

MARINE GEOGRAPHIC INFORMATION SYSTEM

The 1998 Geographic Information System (GIS) project successfully achieved its primary goal of expanding MBARI's GIS capabilities in the areas of cruise planning and real-time applications. The project was tightly integrated with MBARI's seafloor mapping project in the first half of 1998. An estimated six survey days were gained through improved efficiency of planning and at-sea operations achieved by using custom software developed as part of the GIS project.

MBARI's ROV operations continue to make use of the GIS project's development of real-time capability which enables at-sea operations to take place in the context of existing spatial data. The real-time GIS was used with the ROV *Tiburon* dives from the R/V *Western Flyer* this year and continues to be used with the ROV *Ventana* on the R/V *Point Lobos* on a regular basis as an aid to navigation and science. Additionally, a soft-

ware toolkit was created this year to integrate GIS with the existing navigation software to facilitate data sharing and synergistic interaction between the two packages.

The real-time GIS developed for this project was used on five different ships this year in areas of the world including Monterey Bay, Hawaii, Antarctica, and the Indian Ocean.

To enable more MBARI personnel to take advantage of the GIS technology developed by the project, seven on-site introductory classes were given with a total attendance of 40. One class for ROV pilots and ship's crew addressed the special problems and issues unique to those groups. Other classes were given using examples and sample problems customized for this project with MBARI GIS data.

Principal Investigator

Gerry Hatcher

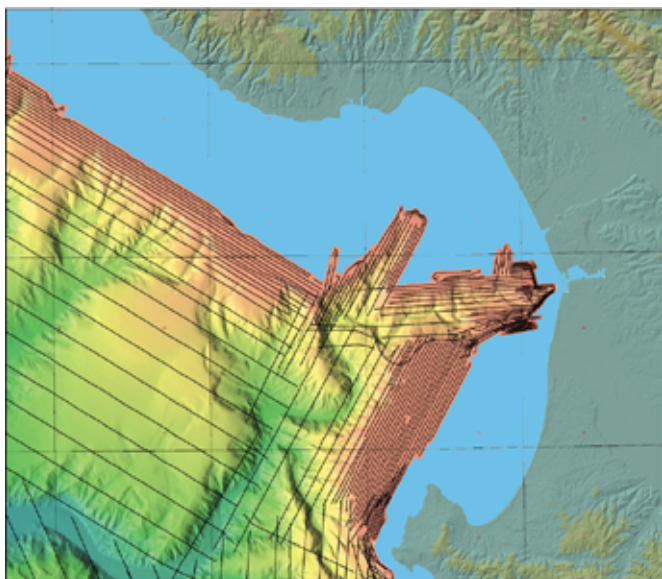
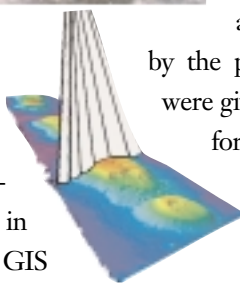


Figure 26. [center] Conceptual representation of seafloor mapping of submarine volcanoes with a multibeam swath sonar.

Figure 27. [above] Shaded surface representation of newly collected bathymetry from Monterey Bay with individual survey lines overlain. The survey was planned using GIS software tools developed as part of this project.

Numerous other projects were incidentally assisted this year by the technology brought to MBARI by this project, highlighting its broad application to many areas of MBARI science. For example, visibility estimates from the Mt. Toro microwave tower were created, assisting the site selection of offshore moorings needing radio communication. Visibility estimates were also created to assist the logistics of the educational JASON Project. GIS was used to help determine the possible locations of lost equipment on the seafloor. Micro earthquakes were visualized spatially. Numerous MBARI presentations and papers made use of thematic maps and images created with GIS.

This project resulted in an MBARI CD-ROM entitled "GIS Data of the Monterey Bay" and two MBARI technical reports describing the use and operation of the real-time GIS and the navigation software integration toolkit.