

Modern tools for mapping the deep ocean floor. (top) A shipboard multi-beam echo sounder uses sound waves to map 10–20 km wide swaths at ~200 m horizontal resolution. (bottom) An Earth-orbiting radar cannot see the ocean bottom, but it can measure ocean surface height variations induced by ocean floor topography. While the resolution of the echo sounder technique is far superior to the resolution of the satellite altimeter technique, complete mapping of the deep oceans using ships would take 200 ship-years at a cost of billions of dollars. Indeed, the shipboard and altimeter methods are highly complementary. When interesting features are discovered in satellite gravity measurements, these can be surveyed in fine detail by ships.

