

The Bonn Geodetic VLBI Operation Center

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Abstract

The IGGB Operation Center has continued to organize and schedule the IVS-T2, IVS-OHIG, IVS-INT3, and EUROPE sessions.

1. Center Activities

The IGGB VLBI Operation Center is located at the Institute of Geodesy und Geoinformation of the University of Bonn, Nussallee 17, D-53115 Bonn, Germany. It has been organizing and scheduling VLBI observing sessions for more than twenty years. The observing series organized and scheduled in 2010 are the same as in 2009.

- **Measurement of Vertical Crustal Motion in Europe by VLBI (EUROPE)**

In Europe, a series of special sessions has been scheduled for the determination of precise station coordinates and for long term stability tests. This year, six sessions with Ny-Ålesund, Onsala, Metsahovi, Svetloe, Zelenchukskaya, Badary, Effelsberg, Wettzell, Simeiz, Madrid (DSS65A), Medicina, Matera, Noto, and Yebes (YEBES40M) were scheduled employing the frequency setup of 16 channels and 4 MHz bandwidth in fan-out mode (identical to the setup of the IVS-T2 sessions).

- **IVS-T2 series**

This series has been observed roughly every second month (7 sessions in 2010) primarily for maintenance and stabilization of the VLBI terrestrial reference frame as well as for Earth rotation monitoring as a by-product. Each station of the global geodetic VLBI network is planned to participate at least once per year in the T2 sessions. In view of the limitations in station days, priority was given to stronger and more robust networks with many sites over more observing sessions. Therefore, 12 to 15 stations have been scheduled in each session, requiring multiple passes on the IVS correlators. The scheduling of these sessions has to take into account that a sufficient number of observations is planned for each baseline of these global networks. The recording frequency setup is 16 channels and 4 MHz channel bandwidth.

- **Southern Hemisphere and Antarctica Series (OHIG):**

In February 2010, only three sessions of the Southern Hemisphere and Antarctica Series with the Antarctic stations Syowa (Japanese) and O'Higgins (German) plus Fortaleza, Hobart, Kokee, and DSS45 were organized. The (southern) winter O'Higgins burst was canceled for various reasons. The purpose of these sessions is the maintenance of the VLBI TRF and monitoring of Earth rotation as a by-product. The recording frequency setup is 16 channels and 4 MHz channel bandwidth. Due to the fact that Syowa is not able to deliver the recorded data for nearly one year after the observations, the correlation and the generation of the databases will be delayed considerably.

- **UT1 determination with near-real-time e-VLBI (INT3):**

The so-called INT3 sessions included the telescopes of Ny-Ålesund, Tsukuba, and Wettzell for weekly UT1 determinations with rapid processing time. Since August 2007, these sessions have been scheduled to start every Monday morning at 7:00 a.m. UT.

The operations of the INT3 series are directly linked to data transmission and correlation since the raw VLBI observation data of the three sites is directly transferred to the Bonn Correlator by Internet connections to speed up delivery of the results. The transmission rate is about 100 Mb/s for Ny-Ålesund (limited due to the use of a radio link for the first part of the distance) and 400 Mb/s from Tsukuba and Wettzell.

Since December, the correlation has been solely carried out with the new DiFX software correlator because the Mark IV hardware correlator died in mid-December as a result of a control crash. Although the development of the full data correlation and export process was not yet complete at that time, the sessions have been processed with a reasonable latency. At present, several small processing steps still require manual interaction and iterations, causing small delays to persist.

Since the beginning of 2010, 46 sessions have been observed and transmitted successfully. 90% of the sessions have been correlated and have had their databases delivered within the first 8 hours after the end of the observations. A further 5% have been completed within 10 hours. The rest took between 10 and 24 hours due to difficulties with networking hardware.

2. Staff

Table 1. Personnel at IGGB Operation Center.

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