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Probably the most efficient and effective way to enhance Artemis science return is to choose well the samples collected by the astronauts to be returned to Earth.

This objective of this brief white paper is not to extend science objectives but to show operationally how we can enhance science return by influencing sample choices. As a general overview, planetary science data from an Artemis mission might be classified as:

- geologic mapping
- mineralogical identification
- elemental identification
- chronology

Examples of instruments to collect data for these are respectively stereo cameras, LIBS instrument, APXS instrument, and argon-argon dating instruments.

Ultimately, the best analysis will occur from returned samples. However since sample amounts will be limited, it behooves us to return well chosen samples. Hence, a timely possible sample evaluation capability will be of much value.

We propose using small rovers with a single or small number of the above classes of instruments in operations modes. We propose these activities to be either prior to human landings or else during periods of astronaut surface time as permitted (e.g., during astronaut sleep time):

- rover with stereo cameras doing full mapping of the landing site's geomorphology
- rover doing short term evaluations of objects of interest from the above survey (i.e., a quick assessment of elemental, mineralogical, or chronologic properties) as directed from Earth
- astronauts being presented with targets deemed to be high priority as part of their surface exploration.

This kind of coupling of human-robot activities have not been previously used on planetary surfaces with astronauts. The intention of this proposed Human-Robotic activity suite is to maximize the science return by having highly informed selections of samples leading to higher human efficiency on the lunar surface.

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