

The Bellegarde target (from the Rochette outcrop, Rochette member of the Mááz Fm) exhibits Raman

peaks that match hydrated Ca-sulfate, AMS, carbonate, and phosphate phases. Collocated 300 and 325 nm fluorescence spectral features with sulfate phases observed within the target may be aromatic ring organics [8].

The Garde target (from the Bastide outcrop, Bastide member of the Séítah Fm) is dominated by olivine and carbonate with AMS occurring in association with both mineral phases. This co-occurrence may indicate carbonation of the primary olivine via an aqueous alteration process, producing carbonate and AMS phases [8,9]. Localized 290 and 335 nm fluorescence spectral features are observed along the olivine and carbonate grain boundaries. Fluorescence spectral features along grain boundaries may be linked to the redistribution of organics during aqueous alteration whereby fluids altered minerals during diagenesis or metamorphism.

The Dourbes target (from the Brac outcrop, Bastide member of the Séítah Fm) (Fig. 1) is dominated by olivine and shows minor amounts of carbonate, hydrated Ca-sulfate, and AMS (Fig. 2). Fluorescence features (330-340 nm) are detected in discrete spots and do not appear to be associated with minerals.

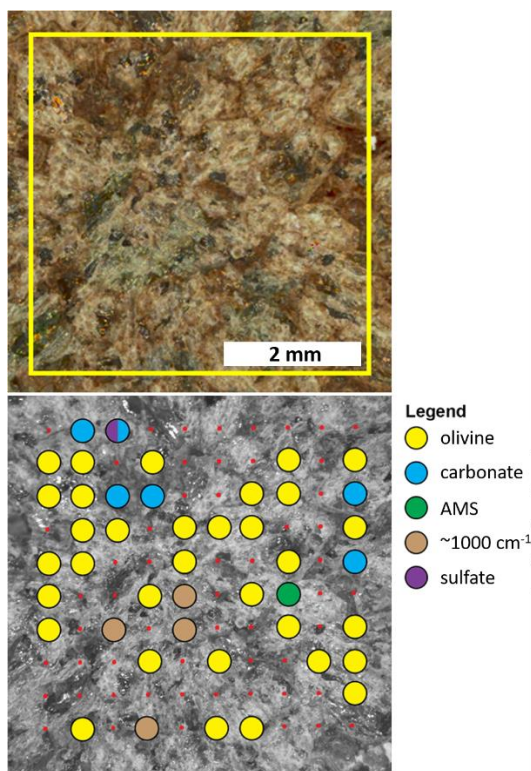


Fig. 2 WATSON image (left) of Dourbes target where yellow box denotes SHERLOC scan area (right). Gray scale ACI with mineral identification (see legend) overlay. Small red dots denote analyzed areas with currently unconfirmed mineral identification.

The Quartier target (from the Issole outcrop, Bastide member of the Séítah Fm) exhibits a large sulfate feature (white feature in Fig. 3), as well as carbonate, perchlorate, olivine and a fluorescence doublet at 290 and 330 nm; this fluorescence feature is very similar to the Bellegarde fluorescence doublet.

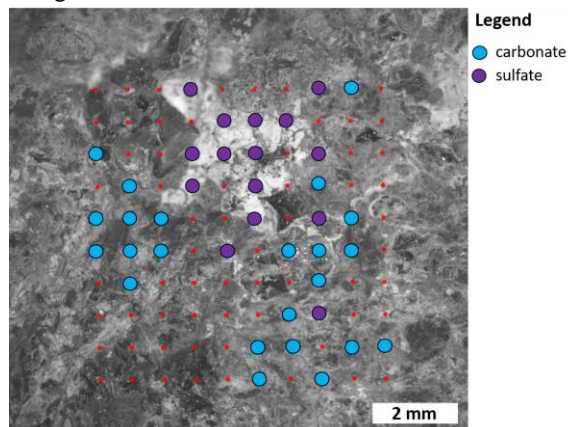


Fig. 3 Gray scale ACI with mineral identification (see legend) overlay in the Quartier target. Small red dots denote analyzed areas with currently unconfirmed mineral identification.

Summary: The presence of perchlorates (Guil-laumes) and the association of amorphous/microcrystalline silicate with olivine/carbonate phases (Garde) suggests aqueous alteration of the rocks analyzed in the ‘Crater Floor’ geologic units including the Mááz Formation (mapped from orbit as Cf-fr) and Séítah Formation (mapped from orbit as Cf-f-1) in Jezero crater.

The *Perseverance* payload is equipped with complementary instruments so that mineral data collected (SHERLOC, SuperCam) may be compared to elemental data collected (SuperCam, PIXL) to better interpret the geologic history at Jezero crater and determine the site’s potential for habitability. We continue to work with the other Mars2020 instrument teams to better interpret the aqueous history of these geologic units and connect fine-scale WATSON/ACI images and SHERLOC’s Raman spectra to other rover- and orbital-derived data.

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