

## **The Role Of Ocean Heat Content On Contemporary Sea Level Change**

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Perturbations of the Earth's Energy Budget from internal or external climate variations create an Earth's Energy Imbalance (EEI), manifested as a radiative flux imbalance at the top of the atmosphere. The contemporary positive EEI is mostly caused by human activity, and is driving global warming. The majority of this excess heat in the climate system is stored (> 90%), moved and sequestered primarily in the ocean, resulting in a warming of the upper and deep ocean layers. The rate of Ocean Heat Content (OHC) change is thus the dominant term in the EEI from inter-annual to multi-decadal timescales. One of the symptoms of the positive EEI is contemporary sea level rise associated to most severe societal consequences. Changes in OHC and sea level are thus closely linked. The ocean's volume changes (thermosteric sea level) due to ocean warming account for up to ~30-40% of global sea level rise. Natural climate modes of variability, ocean circulation changes and their interference with the anthropogenic warming signal result in regional fluctuations of ocean density and volume, which are in turn a dominant player in generating regional sea level changes. This talk will deliver an overview on recent estimates and related uncertainties of OHC changes and their role on contemporary sea level change at global and regional scale. Improving the accuracy of our estimates of global Earth's climate state and variability is critical for advancing the understanding and prediction of the evolution of our climate, and progress can be achieved with a concerted international effort. Ongoing activities will be introduced here as well.

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