



InSight

JPL



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DLR

ETH



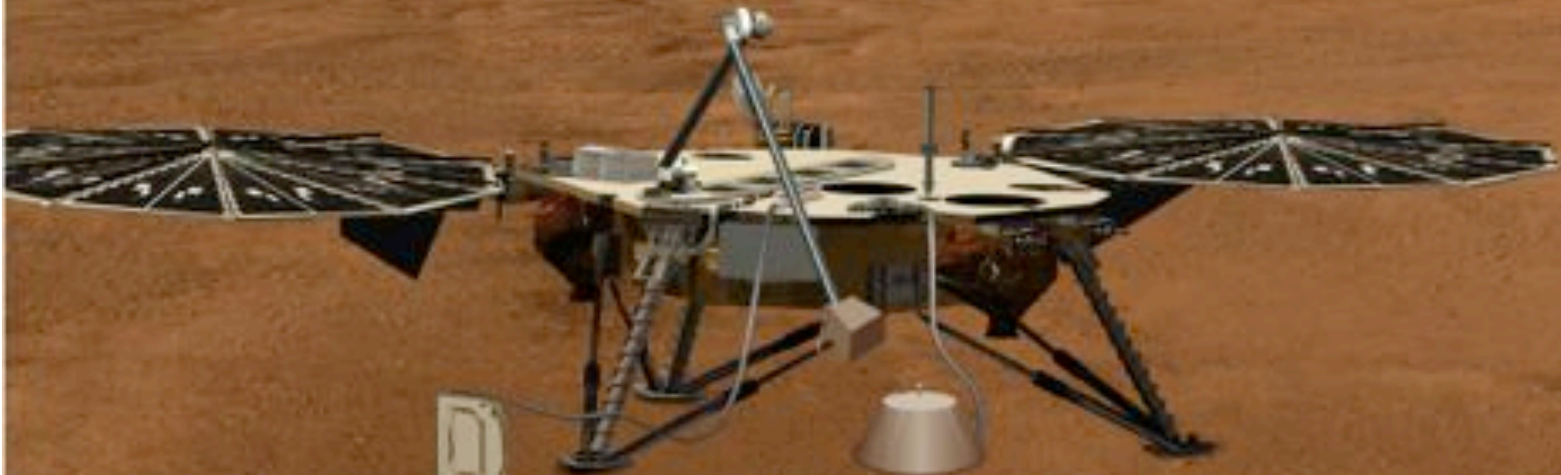
ISA



Imperial College
London

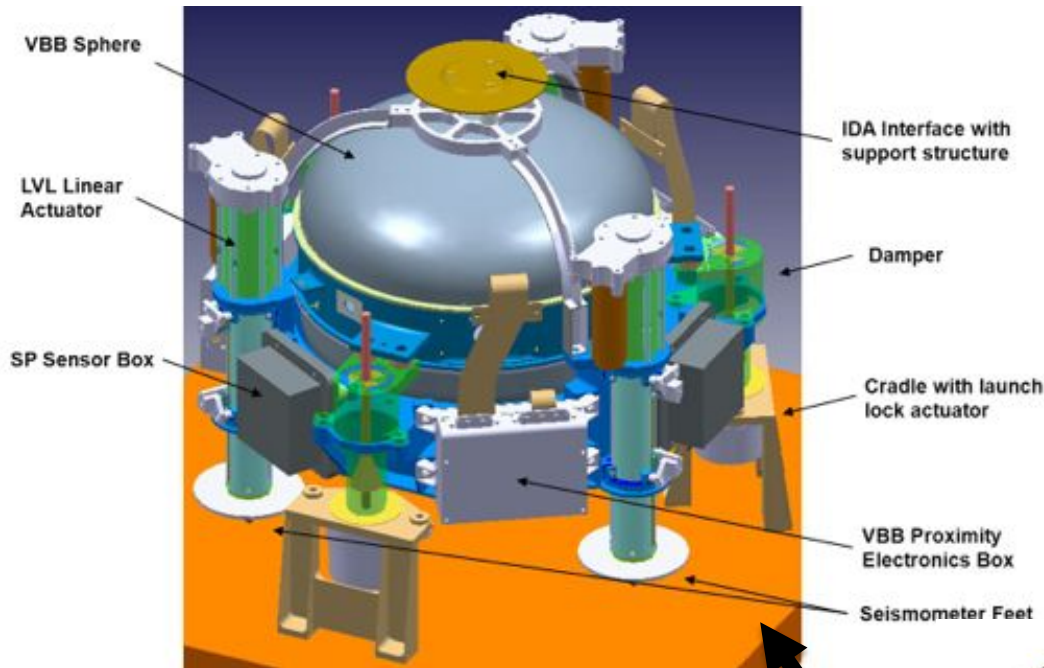


Imperial's contribution to InSight: NASA's 2015 Mission to Mars



