



## **Marsquake Service for InSight: Preliminary Observations and Operation**

John Clinton (1), Simon Stähler (1), Savas Ceylan (1), Domenico Giardini (1), Maren Böse (1), Martin van Driel (1), Anna Horleston (2), Taichi Kawamura (3), Sharon Kedar (4), Amir Khan (1), Fabian Euchner (1), Bruce Banerdt (4), and Philippe Lognonne (3)

(1) Institute of Geophysics, ETH Zürich, Zürich, Switzerland, (2) School of Earth Sciences, University of Bristol, Bristol, UK, (3) Institut de Physique du Globe de Paris, Paris, France, (4) Jet Propulsion Laboratory, California Institute of Technology, Pasadena, USA

InSight landed on Mars in late November 2018, and the SEIS seismometer package was deployed on the surface over Christmas. SEIS is expected to operate for at least 1 Martian year, or two Earth years. The Marsquake Service (MQS) has been setup to create and curate a seismicity catalogue for Mars during the lifetime of the InSight mission. In preparation for operations, the MQS team have developed single station location and characterisation algorithms, created a software framework that manages the data flow that includes these approaches, and tested methods and operational procedures via a suite of blind tests. The MQS approach includes use of an a priori set of plausible martian models that can be refined once constraints from observed signals are included. The MQS works in conjunction with the Mars Structural Service (MSS) on building and adopting updated models. Mars has strong topographic variations, and 3D effects on surface waves can be taken into account. The MQS consists of an international team of seismologists that, in turn, screen incoming data to identify and characterise any seismicity. The MQS has been operational since the first seismic signals started arriving from on deck. In this presentation, we present the MQS, show initial results and describe the challenges we face dealing with the true Martian dataset.