

# **On the usefulness of atmospheric/oceanic angular momentum in recovering polar motion and gravity field variations in a unified process?**

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Polar motion is excited by variations in the mass distribution on the Earth's surface and the exchange of momentum between the atmosphere and oceans and the solid Earth. The same mass redistribution causes temporal changes in the gravity field coefficients with the second degree harmonics related to the rotational deformation and hence to changes in the Earth's inertial tensor. If precise models of the atmospheric and oceanic angular momentum are available solution for polar motion and degree 2 Stokes harmonics can be unified. In this study we utilize SLR tracking of LAGEOS to investigate (i) to what extent the unified approach is possible with current models for atmospheric and oceanic angular momentum and (ii) the precision required for a meaningful solution.