



[U+F06C] Sea level variations during rapid changing Arctic Ocean from tide gauge and satellite altimetry

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Sea level variations can introduce the useful information under the circumstance of the rapid changing Arctic. Based on tide gauge records and the satellite altimetry data in the Arctic Ocean, the sea level variations in the 20th century are analyzed with the stochastic dynamic method. The average secular trend of the sea level record is about 1 mm/yr, which is smaller than the global mean cited by the IPCC climate assessment report. The secular trend in the coastal region differs from that in the deep water. After the mid-1970s, a weak acceleration of sea level rise is found along the coasts of the Siberian and Aleutian Islands. Analysis of synchronous TOPEX/Poseidon altimetry data indicates that the amplitude of the seasonal variation is less than that of the inter-annual variation, whose periods vary from 4.7 to 6 years. This relationship is different from that in the mid-latitudes. The climate indices are the pre-cursors of the sea level variations on multi-temporal scales. The model results show that while steric effects contribute significantly to the seasonal variation, the influence of atmospheric wind forcing is an important factor of sea level during ice free region.