ISSN 1972-1552

Volume 2, 2007

Epitome

Geoitalia 2007

Sesto Forum Italiano di Scienze della Terra
Rimini, 12 - 14 settembre 2007

pianetaterra
Le Scienze della Terra per la Società
Commissione Italiana

FIST

Federazione Italiana di Scienze della Terra

weight increment; photographic survey) or were obtained in lab after tank culture. Data comparison is mostly prevented by inhomogeneous data units (the photographic survey provides a measure of surface increment, whilst the staining technique provide data on the thickening of the thallus) and selection of different target species (Foster, 2001).
The second issue is related to the estimate of shelf surface covered by living corallines, in order to obtain a regional quantification of their role on a global scale. For this purpose, geophysical survey associated with groundtruthing seems a promising tool (Sañé Schepisi et al., 2004).
Some pilot investigations on tank growth estimates of *Lithophyllum stictaeforme* (Areschoug) Hauck and *Mesophyllum lichenoides* (Ellis) Lemoine, collected from the coralligenous of the Ligurian Sea, yelded preliminary data of 10-60 µm/yr thickening for *Mesophyllum lichenoides* and 21-80 µm/yr for *Lithophyllum stictaeforme*, and marginal elongation of 1290-3260 µm/yr for *Mesophyllum lichenoides* (Basso & Rodondi, 2007). Further investigation with tank cultures is in progress.
Experiments at sea started on April 2007. Several thalli of common coralligenous species have been collected along the western rocky coast of Bonassola (SP) at 6 m depth. Samples have been Alizarin-S stained (0,25 g/l for 24h) and cemented at the same place of collection. Water temperature and PAR (Photosynthetically Active Radiation) measurements are recorded regularly during the experiment.
Basso D. and Rodondi G. - First results of growth rate in colture of the calcareous algae *Lithophyllum stictaeforme* and *Mesophyllum lichenoides*. 38 SIBM Congress, 28/5-2/6/2007, Santa Margherita Ligure (GE).
Canals M. and E. Ballesteros, 1997 - Production of carbonate particles by phytobenthic communities on the Mallorca-Menorca shelf, Northwestern Mediterranean Sea. Deep Sea Research II - 44:611-629.
Foster M.S., 2001 - Rhodoliths: between rocks and soft places. J. Phycol., 37, 659-667.
Sañé Schepisi E., Abdelahad N., Basso D., Chiocci F. - Rhodolith facies distribution on the Pontine Islands shelf. - 4th Annual conference IGCP Project 464 Continental shelves during the last glacial cycle: knowledge and applications. Roma, Aug. 28-31/2004.

W10-92 Poster Bellafiore, Debora

10.1474/Epitome.02.0092.Geoitalia2007

VECTOR PROJECT - LINE 5 - ACTIVITY 2 - HYDRODYNAMICS AND CLIMATOLOGY

BELLAFIORE Debora[1], UMGIESSER Georg[1]
1 - ISMAR-CNR, Institute of Marine Science, Venice, Italy
Presenter e-mail: debora.bellafiore@ismar.cnr.it

