

The Use of Synthetic Aperture Radar Observations as Indicators of Fishing Activity in the Bering Sea

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Abstract

The North Pacific Ocean supports one of the most productive fisheries in the world. For example, the highly managed walleye pollock fishery in the Eastern Bering Sea and the Aleutian Islands region is the most valuable fishery in the U.S. Exclusive Economic Zone (EEZ). Routinely available RADARSAT synthetic aperture radar (SAR) images of the Bering Sea are providing indications of ongoing large scale fishing activities in the region. Due to the strong hard target radar return produced by ships, the location of fishing fleets is being frequently determined using SAR imagery. SAR data also provide additional simultaneous information on oceanographic, meteorological, and biological processes relevant to local fisheries. Slick patterns resulting from fishing operations are also detectable by SAR. Extensive slick patterns are found to be ubiquitous over trawl fishing areas in both the U.S. EEZ and the Russian EEZ in the Bering Sea. These slicks are thought to be mainly the result of fish processing residue and bycatch discharged into the water during trawl fishing and processing operations. Persistence of these features for several days is observed. Spaceborne SAR is a promising tool for fisheries management and surveillance as it can provide information on fishing fleet location, ongoing fishing operations, and in some cases, the location of previous fishing activities inside and outside the U.S. EEZ.