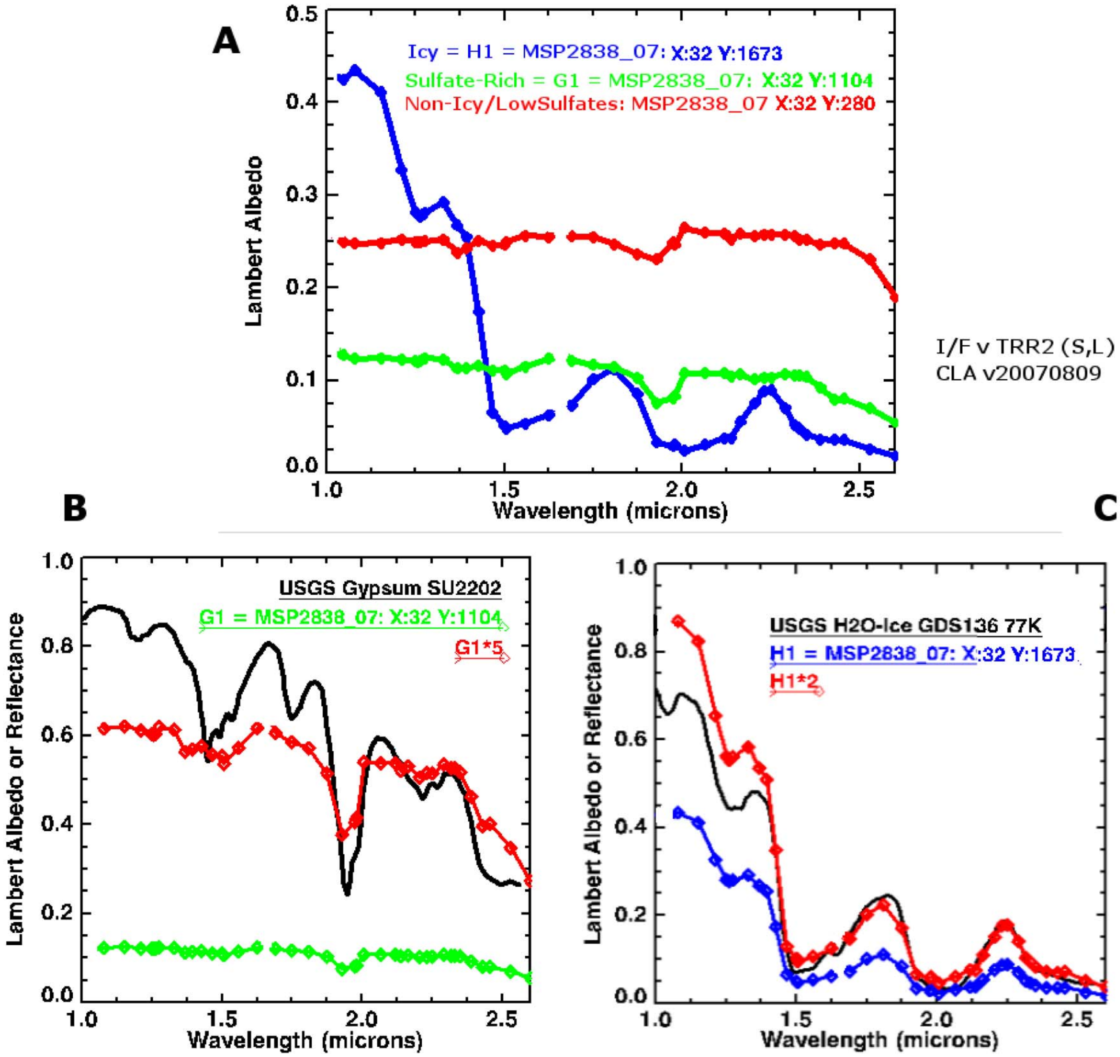

Fig. 6. In (a), three Lambert albedo spectra from CRISM multispectral strip MSP00002838_07. This strip is located near the north pole and crosses the gypsum dunes in Olympia Undae. These Lambert albedo spectra were computed by using the CRISM_LambertAlb software system. In (b), we show the sulfate-rich spectrum from (a), together with a Gypsum spectrum from the USGS library of reflectance spectra of minerals [14]. In (c), we show the ice-rich spectrum from (a), together with a H_2O-ice spectrum from the USGS library of reflectance spectra of minerals. Both (b) and (c) also contain versions of the CRISM spectra that are scaled by multiplying by an arbitrary constant, so that the CRISM spectra can be better compared with the USGS library reflectance spectra. The X and Y values in each subfigure are the locations of the pixel in CRISM multispectral image MSP00002838_07. For clarity, known channels of poor data quality (wavelengths of 1.02, 1.05, and 1.65 μm) have been removed from these spectra.

the surface. Fig. 7 shows this comparison between different atmospheric-correction techniques for bright spectra, and Fig. 8 shows this comparison for icy spectra that are both bright and dark.

Note that the atmospheric correction works well for both techniques in the CO_2 gas bands at 2.0 μm for the bright spectra. However, for the icy spectra which are dark in the broad H_2O ice bands at 1.5, 2.0, and greater than 2.4 μm, the DISORT-based method handles the CO_2 gas-band correction at 2.0 μm much more effectively. This latter deficiency of the Volcano-Scan technique (as currently implemented in CAT 6.0) is due to a combination of the unmodeled interaction of the aerosols at these dark wavelengths and the technique of fitting the banddepth at CO_2 when ices are present on the surface (H_2O and CO_2 ices also have deep bands at 2.0 μm). Also note the more subtle differences between the two atmospheric-correction techniques over the entire spectral range from 1.0 to 2.5 μm in both figures. Again, this is due to the variable aerosols not being accounted for in the Volcano-Scan technique.

C. Comparison of Map Tiles for Tyrrhena Terra

A primary purpose of performing the correction of the CRISM multispectral I/F TRDRs for photometric, atmospheric, and thermal effects is to be able to mosaic or overlay multispectral TRDRs from different orbits under different observing conditions. If this correction was not performed prior to overlaying the different TRDR strips, then the varying observing conditions like different aerosol optical depths, different photometric angles, and different surface temperatures would cause the different TRDR strips, when juxtaposed, to appear wildly different. By performing this correction for different