Preliminary Bathymetric Mapping of Duplin River, Georgia Fall 2009

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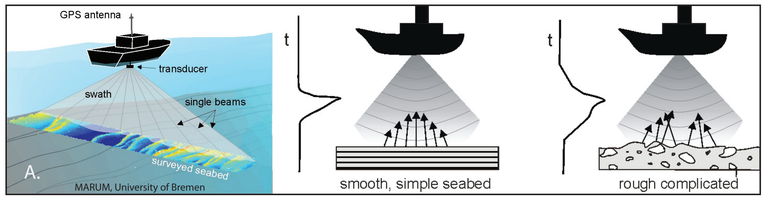
Location map of the Duplin River. The Duplin River is an 11Km tidal creek which connects to the ocean via Doboy Sound.



A. The multibeam echosounder uses sound wave returns to measure the bathymetry of the sea floor. Coastal Carolina University's multibeam system also records signal amplitude, or backscatter intensity. The backscatter intensity can be used to delineate changes in bottom characteristics.

B. Coastal Carolina University uses a Kongsberg EM 3002 dual head system. With an operating frequency of 300 kHz (293/307 kHz for dual head), this system is capable of mapping water depths from 1 meter to 200 meters. Up to 508 soundings per ping are generated at a repeat rate of up to 40 Hz.

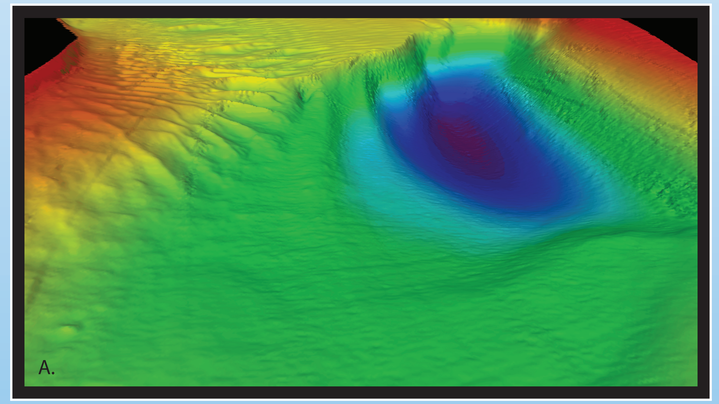
C. A Seatex Seapath 200 RTK vessel reference system provides sub-decimeter positioning accuracy and vessel attitude information. Positioning is provided by real time kinematic (RTK) GPS and GPS tide measurements are applied during post processing. Heading and speed over ground are measured with a pair of dual frequency (L1/L2) antennas. A Seatex MRU 5 inertial measurement unit provides real-time pitch and roll compensation.

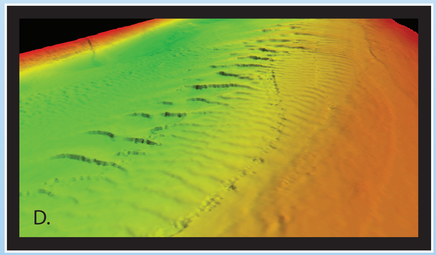
The bottom of the Duplin River is categorized by a range of ripples, mudfalts, sandy shoals, and scour depressions. While surveying proceeded during all phases of the tidal cycle, most of the ripples imaged suggest ebb tidal flows are the dominant process in shaping the river bottom.

A. Perspective view of a deep scour (>15 m) adjacent to a ledge. The steep, sharp ledge may suggest influence of the local geological framework.

B. Map view of the same scour depression. Note the juxtaposition of the smooth river bed with the rippled bottom. Also, note the complicated bathymetric pattern at the confluence of the Post Office Creek and the main channel of the Duplin.

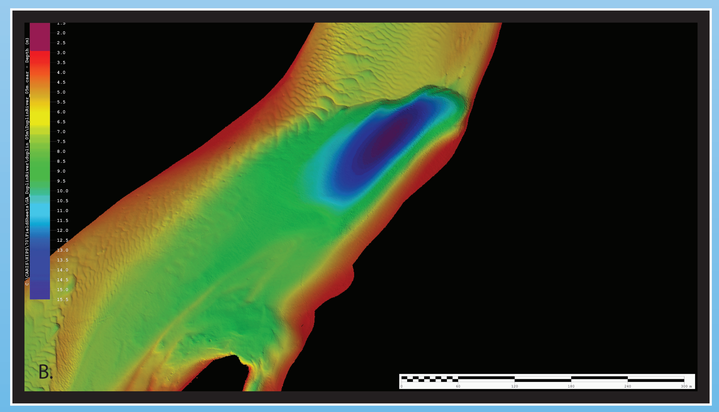
C. South end of the Duplin and Doboy Sound. Note the large, low frequency, arrow head shaped ripple features.

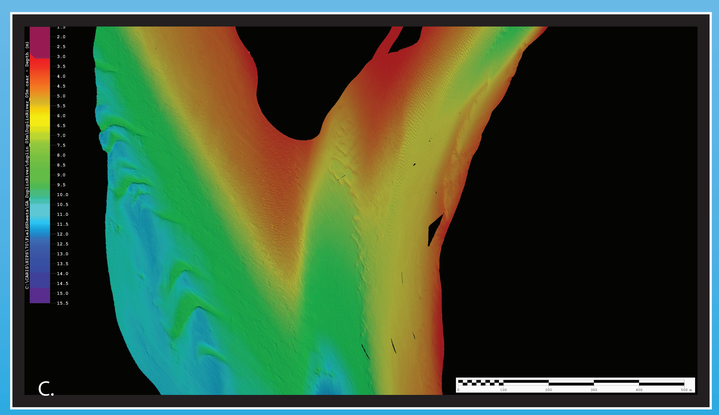




D. Perspective view of ripple features. Notice the steep sides face south indicating that the feature are formed by water moving southward (ebb tide).

E. Backscatter intensity (amplitude) of a ripple in Doboy Sound. The gray tone variation indicates differences in bottom roughness or sediment type.





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