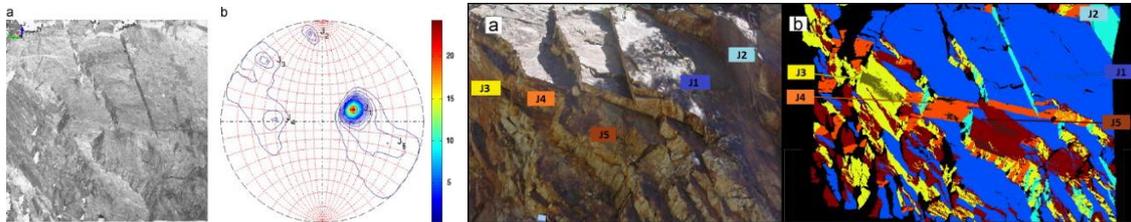


Workshops and short courses

Title: Mapping rock mass discontinuities from 3D point clouds

Duration: morning short course: 3 h



Description:

This course is a basic introduction to the study of discontinuities via remote sensing derived datasets. To analyse the stability of the slope or estimate a geomechanical quality index, it is required to know the number of discontinuities sets and their orientations, among other parameters. Traditional methods comprise the direct access to the surface, which can be a risky (or even impossible) task. However, remote sensing techniques, such as ground-based 3D laser scanning or Structure-from-Motion, provide information of the ground surface. The data is usually a 3D point cloud (3DPC) of a surface. These points represent the discontinuities, weathered surfaces, or the existing vegetation. In this course, we will analyse a case study of a rocky slope to extract: (1) the number of discontinuity sets and (2) their orientation, classifying accordingly the 3DPC. The course will use open-source software (CloudCompare) and Discontinuity Set Extractor (MATLAB-based) to identify the discontinuity sets and obtain their orientation.

Target audience

This short course is specifically designed for both undergraduate and post-graduate students and professionals related to geotechnical, geological, mining, and civil engineering.

Lecturers' Biography

Adrián J. Riquelme Guill has a PhD from the University of Alicante and second-cycle undergraduate degrees in Civil Engineering and Geological Engineering from the Polytechnic University of Valencia.

Currently, he is a PhD assistant lecturer in the Civil Engineering Department of the University of Alicante. Regarding his research, he is an active member in the Geotechnical and Structural Engineering (INTERES) research group, collaborator of the Geohazards InSAR Laboratory and Modelling Group of Spain's Geological and Mining Institute, and member of the Spanish Society for Rock Mechanics (SEMR), the International Society for Rock Mechanics (ISRM) and the European Geosciences Union (EGU). Besides, he is a member of the geomechanical classification working group of the SEMR and the working group for the Upgraded ISRM Suggested Method for Discontinuity Characterisation.

His principal research interests are a) rock mass characterisation and monitoring using 3D point clouds; and b) rock mass geomechanical classifications and intact rock characterisation and c) monitoring and characterisation of landslides, land subsidence and infrastructures using SAR interferometry.

Program

Section I. Theoretical introduction to remote sensing datasets

Section II. Practice with a case study of a real rocky slope

Maximum number of attendances: 20