Analysis Center of Saint-Petersburg University

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Abstract

This report summarizes the activities of Analysis Center of Saint Petersburg University from its establishment to the end of 2001. Changes in our solutions are described, and the outlook for 2002 is given.

1. Introduction

The Analysis Center is located at the Astronomical Institute of Saint Petersburg University. It started its activity in 1998. Initially we obtained UT1-UTC values from NEOS-Intensive sessions only. Since 2000 we have begun to process the weekly NEOS-A experiments. A pentium-III (600 MHz) PC system having a large memory storage (HDD 15363 Mb) is used for VLBI data processing from beginning of 2001.

2. Staff

The staff and their responsibilities are:

Veniamin Vityazev – Director of Astronomical Institute of Saint-Petersburg University, PhD. General coordination and support of activity at the Astronomical Institute.

Oleg Titov – Assistant Professor of Saint-Petersburg University, PhD. Processing of VLBI data. Moved away from Saint-Petersburg University in June, 2001.

Maria Kudryashova – Postgraduate student of Saint-Petersburg University. Current processing of VLBI data.

3. Component Description

As it was announced in our previous annual report, OCCAM software was upgraded jointly with groups of DGFI and Vienna Technical University. A description of OCCAM 5.0 software is available on request. This year we participated in regular submission of EOP from NEOS-A observational program. As to processing the sessions, two series of Earth Rotation Parameters (x,y coordinates of Pole, UT1-UTC, polar offsets) are derived. There are spu00001.eops and spu00002.eops. Differences between these solutions are described below.

OCCAM (version 3.4) was used to get spu00001.eops solution. It contains 1063 estimates since February, 7, 1983. For the reference station only wet delay is estimated. Clock offsets and wet delay are also estimated for other stations as a random walk process. It is suggested that clock rates are constant parameter. Almost all reduction calculations are in accordance with IERS Conventions 1996 and its later modifications. Relativistic corrections are from IERS Conventions (1992). Celestial reference frame was fixed to Reference Frame Navy 1997-8. Station coordinates are referred to ITRF97.

In order to derive spu00002.eops solution we used upgraded OCCAM (version 5.0) software. The time series contains 203 estimates since 01 January, 1998. For all stations (except the reference one) wet delay, clock offsets and atmosphere gradients are estimated. A random walk dynamic

model has been chosen to adjust the stochastic behavior of parameters, mentioned above. For the reference station the clock offset is not estimated. Reduction model is realized in accordance with IERS Conventions (2000). Relativistic corrections are calculated in accordance with IERS consensus model. Celestial reference frame was fixed to ICRF Extension catalogue. Terrestrial reference frame was fixed to ITRF 2000 catalogue.

To get the solutions Kalman filter technique is applied. Wettzell is used as a reference station everywhere, where it is possible.

4. Outlook

In 2002 we are going to process NEOS-A and NEOS-Intensives time series for IVS service. Comparison of our time series under different types of a priori dispersions for stochastic parameters will be done in the nearest future.

References

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