There is new radar evidence for the presence of debris-covered glacier at 36°N latitude in the Phlegra Montes region of Mars. The depth of the glacier is estimated at about 180 m. This is the closest glacier to the equator found by SHARAD to date.

We use the geological record of non-polar ice deposits to distinguish between predicted obliquity scenarios for the Late Amazonian climate history of Mars; extended periods of consistently high or low obliquity are unlikely during the last 250 My.

Glaciers in Antarctica provide insight into the origin of debris-covered glaciers on Mars. The Antarctic analogs suggest that the dichotomy boundary was largely covered with plateau ice fields during parts of the Amazonian.

Model investigations of paleo-ice sheets on Mars help identify and interpret glacial deposits observed from orbit and aid in explaining the mechanisms responsible for formation of the ice-rich mantling seen north of ~50N latitude by Mars Odyssey.

The armored surfaces of mid-latitude pedestal craters (Pd) on Mars preserve a past climate-related, ice-rich substrate deposited during periods of higher obliquity. The Pd heights thus provide insight into the regional thicknesses of the substrate.

Very recent impacts in the martian mid-latitudes have exposed ground ice at shallow depths. We describe modeling of the sublimation of this ice and discuss implications for the ground ice. Modeled rates of sublimation suggest that this ice is more pure than pore-filling.

A subsurface-atmosphere climate model of Mars is used to estimate the volume of ice released from ice-rich permafrost as a result of Milankovitch cycles; the polar layered deposits may result from periodic retreat of mid-latitude subsurface ice.
3:15 p.m. Levy J. S. * Head J. W. III Marchant D. R.
*Thermal Contraction Crack Polygons on Mars: Classification, Distribution, and Context for Phoenix from North and South Polar HiRISE Observations* [#1616]
Thermal contraction crack polygon morphology is used to understand the deposition and modification of young, ice-rich mantling units across martian mid-high latitudes and at the Phoenix landing site. Signatures of excess ice and sublimation dominate.

3:30 p.m. Osinski G. R. * Soare R. J. Pearce G.
*Impact Craters in Utopia Planitia, Mars: Windows into an Ice-rich Subsurface* [#1215]
We demonstrate that impacts have occurred into ice-rich periglacial terrains in Utopia Planitia and show that the impact stratigraphy can be used to build up a clearer picture of the geological history of this region of Mars.

3:45 p.m. Soare R. J. * Osinski G. R. Thomson L.
*Perennial mounds in Utopia Planitia: (HiRISE) Evidence of a Glacial Origin* [#1278]
Here, we use HiRISE and high-resolution MOC images to discuss sub-kilometer pingo-like mounds in Utopia Planitia. The mounds show geological characteristics consistent with formation by glacial accumulation, and ablation by sublimation.

4:00 p.m. Séjourné A. * Costard F. Gargani J. Marmo C. Forget F. Madeleine J.-B. Soare R. J.
*Periglacial Processes in Utopia Planitia, Evolution of Scalloped Terrains: New Insights from HiRISE Observations* [#1733]
We produced a geomorphologic study of scalloped terrains and polygonal networks in western Utopia Planitia with HiRISE images and MOLA altimetry.

4:15 p.m. Wood S. E. * Griffiths S. D.
*Mars Subsurface Warming Due to Atmospheric Collapse at Low Obliquity* [#2490]
We present a modeling study of a subsurface warming mechanism that has not previously been considered but is expected to operate during the periodic intervals when Mars’ obliquity was lower than 25°.

4:30 p.m. Clifford S. M. * Heggy E. Boisson J. McGovern P. Max M. D.
We conclude that the present day cryosphere may be up to twice as deep as previously believed, raising questions about the continued survival of subpermafrost groundwater.