

InSight Lander to sign off soon

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In news— In a recent tweet, NASA's InSight Mars lander account said that the robot currently on Mars will be signing off soon, ending its nearly four-year-long journey to study the red planet's early evolution.

About InSight Mars Lander-

- **The Interior Exploration using Seismic Investigations, Geodesy and Heat Transport mission** was a robotic lander designed to **study the deep interior of the planet Mars.**
- It was manufactured by Lockheed Martin Space Systems, was managed by NASA's Jet Propulsion Laboratory (JPL), and most of its scientific instruments were built by European agencies.
- The mission was launched on 5 May 2018 aboard an Atlas V-401 launch vehicle and successfully landed at Elysium Planitia on Mars on 26 November 2018.
- **The lander had two main functions—**
 - The first was **to understand how rocky planets formed and evolved,** and study the interior structure and geological processes of Mars through its various layers, such as the core, the mantle and the crust.
 - **Second, InSight was to figure out just how tectonically active Mars is today,** and how often meteorites impact it. This included measuring marsquakes, and more than 1,300 quakes have been detected.
- InSight's objectives were to place a seismometer, called Seismic Experiment for Interior Structure (SEIS), on the surface of Mars to measure seismic activity and provide accurate 3D models of the planet's interior; and measure internal heat transfer using a heat probe called HP3 to

study Mars' early geological evolution.

- This intended to give a new understanding of how the Solar System's terrestrial planets – Mercury, Venus, Earth, Mars – and Earth's Moon form and evolve.

Why is InSight shutting down?

- When InSight landed on Mars in 2018, its solar panels produced around 5,000 watt-hours on each Martian day, or sol. Each Martian day is 40 minutes longer than a day on earth. Now, they're producing roughly 500 watt-hours per sol.
- The reduced power is because the panels' capacity to receive energy naturally reduces over time. There will be more dust in the air that would accumulate on the panels and therefore reduce the sunlight received – and the lander's source of energy. While earlier some of the dust was removed, the mission would need a more powerful dust-cleaning event to reverse this, such as very strong winds.
- Because of the reduced power, NASA announced in May this year that the team would soon put the lander's robotic arm in its resting position (called the "retirement pose").