R009-27
Zoom meeting D ：11/2　AM2　(10:45-12:30)
10:45-11:00

## 火星のクリュセおよびアキダリア平原における地下構造の探索

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## Search of shallow subsurface reflectors in Chryse and Acidalia Planitiae

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Recent studies have investigated the subsurface ice at mid-latitude on Mars (e.g., discoveries of exposed ice sheets [Dundas et al., 2018] and widespread excess ice [Bramson et al., 2015]). In the mid latitude, however, current water ice is unstable as implied by climate models [Schorghofer and Aharonson, 2005]. The discoveries of Martian ice are attributed to high resolution imaging data, spectrometer and/or radar technique. Chryse and Acidalia Planitiae (CAP) are the northern planitiae where subsurface ice layers have not been detected by radar sounding yet.
In this study, we surveyed the region in Chryse/Acidalia Planitiae by the data of Mars SHAllow RADar sounder (SHARAD) provided on Geosciences node of the Planetary Data System (PDS). As Noguchi et al. [2020], we also searched the exposed crater walls close to the candidate reflectors using the data of High Resolution Imaging Science Experiment (HiRISE) images [McEwen et al., 2007]. We estimated the plausible component materials of uppermost layers by using these data.
In this region, we identified several subsurface reflectors, but there was no wide subsurface structure. At two locations, we estimated their dielectric constants of the uppermost layers as 5.3 and 5.9 by the combination with high-resolution images and topographic data. Those values constrained the possible bulk porosity (~25 and ~29 %) and the upper limit for the volume fraction of water ice (~50 %). The estimated porosities suggested that the shallow subsurface layers of those locations could be basalt or till. Volume fraction of water ice for rock-air-ice mixture derived in this study was less than 50 %. Thus, if local ice carried from poles still exists, water ice would be preserved as ice-cemented regolith, not pure water ice.