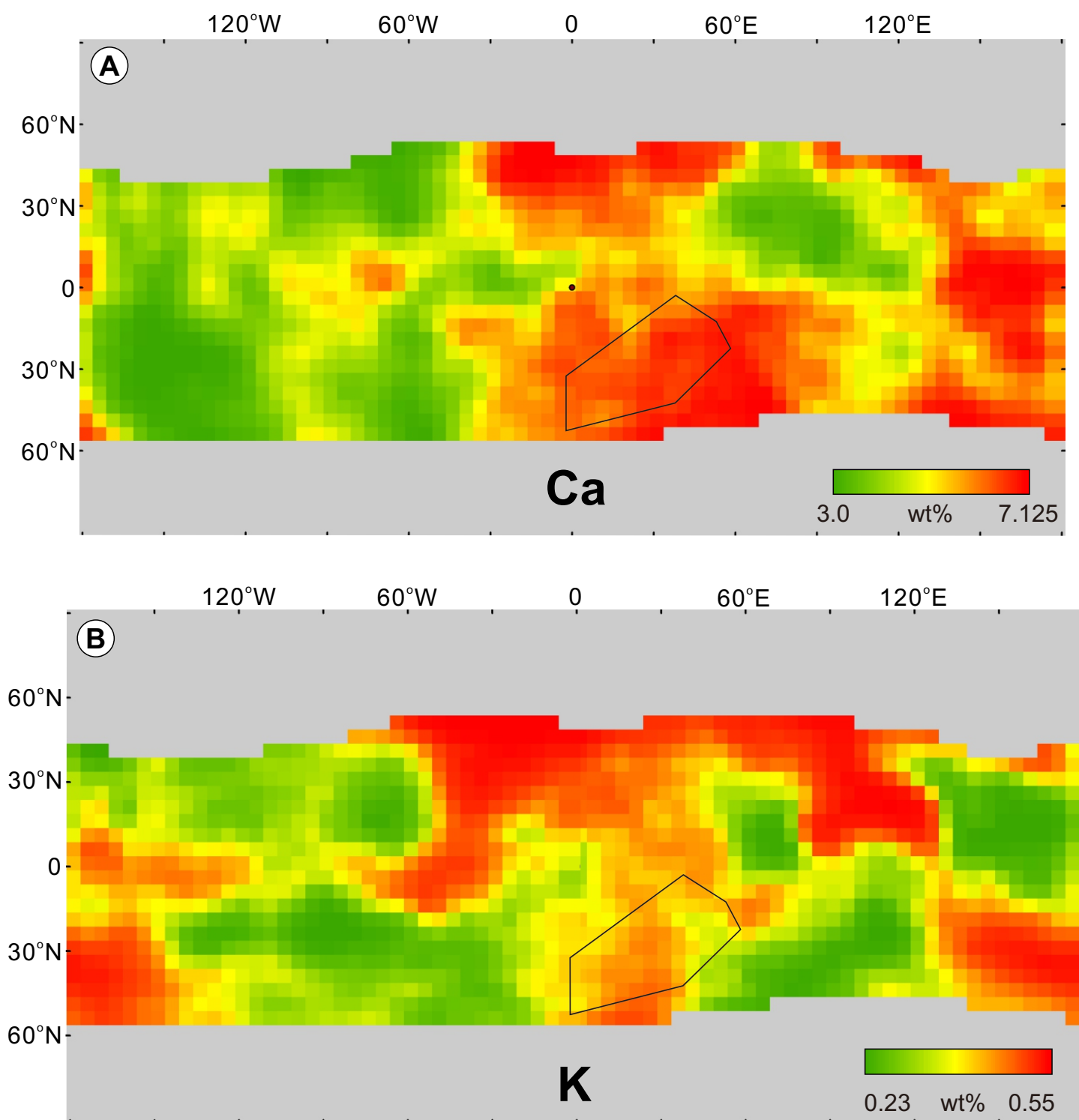
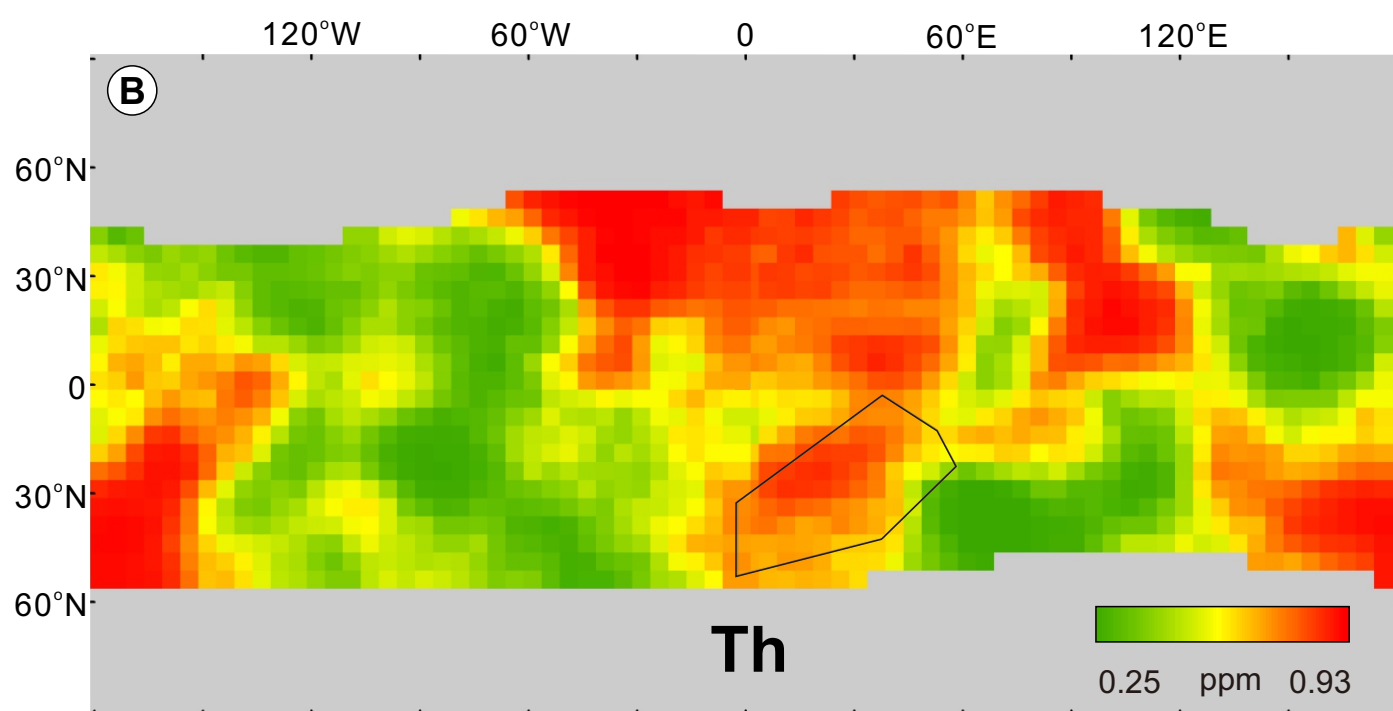
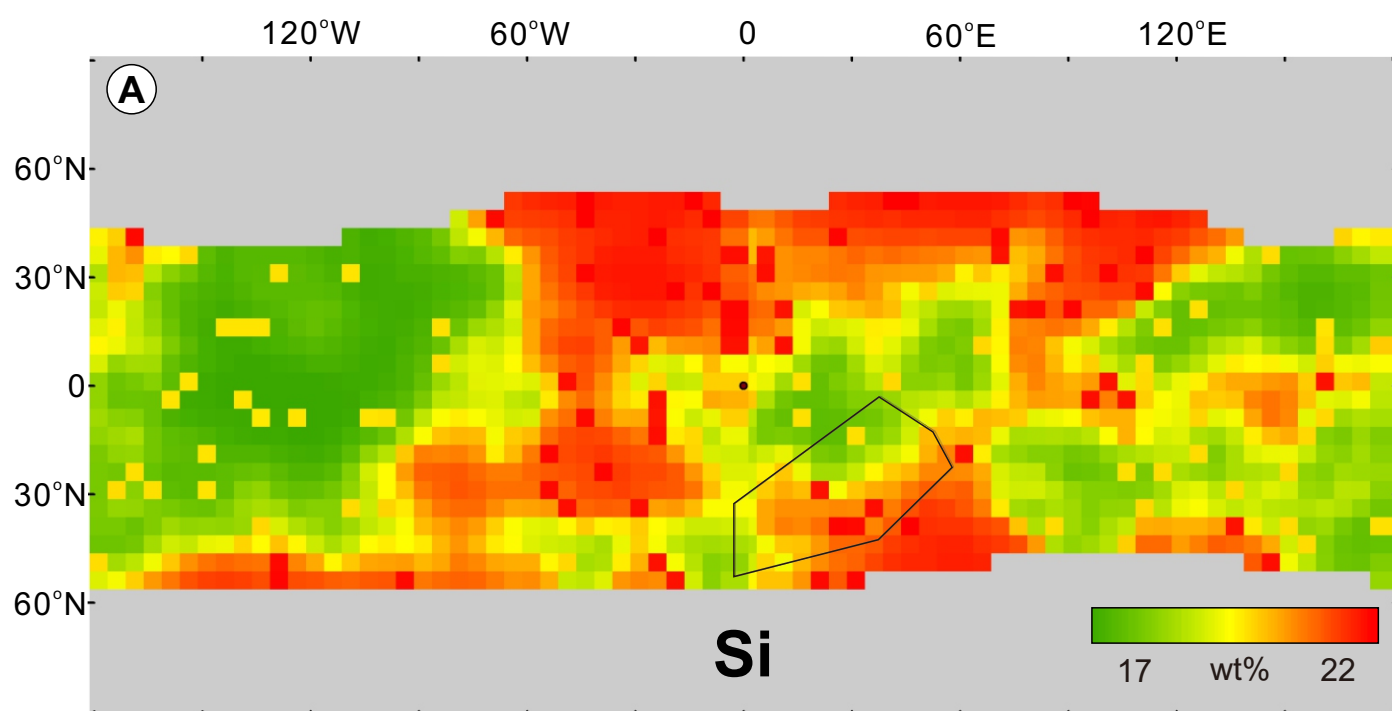


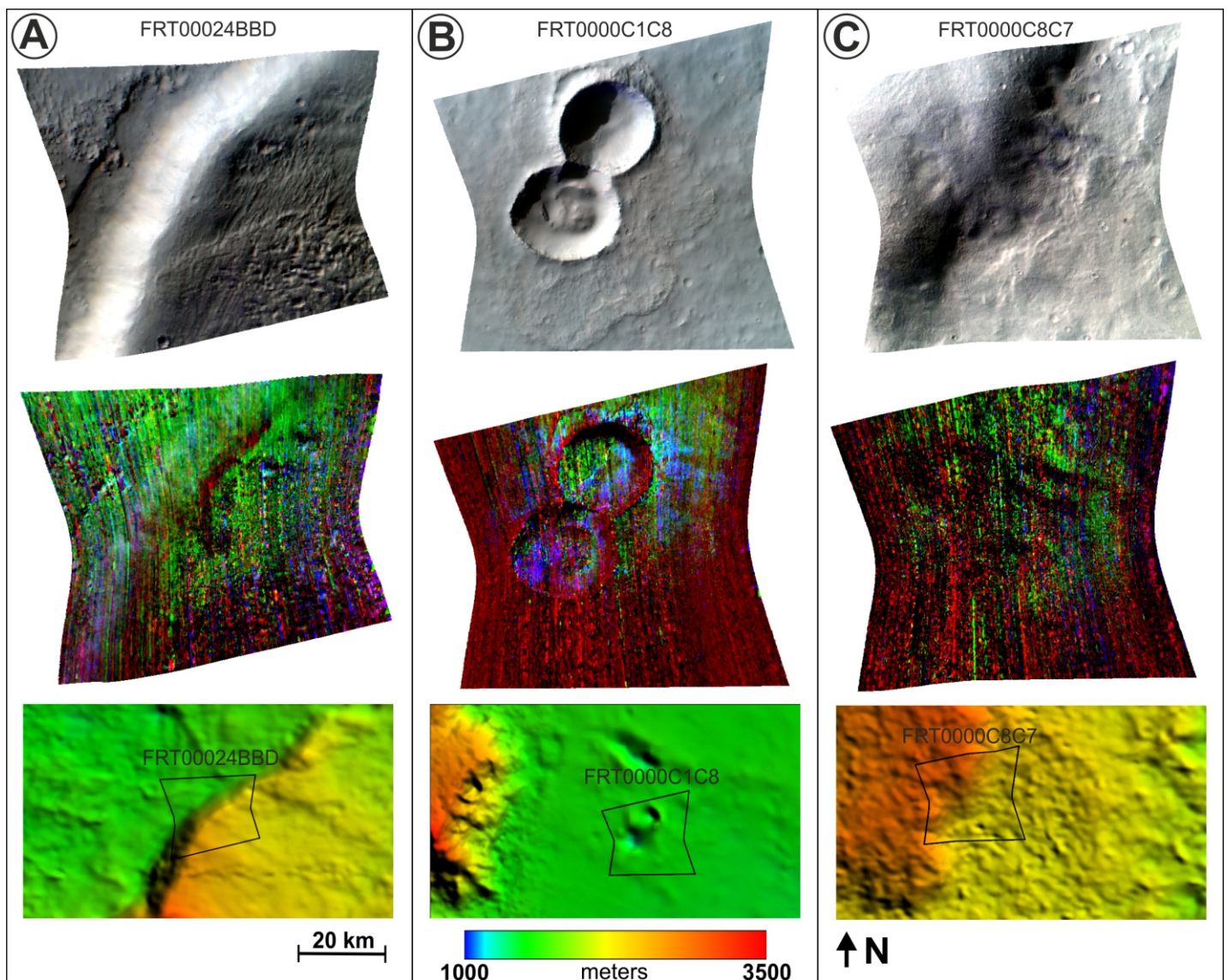
# **Tectonism of Late Noachian Mars: Surface Signatures from the Southern Highlands**



**Figure S1.** Gamma-Ray Spectrometer derived Calcium (Ca) distribution (A), Potassium (K) distribution (B) on global Mars.



**Figure S2.