THE
ATMOSPHERICRESERVOIR
Examining the Atmosphere and Atmospheric Resource Management

GAINING NEW "INSIGHT" ABOUT MARS

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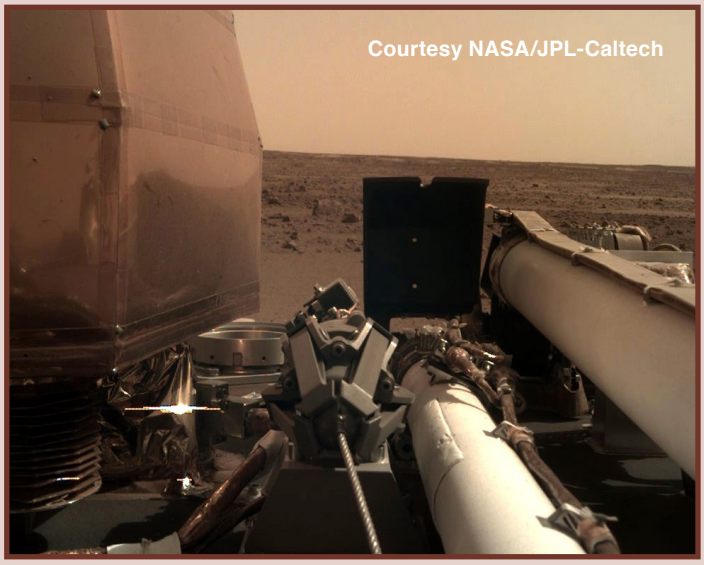
Courtesy NASA/JPL-Caltech

On November 26, after a seven month journey totaling more than 300 million miles, the newest Mars Lander InSight successfully made its 12,300 mile per hour descent through Mars' atmosphere, withstanding temperatures near 3,000 degrees Fahrenheit and touched down gently in the Elysium Planitia (or translated as "flat paradise") region. The acronym InSight stands for Interior Exploration using Seismic Investigations, Geodesy and Heat Transport. Scientists are attempting to gain understanding about the inner composition of the planet. This will hopefully be accomplished with the use of three primary instrument clusters aboard the lander. They include: a seismometer to detect meteorite impacts, movement of magma, and marsquakes; a heat flow probe that will dig down 16 feet below the planet's surface and take Mars' temperature; and specialized antennas that are designed to measure small "wobbles" on Mars revealing the size and composition (whether solid or liquid) of its planetary core.

It's difficult to imagine that this group of instruments will still take months to setup, calibrate and deploy onto the surface of Mars. The NASA Jet Propulsion Laboratory in California actually has a working model of the InSight that serves as the initial "guinea pig" or tester for each movement or operation of the real lander on Mars. Besides the core development of the spacecraft here in America, the European countries of France, Germany, Switzerland, the United Kingdom, Poland, and Spain all contributed to the onboard instruments and technology that will be utilized during this two-year mission.

Something else completely new to this mission was communications and data relay support from two miniature satellites (the size of briefcases) called CubeSats. Given the names MarCO A and B, these CubeSats were able to follow the InSight spacecraft into orbit around Mars, receive data from it during its descent, and then rebroadcast this information to Earth. It would have taken hours for InSight to communicate directly with Earth what these CubeSats provided in minutes from their orbits.

It is still NASA's goal to send a human to Mars and to accomplish this we might first need additional missions to our moon. Mars is hundreds of times further from the Earth (dependent on its orbital distance) than our moon and would thus require significantly more resources. Many scientists believe that establishing a moon base where humans live for long periods of time like on the International Spacestation would be the first step in proving that we're capable of visiting Mars. Large deposits of water have been discovered on the surface of the moon in the form of ice. This water could serve many purposes including sustaining life and providing a source of oxygen and hydrogen for producing rocket fuel.

So, don't be surprised if in the future you hear that the U.S. and other countries are working towards additional manned missions to the moon. That concept may take a rocket scientist to completely understand!

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