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Mars Exploration – Science, Instruments and Technologies (3B)

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FIELD & LABORATORY SPECTROSCOPY OF MARS ANALOGUE SAMPLES: SUPPORT TO MARS IN-SITU AND SAMPLE RETURN MISSIONS

Abstract

We have analysed Mars analogue samples in-situ and in the laboratory, using techniques similar to those applied to in situ measurements (eg Curiosity rover, ExoMars or Mars 2020 rovers) or on returned Mars samples in Earth laboratories.

Some analogue samples were collected from Rio Tinto, Iceland and from volcanic sites at Hawaii, La Reunion, Tenerife, and from the volcanic region of the Eifel, Germany during field campaigns in 2015-2018 and were analyzed with a variety of spectrometers. These samples derived from terrestrial analogue sites are studied to gain insight into Mars analogue processes in their geological context. The aim is to obtain a database of analyzed samples that could be used as a reference for future in situ measurements. We also use a documented set of Moon-Mars relevant minerals curated at VU Amsterdam. The spectrometers have been used in combination with the ExoGeoLab MoonMars lander during field campaigns and also brought to Eifel, and to LunAres Analogue base Poland to prove the applicability of the equipment in the field.

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