WATER ON MARS – GEOGRAPHY

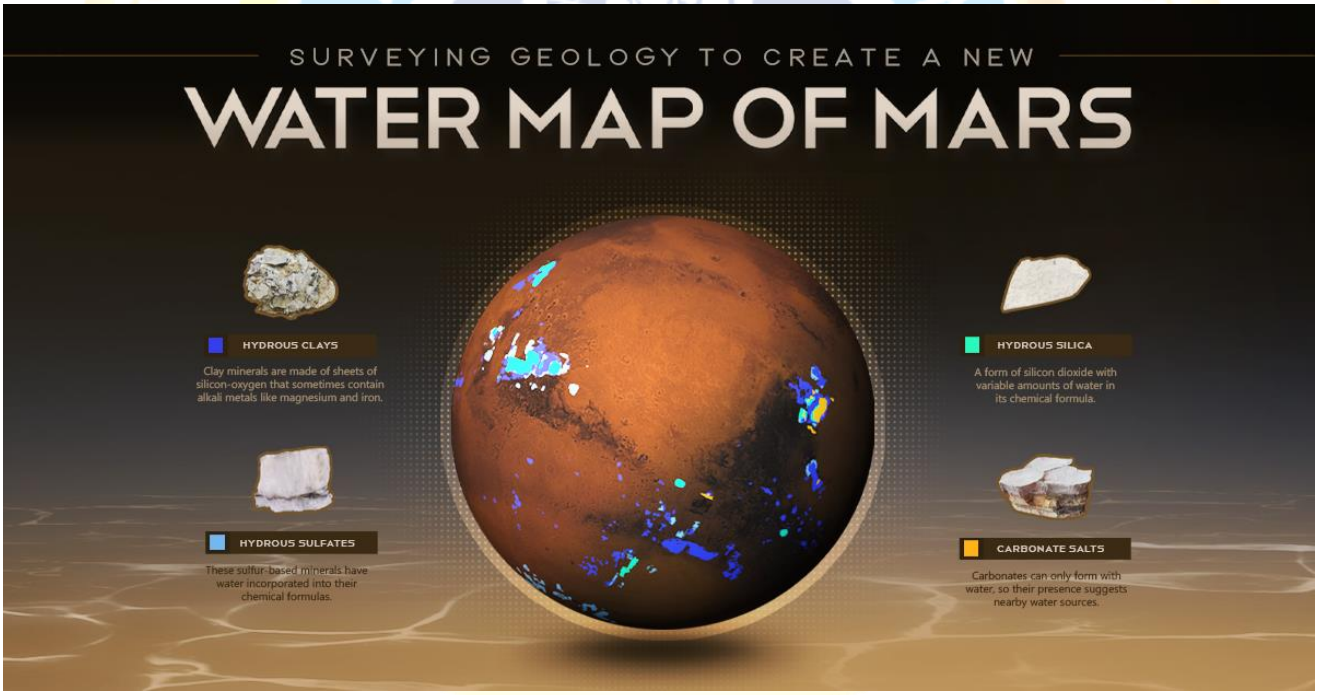
News: *According to a new study, there could be oceans' worth of liquid water deep in the rocky outer crust of Mars. While scientists have known about water ice at the Martian poles for a long time, this is the first time they have discovered liquid water on the planet.*

What's in the news?

- The study**, 'Liquid water in the Martian mid-crust', was published last week in the journal Proceedings of the National Academy of Sciences (PNAS).**
- It was carried out by Vashan Wright, Matthias Morzfeld, and Michael Manga of the University of California San Diego.

Details:

- **Mars, our neighboring planet**, has long intrigued scientists and space enthusiasts alike.
- The recent discovery of liquid water deep beneath its surface marks a significant breakthrough in Martian exploration.
- This finding could reshape our **understanding of Mars' geological and climatic history**, hinting at more complex processes at play than previously thought.



Findings of the Report

The Discovery

- A study has **discovered the presence of oceans'** worth of liquid water trapped deep within Mars' rocky outer crust.
- To reach this conclusion, researchers employed a sophisticated geophysical model, similar to those used on Earth to locate underground aquifers and oil reserves.

- The **data analyzed came from NASA's InSight Lander**, which has been meticulously studying Mars' subsurface.

Methodology

- The researchers utilized seismic data from the **InSight mission.**
- The findings indicate that deep **below Mars' surface lies a layer of fractured igneous rock,** likely granite, with its cracks filled with liquid water.
- This discovery is reflective; if the measurements at the InSight Lander's location are representative of the entire planet, the trapped water could **theoretically fill an ocean 1-2 kilometers deep across Mars.**

Implications

- Firstly, it enriches our understanding of the Martian water cycle, providing clues about the planet's climate evolution.
- The **existence of liquid water raises the tantalizing possibility** of discovering a habitable environment on Mars.
- While it does not confirm life, the presence of liquid water is a key prerequisite for life as we know it.

Historical Context

- Scientists have known about water ice at the Martian poles for decades.
- However, this is the first instance of discovering liquid water, which could transform our approach to future missions.
- This **newfound reservoir of water could support human exploration** and the possibility of establishing a permanent presence on Mars.

Future Research

- Moving forward, scientists aim to explore whether this subsurface water extends across the planet or is localized.
- Additionally, understanding the chemical composition of this water could provide insights into the potential for life and how it has interacted with Mars' geology over time.

Source: https://indianexpress.com/article/explained/explained-sci-tech/liquid-water-mars-9522348/