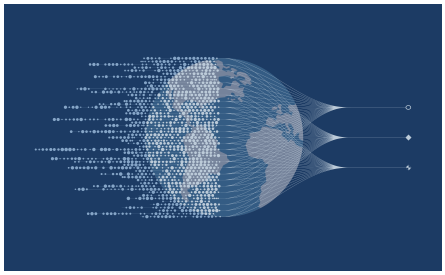

ID: **P4.5-538** Type: **E-poster**

# of an OSI Software Package for Gravitational Field Mapping Data Processing

Gravitational field mapping (GRV) is one of the techniques that an inspection team can use during a Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) on-site inspection (OSI). High precision microgravity surveys may be able to detect the gravitational anomalies created by subsurface observables related to an underground nuclear explosion, namely the presence of a cavity around the detonation point and surrounding zones where petrophysical changes have occurred, a collapse chimney or an apical void. The amplitude of the gravitational anomalies created by such observables may be very small, depending on the density contrast, the size, and depth of the observables. Therefore, it is necessary to process the GRV data accurately, especially to remove the effect of a whole range of corrections that may create anomalies larger than the signal of interest. We present a tailored Python software package (source code based on open source libraries available at CTBTO) that we developed for the processing and visualization of GRV data. The software, accessible through a user friendly graphical interface, imports raw data obtained from the gravimeters currently operated by the CTBTO OSI Division and allows the application of a complete set of corrections (instrumental, time variable, location based and terrain corrections, plus outlier removal) to obtain and display gravity values.

E-mail

daniele.sampietro@g-red.eu

In-person or online preference

in-person

Primary author: SAMPIETRO, Daniele (Geomatics Research & Development s.r.l., Italy; Istituto Nazionale di Geofisica e Vulcanologia, Italy)

Co-authors: CAPPONI, Martina (Geomatics Research & Development srl); Mr MERLO, Riccardo (DkR s.r.l., Italy); Mr TERRUZZI, Matteo (DkR s.r.l., Italy); Ms KOIVISTO, Emilia (CTBTO Preparatory Commission); Mr GAYA PIQUE, Luis (CTBTO Preparatory Commission)

Presenter: SAMPIETRO, Daniele (Geomatics Research & Development s.r.l., Italy; Istituto Nazionale di Geofisica e Vulcanologia, Italy)

Session Classification: P4.5 On-Site Inspection Team Functionality

Track Classification: Theme 4. Sustainment of Networks, Performance Evaluation, and Optimization: T4.5 On-Site Inspection Team Functionality