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W10-100 Poster Caroppo, Carmela

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PICOPLANKTON DYNAMICS IN THE MAR PICCOLO OF TARANTO (NORTHERN IONIAN SEA)

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Key terms: heterotrophic picoplankton; picophytoplankton; Mar Piccolo

Picoplankton has been reported to include not only pico-sized, heterotrophic bacteria but also, often to a considerable extent, < 2 µm pigmented organisms, i.e. cyanobacteria, prochlorophytes, and small pigmented eukaryotes (Li et al., 1992, Sherr and Sherr, 1994). Small autotrophs constitute significant fraction of the total primary production in many systems where they are superimposed on the classical pathway based on the larger phytoplankton. Algae liberate a variety of monomeric and polymeric organic compounds (Fogg, 1983; Jütner, 1981) which constitutes a major source for the heterotrophic bacteria. Heterotrophic bacteria play a vital role in nutrient cycling and food-web structure being responsible for the organic matter hydrolysis. In this study we determined autotrophic and heterotrophic picoplankton abundances over an annual cycle in the Mar Piccolo of Taranto. A monthly sampling was conducted in two stations and water samples were collected at 0.5 m below the surface by using a 5 - l Niskin sterile bottle. In order to estimate the picoplankton abundances, water samples were preserved with formaldehyde (2%) and kept at 4 °C until they could be counted. The cell counts were made using a Zeiss Standard Axioplan microscope equipped with a halogen (Hg 100) light. Results evidenced that picoplankton abundances were comparable to those of other coastal environments subjected to antrophogenic pollution (e.g. Coffin e Sharp 1987; Maugeri et al., 1992; Acosta Pomar e Giuffrè, 1996; Caroppo, 2002).

W10-101 Orale Catalano, Giulio

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FEASIBILITY OF A CARBON BUDGET ALONG THE TRANSECT NEW ZEALAND - ROSS SEA FROM DATA COLLECTED DURING THE ITALIANTARTIDE EXPEDITIONS (VECTOR - TASK 9.2)

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Key terms: Carbon cycling; key parameters; box model; biological pump; Ross Sea

The objectives of this budget are both the thermodynamic disequilibrium of the CO2 between atmosphere and ocean and the fluxes of carbon between its different reservoirs in the water column down to the sediment.
A such exercise, limited to the carbon fluxes in the water column, has been successfully performed for the Ross Sea applying a box model technique and utilizing the data collected by the researchers of several Italian institutes and universities who have participated to ItaliAntartide cruises from 1987 to 2001 (Catalano et al., accepted). This attempt has been carried out in the frame of the book on Carbon and nutrient fluxes in continental margins: A global synthesis (Liu, Atkinson, Quinones, Talaue-Mc Manus, eds.) which aims to evaluate the role of the continental shelf pump, that is the weight of the processes of coastal areas and shelves, toward the export of carbon into the deep ocean.
The budget of carbon for the Ross Sea has been calculated taking as independent variables: temperature and salinity for the hydrological properties of the water column and water masses, the pattern of the currents for the water exchange with the open ocean through the continental shelf edge, the primary production for the carbon sequestration in the upper layer, both the nitrate drawdown and the sediment traps for the downward settling of particulated matter, the microbial community respiration for the carbon regeneration in the deep layer and, finally, the burial rates for the carbon sedimentation at the sea floor. All the other quantities, necessary to balance the budget, have been derived from these.
Really, the Italian data set had the same some gaps which it has been necessary to fill with data made available by American colleagues in the frame of past and present collaborations (US-JGOFS and ROAVERRS).
Although the budget that we have obtained must be considered still coarse, the editorial board has recognized it as the first attempt of synthesis carried out for the Ross Sea and accepted its conclusions.
What I think important of this work it is to put in evidence that all the partners involved have shared both their data and their own expertise in a well defined work plan, making in this way possible this attempt. The task 9.2 of VECTOR was born just thinking to this experience.
Now taking into account all that, we must realize that after several months from the start, and in spite of the efforts done, we are still lacking of the inventory of the Italian data available for the region of interest. I wish to underline that this step is absolutely not evadible and we cannot even think to prosecute without fulfilling it, beyond the possible data gaps that we shall meet which are still to be identified.
In this first phase I do not want to resort to foreign data, but just for comparison, I wish to underline the difference with the US cruise routines: in the Palmer cruise in the Ross Sea of November-December 2006, which I participated to, many data of general interest such as navigation, meteorological, underway (surface temperature and salinity, fluorescence, primary productivity, pCO2) and the CTD casts were already made available in real time through ship intranet and usable by partecipants.
Reference:
Catalano, G., Budillon, G., La Ferla, R., Povero, P., Ravaioli, M., Saggiomo, V., Accornero, A., Azzaro, M., Carrada G.C., Giglio, F., Langone, L., Mangoni, O., Cristina Misic ,C. & Modigh ,M. (accepted). The Ross Sea. In: K.K Liu, L. Atkinson, R. Quinones, & L. Talaue-Mc Manus (eds.), Carbon and nutrient fluxes in continental margins: A global synthesis, Global Change, The IGBP Series, Springer, Berlin.

