

HYDROLOGICAL FEATURES OF THE COASTAL AREA OFF THE PROVINCE OF  
PESARO (ADRIATIC SEA) - CHEMICAL SURVEYS

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ABSTRACT

From July '78 to July '80 in a coastal zone of the Adriatic sea surveys were carried out on a grid of 6 stations in order to study the environmental and biological aspects. From the analysis of chemical-physical parameters it has been found that the zone under consideration has extremely variable characteristics both in space and time being influenced by the irregular local outfalls and by the Po river freshwater.

RESUME

Pour étudier les corrélations entre les facteurs hydrologiques et biologiques des échantillons ont été recueillis chaque 20 jours sur un réseau de 6 stations entre juillet '78 et '80 dans une zone côtière de l'Adriatique. Une première analyse montre que la zone présente des caractéristiques hydrologiques très variables dans l'espace et dans le temps à cause de l'influence soit des apports locaux que des eaux du Pô.

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The aim of this work is to find some indications in order to understand a coastal ecosystem considering the relationship between the biological communities and the relative chemical physical environment. The surveyed area is characterized by shallow sandy-muddy bottom, gently sloping up to 35 m. Hydrological and biological parameters (phyto-zooplankton and benthos) were recorded in six fixed stations on 2 sections 12

miles apart (one north of Pesaro and the other south of Fano). The stations were at 0.5, 3, 10 miles from the coast. Here the chemical-physical parameters are described considering the seasonal and spatial variability. Correlations between environment and biological communities, now being studied, will be given in a subsequent work.

From July '78 to July '80 from the six stations samples were collected about once every 20 days. Water samples were taken from the surface and the bottom by plastic Van Dorn samplers. Analyses of chemical parameters were performed in the laboratory after filtration through 0.45  $\mu$  filters. The following parameters were recorded: temperature, salinity, dissolved oxygen,  $PO_4$ , total P,  $NH_3$ ,  $NO_2$ ,  $NO_3$ ,  $SiO_2$  and chlorophyll. The Strickland and Parson (1968) analytical methods were used.

From a preliminary examination of the data a marked seasonal variability and spatial gradient are evident from the coast out to sea. If we consider nutrient salts no similar behaviour has been found among them although a winter abundance, a summer scarcity and a decrease from the coast out to sea has been noted.

With this general trend considerable fluctuations occur everywhere.

The variability of the hydrological features are attributable to the local outfalls at the coastal stations, to the Po outflow which strongly influences the area and to the ecosystem's cycles.

Generally speaking the nutrient salts enrichment coincides with a drop in salinity; the increase in chlorophyll, denoting a strong photosynthetic activity and confirmed by the abundance in dissolved oxygen, corresponds to an impoverishment of the nourishing elements utilized by the phytoplankton. Considerations on nutrients need more investigations in order to clarify their dynamics and correlating their variations with the biological parameters.

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"Hydrological features of the coastal area off the province  
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Paper presented by N. Tegaccia (Italy)

### Discussion

G. Catalano: Does the Po river outflow influence directly the coastal area, in other hands is the coastal less salinity water Po river water?

N. Tegaccia: Generally speaking our results show that the dynamic of the surface waters is always dominated by the Po river outflows. They influence also the strictly coastal waters even if the overlapping influences of other local outfalls determine a further lessening in water salinity. Po river influence is extremely variable in space and time depending on meteorological and hydrological conditions.

