Achievements and Challenges in Understanding Contemporary Sea-level Change

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The advent of modern satellite and in situ ocean and climate observing systems and the development of improved ocean and climate models has greatly improved our understanding of contemporary sea-level change. Key progress has come from the highest quality satellite altimeter missions as well as global in situ observations. There is now a reasonable understanding of the reasons for sea level change over recent decades and since 1900, including the attribution of the observed change to the climatic drivers. There is also improved agreement between ocean observations and models. However, significant and important challenges remain. The deep ocean, continental shelves and the polar regions are inadequately observed leading to ongoing uncertainties in simulations and projections in these regions and the global implications. Critically important for sea level around the globe is the changing structure of the oceans and the role of the oceans in the future of the ice sheets of Antarctica and Greenland. We need to demonstrate an ability to realistically simulate the observed, three-dimensional and time-dependent ocean and sea-level changes in order to have confidence in regional interannual, decadal, centennial and longer time-scale sea-level projections.

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