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Air-flow separation over unsteady breaking wind waves GAURAV SAXENA, SHUBHRA MISRA, FABRICE VERON, University of Delaware — In air-sea interaction processes, when considering wind stress over small-scale breaking waves, there are few direct quantitative experimental investigations into the role of air-flow separation on the interfacial momentum flux. Reul *et. al*, (1999), found multiple coherent patches of vorticity downwind of the crest that were strongly influenced by the geometric characteristics of the breaker. However, their breakers were generated by dispersive focusing techniques and, therefore, independent of the wind stress. We present experimental results obtained with particle image velocimetry (PIV) where moderate to strong winds directly generate unsteady small-scale breaking waves, a scenario commonly found in the open ocean. Particular attention has been devoted to capturing the spatio-temporal evolution of the air-water interface. Specifically, texture segmentation algorithms typically used for face recognition (Grey Level Co-occurrence Matrix (GLCM) and the Cross-Diagonal Texture Matrix (CDTM)) have been combined to yield robust and accurate estimates of the instantaneous breaker geometry.

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