

Recent Results from a Nested Multi-Static HF Radar Network for the NorthEast Observing System (NEOS).

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Abstract: A nested HF radar network has been deployed along the New Jersey coast as part of the New Jersey Shelf Observing System (NJSOS) and the larger regional NorthEast Observing System (NEOS). A 25 MHz standard system (range about 50 km) setup for continuous operation since 1999 includes two sites in Brant Beach and Brigantine, New Jersey. A second 5 MHz long-range system (range about 170 km) includes four New Jersey sites set up in Wildwood, Tuckerton, Loveladies, and Sandy Hook, and one Massachusetts site in Nantucket. Both the long-range and standard-range systems provide real-time maps of surface currents, with resolutions of 1.5 km (standard) and 6 km (long-range). Recent additions to the network included GPS synchronization, which allows all long-range sites to operate on a single frequency without interfering with each other. In addition to single frequency operation, the GPS synchronization allows the existing coastal stations to be bistatically linked to each other. Without adding additional hardware, four coastal sites provide four monostatic radial current maps and 12 bistatic hyperbolic current maps simultaneously. This both increases data coverage and reduces measurement error. Two bistatic transmitting buoys (one 25 MHz and one 5 MHz) compliment the coastal sites. This operational, nested, and multistatic network provides real-time current maps for scientific and operational users.