

PROJECT SWATHMAP:
SIDESCAN SONAR ACROSS THE WESTERN PACIFIC

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ABSTRACT

Project SWATHMAP (one of the four deep-water, long-range side-scan sonars in operation today) is the low-cost peacetime application of a U.S. Navy a.s.w. system utilized on routine ocean-wide combat vessel transits. While resolution is not sufficient to observe bathymetric structures in detail, the system is particularly adept at locating them and determining continuity. Routine observations include terraces, trench-crossings, fracture zones, abyssal hills, craters and seamounts (many of them new). New findings include the influence of the Hawaii-Emperor Bend on the Philippine plate, the discovery of concentric ring structures undersea, the appearance of a seamount about to be subducted, and the possibility that the Nova-Canton Trough is a fracture zone.

Of the many geomorphic features appearing on SWATHMAP records, lineaments are potentially the most interesting. Side-scan sonar, by virtue of its acute illumination angle, serves well the recognition of extensive features which may be valuable evidence in plate tectonic reconstructions. Magnetic anomaly patterns, the conventional key to paleo-plate motion, are absent or confused in the large Mesozoic quiet zones of the Pacific. A case is made for geomorphology as the key to magnetic quiet zone tectonics.