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Planetary Terrestrial Analogues Library (PTAL) a novel database to support rover missions to Mars

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NASA/Mars2020 and ESA/ExoMars missions will look for traces of present or past life on Mars. To do so, both Perseverance and Rosalind Franklin rovers have been equipped with a wide set of spectroscopic systems to investigate the geochemistry and mineralogy of Martian rocks and soils. As spectroscopic techniques are acquiring an increasing importance in the field of Mars exploration, many research groups are trying to estimate and optimize their potential scientific return by carrying out representative analytical studies in the laboratory.

In this framework, PTAL is a research project founded by the European Commission through the H2020 program, which is aimed to provide the scientific community with a novel library of terrestrial analogue materials that have been selected based on their similarity to well-known Martian geological contexts. Planned to be released to public on January 2022, the PTAL platform (<http://erica.uva.es/PTAL/>) will provide future users with access to complementary spectroscopic and diffractometric data gathered from over 100 terrestrial analogues.

In detail, the XRD analysis of each analogue was carried out to gather a reliable overview of samples mineralogy. Then, LIBS, IR and Raman spectrometers were used to collect additional elemental and molecular data, these being the key analytical tools onboard NASA/Perseverance and ESA/Rosalind Franklin rovers. Beside the use of commercial spectrometers, the RLS ExoMars Simulator, the MicrOmega-Flight (FS) (Spare Model) and the ChemCam-FS were also employed to collect LIBS, Raman and NIR spectra (respectively) qualitatively comparable to those that will soon gathered on Mars.

In addition to analytical data, the PTAL platform will also provide direct access to a dedicated software (SpectPro) for spectral visualization and treatment [1]

To conclude, future users can also request physical access to the terrestrial analogues, so that the data contained in the PTAL library can be combined with further analysis in the laboratory.

To obtain further information about the PTAL project, please use the QR code provided in Figure 01.



Figure 01: PTAL QR code

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References: [1] Saiz J. et al., (2019) EGU general Assembly, 21, 17904.