



# Analog Mars Sample Return Science (AMaSRS)

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**Program: FY21 R&TD Strategic Initiative**

**Strategic Focus Area: Enabling Mars Sample Return Science at JPL**

## Objectives

This program has the following five objectives:

1. Analyze MSR-analog samples from existing abcLab and JPL collections representing the lithologies likely to be encountered by Mars 2020.
2. Develop and apply a preparation and handling workflow for MSR-analog samples that minimizes (and monitors) contamination and sample loss.
3. Develop and apply an analytical workflow for MSR-analog samples with a focus on spatially-resolved and minimally destructive techniques.
4. Develop and apply a data processing and integration platform for MSR-analog samples.
5. Engage the scientific community and public to promote MSR and JPL's strategic role in its execution.

To our knowledge this is the first program to specifically and systematically assemble a collection of samples acquired for lithologic analogy to units in the Mars 2020 exploration area, using a high-fidelity Mars 2020 analog drilling system. By extension, we are aware of no program applying a MSR-analog analytical workflow to MSR-analog samples with the fidelity that we are employing. Our proposed methods for analysis in most cases are at or beyond the state of the art. For the most critical samples we are leveraging existing collaborations with colleagues outside JPL (e.g. at Caltech, Wisconsin, UCLA) to achieve state of the art.

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