Integration of UAS into Lifesaving Operations

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- 13 years experience working with HF radar
- Research Project Manager at Rutgers University
Introduction to HF Radar
Benefit of High Frequency Radar

Horizon (5km)

25 MHz (30km)

13 MHz (80km)

5 MHz (180km)
High Frequency Radar
Hourly radial surface current measurements

Hourly total current measurements
Surface Currents from HF Radar

MARA Particle Trajectories: 2020/04/18 00:00 GMT

5 miles
Surface Currents from HF Radar

MARA Particle Trajectories: 2020/04/20 23:00 GMT

24 km
70 km total path in 3 days
Wave Measurements from HF Radar Stations

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Radio $\lambda$ (m)</th>
<th>Ocean $\lambda$ (m)</th>
<th>Period (s)</th>
</tr>
</thead>
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<tr>
<td>5</td>
<td>60</td>
<td>30</td>
<td>4.4</td>
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<td>13</td>
<td>23</td>
<td>11.5</td>
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<tr>
<td>25</td>
<td>12</td>
<td>6</td>
<td>2.0</td>
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</tbody>
</table>

Hourly Wind Data from NDBC Station 44025

13 MHz

Rutgers
School of Environmental and Biological Sciences

Center for Ocean Observing Leadership
Calibrating HF Radar
Other Applications

Sharks spotted off Jersey Shore beach, police say

By Katie Park | For NJ.com
on June 30, 2016 at 3:20 PM, updated July 01, 2016 at 6:35 PM

DEAL - Beachgoers were frantically ushered out of the water near Deal Casino and the Conover Pavilion on Thursday, after lifeguards spotted a gray, angular fin snaking its way through low tide.

For about an hour on Thursday morning, the ocean near the beach club was devoid of visitors as lifeguards temporarily closed off the water to monitor the area for suspected sharks.

Deal police Sgt. William Hulse said lifeguards thought they saw two sharks near Conover Pavilion following a school of dolphins.

"No one was hurt," Hulse said. "Everyone was removed safely (from the water)."

Police sent out an alert at 11:55 a.m. notifying the public that a 6- to 7-foot shark was spotted approximately 100 yards off Deal Casino.
Florida dad spots shark swimming near his children while taking photos with drone
Florida dad spots shark swimming near his children while taking photos with drone