Fertilization mechanisms in the Ibiza Channel (Baleares, Espana) in November 1990 and March 1991.

Javier JANSA, Carlos MARTINEZ and Olga RENONES

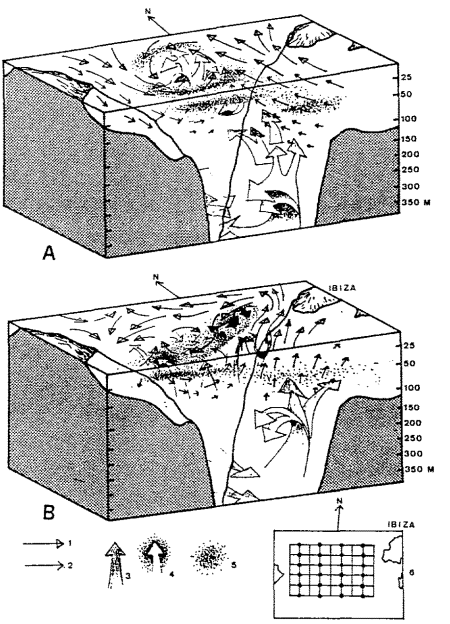
Centro Oceanogràfico de Baleares, PALMA DE MALLORCA **(Espana)**

Nutrients dissolved oxygen and chlorophyll distributions are analyzed in relation to hydrographic dynamics (LOPEZ JURADO *et al.* in press) in two different situations observed in cruises carried out in November 1990 and March 1991. Oxygen and nutrients were determined according to STRICKLAND and PARSONS (1972). Chlorophyll a was measured according to spectrophotometric (SCOR/UNESCO, 1966) and fluorimetric (DURAN and JANSA, 1986) methods.

In November (the general analysis of the data is schematized in fig. A), the fertilization process is partially related to the presence of a cyclonic gyre. From nutrient data, a moderate subsuperficial enrichment, as a typical divergence dome in accordance with the gyre, was observed in the central area of the channel. Oxygen saturation percentage distribution showed a similar trend with higher values (> 100 %) more superficial in the central zone of the gyre that in the periphery. At the same time, two chlorophyll a maxima (> 0.5 mg m^{-3}) were observed at 25 m depth at the North and South of the cyclonic gyre respectively. A third maximum at 50 m depth (> 0.8 mg m^{-3}) near Ibiza was observed too, the interpretation of which is more problematic.

In March (fig. B) it appeared a joint process of mechanic accumulation phenomena and a complicated production inputs system, all this are related with a front (in the NE-SW direction) and cyclonic and anticyclonic associated gyres system. Chlorophyll a concentrations are locally important (> 2 mg m^{-3} at 25 m depth) in the frontal area. Also we can observe in this area the maximum nutrient values (nitrates, phosphates and silicates), consequently a water lense appeared between 25 and 50 m depth with deeper water characteristics. Unlikely cruise of November, the dissolved oxygen (> 100 % saturation) is more uniformly distributed in the 0-50 m upper layer.

Considering the two cruises together, the oxygen saturation, from 0 to 50 m depth, is higher than 100 %. Nutrient values are low and very similar to other observations (DEYA, 1978; ESTRADA and MARGALEF, 1988). As well the high chlorophyll a values measured in March have been previously observed in other areas of the Western Mediterranean Sea (DURAN and JANSA, 1986; ESTRADA and MARGALEF, 1988; FORTEZA *et al.*, 1988).



1 : surface current, 2 : subsurface current, 3 : vertical circulation, 4 : coincidence of nutrient supply with chlorophyll a maxima, 5 : chlorophyll a maxima, 6 : stations chart.

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