Matera CGS VLBI Analysis Center

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Abstract

This paper reports the VLBI data analysis activities at the Space Geodesy Center (CGS), Matera, from January 2011 through December 2011 and the contributions that the CGS intends to provide for the future as an IVS Analysis Center.

1. General Information

The Matera VLBI station became operational at the Space Geodesy Center (CGS) of the Italian Space Agency (ASI) in May 1990. Since then, it has been active in the framework of the most important international programs. The CGS, operated by e-geos (a Telespazio/ASI company) on behalf of ASI, provides full scientific and operational support using the main space geodetic techniques: VLBI, SLR, and GPS.

2. Staff at CGS contributing to the IVS Analysis Center

- Dr. Giuseppe Bianco, responsible for CGS/ASI (primary scientific/technical contact).

- Dr. Rosa Pacione, responsible for scientific activities, e-geos.

- Dr. Roberto Lanotte, geodynamics data analyst, e-geos.

3. Current Status and Activities

3.1. Global VLBI Solution cgs2010a

The main VLBI data analysis activities at the CGS in the year 2011 were directed towards the realization of a global VLBI solution, named cgs2010a, using the CALC/SOLVE software (developed at GSFC). The solution activities, started at the end of 2010, ended in March 2011, when the solution sections (crf, trf, and eop) were published in the IVS archives. The main, final, characteristics of this solution are:

- Data span:
  1979.08.03 - 2010.12.29 (3924 sessions)

- Estimated Parameters:

  - Celestial Frame:
    Right ascension and declination as global parameters for 839 sources
  - Terrestrial Frame:
    Coordinates and velocities for 81 stations as global parameters
  - Earth Orientation:
    Unconstrained X pole, Y pole, UT1, Xp rate, Yp rate, UT1 rate, dpsi and deps.

3.2. IVS Tropospheric Products

Regular submission of tropospheric parameters (wet and total zenith path delays, and east and north horizontal gradients) for all VLBI stations observing in the IVS R1 and R4 sessions continued during 2011. At present 1056 sessions have been analyzed and submitted, covering the period from 2002 to 2011. The results are available at the IVS products ftp site.

3.3. IVS Product "Time Series of Baseline Lengths"

Regular submission of station coordinate estimates, in SINEX files, continued during 2011 for the IVS product "Time Series of Baseline Lengths". This is composed of 3693 sessions, from 1979 to 2011.

3.4. CGS Contribution to IERS EOP Operational Series

Since 2008, CGS has been delivering IERS R1 and R4 session EOP estimates as a regular contribution to the IERS EOP operational series. The whole cgs2007a solution, available when the contribution started, has been delivered to IERS as a reference series updated by the periodic EOP solution submission.

4. Future Plans

- Continue and improve the realization of our global VLBI solution, providing its regular update on time.

- Continue to participate in IVS analysis projects, providing the datum-free normal equations.