

Italy INAF Analysis Center Report

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Abstract

This report summarizes the activity of the Italy INAF VLBI Analysis Center. We also report about some major changes that occurred during year 2004 and have changed the affiliation of our Institute and the location of the AC, officially starting from 1st January 2005. Modification of names and codes necessary for the IVS affiliation will be requested and performed during 2006. A new contact person for the IVS AC will be indicated, soon. The structure and the activities of the Analysis Center remain unchanged.

1. General Information

Our geodesy section and its Analysis Center moved to the Bologna headquarter during 2004, leaving its former location situated at the Center of Space Geodesy, Matera. This decision partly originated by the reorganization process that was started by the Italian Government in June 2003, and in which the Institute of Radioastronomy (IRA) was integrated into INAF (the Italian National Institute for Astrophysics; <http://www.inaf.it>). Therefore, since 1st January 2005, IRA is not part of the Council of National Researches (CNR) anymore. The structure of IRA, as well as its territorial organization, changed: it is now part of INAF, a much larger institute. In its constitution act, INAF is explicitly indicated as the national institute in charge of promoting, both at national and international levels, the activities related to astronomy, astrophysics and radioastronomy. The geodetic activity of IRA has been maintained within the new institute but the Geodetic Division has changed location and structure. Though the reorganization process is not complete yet, new opportunities are foreseen in the process. The Geodetic Division within INAF has increased, joining the former IRA division with the former geodetic division of the Cagliari Astronomical Observatory. Within this new group, the coordination of geodetic activities involving Medicina and Noto telescopes seems to be very promising, also optimizing the efforts required for organizing and planning geodetic activities that are relevant for SRT (Sardinia Radio Telescope; <http://www.ca.astro.it/srt/index.htm>). SRT is now a project of INAF: this new Institute is therefore managing three out of four radiotelescopes located on the Italian national territory.

2. Data Analysis and Results

The IRA started to analyze VLBI geodetic databases in 1989, using a CALC/SOLVE package on the HP1000 at the Medicina station. In the following years that software was installed on an HP360 workstation and later on an HP715/50 workstation. We analyzed mostly databases with some European baselines, generally at least three. We are also storing all the databases with the Ny-Ålesund antenna data. All hardware resources are now located at Bologna headquarters. These are two HP785/B2600 workstations and one HP282 workstation. We run CALC/SOLVE software package and f-SOLVE. During 2005, we have stored all the 1999-2005 databases available on the IVS data centers. All the databases have been processed and saved with the best selection of the parameters for the final arc solutions.

Our AC is participating in the IVS TROP Project on Tropospheric Parameters since the beginning of the activities. Submission of tropospheric parameters (wet and total zenith delay,

horizontal gradients) of all IVS-R1 and IVS-R4 24hr VLBI sessions is regularly performed in form of SINEX files. Moreover, we imported and analyzed all the other 2000-2005 databases available on the IVS data centers, in order to compute the tropospheric parameters. We are carrying out a comparison between the VLBI tropospheric estimates and the GPS-derived troposphere for the co-located sites. Long time series of troposphere parameters have been computed using all VLBI sessions available on our catalogue, in order to estimate the behaviour in time of the content of water vapour in the atmosphere. We submitted long time series of tropospheric parameters to IVS TROP Project.

3. Outlook

For the time being, our catalogue contains all experiments containing European stations and all sessions performed after 1998. It is our intention to upload and analyze all experiments performed in the previous years, thus completing the catalogue.