

Scientific exploration of the western margins of the Pacific Basin by the Ocean Drilling Program

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The Ocean Drilling Program (ODP) has completed 40 internationally-staffed expeditions during the past seven years of scientific ocean drilling. JOIDES Resolution, the scientific drillship of ODP, has travelled in the Atlantic, eastern and western Pacific, and Indian oceans, including high-latitude zones bordering East and West Antarctica, and the Mediterranean, Caribbean, Weddel, Sulu, Celebes, Philippine and Japan seas, in search of answers to important scientific problems designated by the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES). These scientific objectives relate to the tectonic evolution of passive and active continental margins, origin and evolution of oceanic crust, origin and evolution of marine sedimentary sequences, and paleoceanography. In addition, ODP has continued improving existing coring systems and has made numerous advances in technology to improve the capture of scientific information.

ODP has completed several cruises in the western Pacific to investigate the stratigraphic history of the basin in these regions with implications for both tectonic and paleoceanographic events. The cruises bordering the western margin of the Pacific basin include Leg 124 (Southeast Asia Basin), Legs 125–126 (Bonin Mariana Arc-Trench), Legs 127–128 (Japan Sea), Leg 129 (Old Pacific Crust), Leg 130 (Ontong Java Plateau), Leg 131 (Nankai Trough), Leg 133 (Northeast Australia), Leg 134 (Vanuatu), and Leg 135 (Lau basin). Specific tectonic goals of these cruises include, amongst others, documenting the history of the forearc terranes, the timing, process, and products of rifting, and the development and composition of backarc environments. Specific paleoceanographic objectives include documenting variations in the rate of surface productivity, the origin of deep intermediate, and surface water masses, and oceanographic response to the above noted tectonic events.
