



Regional differences of hydrological excitation of polar motion computed from hydrological models and from the GRACE gravity field data.

J. Nastula(1), B. Kolaczek(1) and D. A. Salstein(2)

(1) Space Research Centre PAS, Warsaw, Bartycka 18a 00-716, Poland,(2)Atmospheric and Environmental Research, Inc. 131 Hartwell Ave., Lexington, MA 02421,USA
(nastula@cbk.waw.pl /48228403131)

Understanding changes in the global balance of the Earth's angular momentum due to the mass redistribution of geophysical fluids is needed to explain the observed polar motion. The impact of continental hydrologic signals, from land water, snow, and ice, on polar motion excitation (hydrological angular momentum-HAM), is still inadequately known. Recently the GRACE Satellite Mission monitoring Earth's time variable gravity field has allowed the determination of the global mass term of polar motion excitation functions; here we compare them on seasonal scales with the global mass term derivable from the geodetic excitation functions and geophysical excitation functions of polar motion. The maps of regional hydrological excitation functions derived from the present hydrological models and from the GRACE data differ considerably. The maps of regional hydrological excitation functions derived from the present hydrological models and from the GRACE data differ considerably. The spatial scale that GRACE resolves is coarser than the scale of the hydrological models. In broad terms, however, many features are similar: maxima in both GRACE and hydrological models are seen over Southeast and South Asia, the Amazon Basin of South America, the eastern United States, and areas north the Mediterranean Sea. In the paper differences of these regional data are computed and their geographic distribution is studied.