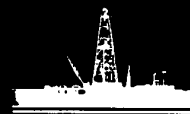


# NEWS RELEASE

## Ocean Drilling Program



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COLLEGE STATION, Tx -- An international team of marine scientists will drill into a welter of ocean basins located at the juncture of three major crustal plates.

The Ocean Drilling Program's (ODP) scientific crew, sailing on board the drill ship, JOIDES Resolution, will drill into the Banda, Celebes and Sulu seas to learn about their origin and evolution.

The three seas, interspaced among the Philippine, Borneo, Celebes and Mindane islands in the extreme western Pacific, are examples of marginal basins. This kind of basin is common to the Pacific, often occurs where crustal plates meet and is therefore the site of high volcanic and seismic activity. The three basins targeted for drilling are located where the Eurasian, Indian-Australian and Pacific-Phillipine Sea plates collide.

Two major theories prevail concerning the formation of these three marginal basins. One theory holds that these are back-arc basins resulting from back-arc spreading. Back-arc basins are found behind island arcs, a crescent-shaped chain of volcanic islands bounded by a relatively shallow basin on the concave side and a deep

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trench and ocean on the convex side.

When one plate slides beneath another, ocean crust is carried down into the mantle for recycling. When the molten material moves upward through the crustal fractures next to the subduction zone, an arc of volcanoes forms. Back-arc basins are created when volcanic activity or other mechanisms of high heat flow weaken the ocean crust that lies behind the chain of volcanic island arcs.

Scientists supporting an opposing theory contend that these marginal basins are parts of trapped oceanic basin. Proponents of this theory say that seafloor spreading in the Indian Ocean and China Sea pushed segments of ocean crust into their present positions. Thus the basins we find today are remnants of an older ocean that lie adjacent to theoretical slivers of continental fragments manifested in the exposed land forms.

The only evidence to support either of these theories has been obtained from land geology and marine geophysical experiments. By drilling through approximately 1,000 meters of sediment, which contain the ash layers of past volcanic activity, to the underlying basement rock, ODP scientists hope to determine the basins' origins.

Scientists will also look at the environmental history of the Sulu Sea. During the last glacial period about 18,000 years ago, the basin underwent a period of stagnation, indicating a low sea level and an increased intensity in the monsoonal winds. Scientists want to identify the basin's environmental pattern of open, closed and restricted circulation. The Sulu basin's ancient environmental patterns will be correlated with data on present-day weather phenomena

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such as the monsoons and El Nino, a capricious weather disturbance that periodically affects marine resources and crop production throughout the Pacific.

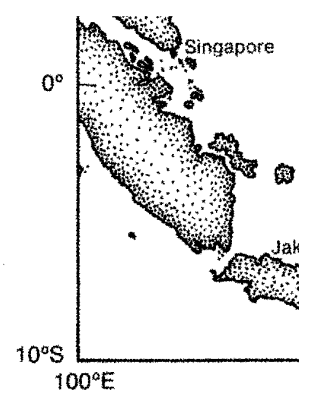
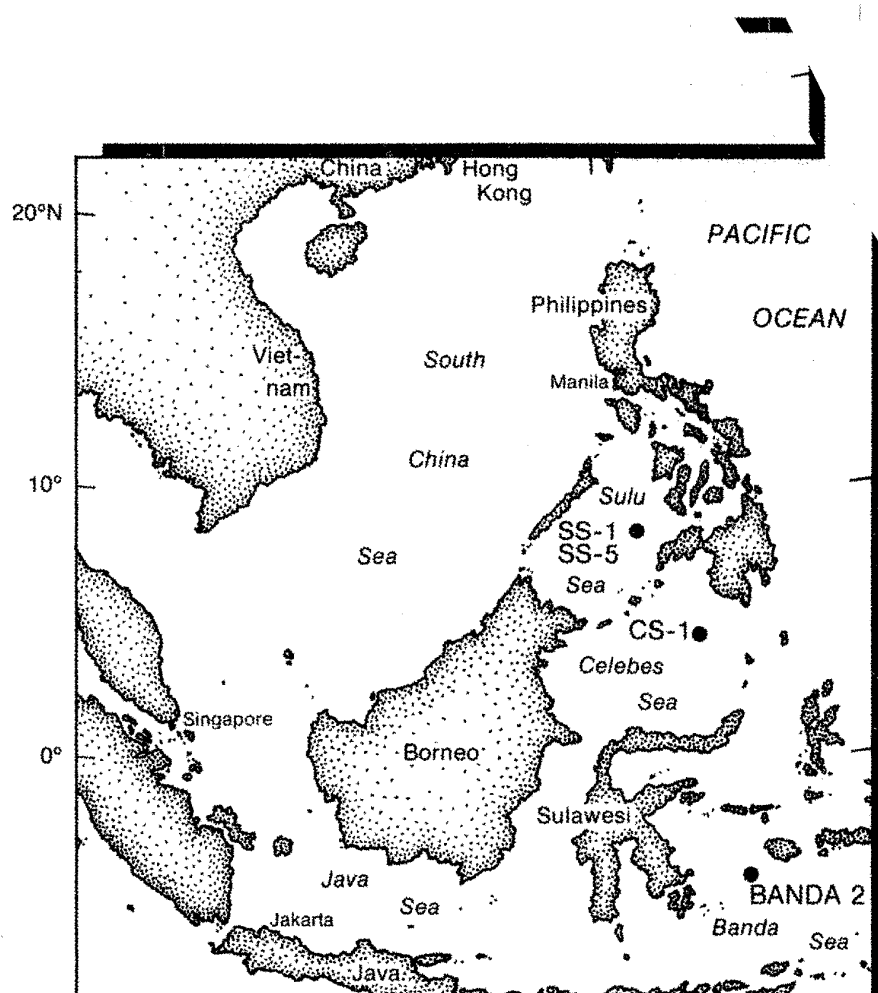
Knowing the environmental history of this region will help chart long-range weather patterns and global sea-level changes through time.

Co-chief scientists for the cruise are Dr. Eli Silver, University of California, Santa Cruz, and Dr. Claude Rangin, Universite Pierre et Marie Curie, Paris, France. Dr. Marta von Breymann, Texas A&M University, College Station, is the staff scientist.

JOIDES Resolution, registered as SEDCO/BP 471, is the research vessel for ODP which is funded by the United States National Science Foundation, Canada and Australia, the European Science Foundation Consortium for the Ocean Drilling Program, France, Japan, West Germany and the United Kingdom.

Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES), an international group of scientists, provides scientific planning and program advice. Joint Oceanographic Institutions (JOI, Inc.), a nonprofit consortium of 10 major U.S. oceanographic institutions, manages the program.

"This cruise, the 24th for the ODP, ended our expedition in the Indian Ocean, where we have been for 18 months," said Dr. Philip D. Rabinowitz, director. "During 1989, we'll drill throughout the Western Pacific."



Site Southeast