

Extension of the Mars Web-GIS "Red Ace" to study surface minerals on Mars

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Spectral data is indispensable for examining the surface minerals on Mars. Minerals have unique spectral features of characteristic absorption bands. We can identify the surface minerals on Mars by comparing observed VNIR spectral data with laboratory spectra. Although spectral data are very informative, there are various kinds of spectral data from multiple instruments in Mars missions, resulting in too numerous amount of data totally. Therefore, it is not easy to reach the target data and analyze the data intuitively and efficiently for the study of surface minerals on Mars.

The Mars Web-GIS "Red Ace" has been developed to reduce the trouble of researchers who use multiple type of Mars observation data [1]. The Red Ace is a Mars spectral data visualization tool and currently visualizes two types of spectral data: CRISM data and THEMIS data. In the Red Ace, observation footprints are displayed on the Mars base map. User can view the spectral data observed on the exact spot at a glance which he/she clicks on the web browser, however, there is no function for spectral analysis there.

This study focuses on preparing for spectral analysis with the Red Ace. In order to prepare for spectral analysis on the web, we implemented the following analysis support functions: (1) list spectral data, (2) make user's note and (3) share the analysis results. By using these functions, user can collect spectral data in region of interest, and write note. User also can share the results and discussion with others in the same research group.

We extended the original Red Ace to study surface minerals on Mars by implementing the analysis support functions. The user can look back the own thoughts and interesting data in the past in the extended new "Red Ace". We built the foundation to utilize multiple kinds of Mars spectral data on the web efficiently.

[1] Matsubara, Y. et al., A Mars Web-GIS "Red Ace" for viewing reflectance spectral data, American Geophys. Union, Fall Meeting 2018, abst. #IN33E-0896.

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