GEOCHEMICAL, SEDIMENTOLOGICAL AND MINERALOGICAL DATA SEDIMENTS OF THE NORTHERN AND CENTRAL ADRIATIC : A MULTIVARIATE STATISTICAL ANALYSIS

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Several studies of the Adriatic Sea shelf have already been carried out on recent and ancient sediments. The present interest, regarding the study of sediments, is connected with the cognitive research and with the environment protection, which needs, in the complexity of the situation, a natural solution, efficacious and rational. The work, shortly described in this note, has been conducted on recent superficial sediments (thickness from 0-5 cm) of the Adriatic Sea. Sediments samples, for a total of 33, have been drawn in the Summer 1990, along 7 transversal transepts in 33 stations in international waters of the northern Adriatic Sea, between the Lagoon of Venice and the junction Gargano-Tremiti-Lagosta.

The following investigations were conducted on the collected materials:
- geochemical : determination of atomic absorption spectrometry of the major (Si, Al, Fe, Mg, Ca, Na e K), minor (Ti, P e Mn) and trace (Zn, Pb, Cd, Cu, Cr, Ni, Co e V) elements;
- mineralogical : definition of the essential qualitative mineralogical composition (light and heavy minerals) by x-ray diffraction analysis, and the study by microscope of some representative samples. The quantity of carbonates was determined by gas-volumetric method.
- sedimentological : determination of the granulometric distribution in the three fractions (sand, silt, clay), and S.S.A. (specific surface area).

A comparative examination of the results obtained by the various investigations has followed, even through a descriptive and multivariate statistical elaboration, which permitted to obtain informations and important results and has pointed out, among the variables, many correlations often difficult to be recognized, operating separately. Experimental data obtained from the various investigations, together with the values of some organic pollutants (PCB, PAH, DDT) associated to particulate input of the several rivers (Po and Adige in particular) in the studied area, have been elaborated by factor analysis (Q-Mode) and analysis of clusters.

The statistical elaboration has allowed to
- identify and define the relationship among determined variables,
- verify the type of connection among particle-size analysis, trace metals and pollutants of organic origin,
- evidence "new connection" among variables (Cd connected to the organic substance; PAH, PCB, DDT, connected to the organic substance and to K),
- synthetize and compare the results obtained with the distribution drawn applying the most classic method of classification. The application of the multivariate statistical analysis, has been preceded by a preliminary analysis of data and of their distribution kind through particular graphic presentation and/or semi-graphic (box-and-whisker plot; stem and leaf display) and the use of non-parametric and robust tests.

The present work must be seen as the starting point of a wider and detailed work of the analysed area.