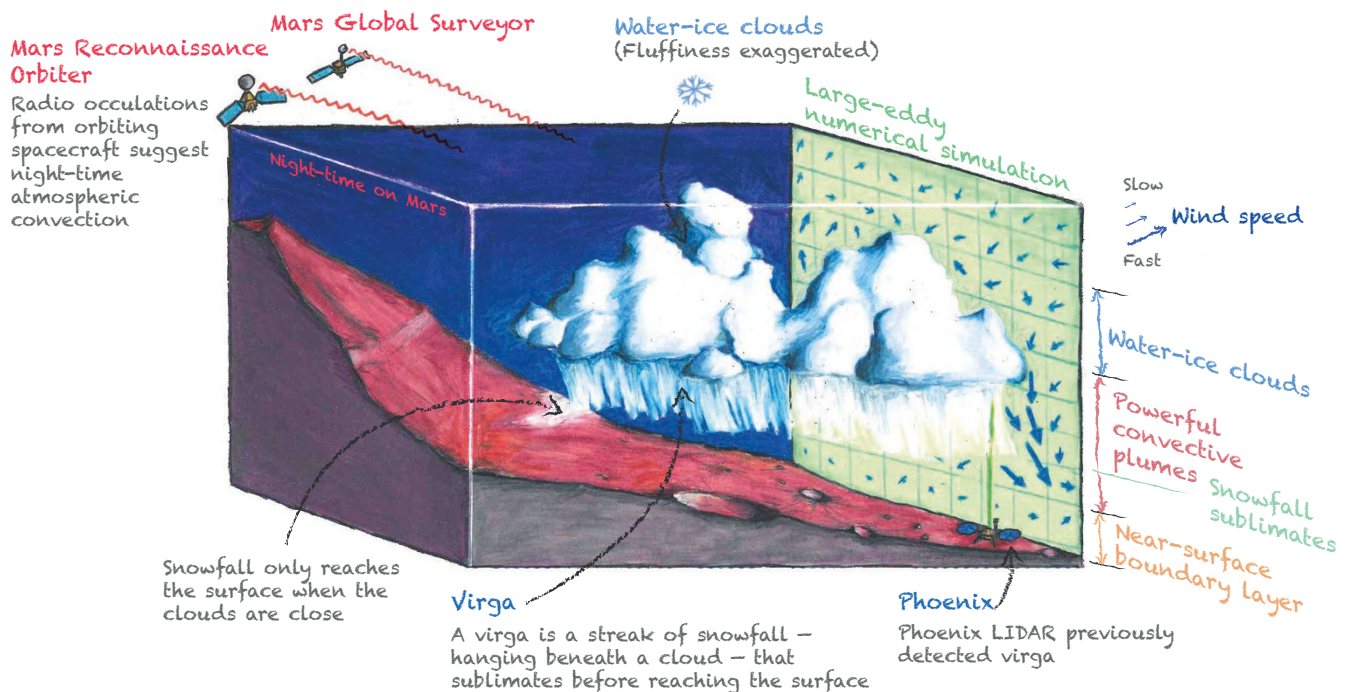


SKETCH-UP

Snowstorms on Mars

Nat. Geosci. <http://dx.doi.org/10.1038/ngeo3008> (2017)

The Martian atmosphere has water-ice clouds, and water ice has been detected on the surface. It has been thought that snow on Mars would fall by slow gentle sedimentation of individual ice particles. Instead, Spiga and colleagues use high-resolution weather models to show that convective plumes can form in and below clouds during the cold Martian nights, producing powerful snowstorms.

Sketch by James Tuttle Keane
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DEEP MANTLE

Enriched carbon source detected

Estimates of carbon in the deep mantle vary by more than an order of magnitude. Coupled volcanic CO₂ emission data and magma supply rates reveal a carbon-rich mantle plume source region beneath Hawai'i with 40% more carbon than previous estimates.

Peter H. Barry

Over geologic timescales, the deep carbon cycle transports carbon from the mantle to Earth's surface via volcanism and back into the interior

through subduction. This process remains poorly constrained, in contrast to the relatively well-studied near-surface carbon cycle between the atmosphere, oceans and

continents. Carbon concentrations in the deepest portions of the mantle — those regions that feed mantle plumes and ocean island basalts — are the most poorly