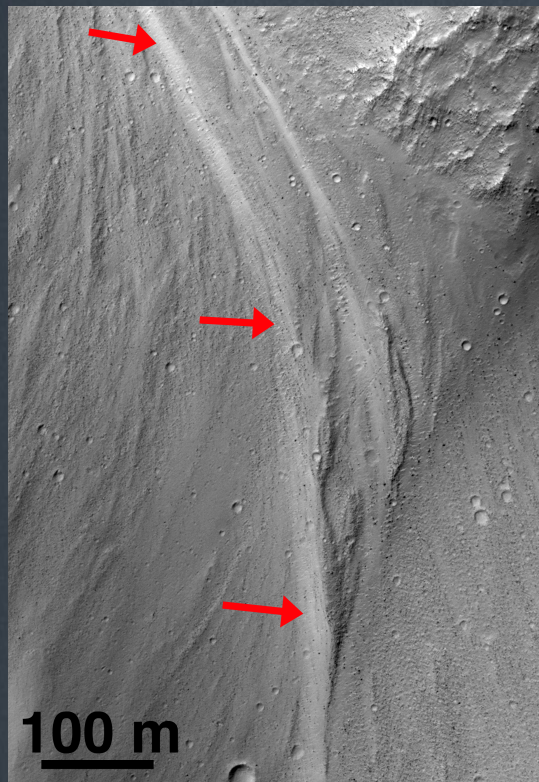
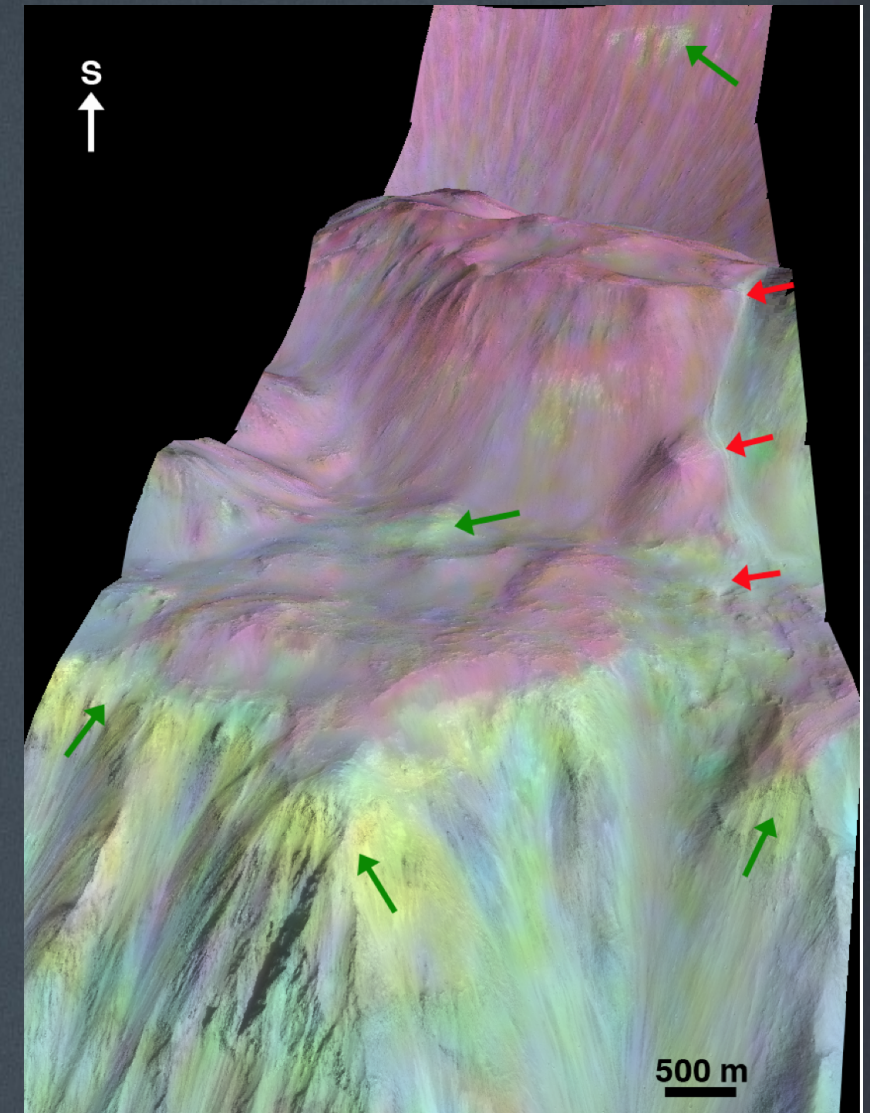


# Fresh Exposures of Hydrous Fe-bearing Amorphous Silicates on Mars



Channel containing Fe-allophane/opal (red arrows). Portion of HiRISE image PSP\_008141\_1645.

- Discovered relatively fresh exposures of a hydrated, amorphous material along the wallrock slopes in Coprates Chasma, Mars.
- CRISM reflectance spectra extracted from the deposits exhibit broad absorptions at 1.42, 1.94, and  $\sim 2.25 \mu\text{m}$  that are most consistent with laboratory spectra of nanophase hydrated Fe-rich allophane and Fe-rich opal.
- At this time, the Fe-rich allophane/opal deposits at Coprates appear to have some of the strongest hydration signatures yet detected on Mars using CRISM data, indicating a young exposure time and minimal time for dehydration.
- The discovery of new Fe-bearing hydrated amorphous silicates by orbital spectroscopy provides additional information about the history of water and aqueous alteration on Mars, and is consistent with the detection of hydrated amorphous phases by rovers on the martian surface.
- Results published in Weitz C.M. et al. (2014) Geophysical Research Letters 41, 8744-8751.



HiRISE DTM perspective view at 2X vertical exaggeration with CRISM spectral parameters overlain in color. Red arrows identify an Fe-allophane/opal deposit (whitish blue), which extends across 940 m in elevation, whereas green arrows identify exposures of smectites within the wallrock (yellow-light green).