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The Calcare di Base Formation and its microfacies: the record of a deposition under the same paleoecological conditions, precursor of the Messinian Salinity Crisis.

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The causes, which triggered the onset of the Messinian Salinity Crisis in the Mediterranean area during Upper Miocene, are still uncertain. Often carbonate beds, named Calcare di Base (CdB), lie at the base of evaporite succession. Some Authors (Hilgen and Krijgsman, 1999; Bellanca et al., 2001; Rouchy and Caruso, 2006) developed detailed cyclostratigraphic studies on this succession, correlating the beginning of the evaporitic deposition with the base of the Calcare di Base. A recent paper (Guido et al. 2007), based on molecular fossils and other organic markers, demonstrated that the CdB layers cropping out in the Rossano Basin (Northern Calabria, Italy) deposited in a marine setting influenced by freshwater inputs. This scenario involves for the carbonate precipitation a bacterial ammonification of amino-acids in aerobic conditions.

The main goal of this research is the confirmation that this bacterial induced precipitation of the CdB, proved for the Calabria, can be extended to the others study localities of the Mediterranean area, i.e. Sicily, Spain and Algeria.

The research has been developed through: (1) observations at optical and SEM microscopes for the definition of the micro and nano morphologies, (2) microanalises EDS for the carbonate characterization via minor element identification, (3) epifluorescence observations for the detection of organic matter remains.

In all outcrops the CdB shows the same prevailing microfacies, which consists of

clotted peloidal micrite with antigravitative thrombolite fabric. Lager and darker cylindrical-subcylindrical micritic grains, attributable to faecal pellets that can be ascribed to copepods, are more or less randomly dispersed in the peloidal micrite. These data together with the absence of skeletal remains suggest for these sediments a bacterial induced deposition like that recognized in the CdB cropping out in the Northern Calabria.

The deposition of the Calcare di Base Formation in various basins of the Mediterranean area may have been happened under the same paleoecological conditions, characterized by marine and not evaporite setting, become stressed and unstable by freshwater inputs.

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