

Field observations of the airflow over waves using PIV

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Abstract

The transfers of momentum and scalars across the air-sea interface are influenced by small-scale turbulent processes. In spite of extensive existing work on the topic, our understanding of near-surface physics remains incomplete. This is partly due to the technical challenges involved in the measurement of the small-scale dynamics very close to the rapidly moving ocean surface.

We present in situ measurements of the submillimeter-scale motions in the airflow above waves. A high resolution, large field of view Particle Image Velocimetry (PIV) system was specially developed for measurements at the ocean surface, capable of capturing 2D velocity fields in the turbulent airflow directly above the wavy surface. The system was recently deployed on RP FLIP. We will show some preliminary results and we will discuss the influence of waves on the structure of the wind stress within the wave boundary layer.