



Geophysical excitation of nutation and geomagnetic jerks

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Recently Zinovy Malkin (2013) proposed that the observed changes of Free Core Nutation parameters (phase, amplitude) might be related to geomagnetic jerks (rapid changes of the secular variations of geomagnetic field). We tested this hypothesis and found that if the numerical integration of Brzezinski broad-band Liouville equations of atmospheric/oceanic excitations is re-initialized at the epochs of geomagnetic jerks, the agreement between the integrated and observed celestial pole offsets is improved significantly. This approach however tacitly assumes that the influence of geomagnetic jerks has a stepwise character, which is physically not acceptable. The present study continues in this effort by introducing a simple continuous excitation function (hypothetically due to geomagnetic jerks). The results of numerical integration of atmospheric/oceanic excitations plus this newly introduced excitation are then compared with the observed celestial pole offsets.