



High resolution acoustic imagery from a shallowly buried shipwreck: a case study.

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Shallow water, inter-tidal to immediate sub-tidal (< 5 m), archaeological shipwreck sites present unique challenges to geophysical investigation. Retrieval of reliable data is very difficult through the combination of issues of water column bubble turbulence and the simple geometry of the acoustic. This poster will present an acquisition method that tackles both of these problems through the combination of a purpose built, high frequency (150 kHz) narrow beam (3°) transceiver, Real-Time Kinematic (centimetric accuracy) navigation and a non-motorised deployment method.

The test site for this system was the Grace Dieu (1420), the flagship of Henry V, which was scuttled at its berth in the Hamble River (UK). The site is typically covered by a maximum of 2-5 m of water only being exposed at exceptionally low tides during the spring equinox. The site is partially buried within muddy inter-tidal sediments to a maximum depth of 1.5 m.

The marine survey utilised the 150 kHz transceiver mounted on a catamaran along with an Ashtec marine RTK-GPS navigational system and attitude sensor. The catamaran was towed over the site using divers. Close survey line spacing (< 1 m), centimetric accurate navigation and a theoretically < 10 cm vertical and horizontal resolution enable the accurate presentation of a pseudo-3D acoustic image of this buried wreck. A full and pseudo-3D interpretation of the site has been calibrated against known archaeological site investigation data and an RTK-GPS terrestrial survey.

This poster will demonstrate not only the effectiveness of this system for shallow water archaeological survey but also shallow water detection of any buried object.