

Delaware Bay Observing System (DBOS)

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& Engineering

DBOS components:

- Temporal Variability Measurement (14 Ft. Lighthouse Project)
- Acoustic Remote Sensing (Tomography)
- Sea Surface current mapping (CODAR)
- Autonomous Underwater Vehicle (AUV)
- Delaware Bay Mouth Flux (Ferry)
- Beach Monitoring (Digital Photography)
- Biological and chemical monitoring
- Predictive Modeling

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DBOS Researchers at UD

- Bruce Liphardt (CMES)
- Jack Puleo (CE)
- Denny Kirwan (CEMS)
- James Kirby (CE)
- George Luther (CEMS)
- Chris Sommerfield (CMES)
- Kuo Wong (CMES)
- Anreads Muenchow (CMES)

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High-Frequency Acoustic Propagation in DE Bay



College of Marine Studies - Univ. of Delaware, Newark DE

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Environmental Measurement



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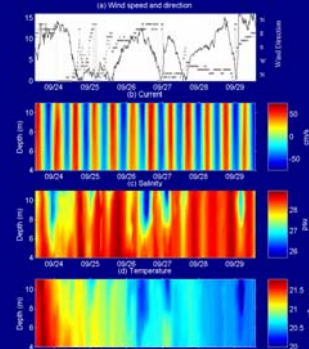
Environmental Measurement

Wind Speed And direction

Current Measurements

salinity

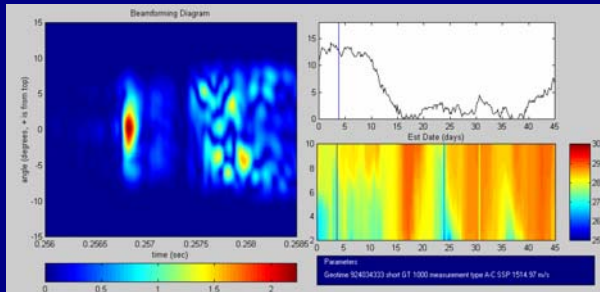
Temperature



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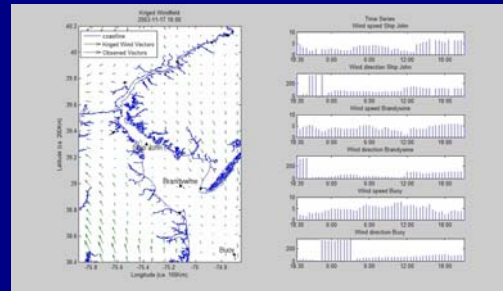
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Experiment – 30 hours of data



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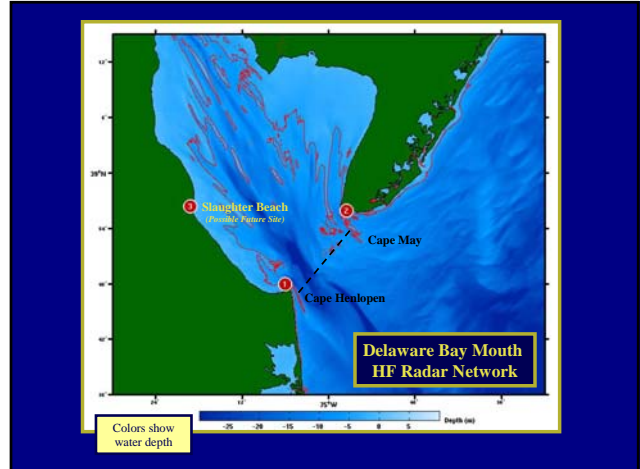
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Summary

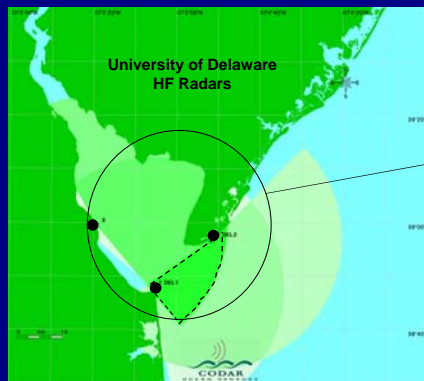
- Acoustical oceanography concept demonstrated (0.6-18kHz).
- A useful tool developed to utilize acoustic array for environmental parameter measurements.
- Acoustically obtained parameters such as wind speed and salinity show in excellent agreement with conventional methods of measuring same parameters.
- Introducing a new way for long-term oceanographic measurements in shallow water.

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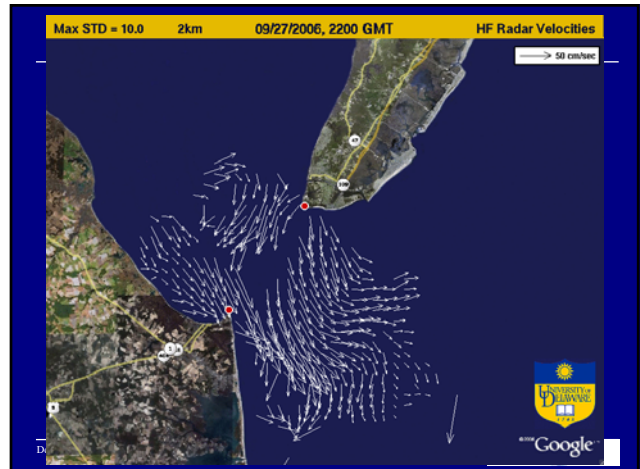
Proposed and Actual Locations of University of Delaware HF Radars Within the MACOORA Setting



- Surface currents within Bay, Bay mouth and adjoining coastal region will be observed with the proposed placement.

- A region of high resolution surface wave-current interaction will result due to overlapping signals (dashed region)

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U.S. National Ocean Observing System

www.macoora.org

www.ocean.us

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The National Ocean Observing System, Physical Oceanography

Rutgers HF Radar Network

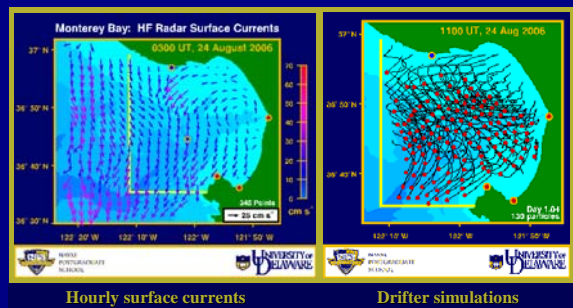
http://marine.rutgers.edu/coolroom

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The National Ocean Observing System, Physical Oceanography

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Example Products from Monterey Bay



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Why are Coastal HF Radars Important?

HF radar provides hourly surface current maps at resolutions of 1-2 km.

This unprecedented information is useful for:

- Coast Guard search and rescue
- Oil or hazardous spill response
- Beach retention/replenishment efforts
- Navigation and piloting
- Fishing
- Ecosystem studies
- Basic research on ocean circulation

Delaware Bay mouth surface current maps will be available on the Internet in near-real time

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