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Satellite data for wave energy resource assessment

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The assessment of wave energy resource has been mostly based on results of 3^{rd} generation wind-wave models (that produce directional spectra at the nodes of a grid covering the ocean surface) after its verification against in situ data. However, satellite altimeter data have also been used for evaluating the accuracy of wave height hindcasts, but it is not useful for wave period, a wave parameter that is essential to take into account for the design of the Wave Conversion Systems (WECs). To turn altimeters more useful, models have been proposed that allow estimating wave period from the altimeter backscatter.

The other source of remote sensed data is the Synthetic Aperture Radar (SAR or the advanced ASAR) providing estimates of directional spectra. Unfortunately, they are not much useful for the present purposes because its accuracy is always good only for long swells. In this presentation a discussion of suitability of available satellite wave data types and the models for extracting period information from altimeters will be made. This includes the presentation of examples of utilization of altimeter data and the verification of ASAR spectra against in situ data.