



Observing ocean currents, waves and their interactions with SKIM

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We propose a new satellite mission that uses a near-nadir Ka-band Doppler radar to measure surface currents, ice drift and ocean waves at spatial scales of 40 km and more, with snapshots at least every day for latitudes 75 to 82, and every few days otherwise. The use of incidence angles at 6 and 12 degrees allows a measurement of the directional wave spectrum which yields accurate corrections of the wave-induced bias in the current measurements. The instrument principle, algorithm for current velocity and mission performance are presented here. The proposed instrument can reveal features on tropical ocean and marginal ice zone dynamics that are inaccessible to other measurement systems, as well as a global monitoring of the ocean mesoscale that surpasses the capability of today's nadir altimeters. Measuring ocean wave properties facilitates many applications, from wave-current interactions and air-sea fluxes to the transport and convergence of marine plastic debris and assessment of marine and coastal hazards.