

RUCOOL Keeps New Jersey Beaches Clean

Rutgers University Coastal Ocean Observation Laboratory was asked to assist the New Jersey Department of Environmental Protection in determining the origin of medical waste that washed up on the shores of Long Beach Island. The incident occurred on the morning of Saturday June 16, 2012 at the height of the beach tourism season. This caused the closure of five beaches for one day as officials determined the extent of the pollution.

The researchers at Rutgers utilized the 13 MHz High Frequency radar network to determine the origin of the pollution. This network was installed this year as part of a NJ Board of Public Utilities project to study the offshore wind potential for renewable energy.

The debris washed ashore at approximately 6 am EDT along the northern shore of Long Beach Island. The mean transport on the New Jersey shelf is from north to south. So the first attempt at identifying a source for the debris was to release virtual particles north of the landing point and see if they arrive where the debris was found. One Hundred virtual particles were released on June 15 at 6 am EDT, 24 hours before the waste washed ashore. The particles were released at 39.75 N and 74.06 W, just outside Barnegat Inlet the first possible land source for the debris. The measured surface currents from the 13 MHz radar network were used to advect particles forward in time. The results of the particle simulation are given in Figure 1. This shows the particles leaving the coverage area of the radar network and likely washing ashore on the beach.

Another simulation was conducted to see if there was another potential source for the medical waste. The next inlet north of Barnegat is Manasquan inlet. So we released 1000 drifters just outside Manasquan Inlet. In 48 hours these drifters were only able to reach just offshore of Seaside (Figure 2), so the syringes that washed ashore on the 16th needed to be closer than Manasquan Inlet. This affirms our original hypothesis that Barnegat Inlet was the source of the pollution.

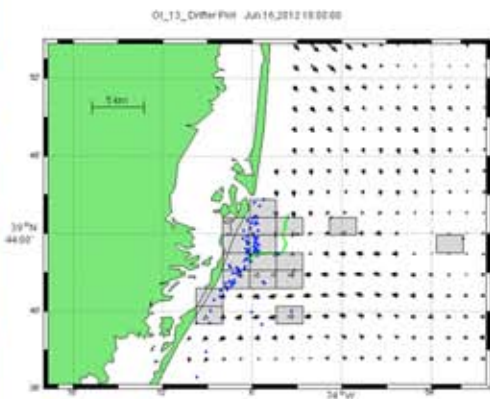


Figure 1: Results of the 24-hour particle simulation. The blue points mark the location of the particles at the time the debris washed ashore. The green line indicates the path of the centroid of the particles from release point to final position. The gray boxes denote the location of 95% of the virtual particles. The measured surface currents are shown as the black arrows.

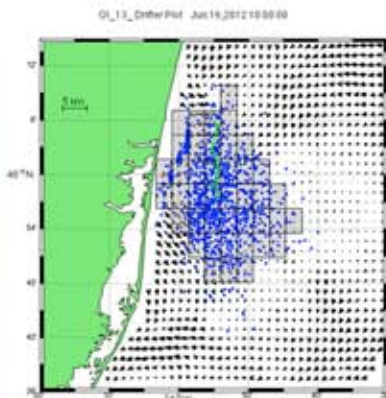


Figure 2: Results of the 48-hour particle simulation. The items in the figure match those of Figure 1.

