



Time series analysis of recent (1 ky) sediments of the euxinic slope of the Black Sea

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To reconstruct the past history of the euxinic environment of the Black Sea, a 0.5 m core containing unconsolidated sediments was collected at a dept of 600 m on the slope of Continental Platform of the Black Sea. The vertical profiles of both Cs-137 and Pb-210, as radiometrically measured, allowed us to calculate a sedimentation ratio of 0.49 ± 0.03 mm/y, thus giving to the entire stratigraphic column an age of about 1 ky.

By means of a fourth generation Computer Tomograph we have obtained a high resolution tomographic image of a longitudinal section through entire core evidencing the presence of about 250 parallel laminae (1 to 2.5 mm thick) consisting of an alternation of coccolithic and argillaceous mud. After image digitization, we have obtained the corresponding 3550 equidistant points time series (TS).

After detrending, TS was analyzed by means of the Blackman-Tukey correlogram and subsequently decomposed in wavelet functions. The resulted correlogram evidenced multiple maxima, the most important ones corresponding to 307, 125, 35, 18, 9 and 7 years (at $p < 0.001$). At the same time, the Morlet wavelet evolutionary spectra showed the presence of a bundle of cycles whose age, estimated to be between A.D. 1600 and 1800, could indicate some significant changes of the European environment, the end of the Little Ice Age being one of the possible explanations.

At the same time, the relative constancy of the laminae thickness along entire sedimentary column testifies to a long term stationarity of the euxinic environment during the last thousand years, in concordance with the experimental data regarding both Mo and U vertical profiles, two important proxies of the euxinic medium.