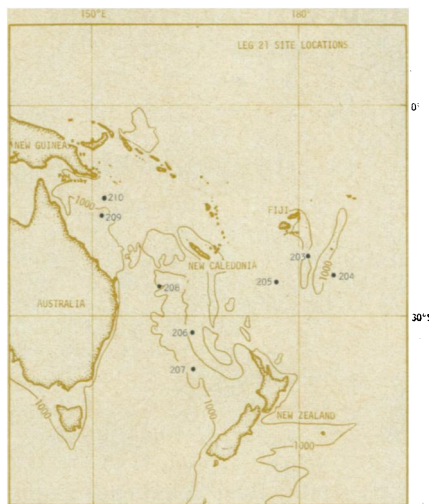


Deep sea drilling goes 'down under'

Topographically, tectonically and geologically, the floor of the Tasman and Coral Seas is one of the most complex areas in the world. This relatively small region is crowded with a series of ocean basins, ridges, trenches and a large plateau, and no simple tectonic reconstruction has been found to explain it.

In an attempt to resolve some of the confusion, scientists on Leg 21 of the Deep Sea Drilling Project drilled at eight sites between Australia and Samoa. Co-chief scientists on this voyage, dubbed the "Down Under" leg, were Robert E. Burns of the National Oceanic and Atmospheric Administration's Pacific Oceanographic Laboratories in Seattle and James E. Andrews of the University of Hawaii.

One of the most interesting findings on this leg, Burns said this week, was a large gap in the sediment record. At five of the sites cored, sediments dating from the late Eocene epoch (58 million to 36 million years ago) to the middle Oligocene (36 million to 25 million years ago) are missing. The period of time represented by the gaps varied from 13 million to 32 million years. The largest gap, the 32-million-year one, was at site 207 in the middle of the Tasman Sea. The gap, says Burns, occurs over a wide geographic area and appears to



DSDP

Leg 21: Sampling a complicated area.

be unrelated to water depth or to tectonic activity.

The researchers have not agreed on what this sediment gap might mean, but they propose that it might have been caused by a change in the path of a major oceanic current. Australia and Antarctica began to drift apart in the middle Eocene. It is possible, the researchers say, that as Australia drifted northward it diverted a circumpolar oceanic current to the north. After flowing eastward past northern Australia, this current could then have flowed southward between Australia

and New Zealand, sweeping away sediments deposited during the period when it followed that course. When the rift between Antarctica and Australia became deep enough, the current would have been transferred again to its present circumpolar course.

The Leg 21 researchers also found that marine fossils in the lower parts of the cores are similar to those found in temperate climates; younger fossils are more tropical in character. This may confirm that oceanic current patterns were different during the Oligocene and Eocene, says Burns, or it may indicate that the region had drifted northward along with Australia.

One of the major points of confusion about the Tasman and Coral Sea area has been in distinguishing between continental and oceanic crust. Volcanic records obtained on Leg 21 suggest, says Burns, that the western part of the region may be founded continental crust, and the eastern portion—the South Fiji Basin—is oceanic crust. This hypothesis is confirmed by evidence of depth changes. Different types of marine animals inhabit different water depths. By examining the fossil record, the scientists can identify past depth changes. The Leg 21 researchers tentatively report that the western part of the region they explored has become progressively deeper through time.

Leg 21 began at Fiji Nov. 16 and ended Jan. 11 at Darwin, Australia. □

Technology assessment bill passes House

It has long been recognized that Congress operates at a disadvantage when it comes to scientific and technical matters. Most of its members have legal, not scientific, backgrounds.

Congressional committees can elicit scientific advice in hearings or request specific studies from the National Academy of Sciences. But except for the Congressional Research Service, Congress has practically no in-house continuing source of technical or scientific expertise to help in evaluating the probable impacts, both good and bad, of developing technologies. The executive departments and agencies have whole scientific staffs and advisory structures, but as was demonstrated by the Administration's two-year embargo on the Garwin report on the supersonic transport (SN: 1/1/72, p. 6), the information and judgments deriving from those efforts are all too often kept from view of Congress and the public.

There are at least two possible approaches to the problem. One is being attempted by Sen. Lee Metcalf (D-Mont.). A Metcalf bill would require open meetings by ad-

visory committees to Federal agencies, and public membership on the committees (SN: 7/31/71, p. 82). The bill probably stands little chance of being passed soon. The other approach is the one long sought by the House Subcommittee on Science, Research and Development: to establish Congress' own Office of Technology Assessment (OTA) so that the legislative branch could independently generate its own information on scientific and technical matters. Last week, the technology assessment bill passed the House 256-118. The bipartisan support it has in the Senate Rules Committee, where it will be considered starting March 1, seems to assure Senate passage.

Rep. John W. Davis (D-Ga.), chairman of the subcommittee, was chief sponsor of the bill this session. Last week he called the bill "probably one of the most far-reaching pieces of legislation to emerge from the Congress in the last 10 years." First introduced by former Rep. Emilio Q. Daddario, Davis' predecessor as chairman of the subcommittee, the bill would set up the OTA to, in

Daddario's words, "[identify] the potentials of applied research and technology, [identify] the undesirable by-products and side-effects of such applied research and technology . . . and [inform] the public of their potentials."

Thus, not only would the OTA provide Congress with an independent source of information, but it would also examine proposed new technologies well in advance of their implementation and produce assessments that take into account social costs and environmental impact as well as monetary benefits. Under the bill, a technology assessment board, made up of three majority and two minority members from each House would be established. The board would award contracts to industrial, non-profit or academic groups for specific technology assessments as they are needed by Congressional committees. Only \$5 million has been authorized for OTA in the Davis bill, however, and the new Congressional watchdog will get off to a slow start. Reforms on the order of the Metcalf bill are still needed, and would, according to a Davis staffer, be "complementary" to the technology assessment bill.