

## VISNIR Hyperspectral imagery of rock surfaces

Contact persons: Marc-Henri Derron

### Context

Hyperspectral images are composed of thin contiguous spectral bands in the visible and near infrared light. The signal content of these images depends on the material composition of the object (like in spectrometry), but also on external factors such as light conditions, incidence angles, etc.

A new terrestrial hyperspectral camera makes possible to acquire such hyperspectral images in a much easier way than what was possible previously. It opens new perspectives to analyze natural surface in real field conditions (rock, soils, sediments, vegetation, ice). However, there is still some work to establish the capabilities and limits of this method and to propose a proper procedure of acquisition.

### Objectives and Methods

The objective is to define a procedure of acquisition that maximises the response related to the material composition and minimizes the other contributions such as light conditions or geometry of acquisition. Standardized Teflon plates and objects with a controlled geometry will be placed in scenes to calibrate the signal. Various experiments will be achieved on rock surfaces of different mineralogical compositions in order to understand the spectral resolution of the device (for instance calcite vs dolomite, surface oxidation, ...). This topic is rock-related, but it could be adapted to other types of surfaces such has vegetation (with the cooperation of another supervisor).

### Literature

Close-range hyperspectral imaging for geological field studies: workflow and methods. Kurz, Buckley, Howell (2013). *International Journal of Remote Sensing*, Volume 34, 2013 - Issue 5

