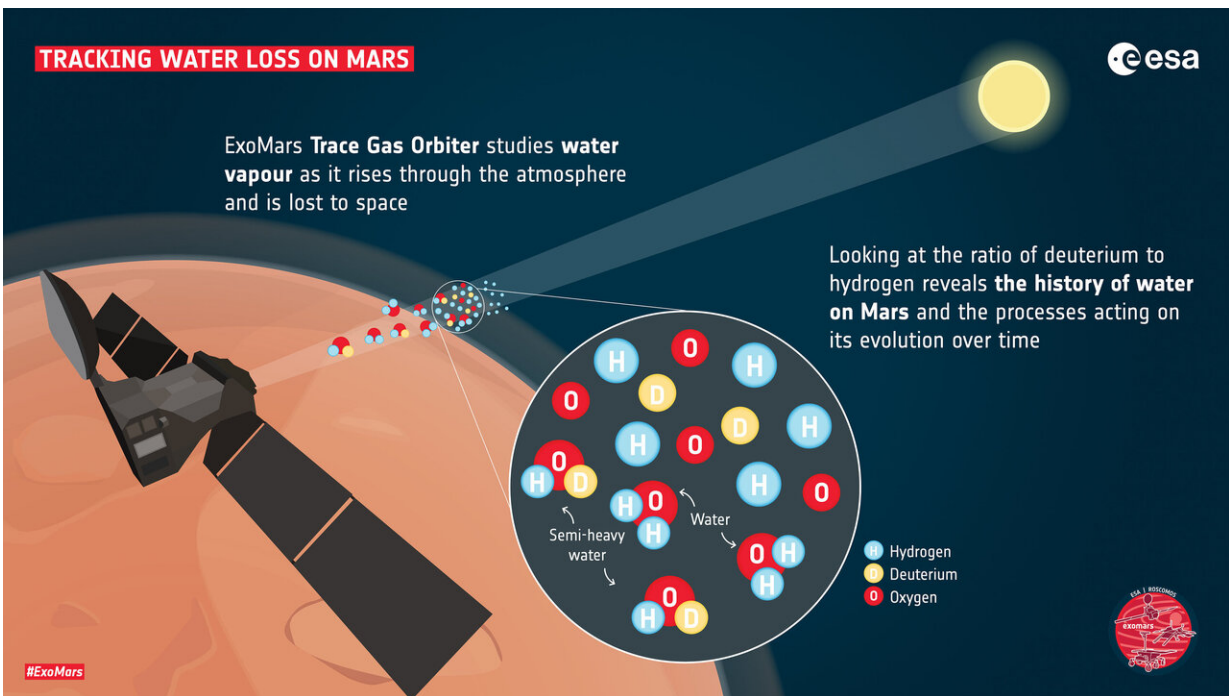


# Scientists detect water vapour emanating from Mars

February 10 2021



The ESA-Roscosmos ExoMars Trace Gas Orbiter studies water vapour and its components as it rises through the atmosphere and out into space. By looking specifically at the ratio of hydrogen to its heavier counterpart deuterium, the evolution of water loss over time can be traced. Credit: (C) ESA

Researchers said Wednesday they had observed water vapour escaping high up in the thin atmosphere of Mars, offering tantalising new clues as to whether the Red Planet could have once hosted life.

The traces of ancient valleys and river channels suggest [liquid water](#) once flowed across the surface of Mars. Today, the water is mostly locked up in the planet's ice caps or buried underground.

