

InSight

COMET Opérations et Exploitations des Missions Spatiales

Retour d'expérience des opérations de l'instrument SEIS
sur la mission INSIGHT

This document has been reviewed and determined not to contain export-controlled data





Lancement de la mission
InSight le 5 Mai 2018

A son bord le sismomètre
français SEIS, le plus
performant jamais développé
pour une mission spatiale



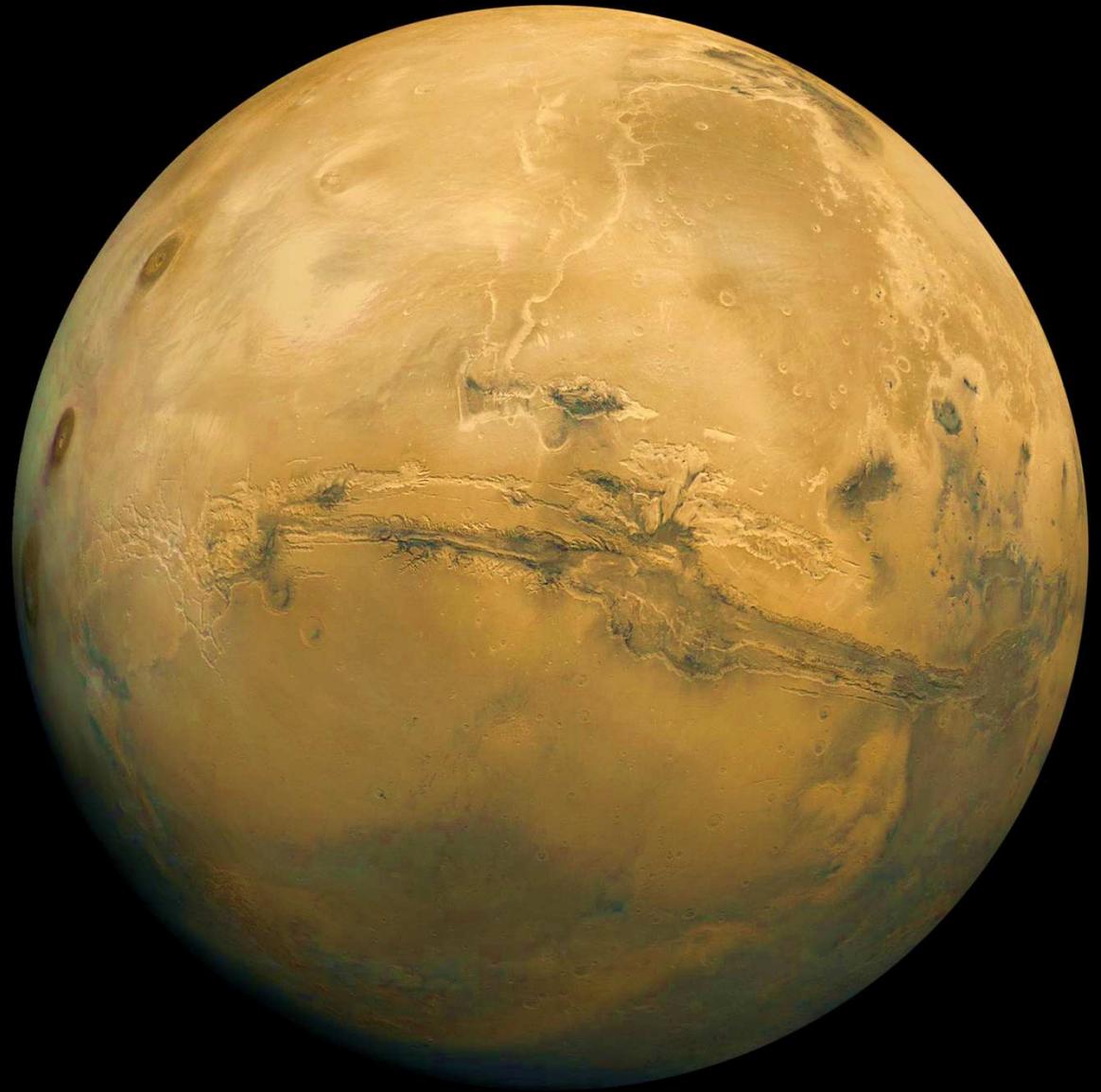
Pourquoi Mars?

La Terre et Mars se sont formées en même temps, il y a ~4.5BY

Mais les deux planètes ont évolué très différemment:

- Mars a perdu presque toute son atmosphère et son champ magnétique
- La vie est apparue sur Terre
- Que se passe-t'il à l'intérieur de Mars?

