Geophysical Research Abstracts, Vol. 9, 01782, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-01782

The exhumed Mesozoic "Verrucano" redbeds of the Peloritani Alpine Belt (NE Sicily, southern Italy)

R. Somma (1), I. Martín-Rojas (2), A. Messina (1), V. Perrone (3)

(1) Dipartimento degli Alimenti e dell'Ambiente, Università degli Sudi di Messina, Sant'Agata, 98166 Messina, Italy. (2) Dpto. de Ciencias de la Tierra y del Medio Ambiente, Universidad de Alicante, Ap. 99 03080 Alicante, Spain. (3) Istituto di Geologia dell'Università "Carlo Bo" di Urbino – Campus Scientifico Località Crocicchia, 61029 Urbino, Italy.

In the peri-Mediterranean Alpine Orogen, from the Alps to the Gibraltar Arc, the metamorphic "Verrucano" and the unmetamorphosed "Pseudoverrucano" redbeds (M. Triassic-L. Liassic) represent the early continental deposits of the Alpine sedimentary cycle.

In the Peloritani Alpine Belt (Calabria-Peloritani Arc), the "Verrucano" deposits belong exclusively to the Alì-Gioiosa Vecchia Unit. This latter is a tectonic unit composed of a Palaeozoic basement and a Mesozoic cover, both affected by an Alpine polystage metamorphism (P = 0.3-0.4 GPa; T = 300-350 ˚C), and exhumed during syn-orogenic extension.

These metamorphic redbeds, presumably Anisian-Carnian in age, consist of a detrital formation made up of a facies association ranging from dark red metabreccias to metapelites. The clastic deposits, characterised by an apparent thickness up to 500 meters, derive from low- to medium-grade Variscan metamorphites, eroded at high erosion rates. In the Alì area, redbeds pass upwards to rhauwackes (Carnian) and metadolostones (Norian). The Mesozoic succession continues with metamarly limestones (upper Pliensbachian) and ends with variegated metamarls intercalated by metaradiolarites and metamicrobreccia (Malm-Liassic).

At the geodynamic scale, redbed sedimentation began during the Triassic continental rifting stage of Pangea. This process originated a microcontinent, the Mesomediterranean Microplate, delimited by two branches of the western Tethys and interposed between the Europe, Africa and Adria Plates.

From a palaeo-environment and palaeogeographic standpoint, the Mesozoic succession under study developed along a margin of the microplate which recorded the evolution from continental to marine environment. Particularly, the Anisian-Carnian redbeds sedimented in alluvial, fluvial, and flood-plain environments. The passage to the Carnian rhauwackes indicates that the evolution from continental to shore and shallow-marine sedimentary realms occurred during an arid climatic period.

Comparative studies of redbeds distributed throughout the peri-Mediterranean orogen indicate that the rocks being studied can be compared with those ascribed to the Roccastrada-Monticiano Unit of the Northern Apennines, to the Intermediate Units of the Betic Chain, and to the Fédérico Units of Rifian Sebtides.