



An analysis of celestial pole offset observations in the free core nutation frequency band

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Poorly modeled and predictable free core nutation (FCN) is the most significant geophysical phenomenon, which limits the accuracy of transformation between celestial and terrestrial reference frames. VLBI technique provides more than two decades monitoring of the motion of the Earth's rotation axis. This data allow us to build an empirical FCN model for practical use. On the other hand, results of the VLBI observations and empirical models allow us to investigate variations of the FCN amplitude and phase, which are a basis for improvement of our knowledge about the Earth's interiors, interaction between solid Earth's layers, atmosphere and ocean, and connection of the Earth's rotation with other geophysical phenomena. FCN parameters derived from the VLBI observations also help in investigations the resonance effects in the celestial pole motion in the FCN frequency band. In this paper we analyze celestial pole offset observations provided by the International VLBI Service for Geodesy and Astronomy, and given as the differences between the observed nutation angles and the IAU2000A model. We have made using several statistical tools, such as spectrum analysis, singular spectrum analysis, wavelet analysis to investigate both trend and (quasi)periodical components. Recently predicted 2-component FCN model is also investigated. Finally, several latest empirical FCN models are compared.