The Bonn Geodetic VLBI Operation Center

A. Nothnagel, A. Müskens

Abstract

The IGGB Operation Center has continued to carry out similar tasks of organizing and scheduling various observing series as in 2006. The INT3 activities have been added in the second half of the year.

1. Center Activities

The IGGB 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 2007 are the same as in 2006 but augmented with the INT3 activities.

- **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 third month (4 sessions in 2007) 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):**
  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 manpower available. The recording frequency setup is 16 channels and 4 MHz channel bandwidth.
- **UT1 determination with near-real-time e-VLBI (INT3):**
  One of the main applications of the results of the IVS Intensive series is the prediction of UT1 values based on time series of existing UT1 observations. Reducing the latency in providing UT1 results from observations does improve UT1 predictions significantly.

For this purpose another Intensive project was initiated to fill the gaps between the INT2 sessions on Sunday mornings and the INT1 sessions on Monday evenings. Under the short name INT3, the telescopes of Ny-Ålesund, Tsukuba and Wettzell started to observe a new series of one-hour Intensive sessions in August 2007. These sessions are scheduled to start every Monday morning at 7:00 a.m. UT.

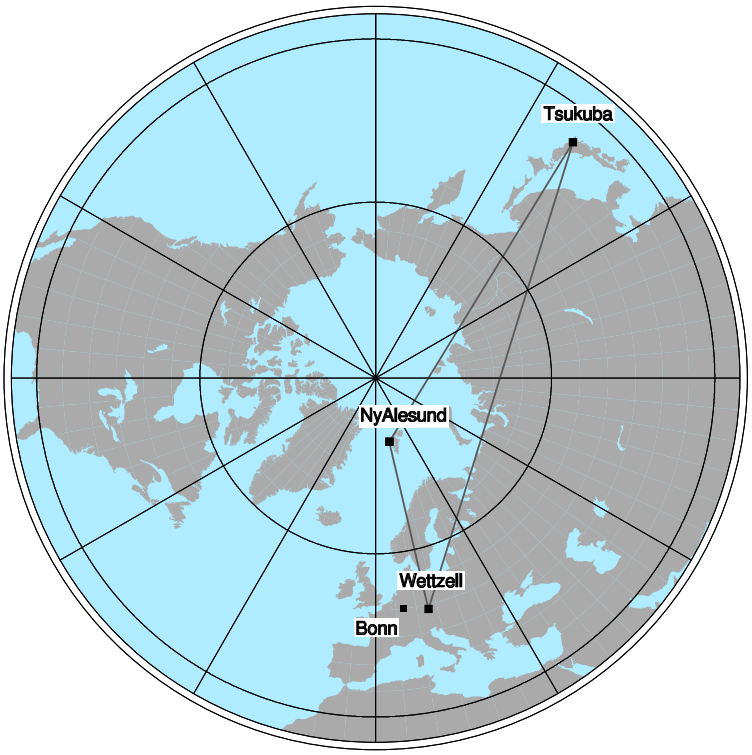

Figure 1. INT3 Network

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. For compatibility reasons, the Tsukuba data, initially recorded in K4 format, has to be converted 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, completion of delivery of the raw VLBI data to the correlator is currently about seven hours after the final observation.

2. Staff

Table 1. Personnel at IGGB Operation Center

Arno Müskens	+49-228-525264	mueskens@mpifr-bonn.mpg.de
Axel Nothnagel	+49-228-733574	nothnagel@uni-bonn.de