



InSight on Mars: Overview and Early Results

Bruce Banerdt (1), Sue Smrekar (1), Don Banfield (2), Ulrich Christensen (3), Bill Folkner (1), Domenico Giardini (4), Matt Golombek (1), Philippe Lognonné (5), Tom Pike (6), Tilman Spohn (7), Jose Antonio Rodriguez-Manfredi (8), Chris Russell (9), and the The InSight Science Team

(1) Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA, (2) Cornell University, Ithaca, NY, USA, (3) Max Planck Institute for Solar System Research, Göttingen, Germany, (4) Eidgenössische Technische Hochschule Zürich, Switzerland, (5) Institut de Physique du Globe de Paris, France, (6) Imperial College, London, UK, (7) DLR Institute of Planetary Research, (8) Centro de Astrobiología, Madrid, Spain, (9) University of California Los Angeles, CA, USA

After a flawless launch and a quiet half-year cruise to Mars, the InSight spacecraft landed safely in Elysium Planitia on 26 November 2018 carrying a scientific payload focused on the exploration of the deep interior of the planet. The three core experiments are SEIS (Seismic Experiment for Interior Structure), a six-sensor, broad-band seismic instrument to detect global seismic/impact activity and use it to probe planetary structure; HP³ (Heat flow and Physical Properties Package) for measuring the ground temperature/gradient, thermal conductivity and mechanical penetrability from the surface to 5 m depth; and RISE (Rotation and Interior Structure Experiment), a geodetic planetary rotation investigation using sub-decimeter-scale precision tracking. These are augmented by APSS (Auxiliary Payload Sensor Suite), an environmental sensor suite comprising a pair of wind and air temperature sensors (TWINS, Temperature and Winds for INSight), a pressure sensor (PS) and a magnetometer (IFG, InSight FluxGate); and an Instrument Deployment System (IDS), including a robotic arm, a mid-resolution color camera (IDC, Instrument Deployment Camera) and a wide-angle color camera (ICC, Instrument Context Camera), all of which additionally support geological investigations of the lander's surroundings.

The landing site turns out to be remarkably well-suited for the deployment of SEIS and HP³, and at the time of this writing (January 2019) SEIS is on the ground with all sensors operating as designed and HP³ deployment is expected within weeks. All of the other instruments have been successfully commissioned and are returning science data. In this presentation we will discuss current mission status along with key scientific results from the first few months of Mars surface operations.