** Gamma-Ray Spectrometer derived Silica (Si) distribution (A), Thorium (Th) distribution (B) on global Mars.



**Figure S3.** Mafic spectral parameter highlights of three sample CRISM observations within the study area. Minerals highlighted are olivine (red), low-calcium pyroxene (green), and high-calcium pyroxene (blue): A) CRISM observation FRT00024BBD. False color composite (top). RGB composite with summary parameters [R=OLINDEX (0.000-0.129), G=LCPINDEX2 (0.000-0.031), B= HCPINDEX2 (0.000-0.025)] (middle). HRSC-MOLA blended DEM showing the nearly 2 km relief of the graben wall (bottom). B) CRISM observation FRT0000C1C8. False color composite (top). RGB composite with summary parameters [R=OLINDEX (0.000-0.109), G=LCPINDEX2 (0.000-0.019), B= HCPINDEX2 (0.000-0.005)] (middle). HRSC/MOLA blended DEM showing the observation's position on the graben floor (bottom). C) CRISM observation FRT0000C8C7. False color composite (top). RGB composite with summary parameters [R=OLINDEX (0.000-0.081), G=LCPINDEX2 (0.000-0.018), B= HCPINDEX2 (0.000-0.020)] (middle). HRSC-MOLA blended DEM of the southernmost section of the study area where the observation partially covers a south facing graben wall.