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preserved. The erosion of the intermediate and lower sectors of fans characterised by different relief and convexities explains the differences in heights and recognisability of the wave-cut scarps at different river mouths. Moreover, since the fans occur at the river mouths, the wave-cut scarps resulting from their erosional remoulding locate just around the river mouths themselves.

W10-156 Poster Tramontana, Mario

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ACTIVITY OF THE URBINO WORKING GROUP WITHIN THE VECTOR PROJECT: STATE OF THE ART.

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Key terms: VECTOR Project; Northern Marche Region; Coastal area

The activity of the Urbino University Research Group has been focused on the detailed analysis of the northern-Marche coastal area embracing the Foglia and Metauro river mouths. A large-scale analysis of the entire hydrographic basins of these rivers has been performed as well. At the scale of the hydrographic basins digital terrain models based on the 3D digital topographic map of the Marche Region have been reconstructed; the geostatistic kriging method with resolution of 40 m has been used to interpolate the whole dataset. An 1.50.000 geolithologic map and a land-use map at the same scale have been elaborated based on previous data, while an 1.50.000 geomorphologic map has been realised based on both pre-existing data and new surveys in key-areas. Such operations have been performed at a more detailed scale (i.e. 1:10,000) in the coastal sectors between the Foglia and Metauro river mouths. Here a high resolution DTM has been also elaborated. In the offshore area the realisation of a bathymetric contour map and a related DEM based on existing data is still in progress. In the coastal submerged area the near-bottom sediment characterisation and some analyses of the benthic faunal assemblages have been already started. In key-areas close to the Foglia and Metauro river mouths, studies addressed to the reconstruction of late Pleistocene and Holocene coastline variations and geomorphic evolution have been started allowing to recognise coastal fans-related convexities causing the development of discontinuous wave-cut scarps during the last sea level eustatic rising.

W10-157 Poster Ursella, Laura

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WATER FLOW IN THE BOTTOM LAYER OF THE OTRANTO SECTION AS OBTAINED FROM HISTORICAL CURRENT-METER DATA (1997-1999) AND VECTOR PROJECT DATA (2006-2007)

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Key terms: Otranto Strait; Current profiles; frequency analysis

Currents measured in the bottom layer of the Otranto section have been used to determine the deep water outflow from the Adriatic and Ionian Sea and its dependence on seasons and particular climatic conditions. The signal at different frequencies has been studied in order to separate low-pass currents from tidal and inertial contributions. During MATER project (1997-1999) a certain number of ADCP (Acoustic Doppler Current Profiler) and current-meters have been deployed in order to analyze horizontal and vertical current structure in the bottom layer. In particular, in the Otranto section the tidal structure of the main components (K1 and M2) shows a seasonally dependent behaviour, and an intensification of amplitudes near the coast along the shelf. Low-pass currents, prevalently directed southward at the western flank of the strait, strengthen during winters when Adriatic Deep Water is formed and the outflow intensifies, and are particularly strong in early spring 1999 after a very cold winter. The most recent measurements (from November 2006 to April 2007) conducted in the framework of the VECTOR project, permit to compare recent vertical and horizontal structures with the previous ones, and to study the evolution of the dynamics in the bottom layer of the strait. In addition, vessel-mounted ADCP data collected during VECTOR campaigns and covering the entire Otranto Strait section have been analyzed.

W10-158 Poster Vichi, Marcello

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MODELLING APPROACH TO THE ASSESSMENT OF BIOGENIC FLUXES IN THE ROSS SEA

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Key terms: Biogeochemistry model; Ross Sea; Carbon cycle; Sedimentation

