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Broken pebbles and cobbles from the middle-upper Miocene siliciclastic deposits of the Peloritani Mountains (Sicily, Italy): evidence of extensional paleotectonics?

Rosanna Maniscalco[1], Roberta Somma[2], and Sebastiano Ettore Spoto[3]

[1]Department of Biological, Geological and Environmental Sciences, University of Catania, Catania, Italy (rosanna.maniscalco@unict.it)
[2]Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy (rsomma@unime.it)
[3]Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy (sebastianoettore@gmail.com)

In the Peloritani Mountains (North-Eastern Sicily, Italy), evidence of several fractured pebbles and cobbles was found in the coarse-grained siliciclastic deposits of the middle-upper Miocene San Pier Niceto Formation. The pattern of this pebble/cobble fracturing is analogous in type and orientation. These broken pebbles and cobbles appear fractured and affected by normal subparallel faults in a single clastic element, with mm- to cm offset. Such peculiar structures have been commonly associated with active tectonics in recent deposits.

The present research is therefore devoted to the study of the middle-upper Miocene San Pier Niceto Fm. in Peloritani Mountains for i) characterizing the morphologic properties and orientation of clasts, ii) defining the spatial orientation of faults and principal stresses, iii) understanding their tectono-sedimentary genesis. The goal is to ascertain that broken clasts may or may not represent paleoseismic evidence and coseismic deformation during the initial stages of the extensional tectonics in the still active area of the Calabrian Arc.

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