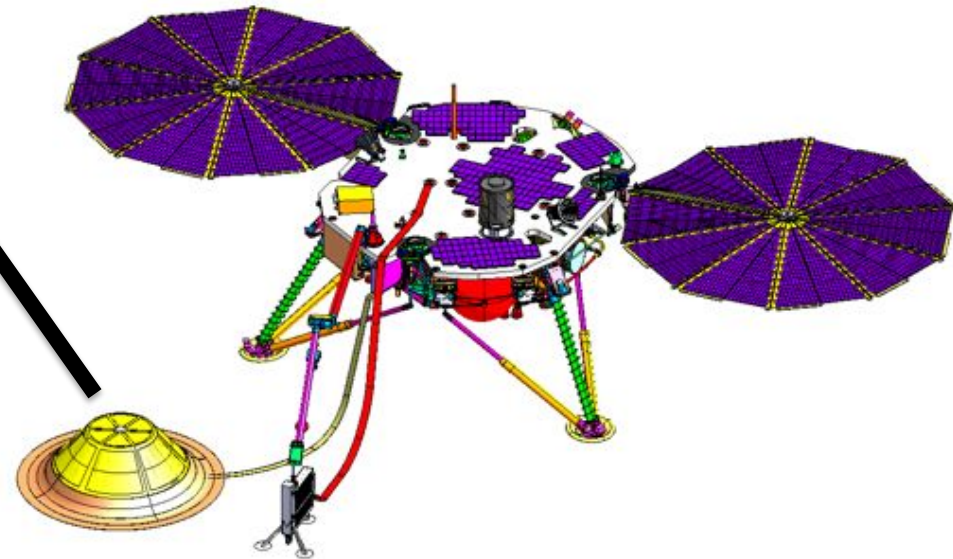
**Tom Pike,
Electrical and Electronic Engineering
Imperial College London**

InSight Mission to Mars

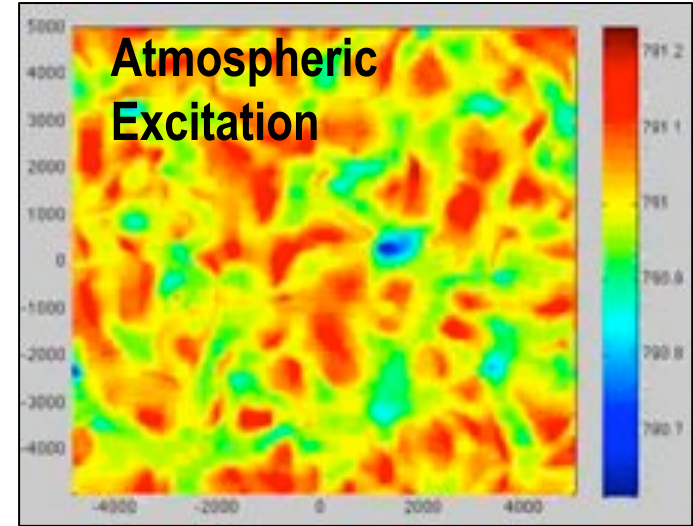
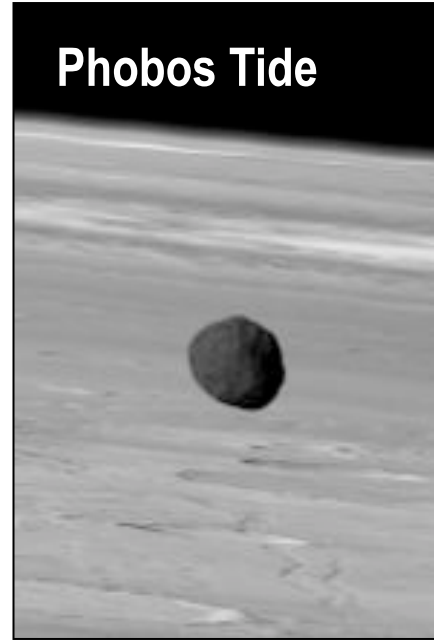