Key terms: Climatology; state of the art; timeseries

In this work results during the first year of activity of VECTOR PROJECT, Line 5 CLIVEN, Activity 2 - Hydrodynamics and Climatology - are presented. This activity is concerned with a climatological characterization of the Venetian Lagoon and the nearby coastal areas. The hydrodynamics is the focus of the project that tries to connect and compare former studies. The state of the art of knowledge and monitoring in the Venetian area is presented and new results from statistical analysis and numerical modeling are discussed.
The first step consisted in cataloging the spatial and temporal coverage of hydrodynamical variables (water levels, meteorological data, waves, currents, temperature and salinity, solid and suspended transport, river discharges and bathymetries) in the study area considering former data analysis and adding new elaborations. The meteorological data, in particular wind speed and direction, have been taken as the topic of study. Three locations have been chosen, the CNR oceanographic platform, 15 km offshore in front of the lagoon, Lido, a barrier island, and Tessera Airport, in the Venetian inland. This choice allows us to characterize longitudinally the venetian area. The examined period spans from 1972 to 1987 with a good temporal data coverage. The main directions and the averaged wind speed values have been computed in the three stations, identifying two main patterns, one coming from NE, Bora wind, and the other from SE, Scirocco wind. The wind speed signal shows an averaged attenuation going inland.
A speed correlation analysis between the three datasets has been applied to define quantitatively whether a common wind pattern is present in the lagoon. The correlation increases for low wind periods, which can be linked with low direction variability phenomena. Lido and CNR platform, spacially close, are well correlated. Finally a comparison with a former study, done on Lido wind dataset in the period 1923-1930 (Crestani, 1930), has been performed. The average of monthly averaged speed values have been computed, for each month, and these values have been compared with Crestani's ones. The results show the same trend in both datasets, eccept for the winter months where an attenuation (negative derivative) in the more recent measurements is registered. The values computed in the present work are systematically underestimated and this could be due to a real signal attenuation during the last century or to different calibrations of the instruments.
The last topic in this activity is connected with numerical modeling, which will be applied, in the next year, to reproduce extreme events in the past and future scenarios from a climatological point of view.
A 3D finite element model, SHYFEM, created and developed at ISMAR-CNR, in Venice, will be applied using historical forcings, boundary and initial conditions that are already available.

W10-93 Poster Boldrin, Alfredo

10.1474/Epitome.02.0093.Geoitalia2007

PARTICULATE MATTER AND ORGANIC CARBON DOWNWARD FLUXES IN THE SOUTHERN ADRIATIC SEA

BOLDRIN Alfredo[1], LANGONE Leonardo[2], MISEROCCHI Stefano[2], TURCHETTO Margherita[1], TESI Tommaso[2]
1 - ISMAR - CNR - Venezia
2 - ISMAR - CNR - Bologna
Presenter e-mail: alfredo.boldrin@ismar.cnr.it

Key terms: Particulate Organic Carbon; Downward particle flux; Carbon export; Southern Adriatic

Particulate matter in deep sea areas, is mainly related to autotrophic production processes occurring in the upper layer of water column, supported by the seasonal mixing, upwelling phenomena and deep convection events. In these environments, productivity may be estimated by the amount of organic matter that falls out from the photic zone and the downward fluxes measured by sediment traps represent a good tool to have continuous information on biological production processes occurring in the photic layer. In addition, organic matter changes qualitatively and quantitatively while sinking through the water column with several implications on biogeochemical cycles.
Here the results obtained during the first year of the VECTOR Project, are discussed. The main objective is to characterize the particulate organic matter in the water column and study the sinking processes in the southern Adriatic Sea.
Data on total suspended matter (TSM), particulate organic carbon (POC) and the carbon stable isotope delta13C of particulate organic carbon in the water column have been collected during 3 oceanographic surveys, carried out in November 2006, February and April 2007, along the Bari-Dubrovnik transect. From November 2006 to April 2007, the export of particulate matter below the photic zone (150 m depth) and near the bottom has been estimated through the downward particle fluxes measured with automated sediment traps, in a station located in the centre of the South Adriatic Pit (1200 m depth). The particulate material was collected at sampling intervals of 7 - 15 days.
The preliminary results of the first year of activity, concerning the particulate matter distribution and origin along the water column and the vertical particle fluxes measured in the first 6 months of deployment, are here presented.
To evidence possible changing in biogeochemical cycles in the last 10 years, data obtained have been compared with similar information available in the same area and collected since 1994.

