

## **Multibeam Swath Mapping: A Revolution in Mapping of Continental Shelves**

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Multibeam bathymetric mapping provides a precise and detailed understanding of seabed morphology comparable to areal photographs on land. Multibeam data yields digital terrain images of the ocean floor with horizontal resolution of several decimetres and vertical resolution of 10cm. These data are digitally processed to make shaded relief and seabed texture maps of the seafloor with 100% of coverage of chosen areas. Combining multibeam bathymetry with high resolution subbottom seismic reflection data, sidescan sonar, seafloor samples and photographs, produces a multidisciplinary data set which has revolutionized our understanding of continental shelf attributes and processes. In Canada we have applied this mapping strategy to: 1) Foster a "green fishery" where increased knowledge of seabed habitat has resulted in increased catch per unit effort and reduced seabed habitat disturbance. 2) Provide insight into seabed processes and morphology which aids in placement and security of offshore structures such as pipelines, cables and bottom-mounted platforms. 3) Define the placement and origin of paleo-landforms such as drowned rivers and glaciogenic landforms which greatly improves our understanding of the post glacial evolution of the Canadian continental shelves including shoreline migration/erosion. 4) Aid disaster mitigation such as locating the wreckage of the downed Swissair Flight 111 and location of seabed failure by slumping. Examples of the four scenarios are shown which demonstrate the potential of this revolutionary technology for continental shelf mapping.