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GRACE and GRACE-FO Mascons for Studying Ocean Dynamics

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We have developed a specialized set of CSR mascons for ocean dynamics studies. The standard GRACE/GRACE-FO mascons over the ocean represent ocean bottom pressure. Thus, they have contributions from the average atmospheric pressure change over the ocean, the barystatic (global mean) mass change and the geographically variable redistribution of mass caused by gravitation, rotation, and deformation (GRD) changes, none of which drive ocean dynamics. In addition, there are large signals associated with the Andaman-Sumatra and Tohoku earthquakes. In this presentation, we describe the differences in the signal content and regularization of new ocean mascons from the standard release. We have calculated the barystatic-GRD fingerprints consistent with the mascons' estimate of continental mass changes, as well as explored the atmospheric and dynamic ocean effects on the fingerprints. In addition, we have estimated the earthquake signals using localized empirical orthogonal functions. All these contributions are removed, allowing the new product to be directly utilized in ocean dynamic studies.