**STUDY OF WAFER-THIN ROCKS ON EARTH & MARS AND HOW THEY CAN BE A CLUE TO PAST: IMPLICATIONS FROM CURIOSITY OBSERVATIONS AND THEIR TERRESTRIAL ANALOG.** M. Foroutan[1] and J. R. Zimbelman[2], [1]Department of Geography and Environmental Management, University of Waterloo, Waterloo, ON, Canada N2L 3G1 (mari.foroutan@uwaterloo.ca), [2]Center for Earth and Planetary Studies, Smithsonian Institution, National Air and Space Museum, Washington, D.C. 20560, USA (zimbelmanj@si.edu).

**Introduction:** Thin sedimentary layered rocks can be found in different locations on Mars, such as northern Sinus Meridiani [1]. Different forms of layered terrain indicate diverse types of surficial processes such as volcanic process in Valles Marineris [2]. Some of these rocks that have been captured by curiosity rover in Gale crater, close to the sand dunes, are very thin, paper thin, which has been called wafer-thin in some resources. These flaky layers have different orientations compared to the regular thin sedimentary rock layers. Their initial deposition, formation and erosion should be the result of the fluvial or aeolian actions. This study investigates the mineralogy and the formation of these layers by using the samples from the same layers on Earth and studying rover images.

**Study area:** Images from the Mars curiosity rover indicate these rocks in the Gale crater (Figure 1). The same features have been found between large sand dunes in the Yilan erg located in the Lut desert of Iran. The Lut desert of Iran is one of the pristine and extraordinary deserts on Earth with geomorphological features like mysterious features on Mars such as Transverse Aeolian Ridges (TARs) and Dust Devil Tracks (DDTs) [3], as well as curious patterns like raked pattern features [4]. The erg hosts dunes up to 450 meters height located in the eastern part of a huge mega-yardang field [3]. This hyper-arid desert is dominated by aeolian processes in different scales [5].

**Methodology and Preliminary Results:** X-ray diffraction method will be used for mineralogy identification of these layers from the samples that has been collected from the Lut desert. The wafer-thin rock layers are oriented differently from the layers in the ex-posed interdune materials and they appear not to be an extension of the subsurface materials. Although each layer has less than a millimeter thickness, but the initial observation of these layers shows different layers with diverse color and mineralogy. The light pebbly layer on the top with lighter tone and layer beneath with fine grained darker materials. The research is at its preliminary stages at this time.

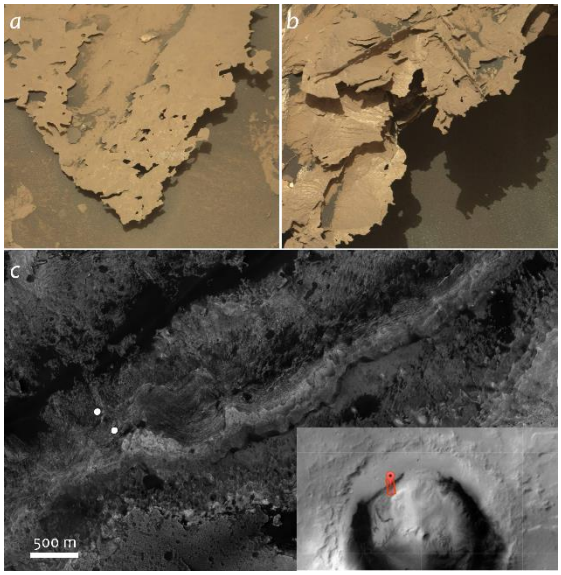


*Figure 1. a, b) Curiosity images from soles 1698 and 1728 in the Gale crater. c) HiRISE image (ESP_040770_1755), white points indicate locations of a and b images. The location of this HiRISE image in the Gale crater is indicated as well.*

**References:**

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