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GEOCHEMICAL DATA OF THE CURIOSITY ROVER ON MARS IN LITHOSPACE

Abstract

LithoSpace is a unique new public democratised space data platform that centralizes vetted and standardized geochemical data, acting at once as a repository, geospatial visualisation tool, and data analysis tool. The platform easily accommodates data acquired by all manner of spacecraft including orbiters, landers, rovers and astronaut-collected samples, and can accommodate a large array of analysis types. LithoSpace provides a suite of integrated geochemical analytical tools, including Rare Earth Element (REE) pattern analysis, trace element assessments, on-the-fly interpolation and ternary plot generation, all of which are crucial for enhancing our understanding of the geological characteristics and inherent resources of bodies such as the Moon, Mars, asteroids and other celestial bodies. As an agnostic tool, this platform collects all publicly-available sample data into one convenient location and provides it open-access to anyone with an internet connection. User data upload and user-generated analytical results (figures, tables), can be made public or kept proprietary. In this work, the specific example of the Curiosity rover is presented, whereby geochemical data along the entirety of the rover's path is presented via the user-friendly graphical user interface of the LithoSpace platform. Minerals of various types are codexed by colour, allowing users to readily discern geochemical trends in the data as a function of rover geospatial location. LithoSpace is a sibling platform to the open-data platform 'AusGeochem', which was opened in 2022 and provides spatial geoscience data solutions and data-mining services for Earth-based resources. Here, we introduce users to the new LithoSpace platform and invite contributions of datasets from the community for upload into the databank, and feedback regarding current and future analytical tools embedded within the platform.