W10-94 Orale Brunet, Christophe

10.1474/Epitome.02.0094.Geoitalia2007

COMPARATIVE FUNCTIONAL DIVERSITY OF THE PHYTOPLANKTON COMMUNITY FROM THE SOUTH ADRIATIC AND SOUTH TYRRHENIAN SEAS: A PIGMENT STUDY

BRUNET Christophe[1], CASOTTI Raffaella[1], LAVEZZA Rosario[1], TRAMONTANO Ferdinando[1], CONVERSANO Fabio[1]
1 - SZN "A. Dohrn" - Villa comunale - Napoli - Italy
Presenter e-mail: brunet@szn.it

Key terms: Picoplankton; Pigments; functional diversity

Results on photosynthetic and photoprotective pigments of phytoplankton analyzed by HPLC from the South Adriatic and South Tyrrhenian seas are presented. The aim of this study is to compare between the two sites the functional diversity of the algal community using pigments analyzed by HPLC. Phytoplankton pigments are biomarker molecules for many biological or ecological processes, as the community structure in term of algal groups, size and succession, the physiological and photoacclimative state of cells, the degradation processes related to senescence of algae or grazing by zooplankton. The two sampled sites correspond to the stations sampled in the framework of the Italian project VECTOR, from the South Adriatic (AM) and Tyrrhenian (TM) seas. Four campaigns have been carried out from November 2006-May 2007. Samples for pigment analysis by HPLC had been taken at 5 to 7 depths, mainly - but not only - covering the euphotic zone of these two stations. Size Two algal size classes were investigated: the picoplankton (< 3µm diameter) and the nano- + micro-plankton (> 3µm) thanks to fractionated filtration on-board of the water samples. Results highlight the presence of different algal composition and functional traits of the community between the two sites, in agreement with the different trophism of the water masses.

W10-95 Orale Buia, Maria Cristina

10.1474/Epitome.02.0095.Geoitalia2007

***CAULERPA RACEMOSA* VAR. *CYLINDRACEA* IN THE GULF OF SALERNO: FROM THE MOLECULE TO THE ECOSYSTEM.**

BUIA Maria Cristina[1], LORENTI M.[1], PROCACCINI G.[1], GAMBI M.C.[1], FLAGELLA M.M.[1], GUGLIELMO R.[1], JONGMA D.[1], IACONO B.[1], PATTI F.P.[1], RANDO V.[1], et al.
1 - Stazione Zoologica 'A. Dohrn' - Laboratorio di Ecologia del Benthos - Punta San Pietro - Ischia (Napoli)
Presenter e-mail: mcbuia@szn.it

Key terms: gulf of Salerno; Caulerpa racemosa; ecosystem

The occurrence of the green macrophyte *Caulerpa racemosa* represented by its invasive variety *cylindracea* has been recorded in the gulf of Salerno since the mid-1990s. At that time the bottom surface covered by the alga was estimated to be one of the largest in the Western Mediterranean Sea. The structure and functioning of the algal populations and their role in affecting soft-bottom communities in the gulf of Salerno are now being investigated at three levels: population genetics, plant ecophysiology and effect on macrofaunal abundance and diversity.
In order to assess the genetic potential of the species in surviving and adapting in the newly colonized areas and to clarify the modalities of colonizing new biotopes, ninety samples have been collected by scuba diving. A standardized sampling design which will allow comparing results with other areas within the Mediterranean distribution of the species was followed. Genomic DNA has been extracted from each single thallus and polymorphic microsatellite markers will be utilized as molecular markers. Results will allow inferring about the genetic polymorphism underlying the morphological plasticity of this species. Gene flow within the Gulf of Salerno and among distinct localities will be related to dispersal vectors and marine currents regime.
As highlighted by our previous research, *C. racemosa* var. *cylindracea* exhibits a remarkable plasticity also of its photosynthetic traits with respect to major environmental variables. In the present study, the response to temperature, irradiance level and photoperiod is being investigated, and results so far obtained provide new insights into the acclimation capabilities of the alga. This may have important implications about how the local climate may affect its spread potential.
Although characterized by a marked seasonal variability, the broad distribution of the alga on soft bottoms of the gulf has been confirmed by surveys conducted along selected transects in the Northern and middle gulf, seemingly enhancing the habitat complexity of the bottoms which *Caulerpa* stands