

IAU Commission A2 Rotation of the Earth

Annual report for 2022

Organizing Committee for the term 2021–2024:

Zinovy M. Malkin (President)
Alberto Escapa (Vice-President)
Laura I. Fernandez (Secretary)
Florian Seitz (Advisor – Past President)
Shuanggen Jin
Jolanta Nastula
David A. Salstein
Hadia Hassan Selim
Jean Souchay
Robert Heinkelmann (IAG Representative)
Daniela Thaller (IERS Representative)
Oleg A. Titov (IVS Representative)

Organization

IAU Commission 19 began its history with the birth of the IAU at the Brussels Conference in 1919, where Standing Committee 19 on Latitude Variations was established. At the first IAU General Assembly in 1922, Standing Committee 19 became Commission 19 "Variation of Latitude". Later, as the topic of the Commission was expanded to include observations and the theory of Earth rotation and interconnection between Earth rotation and geophysical phenomena, in 1964 it was renamed Commission 19 "Rotation of the Earth". In 2015, Commission 19 was renewed as Commission A2 "Rotation of the Earth" (CA2) with the same functions. In 2021, CA2 was renewed for the next 6-year term. Among its scientific rationale, CA2 helps linking the astronomical community to other scientific organizations such as the International Association of Geodesy (IAG), International Earth Rotation and Reference Systems Service (IERS), and space geodesy technique services largely contributed to the monitoring and investigation of the Earth's rotation, such as International VLBI Service for Geodesy and Astrometry (IVS), International GNSS Service (IGS), International Laser Ranging Service (ILRS), and International DORIS Service (ILRS).

Election of CA2 officers for the term 2021–2024 took place in April 2021. Alberto Escapa was elected as the new CA2 Vice-President. Three new CA2 OC members were elected: Laura Fernandez, David Salstein, and Jean Souchay. Second term CA2 OC members are Hadia Hassan Selim, Shuanggen Jin, and Jolanta Nastula.

Three non-voting Representatives to CA2 OC from other organizations were appointed by the new CA2 OC and confirmed by corresponding organizations: Robert Heinkelmann (IAG Representative), Daniela Thaller (IERS Representative), and Oleg Titov (IVS Representative).

Laura I. Fernandez was appointed by the CA2 OC as the new Commission Secretary.

As of April 1, 2023, the Commission consists of 114 members.

The CA2 webpage is https://www.iau.org/science/scientific_bodies/commissions/A2/info/.

General activity

The CA2 participated in the Division Meeting at the XXXI General Assembly (Busan, Korea, 5 and 8 August 2022) with commission report. The CA2 also organized Session 4 “Reference Frames and Rotations” https://www.iau.org/science/scientific_bodies/divisions/A/meeting2022.

CA2 together with CA1 proposed an IAU Resolution in support of the protection of geodetic radio astronomy against radio frequency interference, which was approved by the XXXI IAU GA as IAU Resolution B1, <http://www.iau.org/static/archives/announcements/pdf/ann21040a.pdf>.

CA2 also proposed an IAU Resolution on Improvement of the Earth's Rotation Theories and Models, which was approved by the XXXI IAU GA as IAU Resolution B2, <http://www.iau.org/static/archives/announcements/pdf/ann21040b.pdf>.

A. Escapa, R. Heinkelmann, J. M. Ferrandiz, F. Seitz, and R. Gross published an article in IAU Catalyst, March 2022, on these two IAU Resolutions including their detailed description and explanation, <https://www.iau.org/static/publications/iau-catalyst-06.pdf>.

Scientific meetings

Besides IAU GA events, CA2 members actively participated in organization of many scientific meetings of CA2 interest in 2022, such as REFAG 2022 (October 17-20, 2022, Thessaloniki, Greece), IVS General Meeting 2022 (March 27 – April 1, 2022, Helsinki, Finland), EGU General Assembly 2022 (May 23-27, 2022, Vienna, Austria and Online), AGU Fall meeting (December 12-16, 2022, Chicago, IL, USA and online), and others.

Working Groups under IAU Commission A2

Joint IAU-IAG-IERS WG Consistent Realization of TRF, CRF and EOP (JWG CRTCE)
Chair: Robert Heinkelmann, Co-Chair: Manuela Seitz

The main objectives of this WG are:

- to compute multi-technique CRF-TRF solutions together with EOP in one step,
- to quantify the consistency of the current conventional reference frames and EOP,
- assess the consistency of reprocessed and predicted EOP.

Joint IAU-IAG WG Improving Theories and Models of the Earth's Rotation (JWG ITMER)
Chair: Jose Ferrándiz, Co-Chair: Richard Gross

The main purpose of this WG is to propose consistent updates of the Earth rotation theories and models, and their validation. The associated tasks will thus contribute to the implementation of the 2018 IAU Resolution B1 on Geocentric and International Terrestrial Reference Systems and Frames, and the 2019 IAG Resolution 5 on Improvement of the Earth's Rotation Theories and Models.

The Working Groups publish their reports at https://www.iau.org/publications/iau/wg_reports/