Press Release

7 December 2018 **PR200-2018**

France-United States space cooperation
French science instrument on InSight
'hears' sound of Martian winds for the first time

Teams at the Jet Propulsion Laboratory (JPL) in Pasadena, California, have begun checking out InSight on Mars after the excitement and tension of its successful landing on Monday 26 November. These operations have revealed what wind sounds like on Mars—a world first—thanks to recordings by two instruments on the lander, one of them the French SEIS seismometer.

During initial functional testing of InSight on Saturday 1 December, surface winds were estimated to be blowing at between 5 and 7 km/h from the direction of dust devil streaks seen in the landing area. This estimation was confirmed by vibrations captured by two highly sensitive sensors on InSight: an atmospheric pressure sensor inside the lander and the French SEIS seismometer, currently on the deck of the lander awaiting deployment on the surface of Mars by InSight's robotic arm. These recordings have revealed the very first 'sounds' of winds blowing on the red planet.

The two instruments recorded the wind noise in different ways. The air pressure sensor, part of the Auxiliary Payload Sensor Subsystem (APSS), which will collect meteorological data, recorded these air vibrations directly. The SEIS seismometer's high-frequency sensors, developed in the United Kingdom, recorded lander vibrations caused by the wind moving over the spacecraft's solar panels, which are each 2.2 metres in diameter and stick out from the sides of the lander like a giant pair of ears.

The mission team still plans to deploy SEIS[1] on the surface of Mars around Christmas time, after successfully completing tests on Friday 30 November. SEIS operations are being conducted by CNES with its European partners. Research scientists and engineers from the IPGP global physics institute in Paris, the ISAE-Supaero aeronautics and space institute and CNRS (the LPGN planetology and geodynamics laboratory in Nantes and the LMD dynamic meteorology research laboratory) make up the rest of the French team at JPL that will be analysing the first data from SEIS and weather sensors to help select the site where SEIS will be deployed.

"This recording of vibrations by InSight, caused by winds on Mars, shows just how sensitive our SEIS instrument is to movements. Of course, we haven't listened inside Mars yet but just to the movements of its atmosphere, and we're really excited to be involved in this world first!" said Philippe Laudet, SEIS Project Leader at CNES.

Philippe Lognonné, SEIS Principal Investigator at IPGP and Paris Diderot University, added: "This noise is completely unrelated to the seismic noise of the lander that we'll be characterizing in the days ahead to choose the quietest spot to deploy SEIS on the surface."

Sounds available here :
https://spacegate.cnes.fr/fr/insight-historique-seis-enregistre-le-bruit-du-vent-sur-mars

1 Supplied by CNES as prime contractor and IPGP as science lead, working in collaboration with teams at CNRS, Sodern, JPL, the Swiss Federal Institute of Technology (ETH Zurich) and the Max Planck Institute for Solar System Research (MPS, Göttingen, Germany), and at Imperial College London and Oxford University, which supplied subsystems for SEIS.

CONTACTS

Pascale Bresson	Press Officer	Tel: +33 (0)1 44 76 75 39	pascale.bresson@cnes.fr
Raphaël Sart	Press Officer	Tel: +33 (0)1 44 76 74 51	raphael.sart@cnes.fr
Sébastien Martignac	Press Officer	Tel. +33 (0)1 44 76 78 35	sebastien.martignac@cnes.fr

presse.cnes.fr