

# Italy CNR Analysis Center Report

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## Abstract

This report summarizes the activity of the Italy CNR VLBI Analysis Center. We also report about some major changes that occurred during 2004. The institute changed its affiliation and location (officially taking effect on 1st January 2005). Modification of names and codes necessary for the IVS affiliation will be requested and performed during 2005. A new contact person for the IVS AC will be indicated. 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 in 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 (Italian National Institute for Astrophysics; <http://www.inaf.it>). Therefore, starting on 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, has 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. The year 2004 has therefore been very important in terms of reorganization and planning of the activity that will be carried out by our new group and by our new institute in the future.

## 2. Data Analysis and Results

The IRA started to analyze VLBI geodetic databases from 1989, using the 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 have analyzed mostly databases with some European baselines, generally at least three. We are also storing all the databases of the Ny-Ålesund antenna. 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 2004, we have stored all the 1999-2004 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.

In 2004, we have also asked for OCCAM 6.0 software, which will be installed and used in 2005.

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 2000-2004 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 in our catalogue, in order to estimate the behaviour of the content of water vapour in the atmosphere over time. 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.

Along with f-SOLVE, it is our intention to start regular data analysis using OCCAM, thus producing solutions with two important VLBI software packages.

Furthermore, we are going to start a regular production of Earth Orientation Parameters with the purpose of preparing for regular submission to IVS.