

ZOOPLANKTON SAMPLING IN THE GUAYMAS BASIN
THERMAL VENTS STUDY AREA
RV/Atlantis II CRUISE 112-28.

BY

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The MOCNESS, Multiple Opening/Closing Net and Environmental Sensing System, was used to sample the zooplankton in the Guaymas Basin deep sea vents study area (Southern Trough) between 26 July and 1 August 1985. The purpose of the sampling was to characterize the zooplankton populations within 100 meters of the sea floor in the vicinity of the hydrothermal vent activity and to compare animals caught in this region with animals caught in adjacent areas outside the immediate influence of the vents and in the water column above the vents area.

A MOCNESS-1 was used to make these collections. This system was equipped with 9 1-m² nets of 333 μ m nitex nylon mesh, which presented a 1-m² mouth opening when towed with the frame at 45 degrees from the vertical. The system carried Sea Bird temperature and salinity probes, a down welling light sensor, a bottom finding 12 kHz pinger, a pressure transducer, a modified TSK flowmeter, and an angle inclinometer. Data from the sensors were transmitted up to a deck unit via conducting cable where they were displayed and saved on 1/4" cassette tape. Data were also passed from the deck unit to a CBM microcomputer for real time processing, storage on floppy disc, printing, and plotting.

A variety of towing strategies were used (Figures 1 and 2). Four long horizontal tows with the MOCNESS maintained approximately 100 m above the sea floor in approximately 2000 meters of water were taken both along the axis of the Southern trough above the benthic study area and perpendicular to the axis of the trough. On these tows, the system was traveling above the bottom at between 1 and 2 knots and eight nets were opened sequentially at about fifteen minute intervals. Water filtered by each net was at least 500 m³.

Three oblique tows were made to 1000 m. While hauling the system back to the surface, nets were opened and closed to sample the following depth strata: 1000-850, 850-700, 700-550, 550-400, 400-300, 300-200, 200-100, 100-0m. Volume of water filtered by each net was between 500 and 1000 m³. Two additional oblique tows were made to sample from within 50

meters of the bottom in the Southern Trough area to 850 m. The depth strata sampled were: 1950-1800, 1800-1700, 1700-1600, 1600-1450, 1450-1300, 1300-1150, 1150-1000, 1000-850 m and approximately 1000 m³ was filtered by each net. On the second of these tows, batteries in the underwater unit failed, and only depth specific samples from 1950-1800 and 1800-1700 m were obtained. A single oblique tow sampling 25 m intervals from 200 m to the surface was obtained on the last night of the MOCNESS work.

As part of this investigation, F. Manrique made visual and photographic observations of the plankton throughout the water column and especially in the vicinity of the deep-sea floor during ALVIN dive #1609 (1 August 1985).

This combination of tows (a total of 85 samples) and ALVIN observations provides a rather complete characterization of the vertical distribution of zooplankton populations from the deep-sea floor to the sea surface in the Guaymas Basin region. In addition, the horizontal distribution of zooplankton in the bottom water zone above this hydrothermal vents area can, for the first time, be studied and the results placed in the larger context of the distribution of the zooplankton in the water column as a whole.

Figure 1. Vertical extent and timing of MOCNESS tows taken in the Guaymas Basin in July and August 1985. Solid lines indicate where samples were taken; dashed lines indicate trajectory of the net system with all nets closed. Horizontal black bars indicate night time periods.



