

# Analysis Center of Saint-Petersburg University

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## Abstract

The contribution of the Analysis Center of Saint Petersburg University for IVS consists in routine estimations of EOP time series and UT1-UTC values. Information about activities, staff members and background information is included in this report.

## 1. Introduction

Sobolev Astronomical Institute is located in Petrodvorets, near St. Petersburg. It is a research institute of the Saint Petersburg State University. The IVS Analysis Center of Saint Petersburg University was established in the Institute in 1998. The main activity of the AC SPU consists of routine processing of 24-hour and 1-hour observational sessions for obtaining Earth Orientation Parameters (EOP) and rapid UT1-UTC values, respectively. During 2006, the activities of AC SPU were supported by the Ministry of Education and Science of the Russian Federation (in frame of grant RNP.2.1.1.5077 “Astronomical and Geophysical Research based on VLBI and GPS/GLONASS observations”).

## 2. Staff

The staff members who are involved in the activities of the Analysis Center are listed below:

- Veniamin Vityazev – Director of Astronomical Institute of Saint-Petersburg University, PhD., Prof. General coordination and support of activity at the Astronomical Institute.
- Maria Kudryashova – Research assistant of Astronomical Institute of Saint-Petersburg University. Processing of VLBI data.

## 3. Activities in 2006

- As in the previous years we continued to provide the series of five EOPs (spu0003i.eops) and rapid estimations of UT1-UTC (spu0002.eopi) values on a regular basis. Detailed description of the solution strategies have been given in our previous reports (see for instance [1], [2]).
- A new version of the OCCAM software package (version 6.2) was released [3]. Our center took part in testing this version and in the near future we are planning to change our current version to the new one. A preliminary comparison of the EOP series obtained by old and new versions of the software revealed that 1) the scatter of the post fit residuals (represented by weighted rms) was decreased when applying the new version; 2) formal errors of the parameters under estimation were more realistic in comparison with results of previous versions of the package due to more realistic estimation of  $\chi^2$  values.
- During the year 2006 we continued our investigations of sub-diurnal variations of EOP. Several individual time series of sub-diurnal EOP obtained from the CONT02 VLBI campaign

were compared. Two of these series were kindly provided by Dr. S. Bolotin (Main Astronomical Observatory of National Academy of Science of Ukraine) and by Dr. D. MacMillan (Goddard Space Flight Center). Analysis of the results is in progress. We also studied the covariance function of Earth orientation parameters which is needed for the least-squares collocation estimation of these parameters.

#### 4. Future Plans

In the coming year we are planning to update our EOP solutions as well as to continue the investigations of sub-diurnal variations of Earth orientation parameters and their correlations with geophysics.

#### References

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- [2] Kudryashova, M., Analysis Center of St. Petersburg University In: International VLBI Service for Geodesy and Astrometry 2003 Annual Report, NASA/TP-2004-212254, N. R. Vandenberg and K. D. Baver (eds.), 161–162, 2004.
- [3] Titov, O., Tesmer, V., Böhm, J., OCCAM version 6.2 software (user guide), <ftp.ga.gov.au/sgac/vlbi/OCCAM6.2/doc/occam6.2.pdf>