Etudier Mars permet de mieux connaître et comprendre la Terre



NASA at Mars

The space agency has steadily developed an impressive entourage either orbiting or roaming the Martian surface

Mars Global Surveyor

This satellite spent over nine years imaging and mapping the entire globe's atmosphere and surface before NASA lost contact with it on 2 November 2006.

Mariner 9

Launched on 30 May 1971, Mariner 9 became the first spacecraft to orbit another planet. It mapped 85 per cent of the Martian surface and also collected valuable atmospheric information.

Phoenix

The lander of which InSight uses the same design. Phoenix landed on Mars on 25 May 2008 and lasted 157 sols. It included an array of instruments conducting different tasks on the surface of Mars.

Viking program

In 1975, NASA launched two sets of orbiters and landers known as Viking 1 & 2. The landers would study the planet from the surface while the orbiter imaged it from above.

Spirit

The fallen sibling of Opportunity, this rover spent 2,210 sols in operation, searching for evidence of water on Mars before getting stuck and falling silent.

MAVEN

The Mars Atmosphere and Volatile Evolution (MAVEN) mission continues to determine how the loss of volatiles from the Martian atmosphere have affected the planet's evolution.

InSight

InSight can now join this prestigious crew at Mars, performing tasks like none that have come before it. Its ability to look underneath the surface is truly exciting and unique.

Mars Reconnaissance Orbiter (MRO)

This popular orbiter has been very useful in recent times at producing good-quality images of Mars' surface using its HiRISE camera. The InSight team hope its lander can collaborate with the MRO during its mission.

Mars Odyssey

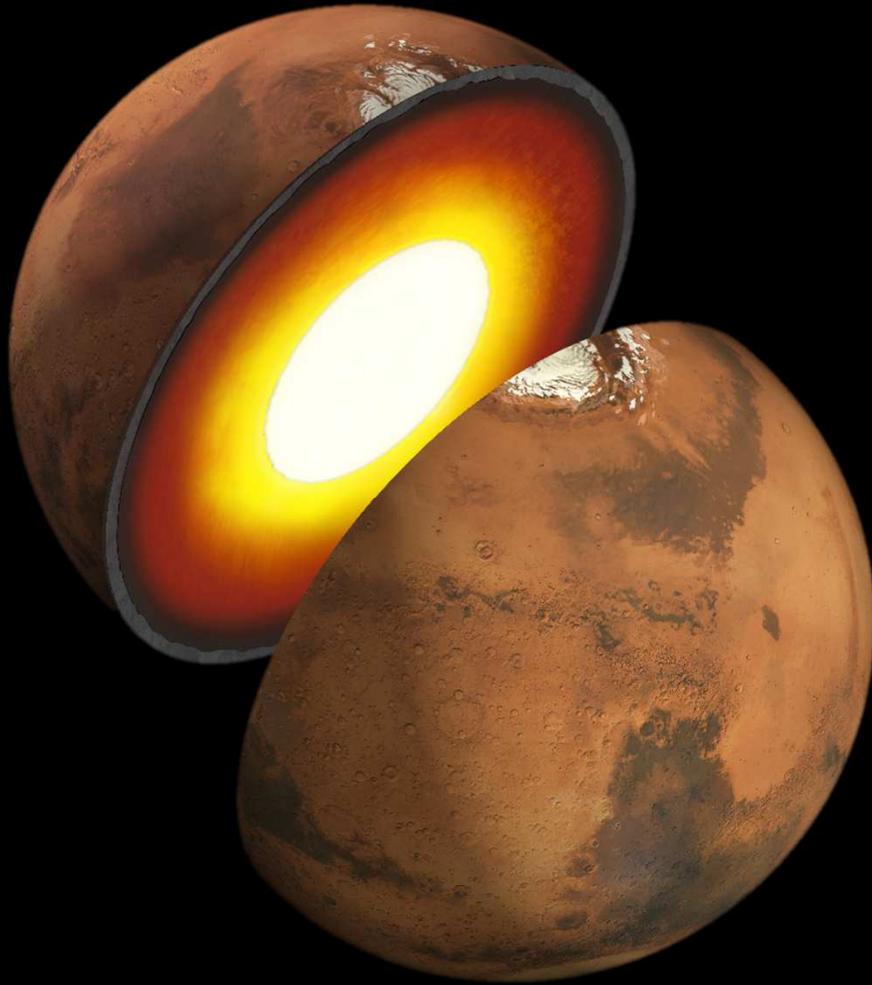
Launched on 7 April 2001, NASA's Mars Odyssey is the longest-serving spacecraft on Mars. Until its predicted demise in 2025, Odyssey images Mars' surface while providing a communication relay between Earth and other surface spacecraft.

