



Hydrologic Contributions to Global Mean Sea Level Change

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Time series of variations in global mean sea level from TOPEX/Poseidon and Jason show a large amount of interannual variability, especially during ENSO events. Analysis of thermosteric sea level suggests that not all of the interannual variability is related to changes in the ocean heat storage, which implies that it may be explained by interannual variations in the exchange of freshwater mass with the continents. Unfortunately, observations of the hydrologic contributions to sea level change are sparse at best, and thus assessing the contributions to sea level change is difficult. Nevertheless, we have embarked on an effort to quantify these contributions using the available river gauge, precipitation, and evaporation data, as well as model output that incorporates these measurements. In addition, GRACE time variable gravity measurements provide a way to directly determine the hydrologic contributions to sea level change, but only over the last 4 years. We will review the results of our analysis of these datasets, but on the whole, they suggest that the exchange of freshwater between the continents and the oceans is a significant driver of interannual variability in global mean sea level.