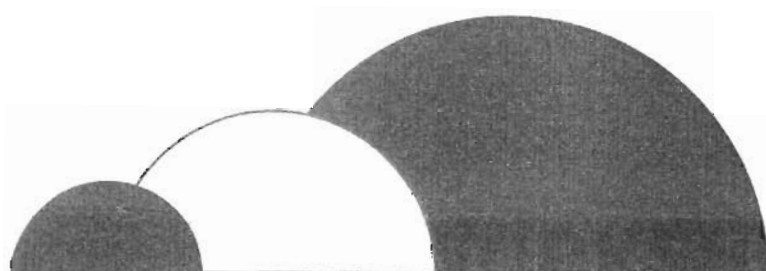


ISSN 1972-1552

Volume 2, 2007

Epitome



Geoitalia 2007

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



F I S T

Federazione Italiana di Scienze della Terra

spread of *U. pinnatifida* in the basin, highlighted that it remained in the zone of the first collection even though numerous thalli were observed on floating wharves which had been positioned near the quay a short time before. After five years, in 2006-2007, a new study on the population of *U. pinnatifida* sporophytes was undertaken in the same zone, which outlined that: 1) currently, the population extends for 20 m along the quay where thalli were settled only in the upper sublittoral (-50 cm); 2) sporophytes were present from February throughout June; 3) the highest recruitment value was observed in March; 4) the maximum mean settling density was of 1 thallus /0,25 m²; 5) the highest length values did not exceed 40 cm.

Therefore, the above recent study pointed out that, in the Mar Piccolo of Taranto, *U. pinnatifida* population is undergoing a regression. This is in contrast with that occurred in other localities outside the Mediterranean basin (e.g. The Netherlands, Argentina, Australia, New Zealand), where *U. pinnatifida* spread quickly and showed an invasive behaviour to induce local researchers to try eradication experiments. Also in Venice, *U. pinnatifida* spread throughout the lagoon after its first finding at Chioggia in April 1992 and proved to outcompete local species.

The regression of *U. pinnatifida* population observed in the Mar Piccolo is probably due to the high temperature values of the basin seawater. In fact, a careful study carried out on the population of *U. pinnatifida* introduced in California, highlighted that temperature has a significant effect on survivorship of microscopic gametophytes and young sporophytes; in particular, temperatures below about 15°C seem to stimulate gametophyte development so affecting recruitment. In the Mar Piccolo, temperature drops below 15°C only from December throughout March. Especially in late summer-autumn, when the overwintering microscopic gametophytes undergo sexual reproduction, seawater temperature is indeed higher than 15°C (from 1996 to 2006 the mean temperature values recorded in September, October and November were 24.1 ± 0.4, 21.1 ± 0.5; 18 ± 0.5, respectively). In particular, in October an increasing trend is clearly detectable over the eleven year period 1996-2006 (R=0.66) which might have progressively affected *U. pinnatifida* recruitment, causing the observed population decline.

Therefore, it can be concluded that: 1) the concept of "invasive species" is not absolute, in that local environmental variables may heavily affect the success of an introduction; 2) the warming of the Mediterranean basin can limit the spreading of cold-temperate introduced species.

W10-105 Orale Chiocci, Francesco Latino

10.1474/Epitome.02.0105.Geoitalia2007

THE VECTOR PROJECT: OMBRONE RIVER DELTA'S AREA

CHIOCCI Francesco Latino¹, TARRAGONI Claudia², BELLOTTI Piero³, CARBONI Maria Gabriella³, CONFORTO LUISA Davoli Lina³, DEL MONTE MAURIZIO Tortora Paolo³, LA MONICA Giovanni Battista², LANDINI BRUNA Manfra Luigia², PRANZINI Enzo³, TOMMASI Paolo³

- 1 - Università di Roma "La Sapienza" - IGAG-CNR
- 2 - Università di Roma "La Sapienza"
- 3 - Università di Firenze
- 4 - IGAG-CNR

Presenter e-mail: francesco.chiocci@uniroma1.it

Key terms: Vector Project; climate change; delta

The Ombrone River delta and the facing marine area between Monti dell'Uccellina and the Bruna River mouth, is one of the 5 study areas within research lines 2 (Vulcost) and 3 (Varcost) of the VECTOR Project. The area has long been investigated through multidisciplinary studies (micropaleontology, sismostratigraphy, geomorphology etc), aimed to reconstruct the evolution of depositional systems during the last climatic/eustatic cycle.

