

Ultra-high resolution acoustic survey in turbid waters. Initial results from Britain's Atlantis – Dunwich town.

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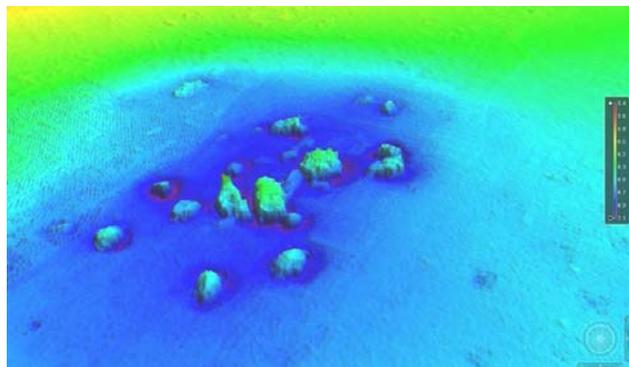
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Habitat mapping often depends on high resolution acoustic data from sidescan sonar or multibeam bathymetry systems to map large areas of seafloor terrain. To see ultra-high resolution features usually requires photography or video from a towed system, ROV or diver. In turbid water where visibility is minimal or none, optical methods are not practical. We present a new acoustic system called a Didson (™ McCartney) working at very high-frequencies of 1.1MHz and 1.8MHz for finer-scale mapping. The very high frequency does mean that the acoustic viewing range is restricted (< 20m), and thus needs to be finely controlled. The system is mounted on a tripod plate, to be placed on the seafloor and rotated on the spot by a diver; the results then to be compared with multibeam bathymetry survey and high frequency sidescan imagery.

Our test area was an archaeological site off the Suffolk coast showing the remains of Dunwich town. In the 12th century Dunwich was a thriving port (the 5th largest port in Britain). Coastal erosion however took its toll over the hundreds of years, possibly due to coastal works begun in the 13th century, so that today Dunwich is a fraction of its former size with only a few houses remaining onshore. Most houses from the period would have been wooden and thus would not survive to this day, but many of the 17 churches were of brick or stone construction and it is these remains which are visible on the seafloor. Mapping allows reconstruction of the history of the port and can provide rates of coastal erosion. Methodology and trials from the survey will be shown together with plans for future work and new systems – possibly up to 3MHz.



Gravestone very close to edge of the cliff in Dunwich's last remaining cemetery, which will soon be lost to the sea by coastal erosion.



3D multibeam bathymetry image of St Katherine's Chapel now submerged under the North Sea.