Abstract Details

<u>AOGS 1st Annual Meeting</u> > <u>Interdisciplinary Working Groups</u> > (IWG3D) Temporal variati degree-zero, one, and two gravity harmonic coefficients due to oceanic and atmospheric maredistributions >

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Title: (IWG3D) Temporal variations of degree-zero, one, and two gravity has coefficients due to oceanic and atmospheric mass redistributions

Abstract:

The bottom pressure fields from the ECCO outputs, the sea level and from the TOPEX/Poseidon altimeter mission (corrected for the steric ϵ and the atmospheric pressure fields from ECMWF were used to compl temporal variations of degree- zero, one and two gravity harmonic coefficients for 1993-2001. In general, the ECCO implied gravity varia smaller in magnitude than the T/P implied variation. The results from analyses show that these low-degree coefficients contain semi-annua annual and interannual components, with ECCO-implied variations les prominent. The secular trend of the degree-zero coefficient indicates oceanic mass increases at a rate of 7.50 0.80 1014 kg year-1 (from and 9.86 1.78 1014 kg year-1 (from T/P). The degree-zero coefficie from the atmospheric mass change shows an annual oscillation, but t of change (0.43 0.33 1014 kg year-1) is not statistically significant variations of the degree-one coefficients (corresponding to geocenter variations) due to oceanic mass also contain semi-annual, annual and interannual components and the results from ECCO and T/P are consi but are different to the atmospheric results in amplitude and phase. 1 and Y components due to oceanic mass change show trends of -0.2 n year-1 and 0.43 mm year-1, respectively, and are highly correlated w ENSO. The Z component has a strong annual component and is less s to ENSO. The anomalous positive rate of J2 during 1998-2001 from S (3.91 10-11 year-1) agrees very well with the rate computed the oc mass change (3.51@10-11 year-1), suggesting that the ocean is the contributor to this J2 anomaly. The J2 rate due to the atmospheric ma change is -1.23@10-11 year-1.

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