

Shallow Water Wide-Swath Hydrography with AUVs

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AUVs have proved their worth in deep-water surveying, as they avoid the problems associated with long cables and positioning. However, their use for hydrographic survey work in depths less than 200m, which has traditionally been done from surface vessels, is less well established. This paper considers the benefits and challenges of using a wide-swath interferometric swath bathymetry system from small autonomous platforms, including Hydroid Inc's REMUS 100 vehicle.

The paper is illustrated with results from sea trials with SEA's new SWATHplus RS100 system on REMUS 100.

Although AUVs can do some things in shallow water surveying that are not possible or practical from a surface vessel, such as working close to platforms and subsea structures, much of their advantage comes from convenience and economics. For example, an AUV is a self-contained unit, ready to go. Setting to work time can therefore be very short. The surface vessel can continue to work whilst the AUV is operating, and so one AUV can double the productivity of a vessel and crew. Interferometric sonars are ideal for use with AUVs, because they are small, light and consume little power. The wide swath width at low altitudes is an advantage when working in shallow water, or when recording sidescan imagery from the same vehicle. The practicalities of planning and running a shallow water hydrographic survey are discussed in detail, including rates of coverage, survey duration and data processing. Limitations imposed by weather and the need to launch and recover the vehicle safely are described.