



Topographic and stratigraphic signatures of a Mediterranean-wide megaflood at the end of the Messinian Salinity Crisis

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The Messinian salinity crisis (MSC) was an outstanding palaeo-oceanographic event that affected the Mediterranean region from 5.97 to 5.33 Ma. This event resulted in the deposition of kilometre-thick sequences of salt and is widely associated with the partial desiccation of the Mediterranean Basin. What is unclear is how normal marine conditions were restored at the end of the MSC. In this study we present topographic and stratigraphic evidence for a Mediterranean-wide catastrophic flood at the end of the MSC. We utilise academic and industry geological and geophysical data from the western Ionian Basin to identify a thick and extensive sedimentary body overlying Messinian evaporites. In view of its volume, wedge-shaped geometry and chaotic seismic character, we interpret this body as a deposit of material eroded and transported from the western to the eastern Mediterranean during the Zanclean flood. Based on the extent of this sedimentary body, the reconstructed Messinian topography and the occurrence of a unique, relict erosional canyon on the Malta Escarpment, we infer that the gateway for the flood was likely located in SE Sicily. Our findings suggest that the identified sedimentary body is one of the largest known megaflood deposits on Earth.