Several biogeochemical data have been collected in the last 10 years of Italian activity in Antarctica (ABIOCLEAR, ROSSMIZE, BIOSESO-I/II). A comprehensive 1-D biogeochemical model was implemented as a tool to link observations with processes and to investigate the mechanisms that regulate the flux of biogenic material through the water column. The model is ideally located at station B (175E - 74S) and was set up to reproduce the seasonal cycle of phytoplankton and organic matter fluxes as forced by the dominant water column physics over the period 1990-2001. Austral spring-summer bloom conditions are assessed by comparing simulated nutrient drawdown, primary production rates, bacterial respiration and biomass with the available observations. The simulated biogenic fluxes of carbon, nitrogen and silica have been compared with the fluxes derived from sediment traps data. The model reproduces quite well the magnitude of the biogenic fluxes, especially those observed in the bottom sediment trap, but the peaks are delayed in time. Sensitivity experiments have shown that the characterization of detritus, the choice of the sinking velocity and the degradation rates are crucial for the timing and magnitude of the vertical fluxes. An increase of velocity leads to a shift towards observation but also to an overestimation of the deposition flux which can be counteracted by higher bacterial remineralization rates. Model results suggest that observed fluxes could be explained by the size-distribution and quality of the locally-produced biogenic material. It is hypothesized that the bottom sediment trap collects material originated from rapid sinking of particles and also from previous years production periods, likely modulated by advective and aggregation mechanisms which are still not resolved by the model.

W10-159 Poster Yari, Sadegh

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WATER MASS TRANSPORT ACROSS THE STRAIT OF OTRANTO

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Key terms: Adriatic Sea; Strait of Otranto; water masses transport

Characteristics of currents across the Strait of Otranto are studied in detail using the direct current measurements for almost one year (November 94-November 95). The Otranto Strait is a channel with 75km width and 800m depth and connects the Adriatic Sea with the Ionian Sea and Eastern Mediterranean. The current data are measured on 6 stations at near surface, intermediate and near bottom layers. Spectral analysis is used to study the partition of the variance of current data as a function of frequency. A complex Fast Fourier Transform (FFT) is used to calculate the power spectrum. The harmonic analysis is done to calculate the most significant tidal constituents and also to remove the effect of tides from the current data in order to obtain residual (nontidal) currents. After removing the tidal effect form current data, a low pass filtering with 33 hour weights is applied to remove some other high frequency fluctuations like inertial oscillations.
The current data time series include gaps, because of instruments or batteries malfunctioning. For a better evaluation of mass transport, these gaps were filled using linear regression analysis. Multivariate linear regression models are applied using data of the nearest stations to estimate currents during the gappy periods.
The annual and seasonal mean inflow (northward) and outflow (southward) are calculated. By means of mean currents the water mass transport across the Strait of Otranto is evaluated.
The result shows that across the Strait of Otranto there is a mean cyclonic (anticlockwise) shear. The mean water flow across the strait consists of an inflow on the eastern side and an outflow on the western side, while there is a two layer structure in the central part. The latter has an inflow in the surface layer and an outflow in the bottom layer.

W10-160 Orale Zaffagnini, Fabio

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DEVELOPMENT AND VALIDATION OF A BENTHIC FLUX MODEL FOR THE ADRIATIC SEA

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Key terms: Benthic Flux Model; Adriatic Sea; Biogeochemistry; Diagenetic processes

The simulation of benthic processes, both due to organism interactions and to early-diagenesis, is less developed with respect to pelagic biogeochemistry model. This is mostly due the requirement of large amount of data for validation and to the generalized sparsity of available observations. Comprehensive models of benthic sediment dynamics are available, although the testing in the Adriatic Sea has generally been mostly experimental. It is however clear the role played by sediments in the northern part of the basin, which might exert a pivotal control on the fate of the organic part produced in these mesotrophic regions. The Biogeochemical Flux Model (BFM, http://www.bo.ingv.it/bfm) is now being applied in the Adriatic Sea in 3-dimensional pelagic simulations with simplified benthic processes. The BFM describes both pelagic and benthic dynamics and the coupling between them, concentrating on the biogeochemical processes affecting the flow of carbon, nitrogen, phosphorus, silicon and oxygen, in terms of benthic fluxes and concentrations over time.
The final aim of this project is to adapt and further develop the BFM for applications in different Adriatic Sea regions, distinguished on the basis of various biogeochemical indicators. The study will focus on long-term equilibrium simulations and on the seasonal variability of the major processes in selected representative locations.
The part of the work presented here consists in identifying the initialization parameters, starting from the data collected by ISMAR-CNR in the past 30 years, undergoing a basic descriptive statistical analysis. Once these benchmarks have been detected, the algorithms of the model have been partially modified and enriched to obtain an adequate description of the processes occurring in the various facies of the Adriatic Sea.