Investigations of Primary Production in Euboicos Gulf

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Summary

The rate of primary production at four stations (E_1, E_2, E_3, E_4) in Euboicos Gulf was studied for a two-year period. It ranged between 60-390, 80-430, 60-340 and 30-360 mgC/m^2/da., with a mean daily value of 190, 200, 190 and 160 respectively. The annual primary production was approximately the same at all the stations, about 60-70 gC/m^2.

Résumé

Des mesures de la production primaire ont été faites en quatre stations (E_1, E_2, E_3, E_4) dans le golfe de Euboïcos pendant deux ans. Les valeurs variaient entre 60-390, 80-430, 60-340 et 30-360 mgC/m^2/jour, avec une valeur journalière moyenne de 190, 200, 190 et 160 respectivement. La productivité primaire annuelle était presque la même en toutes les stations, approximativement 60-70 gC/m^2.

Measurements of the rate of primary production were made at four hydrographic stations E_1, E_2, E_3 and E_4 in Euboicos Gulf which is characterized by an intense tidal current. Two of the stations (E_1 and E_2) are located in the North Euboicos Gulf and two (E_3 and E_4) in South Euboicos Gulf. The stations E_2 and E_3 are in the vicinity of Euripus Canal and therefore subjected to the influence of the tidal currents. These stations are also affected by urbanization. The stations E_1 and E_4 are located further to the North and South respectively where both the tidal phenomena are weaker and the land effect almost nonexistent. Primary phytoplankton productivity was estimated using the in situ ^{14}C method of Steemann Nielsen (1958). Details of the procedure as used

have been given by Becacos-Kontos (1968). Measurements of the rate of primary production were made at five standard depths at the stations E_2, E_3 and E_4 and six standard depths at the station E_1, which is the deepest. The maximum depth is 80 m, 40 m, 30 m and 50 m respectively for the stations E_1, E_2, E_3 and E_4. The rate of primary production at the stations E_1, E_2, E_3 and E_4 varied between 60-390, 80-430, 60-340 and 30-360 mg $C/m^2/da$ with a mean daily value of 190, 200, 190 and 160 respectively. The total productivity was estimated to be approximately equal at all the stations, about 60-70 $gC/m^2/year$. These values are the same as the value of production in the lower Saronicos Gulf (Becacos-Kontos, 1968, 1973) and two times higher than in the adjacent Petalion Gulf (Becacos-Kontos, 1977). Vertical variation of production showed maximum rates generally at the depth of 5-10 meters. At the station E_1 the compensation depth was found at 60 meters, while the bottom productivity samples of the stations E_2, E_3 and E_4 have value approximately equal to the compensation values. The rate of production is stable for most of the year, if we consider the average monthly rates. The minimum values at all stations were found in October, while the maximum values did not show a clear pattern. Generally the results did not indicate any clear differences among stations, although the productivity rate was somehow lower at station E_4, suggesting that the current flow influences the area under study, since no urbanization effect was observed at the stations E_2 and E_3. Further studies are carried out in order to clarify the problem.

References

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