SALTGIANT ETN – Early Stage Researcher in Salt Tectonics – ESR 11

Title	**Salt tectonics in the Levant Basin**
Duration	36 months
Expected start date	October 2018
Host Institution	Geological Survey of Israel (Israel) http://www.gsi.gov.il/eng/ and https://gsi-subsurfacelab.wixsite.com/subsurfacelab
Primary Supervisor(s)	Zohar Gvirtzman (GSI) and Einat Aharonov (HUJI)
Objectives	The overall objective of ESR 11 is to understand the general coupling between salt deformation and deformation of the overlying sediments, and in particular to understand deformation in a young salt giant. The Levant Basin provides a unique opportunity to model the early stage of salt tectonics when the sedimentary overburden is still relatively thin and the evaporitic unit is still intact. Moreover, the Levant Basin is the only deep Mediterranean basin, where the entire Messinian evaporitic sequence was penetrated by wells that can be tied to 3D seismic data. The combination of unique geological conditions with wealth of data provides a natural laboratory for studying the early stage of salt tectonics. The specific objectives of ESR 11 are to reconstruct the deformation history of the Levant basin since the formation of the MSG; to understand how salt giants deform in response to basinward tilting and differential sedimentary loading; to understand how deformation of subsurface salt affect overriding rocks; and to understand strain partitioning within a multi-layered system of evaporites and clastics. The study will be conducted at the Geological Survey of Israel (GSI) and the Hebrew University (HUJI), both located in Jerusalem within a walking distance. Geological reconstruction of various deformation pulses, their ages, and direction of motion, will be supervised by Zohar Gvirtzman (GSI and HUJI). Numerical modelling and mechanical analysis of salt and overburden deformation will be supervised by Einat Aharonov (HUJI).
Expected results	Improved understanding of the interaction between salt deformation and deformation of overlying sediments. Spatial and temporal reconstruction of deformation in the Levant basin based on geological and geophysical data accompanied by physical-based model that explains deformation as a result of the mechanical behaviour of salt. These results will contribute to the general understanding of salt tectonics and will aid in assessing geological hazards for drilling and seabed infrastructure.
Specific Requirements	Completed MSc or Diploma degree in Geophysics, Geology, Earth Sciences or related fields; Good geological background in sedimentary basin evolution; Good programming skills and interest in physics; Basic skills in seismic interpretation would be helpful (Kingdom Suite, Petrel or equivalent software).
Planned secondments Provided by SALTGIANT partners to ESRs; duration 1-3	(1) DELEK DRILLING LP (Hertzeliya Pituah, Israel) with Dr Zvi (Kul) Karcz (VP Exploration and chief geologist), for high resolution study of the mechanical behaviour of the Messinian salt utilizing companies' proprietary data and resources; (2) RATIO OIL EXPLORATION (Tel Aviv, Israel) with Dr Josh Steinberg (Chief Geologist), for seismic interpretation, utilizing companies' seismic data and well logs.

month each

Keywords	Salt tectonics, seismic interpretation, numerical modelling, Levant Basin
Application	Send application via : www.ipgp.fr/saltgiant
For further information	Contact primary supervisors: Zohar Gvirtzman (Zohar@gsi.gov.il); Einat Aharonov (einatah@mail.huji.ac.il).