



Sea level rise: a multidisciplinary problem involving GGOS

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Sea level rise is one of the most unambiguous and serious consequences of a warming climate. Yet our understanding of its rate and geographic pattern is not sufficient for a reliable projection into the future. Sea level change is a process involving complex interactions among many components of the Earth System, including the ocean, the atmosphere, the ice and water on land, and the solid earth. Modern technologies have provided for the first time a capability of making global observations of these components. Satellite altimetry makes direct measurement of the height of sea surface and land ice elevation, satellite gravity missions measure the time-varying gravity field, autonomous floats in the ocean measure sea water density, VLBI and GPS networks measure the land motion. Climate change is inducing changes in all the components with each having unique spatial and temporal variability. One needs to differentiate signals from all the sources: the state of the ocean, ice melting, river discharge, geoid change, and land motions. The Global Geodetic Observing System (GGOS) in combination with other observing systems will play a key role in this multidisciplinary problem. It is timely for the international community to begin coordinating various resources for starting a program addressing the pressing problem of global sea level rise. I will briefly review the progress in the observing systems and discuss the challenges facing the problem,