Wind, wave, and current interactions

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Ocean surface winds, currents, and waves are essential for the exchange of momentum, energy, heat, gases, and other tracers between the ocean and the atmosphere. Surface waves are strongly coupled to the upper ocean circulation and the overlying atmosphere but efforts to improve ocean, atmospheric, and wave observations and models have evolved somewhat independently. From an observational point of view, community efforts to bridge this gap have led to proposals for satellite Doppler oceanography mission concepts, which could provide unprecedented measurements of absolute surface velocity and directional wave spectrum at global scales. This talk will review the present state of observations and modeling of surface winds, currents, and waves, and outline observational gaps that limit our current understanding of coupled processes that happen at the air-sea-ice interface.