Total P and extractable Si in superficial sediments of Northern Adriatic Sea

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On the purpose to verify the presence of a seasonal variability of the amounts of total P and extractable Si, 72 samples of marine sediments collected in 9 sampling stations during 8 cruises carried out in 1990 in Northern Adriatic Sea were analyzed (fig.l).The sediments were sampled with a box corer and a layer of two centimeters was subsampled for the chemical analysis and stored frozen until the analysis.

Triplicate extractions of the two nutrients from sediments were performed after a 2 hours combustion at 550°C and extraction with HCl 1M according to ASPILA (1) ; this method was found to be quantitative for total extractable Si as well ; the analytical determinations were performed by visible spectroscopy (2).

The application of a multivariate statistical analysis (PCA) showed no evidence of dependence of nutrients values on the geographical parameters (Fig. 2).

A next statistical re-examination of the data by Cluster Analysis confirmed a large variability of the concentrations of the nutrients within a same season.This was larger for Si and smaller for P.

P ranged between 160 and 540 mg/Kg d.w. (average value 350 mg/Kg, rsd. 32.2%) ; these values are comparable with those reported by other studies (3,4). Extractable Si ranged between 90 and 790 mg/Kg (average value 198 mg/Kg, rsd. 66.38%) excluding the data of the october cruise ,which were considerably higher ranging between 1510 and 6340 mg/Kg. At the moment this variability can be hardly explained.

The influence of Po river was evident in station 4 (Po mouth) where P and Si levels were higher at 95% level of significance than in the offshore station (St.3), on the relict sand zone, where the depositional contribute is lower.

Total P and extractable Si average concentrations were respectively 501 and 240 mg/Kg for St. 4, while on the relict sands St. 3 the values were 319 and 132 mg/Kg.

An observed correlation between the sediment water content and P concentration can indicate the allocthonous origin of this compound (corr. coeff. 0.589 at 95% level of significance). On the contrary this correlation was not observed for Si.

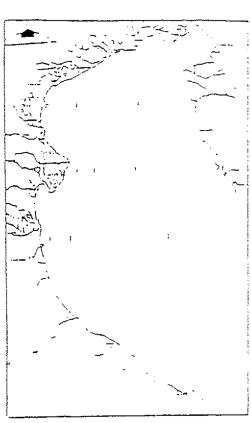

Fig.1 Sampling stations in Northern Adriatic Sea

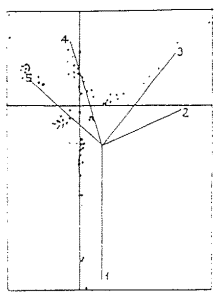

Fig.2 Plot of PCA; 1 depth, 2 longitude, 3 latitude, 4 total P, 5 total Si

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