



Minero-petrographical and geological study of siliciclastic deposits of the Mesozoic succession in the western Calabria (southern Italy): preliminary investigation

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The first occurrence of Mesozoic continental redbeds for the Stilo Unit of the northern sector of the Calabrian Arc has been described for its stratigraphic, mineralogic and petrographic characters. The Calabria-Peloritani Terrane (CPT) is a fault-bounded, allochthonous terrane located between the NW-SE-trending Southern Apennines and E-W-trending Sicilian Maghrebides. The CPT is characterized by an Hercinian crystalline basement showing evidence of pre-Neogene tectonics. The tectono-stratigraphic units of the Calabria-Peloritani northern subterrane containing similar mesozoic sedimentary covers are the Sila Unit (Longobucco Sequence), Bagni Unit and Stilo Unit. These deposits are composed in the lower part by siliciclastic sequence (continental clastics known as “Verrucano and Pseudoverrucano”) passing unconformably to a breccia and calcarenite, calcirudite and dolostone. The composition of the studied fine grained siliciclastic sediments is characterized by the presence of quartz, clay minerals (illite, illite/smectite mixed layers, kaolinite, chlorite), Fe-oxide-hydroxide, feldspars and variable amounts of carbonate minerals (calcite and dolomite). SEM analyses carried out on the quartzose sandstone show effects of mechanical compaction with consequent deformation of mica flakes, and the crystal morphology of aggregate kaolinite-dickite booklet, that moreover testify the late/deep diagenetic stage for the studied successions. The XRD patterns of the whole-rock shows

that the analyzed samples are rich in clay minerals associated with significant amounts of calcite, quartz and feldspars, whereas minor concentrations of dolomite have been identified in some XRD patterns. The $<2 \mu\text{m}$ grain-size fraction of all samples is composed predominantly by illite, illite-smectite mixed layers, chlorite and kaolinite. Preliminary geological and compositional data of these continental siliciclastic deposits suggest close similarities with the well studied Mesozoic continental redbeds successions of the Internal domains of the circum-Mediterranean and Calabrian orogenic belts.