BACINO BANNOCK: Discovery of an anoxic basin rimmed by huge gypsum crystals on the Mediterranean Ridge

Scientific staff of cruise BAN 84-12

A new anoxic basin containing abundant gypsum crystals and floored with black muds has been discovered on the southwestern margin of the Mediterranean Ridge. "Bacino Bannock" is a steep-sided, subcircular depression about 15 Km in diameter, with a prominent topographic bulge in its center.

Sediment in cores from shallower than 3000m within the basin contains a typical eastern Mediterranean pelagic stratigraphy. However, cores from 3200m down to the basin floor at 3522m are black to dark grey muds that smell strongly of H_2 S and contain numerous euhedral gypsum crystals. Dredges from the basin walls recovered huge (up to 1/2 m) masses of interlocked gypsum crystals. Gelatinous mats of organic fibers with trapped pelagic debris were commonly observed in association with gypsum. Acoustic observations suggest that the bottom water trapped in the closed basin has distinctly different sound velocity from the overlying water mass.

We believe that the black muds stinking of H_2 S, the abundant gypsum and inferred sound velocity contrast are best explained by an anoxic, hypersaline bottom water. Such bottom water could be formed by dissolution of Messinian evaporites.