

3.6.2.6 Geodetic Institute of the University of Bonn (GIUB)

The GIUB and the Deutsches Geodätisches Forschungsinstitut (DGFI) jointly form an IERS Combination Research Center. Continuing last years investigations the GIUB group has been carrying out research in the areas of generating time series of earth orientation parameters (EOP) and of combining VLBI solutions on the basis of datum-free normal equations.

Since early 2000, combined VLBI EOP time series have been generated from input provided by up to six IVS Analysis Centers. Until the end of 2002 the EOP data sets contained observing results of polar motion (x_p, y_p), earth rotation phase (UT1) and nutation angle offsets with respect to the IAU1980 nutation model ($d\psi, d\epsilon$). From January 1, 2003 onwards, a second series is routinely generated and disseminated where celestial pole offsets (X, Y) in the frame of the non-rotating origins of the IAU2000 Resolutions and the MHB2000 nutation model are listed. Since VLBI analysis software packages have not yet been modified for a direct estimate of the new nutation paradigm, the offsets are simply transformed from the old paradigm to the new one using a routine kindly provided by Christian Bizouard of Paris Observatory.

In order to provide a quasi-continuous series of the earth's phase of rotation (UT1) the IVS regularly observes so-called Intensive sessions on single baselines. In recent months observations on a second baseline, Tsukuba (Japan) to Wettzell (Germany), have been included in the series of Wettzell - Kokee Park (Hawaii) observations adding UT1 data points also on Saturdays. Since each VLBI baseline contributes its own peculiarities a consistent integration of the new series into the existing one is required. The GIUB CRC investigates effects unique to the Tsukuba - Wettzell baseline which have to be calibrated for a consistent integration of the series.

Another field of research is the rigorous combination of VLBI solutions containing station coordinates and EOP on the basis of datum-free normal equations. After a number of preparatory steps have been completed the DOGS-CS software of DGFI has successfully been employed for the combination of a small series of test sessions generated by three IVS Analysis Centers. Critical areas have been the interpolation of the EOP epochs which have not been identical in all submissions and the number of TRF datum parameters which have to be fixed for a stable solution.

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