



FORM PER PROGETTI BANDO DOTTORATO XXXIV CICLO

1. Project title

Step by step 3D landscape reconstruction and hydrological budgets of the Northern Apennine foredeep during the Messinian Salinity Crisis.

2. Proposer

Surname	Di Giulio
Name	Andrea

3. Research Unit

Surname	Name	Institution
Garcia-Castellanos	Daniel	CSIC-ICTJA (Barcelona)
Aloisi	Giovanni	Université Sorbonne Paris - IPGP
Amadori	Chiara	UNIPV
Toscani	Giovanni	UNIPV

4. Key words

(Max. 5 – at least 2)

Messinian marginal basins – 3D modeling – Backstripping analysis – hydrological balance



5. Abstract

(Max. 1.500 characters with spaces)

The Mediterranean Salinity Crisis (MSC) is one of the most dramatic event in the entire geological history that extracted 5% of the salts dissolved in the global ocean and had a permanent impact on both the terrestrial and marine ecosystems of a huge area surrounding the Mediterranean.

Despite extensive research since discovery of Messinian evaporates in the Mediterranean with deep sea scientific drilling in 1970, several major aspects of the crisis are still debated and we lack a mechanistic understanding of how crustal tectonics, global sea-level and climate forced the Mediterranean into a hypersaline mode, leading to the deposition of evaporite salts at such a huge scale.

The project aims to improve this understanding through the study of the landscape evolution of the Northern Apennines foredeep basin during the salinity crisis, estimating also the step by step hydrological budget during the progressive sea-level drawdown.

This aim seems now feasible through the tracing in the subsurface of the Messinian erosional surfaces (thanks to the established cooperation with ENI), their 3D backstripping through TISC software (thanks to the cooperation with Daniel Garcia-Castellanos, CSIC-ICTJA, Barcellona), and estimates of water budgets based also on evaporates geochemistry (thanks to the cooperation with Giovanni Alosisi, Université Sorbonne Paris – IPGP) in the frame of the SALTGIANT Innovative Training Network, to which all people involved contribute.