

## Minerals detection on Mars from Mars Reconnaissance Orbiter (MRO) CRISM data

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Martian mineral detection and mapping can provide important information and constraints on Martian aqueous history, which can be used to assess the potential habitability of Mars. Degrees of addressing the key question for Martian aqueous alteration are dictated by the depth and extent of grasping the Martian hydrous mineral. Therefore, it is important to know detailed minerals and chemical indication of the existence of water on the Martian surface at past or present. In-situ observations of the Martian rovers, such as Spirit, Opportunity and Curiosity have provided the mineralogical analysis of Martian surface, but restricting in a limited areas. Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) aboard the Mars Reconnaissance Orbiter (MRO) with enhanced spectral resolution can provide more information at spatial and time scale. In this paper, CRISM near-infrared spectral data are used to identify mineral classes and distribution at Martian Gale region, including kaolinite, chlorites, smectite, jarosite, northupite and salts. The detection of northupite that is indicative of evaporation in Gale region suggests that the Gale region has experienced the climate change from moist condition with mineral dissolution to dryer climate with water evaporation.

Keywords: Martian minerals, Mars Reconnaissance Orbiter, CRISM