SALTGIANT ETN – Early Stage Researcher in seismic imaging of Mediterranean salt structures– ESR 10

Title	**Seismic imaging and geological evolution of Mediterranean salt structures**
Duration	36 months
Expected start date	October 2018
Host Institution	Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, OGS, Trieste, Italy - www.inogs.it (doctoral degree to be awarded by the University of Trieste).
Primary Supervisor(s)	Angelo Camerlenghi, OGS; Anna Del Ben, University of Trieste
Objectives	The main aims will be to identify, classify and understand the geological evolution of Messinian salt structures in different depositional and structural environments of the Mediterranean Sea. The study will make use of the available offshore multi-channel seismic reflection data, including regional vintage public data, academic data, and industry data. The data analysis will include full processing or reprocessing in time, pre-stack time migration, pre-stack depth migration, tomography of Vp and attenuation, analysis of seismic attributes. Salt deformation structures will be identified and classified through depth imaging in order to reconstruct real geometries in detail. Data interpretation will be performed with Kingdom Suite or Petrel software packages. The geological evolution will be reconstructed with the use of basin modelling software (PetroMod). Different Mediterranean geological environments will be analysed in order to relate the evolution of salt structures to the varying lithology, sedimentary history and structural development of each areas. Particular attention will be paid to the Messinian seismic facies and parameters, the development of sub-salt fluid overpressure and its influence on the mechanics of halocinetic phases, including gravitational spreading and gliding.
Expected results	Seismic section in depth, definition and recognition of the salt deformation structures in the entire Mediterranean Sea. Geological models of halocinetic deformation in response to sedimentary load, faults, heat flow, gravity and overpressure.
Planned secondments Provided by SALTGIANT partners to ESRs; duration 1-3 month each	**S1** (months 10-12): National Oceanography Center (Southampton, UK) (H. Marin-Moreno for mutual exchange of information with ESR 12. ESR 10 provides geometries of salt structures necessary for modelling and learns about constraints and uncertainties in overpressure modelling); **S2** (months 18-20): Ente Nazionale Idrocarburi (Milan, Italy) (P. Cibin for seismic imaging in salt and sub-salt formations); **S3** (months 27-29): MARUM (Bremen, Germany) (K. Huhn for numerical modeling of salt deformation).
Specific requirements	Completed MSc or Diploma degree in Geophysics, Physics, Geology, Earth Sciences, Geoinformatics, or related fields Basic knowledge in seismic reflection data processing and interpretation Good geological background in basin analysis and evolution; Skills in scientific computing and in visualizing numerical output would be helpful
Keywords	Geophysics, seismic reflection, pre-stack depth migration, salt structures, halocinetics

Application	Send application via: www.ipgp.fr/saltgiant
For further information	Contact primary supervisors: acamerlenghi@inogs.it; delbenan@units.it