



Surface waves, variability and radar altimetry

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Sea surface height is not the only parameter measured by the radar altimeter. Altimeters also measure parameters related to the sea surface. The best known of which are wind speed and significant wave height. In this paper we review work that has been done on retrieving wave parameters and the resulting wave climatologies. Any measurement from space needs to be validated and/or calibrated by reference to reliable measurements on the ground. For altimeter wave data we use routine buoy measurements around the world. Once we have a validated data set we can produce climatologies. Radar altimeters have, for the first time, allowed us to get a global picture of waves. Interannual variability in the wave field is greatest in the North Atlantic and we will illustrate how this can be related to the North Atlantic Oscillation. Going beyond the monthly mean wave climate we look at the estimation of extreme waves from radar altimeter data. We show that the altimeter record is now long enough to estimate extremes but possibly not to see the effect of changing climate on extremes. Finally we will talk about new wave parameters we can derive from radar altimeters in particular wave period.