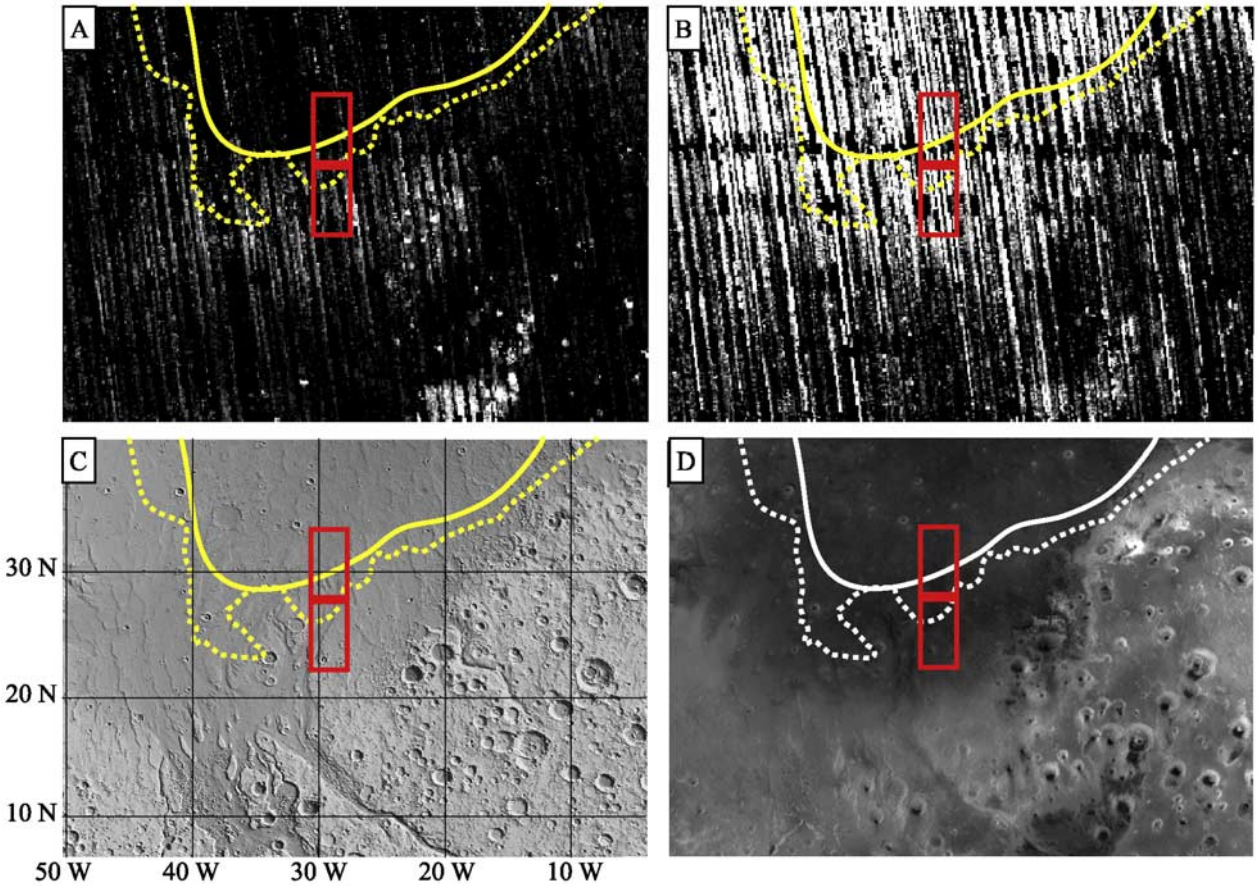

Figure 3. (a and b) TES compositional maps, (c) MOLA shaded relief, and (d) MOC composite image of the surface type 1 and type 2 transition in southern Acidalia Planitia. Surface type 1 (bright pixels in Figure 3a) dominates the southern extent of Acidalia Planitia, while surface type 2 (bright pixels in Figure 3b) extends across nearly all of Acidalia Planitia. MOLA topography shows the transition occurs near the northern lowlands-southern highlands boundary. Red boxes indicate locations of spectra shown in Figure 4.

crater floor and an adjacent dark wind streak that extends southward from the dark material (Figure 1). The Radau Crater composition image (Figure 5b) clearly shows the core of surface type 1 (green) and surrounding arc of surface type 2 (red) in the intracrater low-albedo feature. The Marth Crater composition image shows the surface type 1 core and part of the surface type 2 rim; however, some dark rim material is not covered by TES observations. The thermal inertia map of Marth Crater (Figure 5c) shows higher values for surface type 1 materials ($\sim$400–550 J/m^2 Ks$^{1/2}$) compared to surface type 2 materials ($\sim$300–400 J/m^2 Ks$^{1/2}$). The thermal inertia map of Radau Crater (Figure 5c) partly shows an edge of high thermal inertia material in the low-albedo crater floor, but TES coverage is incomplete. Higher thermal inertias may be interpreted as representing a coarser particle size compared to lower thermal inertias if materials are unconsolidated sediments.

[23] Figure 6 shows a composite MOC image of Radau Crater (southward looking) with superimposed TES composition pixels draped over MOLA topography. The core of surface type 1 and arc of surface type 2 materials on the crater floor and walls are clearly observed. Also shown in Figure 6 is a NA MOC image across the crater floor/wall interface with a schematic cross section of MOLA topography. The location of the NA MOC image on the MOC composite image is shown in the Radau Crater inset. The transition from surface type 1 to surface type 2 compositions occurs near the crater floor/wall interface and is correlated with a transition from low-albedo dune materials to low-moderate albedo dune-free materials. The absence of dunes in wall materials, and lower measured thermal inertias, may be interpreted as representing finer particle sizes compared to the higher thermal inertia dune material on crater floors.

[24] Figure 7 shows average TES surface spectra for materials within the low-albedo Radau impact crater floor and the slope of crater walls compared to surface type 1 and 2 spectral end-members from *Bandfield et al.* [2000b], which are offset by 0.02 emissivity. Within the impact crater floors, surface components contain a broad, flat absorption between $\sim$800 and 1000 cm^{-1} and absorption through $\sim$200–500 cm^{-1}, very similar to the surface type 1 end-member. Along the impact crater walls, the surface components contain a V-shaped absorption between $\sim$800 and 1000 cm^{-1}, similar to the surface type 2 end-member. Linear deconvolution of crater floor and wall spectra using