W10-102 Poster Cavallo, Rosa Anna

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POTENTIALLY PATHOGENIC VIBRIOS AND MICROBIAL POLLUTION INDICATORS IN MAR PICCOLO OF TARANTO (LINEA 4 ATTIVITÀ 5.2)

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Key terms: Vibrio; Microbial pollution indicators; Mar Piccolo of Taranto

Vibrios are gram-negative, curved, halophilic, nonspore-forming bacteria, autochthonous inhabitants of the marine and estuarine environments. Some *Vibrio* species are pathogenic for fish and shellfish as well as for humans. By contrast to several enteric pathogenic bacteria flowing into the water thorough sewage, vibrios are normal residents in coastal waters and their number depends on environmental parameters. Several studies have demonstrated the that the occurrence of vibrios is not related to the presence of the microbial pollution indicators. In this framework we studied the dynamic of vibrionaceae potentially pathogenic as well as the density of the microbial pollution indicators over annual cycle in water, sediment and mussel samples collected in the Mar Piccolo of Taranto. Results evidenced the prevalence of *V. alginolyticus, V. mediterranei* and *V. splendidus II* in the samples examined. Among these vibrios *V. alginolyticus* is considered a potentially pathogenic specie responsible of episodes of diarrhea or cutaneous infections, in particular for frail people. Microbial pollution indicators densities were high in the mussels, low in water samples and zero in the sediments.

W10-103 Poster Cavallo, Rosa Anna

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INTERACTIONS (RELATIONSHIPS) BETWEEN BACTERIA AND PHYTOPLANKTON IN THE MAR PICCOLO OF TARANTO (IONIAN SEA). (LINEA4 ATTIVITA' 5.7)

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Key terms: heterotrophic bacteria; phytoplankton; Mar Piccolo of Taranto

Several studies have already been carried out to characterize heterotrophic bacteria and phytoplankton communities in ocean sites and in different coastal areas of temperate, tropical and polar zones. Mar Piccolo of Taranto (Ionian Sea) is a semi-enclosed basin subject to pollution and receives a considerable amount of sewage and industrial waste.
The aims of this work was to analyse the qualitative and quantitative composition of heterotrophic bacteria and phytoplankton communities and the interactions between these two planktonic components. Samples of sea-water were collected monthly from September 2006 to August 2007 in two stations of the Mar Piccolo at the surface and bottom layers.
Among the Gram-negative bacteria, the predominant genus were *Aeromonas, Photobacterium* and *Pseudomonas*. Gram-positive bacilli were abundant at all sampling points. Among pigmented bacteria, *Flavobacterium* was predominant.
As regards phytoplankton communities, quantitative data evidenced high abundance values in the spring time and they were characterized by the dominance of diatom and phytoflagellate groups. Dinoflagellates and coccolithophorids accounted only for low percentage values. During the sampling period, diatoms were dominant with high cell densities in the spring and were mainly represented by *Pseudo-nitzschia spp., Chaetoceros spp., Cylindrotheca closterium*, and *Thalassiosira sp.*. Indeed, phytoflagellates, mainly represented by the undetermined forms < 10 µm and by cryptophyceans, had a wider distribution over time.
As regards the interactions between bacteria and phytoplankton, our data must be considered preliminary, but they seemed to evidence that phytoplanktonic spring bloom could be probably responsible for the availability of organic matter for bacterial populations. But, further studies will evaluate whether the balance in time between the positive dissolved factors (nutrients from phytoplankton bloom) and the negative particulate factors (grazing) could be considered to be a major determinant of the temporal fluctuations of bacterial density in Mar Piccolo.

W10-104 Poster Cecere, Ester

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WHY IS THE POPULATION OF THE INTRODUCED KELP UNDARIA PINNATIFIDA (OCHROPHYTA, LAMINARIALES) UNDERGOING A REGRESSION IN THE MAR PICCOLO OF TARANTO (SOUTHERN ITALY)-

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Key terms: global warming; introduced species; Mediterranean Sea; Undaria pinnatifida

Undaria pinnatifida (Harvey) Suringar is a kelp native of Japan, China and Korea. Like all the Laminariales, it has a strongly heteromorphic, diplohaplontic life cycle, with an alternation between highly differentiated diploid sporophytes (the macrothalli) and microscopic haploid gametophytes (microthalli). In April 1998, *U. pinnatifida* sporophytes were observed for the first time in the Mar Piccolo of Taranto settled on a quay in the old city. In the years 2000-2001 and 2001-2002, the population dynamic and the phenology of *U. pinnatifida* sporophytes were studied to know the seasonal variation of recruitment, settling density and thallus length. It resulted that: 1) the population extended for about 100 m along the quay where thalli were settled from the upper sublittoral to the bottom (-1.5 m at most); 2) sporophytes were present from December throughout June; 3) the highest recruitment value was observed in February; 4) the maximum mean settling density was of 23 thalli/0.25 m2; 5) the highest length values was about 1 m.
Successively, two surveys performed in 2003 and 2004 to check the possible