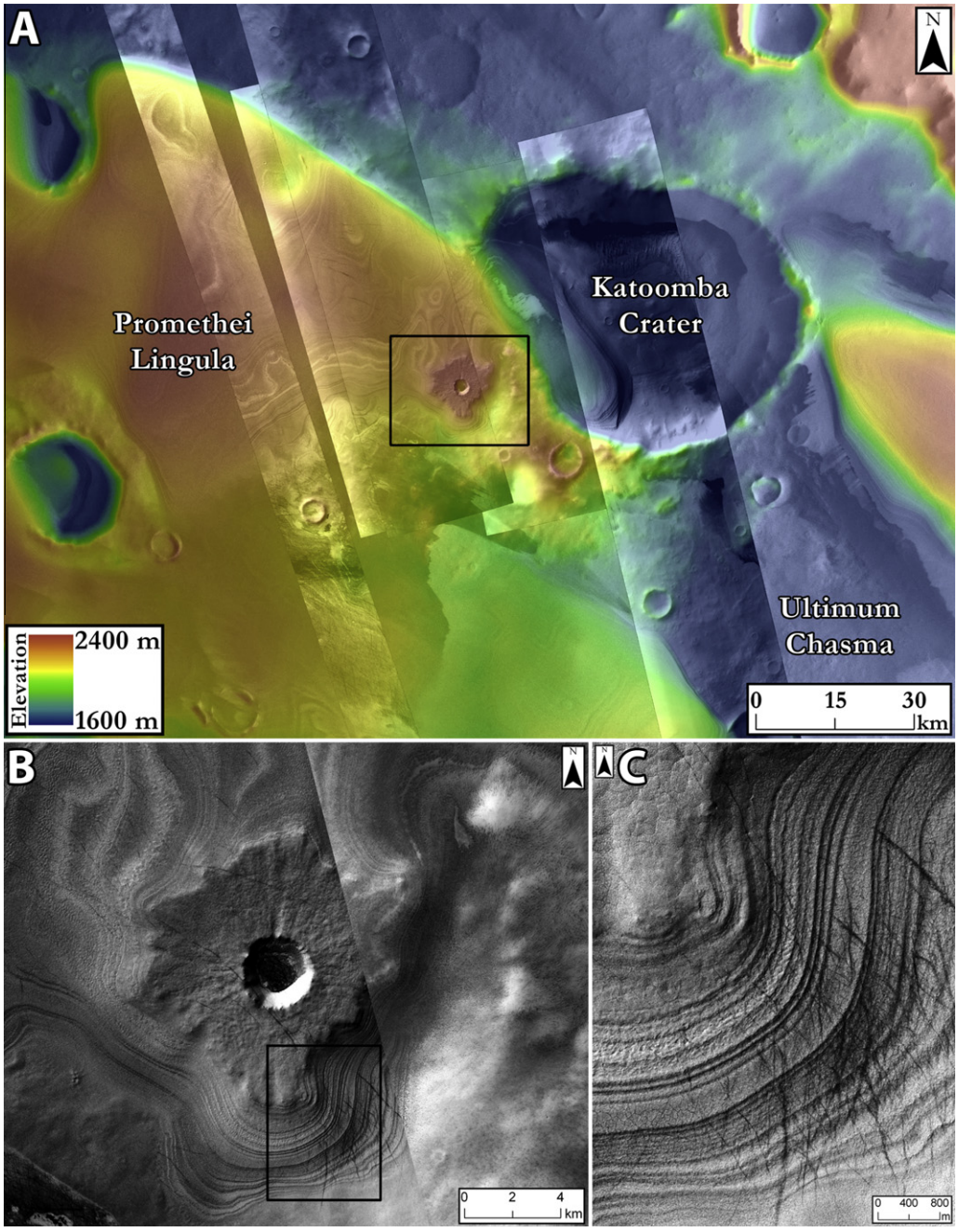

Fig. 4. An example of a Pd that is superposed on the south polar cap (Crater #12 in Table 1). The armored surface is preserving the local SPLD sequence. (A) A CTX and THEMIS mosaic with MOLA topography showing the geologic context of the Pd in the Promethei Lingula region. (B) A CTX mosaic (images B11_013884_1011 and P06_003520_1009) of the Pd. The black box outlines the image in part "C". The layers are particularly clear along the south-facing section of the marginal scarp, where they closely mimic the curvature of the pedestal perimeter. (C) An enlarged view of the layers, showing that the pedestal is responsible for preserving the ice-rich SPLD.

of a given image. It should also be noted that layers that appear to have distinct albedos may be the result of preferred sediment/dust deposition where the local slopes are shallower. The layers in most pedestals, however, are expressed both by albedo and topography. Layers are often continuous around the entire perimeter of the pedestal, although some are interrupted by material overlying the scarp (Fig. 3), and may disappear for several kilometers. The number of layers in a pedestal can range from three (e.g. Fig. 1a) to more than 30 (Fig. 4), with the thicknesses varying from layer to layer by as much as twenty meters as measured from Mars Orbiter Laser Altimeter (MOLA) shot data and HRSC high-resolution DTMs. MOLA gridded data are not of sufficient resolution to distinguish the thicknesses of individual layers. As such, we made these measurements by using MOLA shot data and HRSC DTMs in the following manner: (1) oblique intersections between individual MOLA tracks and pedestal scarps were selected to increase the downslope resolution of the data, allowing us to measure the difference between the elevation of adjacent layers, and (2) closely spaced separate MOLA tracks were utilized to measure layer thicknesses directly downslope. This second method confirmed that there was no influence of local slopes on the first method. The HRSC DTMs were then used to confirm the MOLA measurements.

Although our past research strongly supports the interpretation that pedestals are composed of ice-rich material (Kadish et al., 2008, 2009, 2010), efforts to identify directly the structure of the