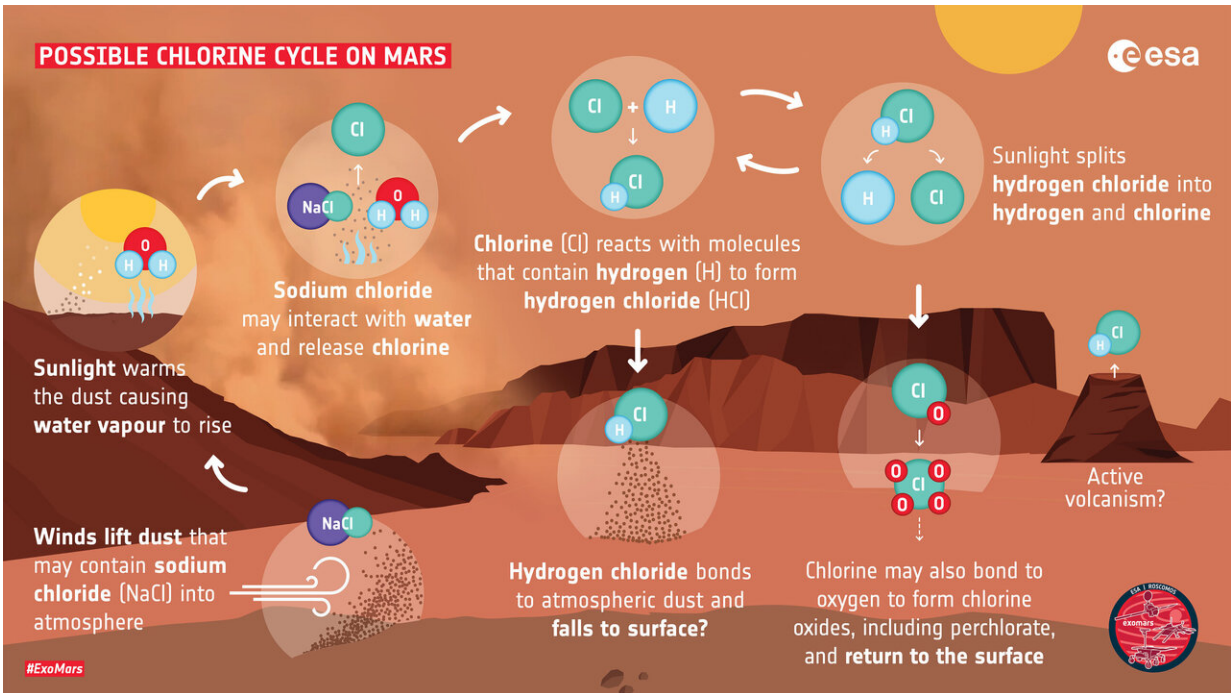
But some of it is vaporising, in the form of hydrogen leaking from the atmosphere, according to the new research co-authored in the journal *Science Advances* by two scientists at Britain's Open University.

They detected the vapour by analysing light passing through the Martian atmosphere using an instrument called the Nadir and Occultation for Mars Discovery.

The device is travelling aboard the ExoMars Trace Gas Orbiter, a joint mission between the European Space Agency and Russia's Roscosmos.

"This fantastic instrument is giving us a never-before-seen view of water isotopes in the atmosphere of Mars as a function of both time and location," Manish Patel, senior lecturer in planetary sciences at the Open University, said.

"Measuring water isotopes is a crucial element of understanding how Mars as a planet has lost its water over time, and therefore how the habitability of the planet has changed throughout its history," he said.



The graphic is simplified to show very broadly one possible way that hydrogen chloride is generated; there are likely additional pathways for the chemical reactions that could also be at play, perhaps with other trace gases that ExoMars hasn't discovered yet. Credit: (C) ESA

It has been a busy week for Martian research.

On Wednesday, the Chinese Tianwen-1 probe entered the planet's orbit after launching from southern China last July, in the latest advance for Beijing's ambitious space programme.

The day before, the United Arab Emirates' "Hope" probe also successfully entered Mars' orbit, making history as the Arab world's first interplanetary mission.

**More information:** Oleg Korablev et al. Transient HCl in the

atmosphere of Mars, *Science Advances* (2021). [DOI: 10.1126/sciadv.abe4386](https://doi.org/10.1126/sciadv.abe4386)

Geronimo L. Villanueva et al. Water heavily fractionated as it ascends on Mars as revealed by ExoMars/NOMAD, *Science Advances* (2021). [DOI: 10.1126/sciadv.abc8843](https://doi.org/10.1126/sciadv.abc8843)

© 2021 AFP

Citation: Scientists detect water vapour emanating from Mars (2021, February 10) retrieved 25 April 2024 from <https://phys.org/news/2021-02-scientists-vapour-emanating-mars.html>

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.