

PROVENANCE OF MESSINIAN CLASTICS
ALONG THE NORTH RIM OF MEDITERRANEAN BASINS

by

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ABSTRACT

Gypsiferous conglomerates and sandstones of terminal Miocene (Messinian) age occur throughout the northern parts of the Mediterranean region. They grade from boulder conglomerates in the east to sandstones in the west. Flood water velocities thus diminished westward, although river gradients from adjacent lands (Taurides, Pindus, Alps, Apennines, Pyrenees) were probably steep everywhere. Cross bedding of the bedload also points to a westward current akin to the contemporaneous counterclockwise current system in the Mediterranean Sea. Brackish water mollusks, ostracods and foraminifers were carried from Ukrainian and other Paratethyan sites to Greece, Italy and Spain, where they apparently did not arrive as dead current load. In Tunisia, Italy, Crete and Cyprus the Messinian evaporites are capped by a brackish or fresh water facies of finer grain size indicating that dilution of the hypersaline brines was not caused by sea water.

Lithic fragments in the bedload of the Messinian current system appear to bear little relationship with nearby outcropping bedrock. A study of the fine fractions of the conglomerate matrix shows that Messinian clastics from the Dardanelles, the Aegean Islands, Crete, Ionian Islands, the Molise Belt and Calabria in Italy as well as central Sicily all show similarities in the potential provenance area. The prime source appears to be a mature metamorphic terrain (pelitic schists and gneisses). This eliminates sedimentary or igneous outcrops in the circum-Mediterranean mountain chains that were rapidly rising in Miocene time.

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