

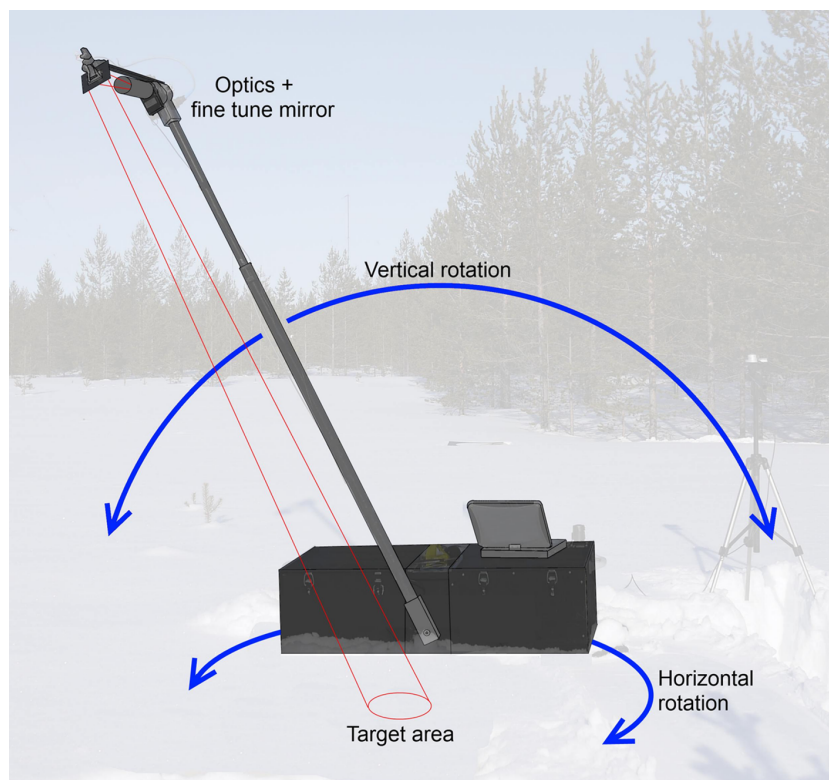
## FIGIFIGO as a tool to characterize and identify planetary analogue sites

M. Gritsevich<sup>1</sup>, J. Peltoniemi<sup>1,2</sup>, T. Hakala<sup>1</sup>, and K. Muinonen<sup>1,2</sup>

<sup>1</sup>Finnish Geodetic Institute, Geodeetinrinne 2, P.O. Box 15, FI-02431 Masala, Finland

<sup>2</sup>University of Helsinki, Department of Physics, P.O. Box 64, 00014 Helsinki University, Finland

We present an overview of the Finnish Geodetic Institute's field goniospectrometer (FIGIFIGO) and highlight its usability to study extraterrestrial analogues on the Earth. The design concept of this custom-made instrument has been proved to have a number of advantages, such as a well-adopted user-friendly interface, a high level of automation, and excellent suitability for field measurements within a wide range of weather conditions. It is perfect for collection of reference data on a given target in natural undisturbed (and well-recorded for further data interpretation) conditions. The instrument communicates via a controlled computer with an implemented simple and user-friendly interface. This allows users to easily set up optional parameters at the beginning of the measurement series. Thus a number of details may be modified, such as the initial position of the sensor, the range and speed of further automated zenith turns, and length of the turnable arm holding the selected optics (including an option for a computer-turned linear polarizer) above the target. The assembly and operation of the instrument are fast and efficient in both laboratory and field conditions. It is battery powered and easily portable, including possible transportation by plane, car, boat, or sledge. The system includes a sky camera to detect the goniometer orientation and a pyranometer to monitor the actual illumination conditions. A fine-tune mirror is used for spatial correction of the optics footprint. Recent calibration of the system has significantly increased the measurement robustness and data reliability, and has provided the operators with information on how to operate the instrument in the most efficient and accurate way. Measurement campaigns are organized frequently and significant amount of reference data has been already collected. The identification of new planetary analogue sites and characterization of known ones using FIGIFIGO could offer new possibilities and provide great insights for the planetary research community.



**Figure:** FIGIFIGO consists of the following main components: casing, measurement arm, rugged computer, and a sunphotometer on a tripod. The casing contains the main sensor ASD FieldSpec Pro FR optical fiber spectroradiometer (350–2500 nm), most of the electronics, and batteries. The active optics system is located horizontally at the top of the measuring arm, and is looking down to the target through a mirror.