

The Bonn Geodetic VLBI Operation Center

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Abstract

The IGGB Operation Center has continued to organise 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 and 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 2008 are the same as in 2007.

- **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, and Noto 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 2008) 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 through the IVS correlators. The scheduling of these sessions has to make sure 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):**

Seven sessions of the Southern Hemisphere and Antarctica Series with the Antarctic stations Syowa (Japanese) and O'Higgins (German) plus Fortaleza, Hobart, Kokee, HartRAO and DSS45 have been organized for maintenance of the VLBI TRF and Earth rotation monitoring. These sessions are clustered in time at periods when O'Higgins is manned, depending on logistical circumstances and available manpower. 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 several months 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.

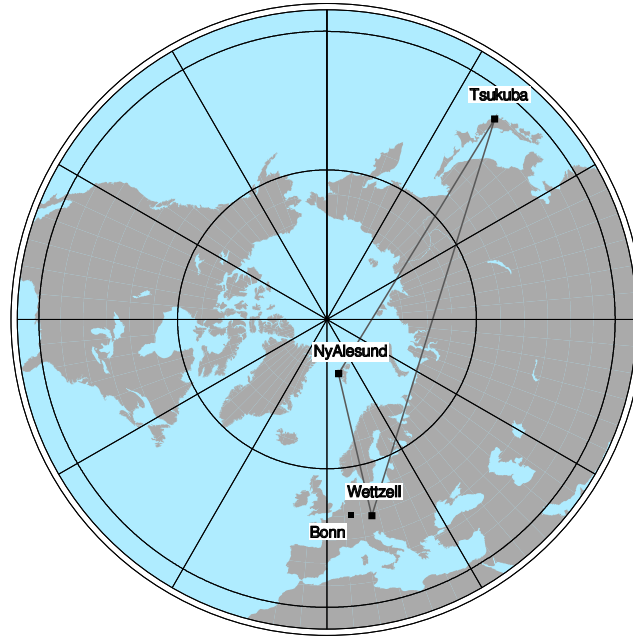


Figure 1. INT3 Network

In order to speed up delivery of the results, the raw VLBI observation data of the three sites is transferred to the Bonn Correlator by Internet connections. 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 Wetzell. For compatibility reasons, the data of Tsukuba, initially recorded in K4 format, has to be copied to Mark 5 format after transmission. 16 channels with 8 MHz/channel are recorded resulting in 256 MBit/s. With close to 30 minutes effective observing and recording time, each station has to transfer about 460 GBit or 58 GBytes per session. Due to copying procedures and current network capacities, the threshold for completion of delivery of the raw VLBI data to the correlator is currently about seven hours after the final observation. In 2008, 42 sessions were observed and transmitted successfully. Correlation and database delivery were completed for 75% of the sessions within the first 8 hours after the end of the observations. A further 15% were 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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