



Lunar and Solar Torques on the Oceanic Tides (Paperback)

By Richard D Ray

Bibliogov, United States, 2013. Paperback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****.A general framework for calculating lunar and solar torques on the oceanic tides is developed in terms of harmonic constituents. Axial torques and their associated angular momentum and earth-rotation variations are deduced from recent satellite-altimeter and satellite-tracking tide solutions. Torques on the prograde components of the tide produce the familiar secular braking of the rotation rate. The estimated secular acceleration is approximately - 1300 sec/century(sup 2) (less 4 after including atmospheric tides); the implied rate of change in the length of day is 2.28 milliseconds/century. Torques on the retrograde components of the tide produce periodic rotation variations at twice the tidal frequency. Interaction torques, e.g. solar torques on lunar tides, generate a large suite of rotation-rate variations at sums and differences of the original tidal frequencies. These are estimated for periods from 18.6 years to quarter-diurnal. At subdaily periods the angular momentum variations are 5 to 6 orders of magnitude smaller than the variations caused by ocean tidal currents.

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