

• Small mounds less than a few kilometers in diameter and up to a few hundred meters in height (A-C), often associated with lobate features (D), are widely distributed in Chryse Planitia.

• Analysis of High Resolution Imaging Science Experiment (HiRISE) images supports formation through mud volcanism, based on observed morphological characteristics (e.g., slopes, height-to-diameter ratios, surface textures, stratification) and comparisons with terrestrial analogs.

• Hydrated minerals detected on these mounds in Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) data further support the mud volcanism hypothesis.

• Alternative mechanisms such as magmatic volcanism are not ruled out, but they have less support from our analyses.

• Terrestrial mud volcanoes and mud flows are important sites for the transfer of subsurface volatiles and biosignatures to the surface, thus these edifices and lobate features are key sites for future astrobiologic exploration.

