

Abstract Submitted  
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**The breaking criteria: a way to predict and characterize a breaking wave**<sup>1</sup> FLORIAN DESMONS, PIERRE LUBIN, None, MFN TEAM — Surface wave breaking, occurring from the ocean to the coastal zone, is a complex and challenging two-phase flow phenomenon which plays an important role in numerous processes, including air–sea transfer of gas, momentum and energy. Recent modelling attempts are struggling with the lack of physical knowledge of the finest details of the breaking processes. Furthermore, no universal scaling laws for physical variables have been found so far. Hence, parameterizing and characterizing breaking effects becomes very difficult. The pre- and post-breaking events can be quantified, detected and qualified following breaking criteria. These criteria can be directly linked to geometrical quantities (wavelength, amplitude, depth, etc.) in order to predict the breaking type, its localization and the energy dissipated during the breaking process. Numerous accurate numerical simulations were performed to gain further insight on predicted and quantified a breaking wave. We aim at presenting and discussing geometrical characteristics and the energy dissipated for small and intermediate breaking waves.

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