

TOW FISH HIGH RESOLUTION MEASURES MATCHED WITH SAMPLING BY SHIP: QUANTITATIVE MODELLING AND MARINE ECOSYSTEM DESCRIPTION

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In order to study the interaction between physical and trophic processes in marine ecosystems and accounting for their spatial and temporal fluctuations, we have developed an operational method that match the use of an undulating tow-fish (Sarago) with traditional sampling by ship, which came up a detailed and quasi-synoptic oceanographic and biogeochemical description. This method has been tested in the frame of PRISMA 2 "Biogeochemical Cycles Research Project", where the Sarago was used in different areas of the NW Adriatic Sea describing the hydrological structure of the coastal front which separate the lower salinity waters generated by freshwater river inputs (i.e. Po River) from the offshore zone. The Sarago payload was CTD, oxygen, chl a, photosynthetic efficiency, PAR. Sarago CTD data have been used for the modelling of the 3-D salinity field. The core of this procedure was the gridding, filtering and masking of the data, with the actual data boundaries, and their 3-D interpolation for the computation of seawater volumes at different salinity ranges. The quantitative estimation of the major inorganic nutrients, dissolved organic nitrogen (DON) and phosphorus (DOP) was obtained in the lower salinity waters of the inner portion of the front. Moreover, primary productivity data provided by Pump and Probe method, installed on the SARAGO, were considered with respect to nutrient data. This high resolution monitoring has permitted the quantitative modelling and description of this marine ecosystem, in early spring and summer, during different phases of the evolution of the coastal front. Some differences in the seasonal biological utilization of the reservoirs of dissolved inorganic and organic nutrients have also been evidenced.