

WS04

Lidar and UAV for Rock Mass Geomechanical Characterisation - Support to fracture studies of outcrop analogues

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Imageo

Summary

Fracture studies of outcrop analogues represent a powerful tool in reservoir characterization. Outcrop analogues provide a valuable support in defining conceptual models to extrapolate borehole data outside the well control, trying to take into account reservoir heterogeneity

Abstract

Fracture studies of outcrop analogues represent a powerful tool in reservoir characterization. Outcrop analogues provide a valuable support in defining conceptual models to extrapolate borehole data outside the well control, trying to take into account reservoir heterogeneity.

Thanks to the improvement of surveying equipment, i.e. Terrestrial Laser Scanners (TLS) and Unmanned Aerial Vehicles (UAV), as well as the simplification of ground base photogrammetry acquisition and processing tools, dense point clouds and very precise 3D models of inaccessible rock cliffs can be obtained. By analyzing these accurate models of the outcrop surface it is now possible to accurately characterize reservoir analogues from a lithological and structural point of view.

Both commercial and self-developed data processing software packages allow the extraction of main parameters regarding discontinuity sets (i.e. orientation, intensity, V_b , P_{21} , etc.). Nevertheless, maps with the distribution of such parameters are still not common. A procedure for obtaining raster maps with the distribution of significant parameters for the geomechanical characterization of rock cliffs will be presented through the analysis of selected case studies.