One of the main objectives of the VECTOR Project is to analyse the most recent stratigraphic interval in order to define the possible sedimentary response to short-lived (at the scale of the last few millennia or centuries) changes in sedimentary supply and sea level. Supply fluctuations depend on the impact of climate on the drainage area and its effects on sediment yield. These data, once available, represent important constraints for evaluating the environmental response to possible rapid changes for the near future.

- Analyses performed in the study area include:
- geomorphological analysis of the entire area;
 - detailed geomorphology of coastal ponds ("chiari" in the local terminology);
 - lithological analysis of the uppermost (few metres) interval of the coastal area and characterization of the dune-beach system evolution during sea level change and shoreline migration;
 - appraisal of the rainfall, the liquid capacities and the torbid outflow and the eventual recent variations;
 - identification and estimate of the frequency of storm and flood events based on sedimentologic and multi-proxy analyses (stable isotopes, heavy metals, foraminifers assemblages);
 - detailed seismo-stratigraphy of the highstand deposit in order to identify discrete subunits and/or key stratigraphic surfaces characterised by high-coreliability and relatable to depositional events detectable through other proxies;
 - identification of hyperpichnal flows based on morpho-bathymetry and sedimentologic analysis.
- The above analyses will be targeted to define the possible scenarios for the evolution of the coastal and deltaic environment within the next 25, 50 and 100 years.

W10-106 Orale Conversano, Fabio

10.1474/Epitome.02.0106.Geoitalia2007

TEMPORAL SERIES IN THE SOUTHERN TYRRHENIAN SEA: THE ACTIVITIES OF THE GROUP INVOLVED IN LINE 8 CARPEL (THE CARBON CYCLE IN PELAGIC AREAS OF THE MEDITERRANEAN) - ACTIVITY 2

CONVERSANO Fabio¹, DELFANTI Roberta²

- 1 - Stazione Zoologica 'A. Dohrn', Villa Comunale, 80121 Napoli, Italy
- 2 - ENEA-CRAM, Forte Santa Teresa, 19036 Pozzuolo di Lerici, Italy

Presenter e-mail: fabio@szn.it

Key terms: Tyrrhenian Sea; Carbon cycle; Double diffusion processes

The oceanographic campaigns are part of the experimental activity envisaged within the VECTOR project (Vulnerability of the coasts and Italian marine ecosystems to climatic changes and their role in the carbon cycles of the Mediterranean) - Line 8 CARPEL (The carbon cycle in pelagic areas of the Mediterranean) - Activity 2: Temporal series in the Southern Tyrrhenian at a fixed station (39°30' N 13°30' E).

The general aim of the project is the study of the main processes controlling the seasonal and interannual variability of the carbon exchange between the atmosphere and the open sea environment and its possible segregation in the deep sea. The specific objective of the campaign is to conduct process studies for the definition of the carbon cycle in the pelagic area of the Southern Tyrrhenian Sea. Particular focus will be given to the response of the pelagic populations to the abiotic forcing both in the surface layers as well as in the meso- and bathy-pelagic zones.

The activity plan of oceanographic campaigns, foresees hydrological sampling in 6 stations located along a section extending from the Gulf of Naples to the time-series station VECTOR (coordinates 39°30' N, 13°30' E) situated offshore on the bathymetry of 3500 m, a site affected by intense processes of deep vertical mixing and double diffusion. The experimental activity of the group involved in line 8.2, conducted during the first year, will be presented.

