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SPECTROSCOPY ANALYSIS OF MARTIAN ANALOGUE SAMPLES

Abstract

In this study, an array of analogue Mars samples is characterized using a hyperspectral imaging camera. The primary objective is to establish a comprehensive database, serving as a reference for upcoming projects and to evaluate the camera system for potential applications in future space endeavours. The analysis focuses on leveraging hyperspectral imaging to gain insights into the mineralogical composition and surface properties of these analogue Mars samples.

By employing hyperspectral imaging, we aim to discern subtle variations in the reflectance spectra of Martian analogues, contributing to a detailed understanding of their composition. This database of characterizations acts as a foundational resource, offering valuable references for the interpretation of data obtained from future planetary missions, including ongoing missions such as the Perseverance rover and anticipated missions like the Mars Sample Return.

Moreover, the study addresses the potential application of the hyperspectral imaging camera in forthcoming space projects. The systematic evaluation of the camera system lays the groundwork for its integration into space missions, extending its utility beyond terrestrial analogues to more complex celestial objects such as Mars or the Moon.

Looking forward, the envisaged use of the hyperspectral imaging camera holds promise for inspecting and scrutinizing intricate celestial features. Future applications include the detailed analysis of planetary surfaces, allowing for a more nuanced understanding of geological formations and surface processes on celestial bodies like Mars and the Moon. The establishment of this database and the assessment of the camera system in this study contribute to advancing our capabilities for planetary exploration, aligning with the objectives of current Mars missions and preparing for the sophisticated analyses expected in the realm of future space science endeavours.