Earth Rotation and Reference Systems Service (IERS)

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Chair of Directing Board: Tonie van Dam (USA)
Central Bureau Director: Daniela Thaller (Germany)

IERS website - <https://www.iers.org>



1 Introduction

The IERS was established as the “International Earth Rotation Service” in 1987 by the International Astronomical Union (IAU) and the International Union of Geodesy and Geophysics (IUGG), and it began operation on 1 January 1988. Since 2001, the IERS works in a new organizational structure.

In 2003, the new name “International Earth Rotation and Reference Systems Service” was adopted, without changing its abbreviation. The IERS is a regular member of the ISC World Data System (WDS) and an Associate Member of the International Committee on Global Navigation Satellite Systems (ICG). The latest Terms of Reference (ToR) of IERS can be found on its website: <https://www.iers.org/IERS/EN/Organization/About/ToR/ToR.html>.

2 Objectives

The primary objectives of the IERS are to serve the astronomical, geodetic and geophysical communities by providing the following:

- The International Celestial Reference System (ICRS) and its realization, the International Celestial Reference Frame (ICRF);
- The International Terrestrial Reference System (ITRS) and its realization, the International Terrestrial Reference Frame (ITRF);
- Earth orientation parameters (EOP) required to study Earth orientation variations and to transform between the ICRF and the ITRF;
- Geophysical data to interpret time/space variations in the ICRF, ITRF or EOP, and model such variations;
- Standards, constants and models (i.e., conventions) encouraging international adherence.

3 Products

IERS collects, archives and distributes products to satisfy the objectives of a wide range of applications, research and experimentation. These products include:

- International Celestial Reference Frame;
- International Terrestrial Reference Frame;
- Final daily Earth orientation data updated monthly;
- Rapid service estimates of near real-time Earth orientation data and their predictions updated four times per day;
- Announcements of the differences between astronomical and civil time for time distribution by radio stations;
- Leap second announcements;
- Products related to global geophysical fluids such as mass and angular momentum distribution;
- Annual reports and technical notes on conventions and other topics;
- Long-term Earth orientation information.

The accuracies of these products are sufficient to support current scientific and technical objectives including:

- Fundamental astronomical and geodetic reference systems;
- Monitoring and modeling Earth rotation/orientation;
- Monitoring and modeling deformations of the solid Earth;
- Monitoring mass variations in the geophysical fluids, including the atmosphere and the hydrosphere;
- Artificial satellite orbit determination;
- Geophysical and atmospheric research, studies of dynamical interactions between geophysical fluids and the solid Earth;
- Space navigation.

4 Structure

The IERS accomplishes its mission through the following components:

- Technique Centers: International GNSS Service (IGS), International Laser Ranging Service (ILRS), International VLBI Service (IVS), International DORIS Service (IDS);
- Product Centers: Earth Orientation Center, Rapid Service/Prediction Center, Conventions Center, ICRS Center, ITRS Center, and Global Geophysical Fluids Center (GGFC) with Special Bureaus for the Atmosphere, for the Oceans, for Hydrology, and for Combination;
- ITRS Combination Centers at Deutsches Geodätisches Forschungsinstitut at TU München (DGFI-TUM), Institut Géographique National (IGN), Jet Propulsion Laboratory (JPL);
- Analysis Coordinator;
- Central Bureau;
- Directing Board;
- Working Groups: WG on Metrology of Space Geodetic Infrastructure, WG on SINEX Format, WG on the Consistent Realization of TRF, CRF, and EOP, WG on GENESIS, WG on Evaluation of the Terrestrial Reference Frames.

Some of these components (e.g., Technique Centers) may be autonomous, structurally independent from IERS, but which cooperate with the IERS. A participating organization may also function as one or several of these components.

IERS Directing Board

- Tonie van Dam (USA); Chair of the IERS Directing Board
- Daniela Thaller (Germany); Director of the Central Bureau
- Robert Heinkelmann (Germany); Analysis Coordinator
- Christian Bizouard (France); Earth Orientation & Conventions Center Repr.
- Nick Stamatakis (USA); Rapid Service/Prediction Center Repr.
- Claire E. Cramer (USA); ICRS Center Representative
- Zuheir Altamimi (France); ITRS Center Representative
- Jean-Paul Boy (France); GGFC Representative
- Jérôme Saunier (France); IDS Representative
- Petr Štěpánek (Czech Republic); IDS Representative
- Rolf Dach (Switzerland); IGS Representative
- Elisabetta D'Anastasio (New Zealand); IGS Representative
- Clément Courde (France); ILRS Representative
- Mathis Bloßfeld (Germany); ILRS Representative
- Rüdiger Haas (Sweden); IVS Representative
- Sigrid Böhm (Austria); IVS Representative
- Thomas Herring (USA); IAG/IUGG Representative
- Aleksander Brzezinski (Poland); IAU Representative
- Detlef Angermann (Germany); GGOS Representative

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