

# Winds drive dune movement on Mars

November 16 2011

---



Mars, as seen by the Hubble Space Telescope. Image credit: NASA

Sand dunes, a common feature on the surface of Mars, can provide a record of recent and past changes. Some dunes near Mars' polar areas have been observed to move recently due to carbon dioxide ice sublimation, but it has not been confirmed whether dunes are still active all over Mars. Winds contribute to dune movement on Earth, but wind tunnel and atmospheric computer simulations have suggested that strong winds would be rare in the current Martian atmosphere.

In a new study, Silvestro et al. observe recent dune movement in Mars' tropical regions, which are not affected by seasonal changes in carbon dioxide frost.

Focusing on the Arabia Terra and Meridiani region on Mars, the researchers analyze images from the High Resolution Science Experiment (HiRISE) camera onboard the Mars Reconnaissance Orbiter

as well as other sources of data. They measure migration rates of two groups of ripples in the sand in a dune field in Meridiani Planum and find that [dunes](#) advanced about 0.4 - 1 meter (1.31-3.28 feet) in a Martian year.

The study shows clear evidence that wind-driven dune activity occurs regularly on Mars today. This suggests that carbon dioxide ice sublimation is not necessary for Martian sand movement, as had previously been thought, and that [wind](#) tunnel measurements and computer simulations showing that strong winds are rare on [Mars](#) need to be reconsidered.

**More information:** "Active aeolian processes on Mars: A regional study in Arabia and Meridiani Terrae", *Geophysical Research Letters*, 2011. [doi:10.1029/2011GL048955](https://doi.org/10.1029/2011GL048955)

Provided by American Geophysical Union

Citation: Winds drive dune movement on Mars (2011, November 16) retrieved 22 March 2023 from <https://phys.org/news/2011-11-dune-movement-mars.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--