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Contribution of the additional GNSS constellations to the nutation rates estimation: analysis of correlations

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This study is a sequel to our recent study (Kudryashova et.al., proc. of the Journées 2008) on the potential contribution of new satellite constellations (like revitalized GLONASS and upcoming GALILEO) to the estimation of nutation rates w.r.t. GPS-only based nutation rates. The correlation coefficients between nutation rates and some other parameters could serve as a real measure of the contribution of improved geometry of an additional (w.r.t. GPS) satellite system. In this investigation we concentrate on the detailed analysis of correlation coefficients between two sets of parameters: 1. nutation rates and radiation pressure parameters; 2. nutation rates and polar motion.

For this purpose two series of nutation rates have been produced. The first series is based on the GPS observations only. The second series is based on the observations of two satellite systems: GPS and GLONASS. In order to derive these series we used simulated observations produced by means of the Bernese v.5.0 software.