importance of the barotropic signal evidenced by TOPEX/Poseidon and Ocean General Circulation Model in the Indian ocean.

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"The difference between sea-level and dynamic topograhy relative to various reference depths, is examined with TOPEX/Poseidon data between October 1992. and August 1993 and with OGCM simulations over the Indian Ocean. The model is run over the Indian Ocean north of 40°S with all closed boundary conditions and bottom topography. At the surface it is forced by Hellerman and Rosenstein (1983) winds or NMC winds over 1992-1993 and by Oberhuber (1988) air-sea fluxes. Temperature and salinity are restaured to Levitus (1982) as a function of latitude, depth and distance to the coast so that there is no influence of Levitus in the equatorial region, nor in the upper layers, nor close to continents.

Simulated sea-level is derived by globally inverting the surface pressure gradients over the model domain, It is shown that everywhere, even along the equator, there is a significant difference between the dynamic topography and sea-level, no matter how deep the level of no motion is assumed. This difference is due to the barotropic signal which has a complex contribution to sea-level changes in space and time. Observed sea-level variations derived from TOPEX&Poseidon agree well in space and time with the simulated sea-level fluctuations, not with the dynamic topography signals derived from the model nor from Levitus (1982).

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