



The noise properties in GPS time-series at European stations revisited

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Williams et al. (2004) made a comprehensive study of the noise in GPS time-series for a large set of stations, analysed by various research centres. One of their conclusions was that the power-law plus white noise model is a good description of the temporal correlation that exists in the observations. The power-law model mostly has a spectral index of 1 which corresponds to flicker noise. Santamaría et al. (2011) repeated this study using also the General Gauss Markov noise model and the flicker plus random walk noise model suggested by Langbein (2008). They concluded that the flicker plus random walk noise model was still the best choice. However, Langbein (2012) emphasised recently that the flicker plus random walk noise is a good alternative. To investigate this issue further, we have analysed the noise properties in GPS time-series of around 110 stations in Europe with more than 8 years of data. The data length threshold was chosen to focus our study on long periods where the effect of random walk noise should be clearer. The Bayesian Information Criteria was used to quantify how well the noise models fit the data. For this work we will use the recently developed Hector software package (Bos et al., 2013) which employs the standard Maximum Likelihood Estimation method. In addition, we will compare solutions made publicly available: JPL, EUREF, and IGS solutions and our own solutions (SEGAL) computed using GIPSY/OASIS.