Opportunity

Spirit's surviving sibling Opportunity has been travelling across Mars since 25 January 2004, and clocking up an amazing odometer reading of over 45 kilometres (28 miles).

Curiosity

Curiosity is a car-size rover carrying multiple instruments that are deeply analysing the climate and geology of Mars, in particular the Gale Crater.

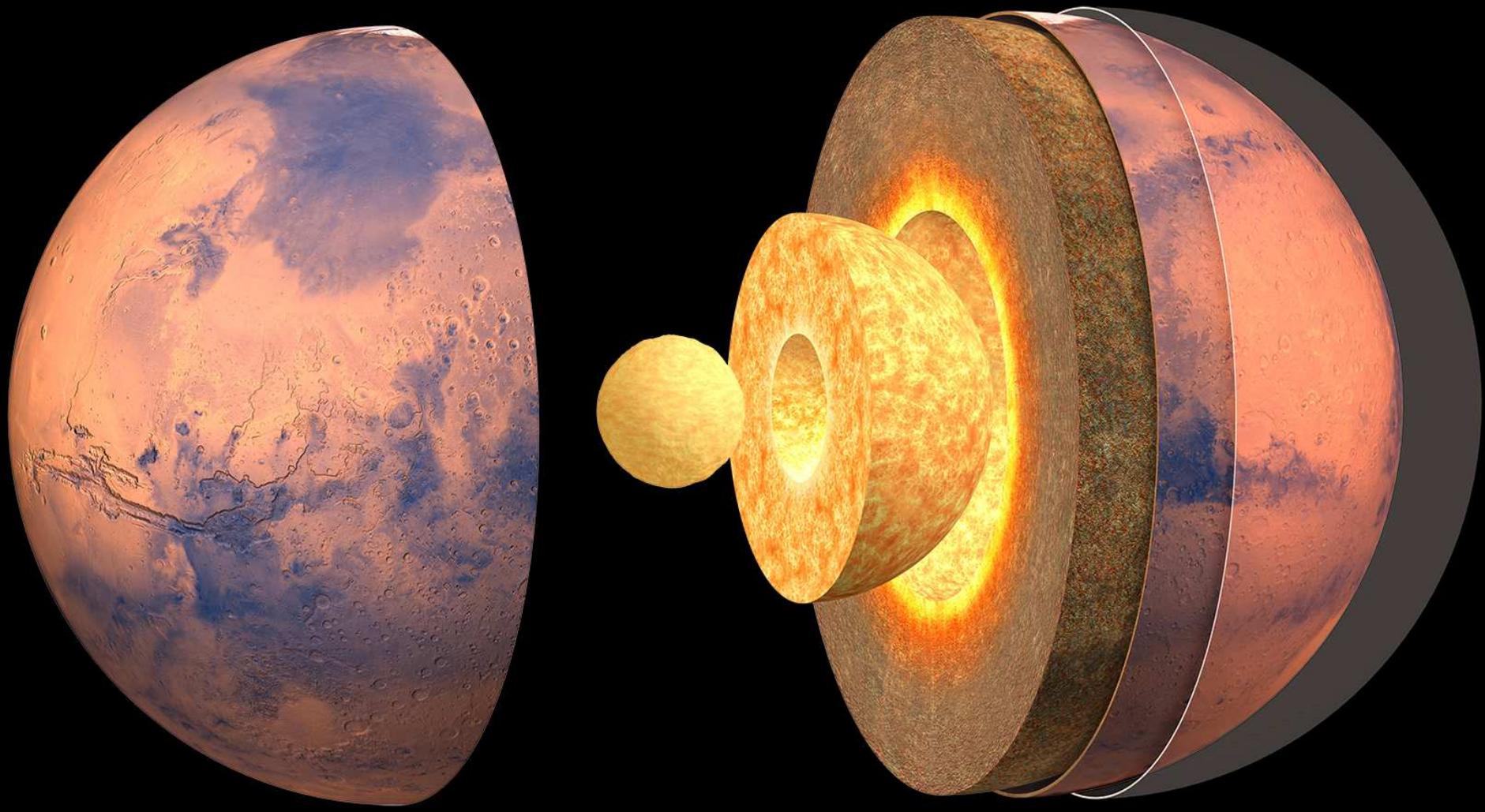


InSight

Ecouter battre le cœur de Mars

- Mission sélectionnée en 2012 par la NASA
- Lancement le 5 Mai 2018
- Atterrissage sur Mars le **26 Novembre 2018** pour une mission de deux ans

Le grand objectif : Fournir des contraintes sur la formation et l'évolution des planètes telluriques en mesurant la structure interne de Mars.



