Geophysical Research Abstracts, Vol. 9, 04802, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04802

Influence of irregular oscillations in the Earth orientation parameters on their prediction errors

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The Discrete Wavelet Transform (DWT) and the Fourier Transform (FT) band pass filters (BPF) were applied to compute the oscillations in the Earth orientation parameters (EOP) as a function of time and frequency. The DWT BPF is based on the discrete Meyer or Shannon wavelet functions. Such irregular oscillations were then introduced to the model data similar to the EOP data, replacing the oscillations with constant amplitudes and phases. Next, the obtained model data were forecast by the combination of the least-squares extrapolation and the autoregressive prediction to examine the influence of the considered oscilaltions on the EOP prediction errors. It has been shown that the irregular broadband Chandler + annual oscillation is the main cause of the increase of the pole coordinates prediction errors. Moreover, irregular non tidal annual and semi-annual oscillations in LOD or UT1-UTC are responsible for increase of their prediction errors.