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Estimation of nutation time series from GPS and VLBI for the CONT05 campaign

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In September 2005 the IVS (International VLBI Service) organized the 15 days campaign CONT05 (Continuous VLBI 2005) to collect a set of continuous Very Long Baseline Interferometry (VLBI) observations from the global IVS station network. The goal of this experiment was to acquire a unique data set in order to demonstrate the highest accuracy which is VLBI currently able to achieve. This was the follow-on campaign of the previous CONT94, CONT95, CONT96 and CONT02.

In our poster we concentrate on the estimation of nutation offsets from VLBI and Global Positioning System (GPS) w.r.t. the IAU2000 precession-nutation model for the time span of 5 weeks centered at the CONT05 campaign. Our work was performed in three steps. First, nutation offsets were computed from VLBI observations using the OCCAM 6.1 software for VLBI data analysis. Then, nutation rates were derived from GPS network data for GPS weeks 1339-1343 using 79 globally distributed permanent tracking stations which are part of the IGb00 realization of ITRF2000. For GPS data processing the Bernese software Version 5.0 was used. In order to take advantage of the strength of both space techniques (long-term stability of VLBI and high time resolution of GPS), the nutation offset and nutation rate time series were combined using the 'combined smoothing' method introduced by Vondrák&Čepek in 2005. The dense VLBI CONT05 parameter series over a two-weeks subperiod allows to discuss the impact of high resolution VLBI nutation offset estimates on the combination. In our poster we will present the comparison of the established combined time series and we will discuss in detail the results.