

# Threshold For Sand Motion on Mars Determined With HiRISE Images

**Old View:** The wind strength required to move sand on Mars was highly uncertain

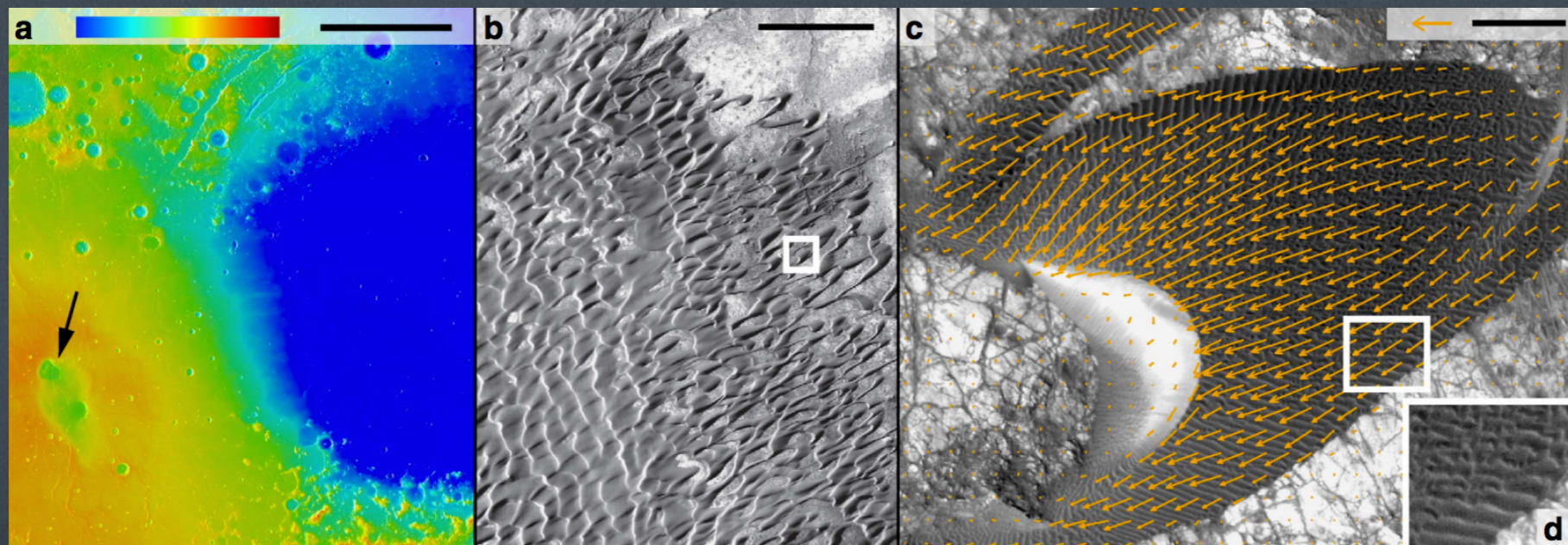
**New View:** HiRISE measurements show that dune sand flux, and therefore wind strength, varies seasonally. Tying these measurements to general circulation models shows that the wind strengths needed to move the sand are about 10% of previous estimates based on wind tunnel data\*.

**Why:** The average flux of sand is driven by both higher wind speeds from gusts needed to initiate motion, and lower speeds necessary to maintain it. At scales of several kilometers seen from HiRISE, this “effective” threshold for motion is a mixture of these two components.

**Implication:** This measured value provides a calibrated input into climate models where detailed observational data are lacking, allowing the accurate prediction of sand fluxes across the planet.

**Future work:** Continued monitoring by MRO/HiRISE will refine these estimates for Nili Patera and other regions on the planet.

Location of the study area in the Nili Patera dune field, Mars (8°N, 293°E)



\*<http://www.nature.com/ncomms/2014/140930/ncomms6096/pdf/ncomms6096.pdf>