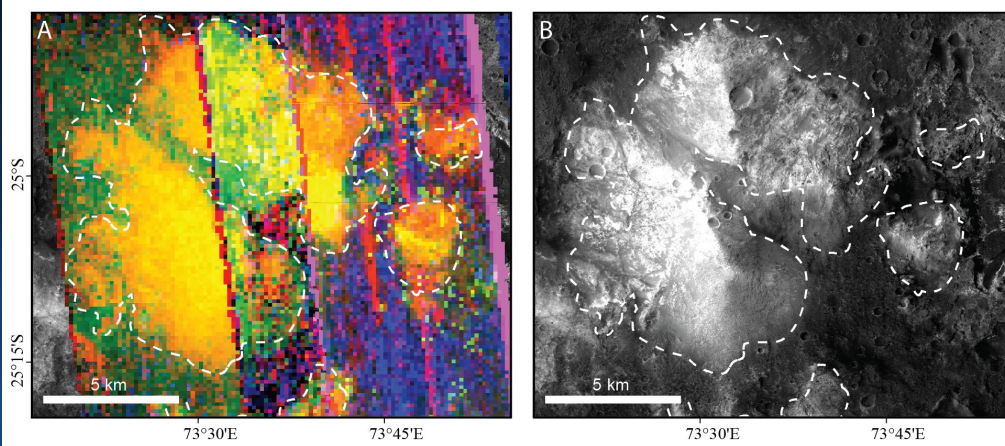


Ancient North Hellas Massifs Are Chock-Full of Feldspar

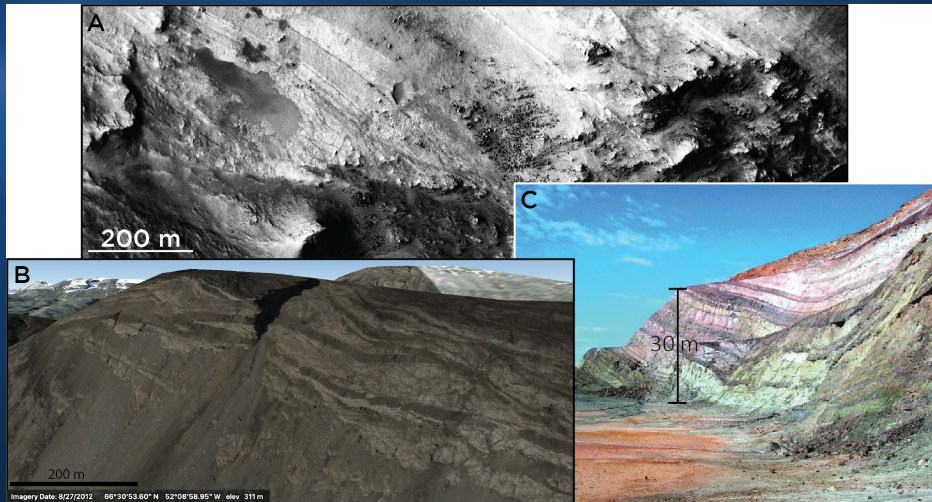
Plagioclase-bearing massif, north Hellas Mars



Plagioclase-rich block of uplifted crust in CRISM false color composite (A, yellow=plagioclase) and 5 m/pixel CTX (B).

We discovered nearly 100 feldspathic outcrops in >4.1 billion-year-old rocks north of Hellas basin, Mars. These lithic windows into ancient crust-forming processes complement recent results from the Insight lander and inform interpretations of magma ocean modeling.

- The composition of Mars' most ancient crust is relatively unconstrained.
- Mountainous blocks of crust were uplifted ~4.1 billion years ago by the Hellas impact from at least 8-km depth, providing a window into the ancient crust.
- We analyzed many ancient crustal exposures and found a surprising quantity of plagioclase feldspar.
- These outcrops may represent anorthositic members of a layered mafic intrusion in the primary crust of Mars.



Comparison between Mars (A), and layered mafic intrusions on Earth (B, Greenland; C, Australia)