NEW RESULTS OF HIGH RESOLUTION PROFILING IN THE NORTHERN ADRIATIC SEA (ITALY)

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As part of a research program sponsored by the "Progetto Finalizzato Oceanografia e Fondi Marini" of the Italian National Research Council (C.N.R.), a number of UNIBOOM traverses supplemented by Side Scan Sonar and Echosounder profiles have been run in the Northern Adriatic Sea. Special towing techniques and signal processing -including play-back from analog tape- permitted to obtain on the UNIBOOM records single lines echoes in most cases, with a resolution approaching the limit of 10-15 cm; on such records, corrected bottom and penetration depths have been calculated on a pocket-size TI-59 calculator, using a special program (Boldrin et al. in preparation). Checks on bore-holes show the system has an accuracy of the same order of the resolution.

Our high resolution profiling system has permitted to recognize some new aspects of the marine geology of the Northern Adriatic Sea:

1) several isolated or grouped bottom reliefs are relict features, in some cases erosional, and should not be confused with other morphological forms due -for example- to accretion. They can be related either to a substratum (80 cm below the bottom surface, off Chioggia), from which the reliefs crop out through the surface sediments, or they are located just over (in discordance ?) the present sea bottom (off Venice and Jesolo Lido). These reliefs usually present a rock cover of beachrock and algal reefs (cap reefs, see Newton & Stefanon, 1976) which can occupy most of the feature or be in form of scattered, isolated, minor rock outcrops.

2) large erosional phoenomena and bottom sediment movements have been detected on and offshore; in some areas subsurface strata outcrop and are truncated at the sea floor. Onshore, outcropping strata are covered with layers of reworked sediments. Some of the relict forms seem to be old, probably up to pre-holocene.

3) a number of peculiar acoustic features due to a high
gas content have been found practically all over the North-
ern Adriatic. The gas can be diffused in large sedimentary
bodies, or concentrated in thin horizons, where an enhanc-
ing effect takes place. Gas bubbles escaping through the
sediments have been observed by divers and on the records
where the gas-charged structures reach the sea floor.
Pock mark like features have also probably been encountered.
Some of the detected gas charged sediment zones represent
possible geologic hazard for offshore drilling and instal-
lations.
4) peculiar morphological and sedimentological features
have been found and investigated in the channels connecting
the Lagoon of Venice to the open sea. The morphology and
the structure of some deep, cone like depressions (up to
50 meters deep) at the entrances have been investigated,
in regard also to their historical evolution. Large comet
marks have also been observed. The latter seem to be rela-
ted to a once in a while, strong event, rather than to the
normal ebb and flood currents, even if these currents can
reach -at the surface- a speed of 3 meters per second.
The comet marks should be therefore related to the reaction
of the lagoon to the hydraulic behaviour of the Northern
Adriatic during specific, strong, meteorological events.

Selected references:

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