New insights of Tripoli and “Calcare di Base” Formations from Caltanissetta (Sicily) and Rossano (Calabria) Basins: a detailed geochemical, sedimentological and bio-cyclostratigraphical study.

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A detailed biostratigraphical and cyclostratigraphical study provided the opportunity of cycle-by-cycle correlations between sections from the marginal and deep areas of the Caltanissetta Basin (Sicily), and the northern Calabrian Rossano Basin. All the sections were compared with the Falconara-Gibliscemi composite section. We present new mineralogical and geochemical data on the transition from Tripoli to Calcare di Base (CdB), based on the study of several field sections. The outcrops display good record of the paleoceanographical changes that affected the Mediterranean Sea during the transition from slightly restricted conditions to the onset of the Mediterranean Salinity Crisis (MSC). This approach permitted to better constrain depositional conditions and highlighted a new palaeogeographical pattern characterized by separated sub-basins. The sedimentological and geochemical parameters of these basins introduced a different and diachronous response to the global constraints of the MSC. Our preliminary results display already evidences of paleoenvironmental changes: (1) a lithological transition passing from the Tripoli’s triplet (grey marls, reddish laminites and diatomites) to the complex carbonates of CdB; (2) the appearance of evaporite pseudomorphs implying early stage diagenesis; (3) the presence of sulphur-rich deposits involving process of bacterial sulphate reduction. The local transition from the uppermost part of the Tripoli cycles to the CdB reflects the worsening of the marine connections, leading to the individualisation of semi-closed settings where the marine inputs were not great enough to balance the effects of the climate fluctuations and especially of the evaporation/precipitation budget.