

## Foreword

Since its creation in 1999, the International VLBI Service for Geodesy and Astrometry (IVS) has documented its progress and current status in the form of annual or biennial reports. The first sixteen years were recorded in the form of annual reports, while starting with the years 2015+2016 the rhythm was changed to two years. Hence, the 2019+2020 Biennial Report constitutes the third installment of the two-yearly reporting scheme, documenting the work of the IVS components for the calendar years 2019 and 2020.

As a testament to its usefulness, the general structure of the reporting has remained stable over the years: the individual components of the IVS contributed short reports describing their numerous activities, progress, and future plans. Without the continued input from the VLBI groups of the international geodetic and astrometric community, this publication could not be compiled and the IVS itself would not be able to flourish. So, once again many thanks to all IVS components who contributed to this Biennial Report.

We continue to publish the Biennial Reports in electronic form only. The last Biennial Report with a corresponding printed version was the publication for 2015+2016. Hence, all IVS publications (Biennial Reports, General Meeting Proceedings, and IVS Newsletter) are available online only. The contents of this report appear on the IVS Web site at

<https://ivscc.gsfc.nasa.gov/publications/br2019+2020>

The contents of the report are organized as follows:

- The initial section holds a special report. On July 17, 2020, the IVS Directing Board approved a

strategic paper called the “IVS Infrastructure Development Plan 2030” as a planning document for further contributions from IVS components as well as possible new players. How this document came into being is described in the front page article of the August 2020 issue of the IVS Newsletter.

- The next seven sections hold the reports from the Coordinators (including the Chair) and the reports from the IVS Permanent Components: Network Stations, Operation Centers, Correlators, Data Centers, Analysis Centers, and Technology Development Centers.
- The final section provides reference information about IVS. Following the current (May 24, 2019) version of the IVS Terms of Reference, a reference table is provided with links to the IVS Member and Affiliated organizations, the IVS Associate Members, and the IVS Permanent Components.

In its online location, the Biennial Report is part of the IVS website, which contains information concerning the IVS organization. For that, we consider it unnecessary to reproduce this information in the report itself. Hence, we would like to ask our readers to make use of the online tools to look up the most recent lists of IVS components, its member organizations as well as affiliated organizations, and Directing Board Members. The information can be found through the “About IVS” button, which is accessible from most IVS website pages. Useful links are also compiled in the closing section of this report.

During the report period, the IVS consisted of

- 32 Network Stations, acquiring high performance VLBI data,
- three Operation Centers, coordinating the activities of a network of Network Stations,

- seven Correlators, processing the acquired data, providing feedback to the stations and providing processed data to analysts,
- five Data Centers, distributing products to users and providing storage and archiving functions,
- 31 Analysis Centers, analyzing the data and producing the results and products,
- seven Technology Development Centers, developing new VLBI technology,
- an Office for Outreach and Communications, promoting knowledge about the VLBI technique, and
- a Coordinating Center, coordinating daily and long-term activities.

There were altogether

- 87 Permanent Components, representing 43 institutions in 22 countries, and
- about 340 Associate Members.

This report contains contributions from the NICT space-geodesy group at Kashima for a last time; the group will be disbanded at the end of March 2021. With the deconstruction of the 11-m and 34-m antennas, an era is coming to an end. In addition to the telescopes, the Kashima group also supported a Technology Development Center, a Correlator, a Data Center, and an Analysis Center. All these activities will be discontinued. NICT will continue to support the station at Koganei. Please appreciate their reports in this volume and join us in thanking NICT for the strong support of the IVS thus far as well as for future contributions from Koganei station. Arigato!