OBSERVATIONS ON THE ANNUAL CYCLE OF UTERMÖHL PHYTOPLANKTON AT A FIXED STATION IN THE GULF OF NAPLES.

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Summary. The annual cycle of phytoplankton at a fixed station in the Gulf of Naples is described. Evidence of temporal and spatial influence of sewage and land runoff is reported.

Résumé. Le cycle annuel du phytoplancton dans une station fixe dans la Baie de Naples est décrit en relation à l'influence des apports littoraux.

In the Gulf of Naples two subsystems can be identified: 1) a coastal subsystem influenced by land runoff and by domestic and industrial sewage; 2) an "open water" subsystem directly connected with the oligotrophic Tyrrhenian waters (Carrada et al., 1978).

We report on the seasonal cycle of Utermöhl phytoplankton at the fixed station L 20. This station has a depth of 300 m and is located at the boundary between the two subsystems at the end of the Ammontatura canyon roughly six miles from the northern shores of the Gulf. This station is influenced by diluted, nutrient-rich, coastal water as well as by the Levantine Intermediate Water (LIW) entering the Gulf through the canyon and lying at a variable depth between 190 and 300 m (Hopkins and GONEG, 1977). The LIW, which represents the only substantial external source of nutrients to the Gulf, upwells to the euphotic zone strongly diluted by the overlying oligotrophic Tyrrhenian Intermediate Water (TIW).

Fig. 1 and 2 show the 1976 seasonal cycle of temperature and nutrients and that of phytoplankton groups and biomass. Apart from the spring and autumn peaks which reached values closer to those of a coastal environment, the chlorophyll concentrations are in agreement with those observed by other authors in the Tyrrhenian Sea.

Phytoplankton analysis shows that throughout the year there are species belonging to both oligotrophic and eutrophic water association. During the spring peak, for example, fast-growing Diatoms, generally associated with eutrophic waters, such as *Nitzschia closterium*, *N. seriata*, *Leptocylindrus danicus*, *Thalassiotrix frauenfeldi*, *Chaetoceros compressus*, *C. curvisetus*, are found together with such slow-growing one as *Rhizosolenia*

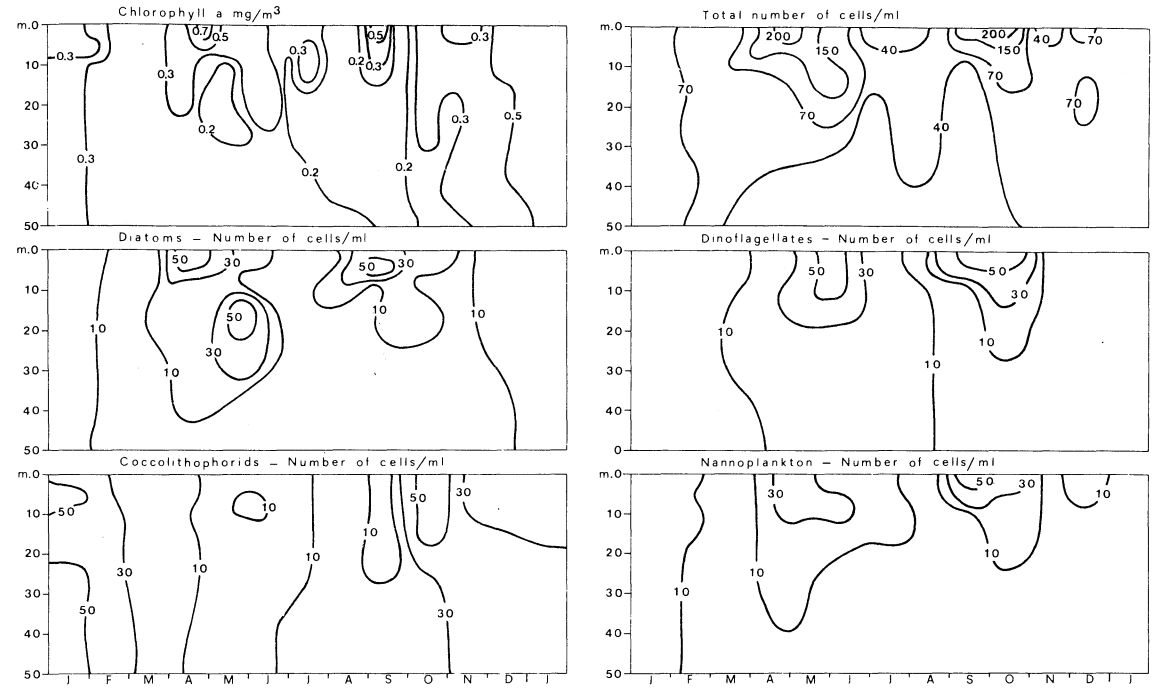

Fig. 1: Annual variation of phytoplankton biomass

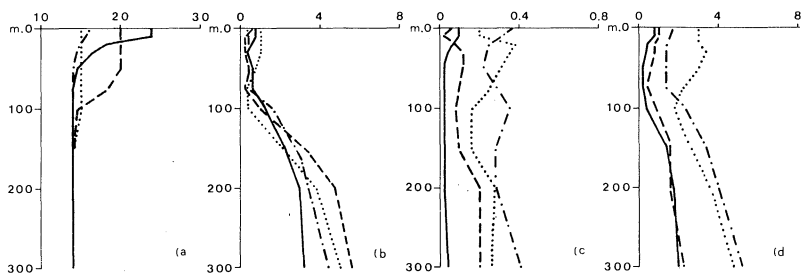

Fig. 2: Vertical variation of physico-chemical parameters
(a Temperature °C
(b NO_3-N µg-at/L
(c PO_4-P µg-at/L
(d SiO_4-Si µg-at/L

Summer
Autumn
Winter
Spring

stolterfothii, *R. alata*.

However, the ratio between the two associations varies during the year in relation to the extent of land runoff. In autumn, at the onset of the rainy season, the dominance of naked Dinoflagellates and nannoplankton and the presence of some Euglenales point to the influence of coastal waters.

References

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