Qualification uncertainties of nutation model using VLBI data and its application to study Earth's interior

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The uncertainties of sine and cosine coefficients of the lunisolar nutation were derived from the 11 independent EOP solutions and their combination plus two combined series IERS14EOPC04 and IVS15q2e by using the iterative Lanzos method. Nutation residuals computed from the combined series, IVS and IERS sets w.r.t. our fitted series, showed an overall 30 μas improvement compared to the weighted root mean square scattering ($wrms$) calculated w.r.t. IAU2000A for the complete data set. However, the scattering factor κ estimated from the short window (40 measurements in each window) data did not produce any significant differences between nutation residuals computed w.r.t. new fitted series and the IAU2000A series. But both results showed a better agreement between the formal uncertainties and CPO residuals when comparing the results to previous studies. In addition, the Earth's interior will be discussed based on the amplitudes of some nutation components and coupling constant inferred from nutation series as well.