W10-107 Poster Conversano, Fabio

10.1474/Epitome.02.0107.Geoitalia2007

MULTIDISCIPLINARY STUDY OF THE PELAGIC ENVIRONMENT OF THE SOUTHERN TYRRHENIAN SEA: THE CONTRIBUTION OF SZN TO VECTOR-LINE 8.2

CONVERSANO Fabio¹, et al.
1 - Stazione Zoologica 'A. Dohrn', Villa Comunale, 80121 Napoli, Italy
Presenter e-mail: fabio@szn.it

Key terms: Tyrrhenian Sea; Biochemical properties; Deep vertical mixing

The ecological laboratories of the Stazione Zoologica Anton Dohrn (SZN) are presently involved in the national program VECTOR aimed at studying the main processes controlling the seasonal and interannual variability of the carbon exchanges between the atmosphere and the open Mediterranean Sea, and its possible segregation in the water column.

In the frame of Line 8 CARPEL (The carbon cycle in pelagic areas of the Mediterranean), which started in February 2006 and will last for three years, an intense field activity is being carried out in the Southern Adriatic Sea and in the Southern Tyrrhenian Sea to investigate, on seasonal scale, the responses of the pelagic communities to abiotic forcing all along the water column from the surface to the meso- and bathy-pelagic areas. Our interests focus in particular on the southern Tyrrhenian Sea, which is still poorly studied in comparison with other Mediterranean regions, although it plays a key role in the complex dynamics of exchange between the eastern and western Mediterranean basins.

The activities in the Tyrrhenian Sea are performed at 6 stations along a transect from the Gulf of Naples to a fixed station (39°30' N, 13°30' E, about 3500 m depth), which seems to be affected by intense processes of deep vertical mixing and will become a long-term observatory.

The SZN contribution focuses on the analysis of the vertical and seasonal patterns of dissolved oxygen, nutrients, spectral light penetration and absorption properties of the water mass, phytoplankton pigment diversity, primary productivity and phytoplankton community composition and micro- and meso-zooplankton biomass and composition.

Preliminary integrated results of the surveys conducted in winter 2006-2007 and spring-summer 2007 will be presented and discussed. The integration of the different information allows to derive some hypothesis on the functioning of the trophic web, taking into account also the microbial food web, and its relationship with the physical and chemical environment.

W10-108 Orale Conversi, Alessandra

10.1474/Epitome.02.0108.Geoitalia2007

ANALYSIS OF PLANKTON AND CLIMATE VARIATIONS OVER 30 YEARS IN THE GULF OF TRIESTE: PRELIMINARY RESULTS

CONVERSI Alessandra¹, FONDA-UMANI Serena², CORTI Susanna³, PELUSO Tiziana⁴, COLUCCI Renato⁴

- 1 - CNR - ISMAR - La Spezia
- 2 - Università di Trieste
- 3 - CNR - ISAC - Bologna
- 4 - CNR - ISMAR - Trieste

Presenter e-mail: a.conversi@ismar.cnr.it

Key terms: climate; zooplankton; Gulf of Trieste; ECMWF; time series

Understanding the impact of climate change on plankton populations is of major importance, as plankton constitutes the basis for higher trophic levels in the marine chain. In this study, in the framework of the national program VECTOR, we use the multi-decadal mesozooplankton abundance time series in the Gulf of Trieste to investigate its seasonal and interannual variability in relation to atmospheric and physical parameters. For the selection of atmospheric and physical parameters we have used the European Centre for Medium range Weather Forecast (ECMWF) ERA-40 and analysis data on a 0.5° X 0.5° grid over the Adriatic Sea; the Comprehensive Ocean Atmosphere Data Set (COADS) on 1° X 1° grid; and local data (Trieste, CNR-ISMAR Station, 45°38'34"N, 13°45'14"E), over the period 1970-2005. We have selected a few variables (SST, sea level pressure and wind stress) which are good candidates for proxies of marine circulation changes and are possibly related to changes in plankton productivity. Our preliminary analyses of the climate data show ECMWF underestimating wind speed in the Gulf of Trieste. With regard to biological variability, the comparisons of the interannual trends of the dominant copepod species indicate an overall change over the 30 year period.

W10-109 Orale Cossarini, Gianpiero

10.1474/Epitome.02.0109.Geoitalia2007