Geophysical Research Abstracts
Vol. 17, EGU2015-7060-3, 2015
EGU General Assembly 2015
© Author(s) 2015. CC Attribution 3.0 License.

3D modeling of a dolerite intrusion from the photogrammetric and geophysical data integration.

João Duarte (1,2,3), Ana Machadinho (3), Fernando Figueiredo (4), and Maria Mira (5)

(1) IQGeo – Serviços, Lda., Portugal, (2) Geosciences Center of the University of Coimbra, Portugal, (3) Department of Earth Sciences of the University of Coimbra, Portugal, (4) CEMUC - Centre for Mechanical Engineering of the University of Coimbra, Portugal, (5) Maria Mira Consultores, Lda., Portugal

The aims of this study is create a methodology based on the integration of data obtained from various available technologies, which allow a credible and complete evaluation of rock masses. In this particular case of a dolerite intrusion, which deployed an exploration of aggregates and belongs to the Jobasaltos - Extracção e Britagem. S.A.. Dolerite intrusion is situated in the volcanic complex of Serra de Todo-o-Mundo, Casais Gaiola, intruded in Jurassic sandstones.
The integration of the surface and subsurface mapping, obtained by technology UAVs (Drone) and geophysical surveys (Electromagnetic Method - TEM 48 FAST), allows the construction of 2D and 3D models of the study local.
The combination of the 3D point clouds produced from two distinct processes, modeling of photogrammetric and geophysical data, will be the basis for the construction of a single model of set. The rock masses in an integral perspective being visible their development above the surface and subsurface.
The presentation of 2D and 3D models will give a perspective of structures, fracturation, lithology and their spatial correlations contributing to a better local knowledge, as well as its potential for the intended purpose.
From these local models it will be possible to characterize and quantify the geological structures. These models will have its importance as a tool to assist in the analysis and drafting of regional models.
The qualitative improvement in geological/structural modeling, seeks to reduce the value of characterization/cost ratio, in phase of prospecting, improving the investment/benefit ratio. This methodology helps to assess more accurately the economic viability of the projects.