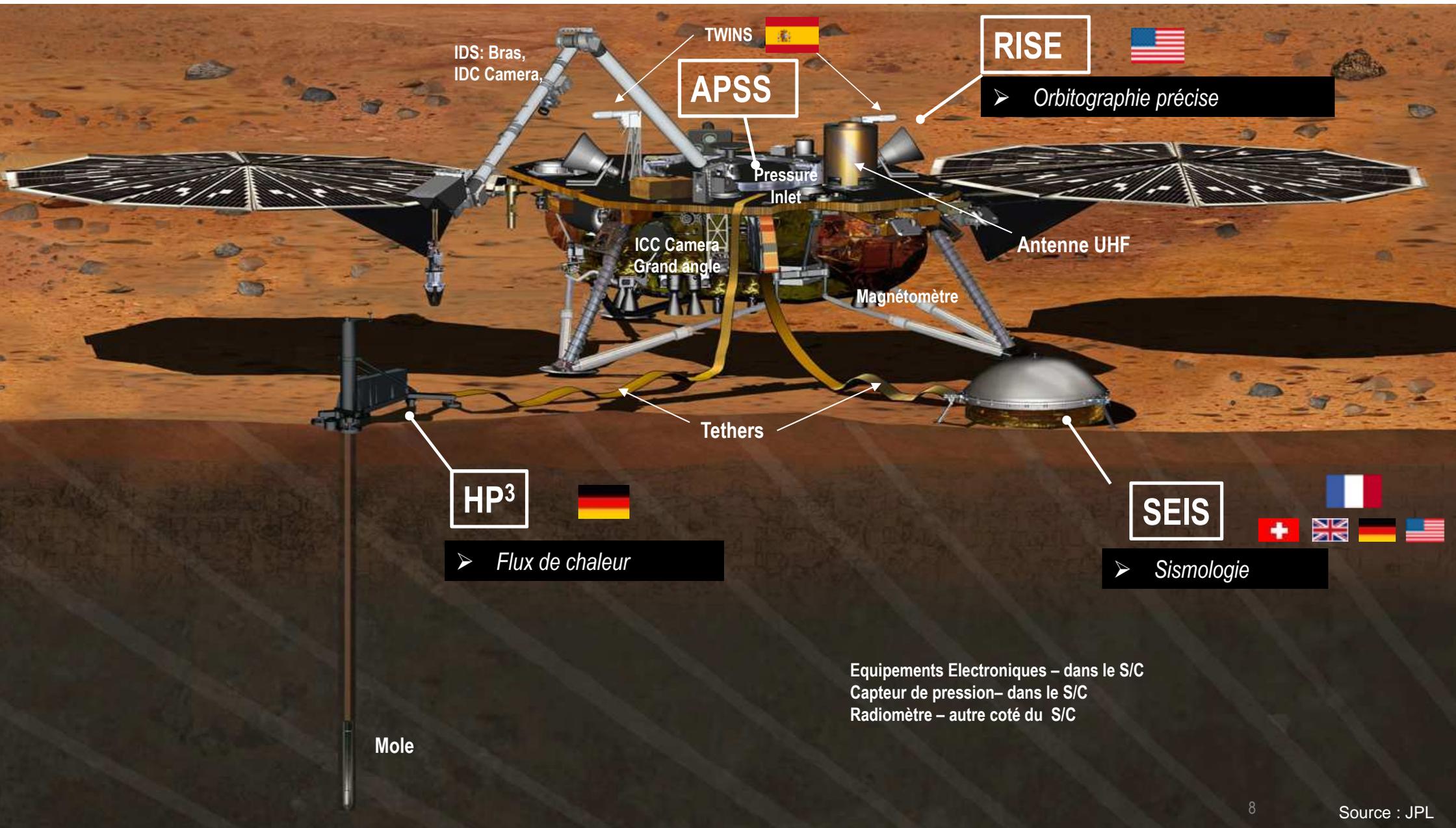
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La sismologie va nous permettre de “sonder” l’intérieur de la planète...



... et de répondre à des questions comme:

- Quelles sont les tailles et structures du manteaux et du noyau?
- Quel est le flux de chaleur de la planète?
- Pourquoi Mars a perdu son champ magnétique et son atmosphère?
- Pourquoi Mars a évolué différemment de la Terre?
- De quoi est composé son coeur?



IDS: Bras,
IDC Camera,

TWINS 
APSS

RISE 
➤ Orbitographie précise

ICC Camera
Grand angle

Pressure
Inlet

Magnétomètre

Antenne UHF

Tethers

HP³ 
➤ Flux de chaleur

SEIS 
   
➤ Sismologie

Equipements Electroniques – dans le S/C
Capteur de pression – dans le S/C
Radiomètre – autre coté du S/C

Mole

Les cubesats Marco

