



How Satellite Altimetry Informs Us About Future Sea Level Change

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The satellite altimeter record has provided an unprecedented climate data record for understanding sea level rise and has recently reached a major milestone at 25 years in length. This record of sea level change is becoming sufficiently long that we can begin to infer how sea level will change in the future. There are a number of potential avenues for doing this. First, observations of the rate and acceleration of global mean sea level change [Nerem et al., 2018; Hamlington et al., 2019] have become sufficiently well determined that we can do simple extrapolations under the (big) assumption that the rate and acceleration remain constant over the time period of the extrapolation. Second, there is evidence that the observed pattern of regional sea level change is being driven by the forced climate response and that these trends will continue into the future [Fasullo and Nerem, 2018]. Therefore, the observed regional trends from satellite altimetry can be used to inform the patterns of future regional variations. Finally, the climate data record from satellite altimetry can be used to evaluate different climate model projections and provide a means of choosing the most representative models for projecting future sea level. Taken together, these developments suggest a framework for a more data-driven approach for projecting future global and regional sea level change. We will review this framework and discuss possible paths forward.

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