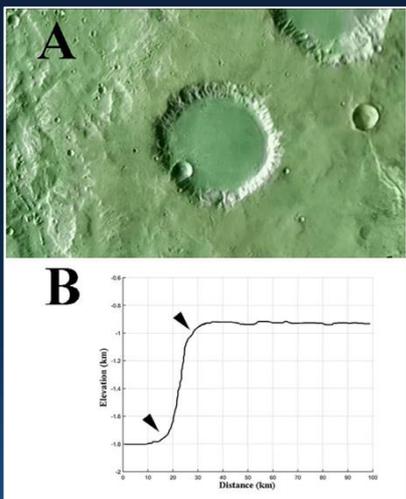


PAST RAIN ON MARS



A) A typical modified impact crater on Mars. B) Topographic cross-section based on (MOLA) data shows features characteristic of rain splash.

Features preserved from different time periods on Mars show distinctly different weathering patterns that, for the first time, have been linked to the changing nature of rainfall as the martian atmosphere waned

- As the surface of Mars preserves vast expanses of terrain from the earliest parts of its history, features such as modified impact craters, valley networks and fluvial sedimentary deposits have been preserved for more than four billion years in some places. These features show definitive modification by water, but in different ways for features of different ages.
- Data from Mars Orbiter Laser Altimetry (MOLA) combined with models that take into account the effects of rainfall and erosion that could take place during a storm, were used to understand how different atmospheric pressures could effect the weathering of features on Mars' surface.

- The analyses indicated that at the start of the period when raindrops were able to change the topography, the martian atmosphere would have been between 3-4 bars (at this pressure and martian gravity, similar to drizzles or light rain on Earth), with effects intensifying to storm strength as the pressure dropped to 1.5 bars, and then completely ceasing when pressure fell to 0.5 bars (Earth's surface pressure is 1 bar).
- This new record of atmosphere evolution can be used to further tease apart differing lines of evidence and clarify our understanding of the early conditions on Mars.

