



Airborne measurements of the statistics of breaking waves and their simultaneous microwave radar return

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Breaking of wind waves is an important and ubiquitous oceanic process which can be observed under moderate and high wind conditions. Sea surface whitecaps can be seen as an indicator of the associated physical phenomena. Thus, correct estimation of the breaking waves statistics can provide rich information on form, dynamics and intensity of the air-sea interaction and upper ocean layer processes. In this respect, the investigation of the spatio-temporal statistics of breaking waves together with their impact on the remote sensing data is a current important issue in Oceanography.

Since the signature of breaking waves and related phenomena in the microwave domain is not well understood, new experimental efforts have been conducted in order to improve the knowledge of the impact of wave breaking on the sea radar return. In this work we present first results of airborne video observations of the sea surface with concurrent microwave radar measurements. Basic whitecap statistical parameters are correlated with the variations of the radar backscatter signal. Empirical relationships have been derived for various wind speeds and sea states in different polarizations.