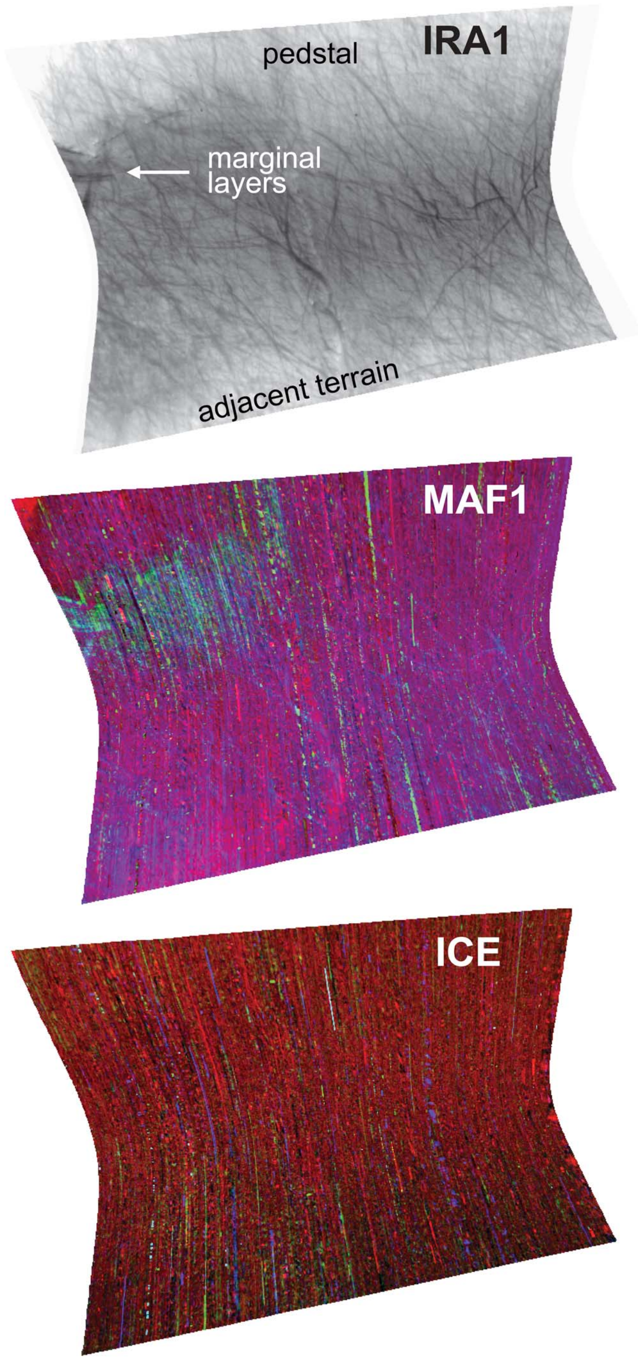

Figure 16. CRISM product FRT0001461F_07_IF163S, centered approximately at 66.4°S and 60.3°E, showing a section of the margin of the large Malea pedestal in Figure 4. A minor partial exposure of pedestal layers is seen in the upper left of the frame. From the top to bottom, derived spectral products correspond to IR surface brightness (IRA1), mafic mineralogy (MAF1), and water and CO_2 ice (ICE1A). A trace of mafic mineralogy is seen at the layering, while no ice signature is observed.

in ice tends to decrease over time due to compaction under the weight of the overburden [e.g., *Arthern et al.*, 2000] and a porous matrix would likely be more susceptible to deflation (for example, see the summary of *Augustinus* [1991]). Another alternative is that this portion of the pedestal is dominated by a very porous silicate matrix, but this probably suffers from increased susceptibility to deflation. More likely perhaps is the breakdown of our assumption that the subsurface reflector corresponds to the interface between the pedestal material and the surrounding surface. It is possible that the subsurface reflector seen on the left side of the radargram in Figure 5 is due to an interface other than the surrounding surface. If the subsurface reflection in question were to be produced in an interface higher than the base of the pedestal (as in one of the internal layers), then it would require a lower value of ε to bring it to the same level as the surrounding terrain in a depth-corrected radargram (such as what is observed). It is not clear, however, why an internal layer would produce a strong reflection at this location only. In contrast, a pedestal basal interface deeper than the surrounding terrain would necessitate a higher value of ε, which is not the case. Finally, there is the possibility of basal relief that pushes the interface to a level higher than the surroundings, which may be the more likely scenario.

[35] The large pedestal in Parva Planum (LPP) is notably different from the large pedestals in Malea, not only in the absence of a subsurface radar signature, but also in its morphology. Its marginal scarps are very steep and mostly covered with what appears to be a fine-grained debris blanket different from the mantling described in the previous cases. There are no indications of layering at the margins. The only layering observed is on the western surface of the pedestal and deep within the bowl of the central crater. This layering appears to be associated with the material blanketing the surface of the pedestal, which is very smooth and gently undulating, and shows fine fracturing at HiRISE scales. Reasons why a basal reflection is not present in this case can range from a lack of substantial dielectric contrast between the pedestal and the underlying surface, to the pedestal material being much lossier due to higher electric conductivity (as in the case of mafic composition indicated by CRISM at one of the Malea pedestals) or to volume scattering. Given that the pedestal is the thickest of all of the ones examined (>500 m), path losses are likely to be greater here even if the material composing the pedestal were similar to the large pedestals of Malea Planum. However, the Dorsa Argentea Formation, which stratigraphically underlies LPP, is thought to be ice-rich [e.g., *Head and Pratt*, 2001]. If so, the dielectric contrast could perhaps be negligible with respect to ice-rich pedestal deposits. A combination of these two factors may explain the lack of observed subsurface reflections at LPP.

[36] The large pedestal doublet in Acidalia Planitia is very sparsely imaged at high resolution, and we were not able to examine its entire perimeter. Based on a single CTX frame, there are no indications of layering exposed at the margins. A few pits, similar to those identified at small pedestals by *Kadish et al.* [2008], are present along small segments of the perimeter, as well as isolated blocks apparently derived from the pedestal due to the loss of material along polygonal cracks. The smaller pedestal to the south of the doublet possesses a comparable morphology.

[37] The small pedestal doublet in Malea Planum, just to the east of Pityusa Patera, seen in Figure 9, appears to in a local depression. To the south and the southeast, the margin of the pedestals are elevated with respect to lowest point in