- NASA Discovery Mission with a predominantly European payload
- Launch March 2015
- Land September 2015
- Operate for at least two years
- First determination of the internal structure of another planet

- Major instrumentation: a deployed seismic station
- Includes a large seismometer (VBB) and a three-axis microseismometer (called SP for short period)

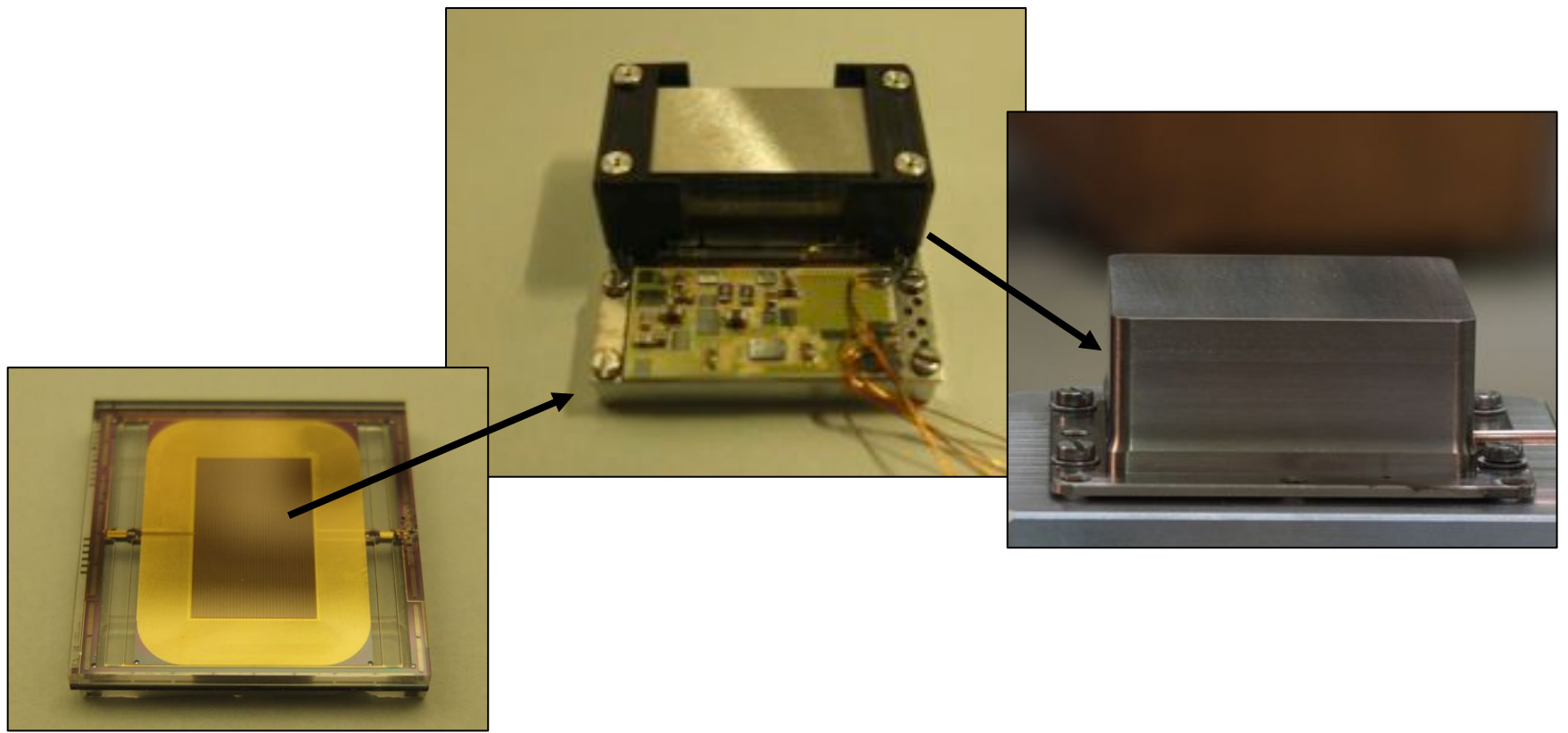


Seismicity on Mars

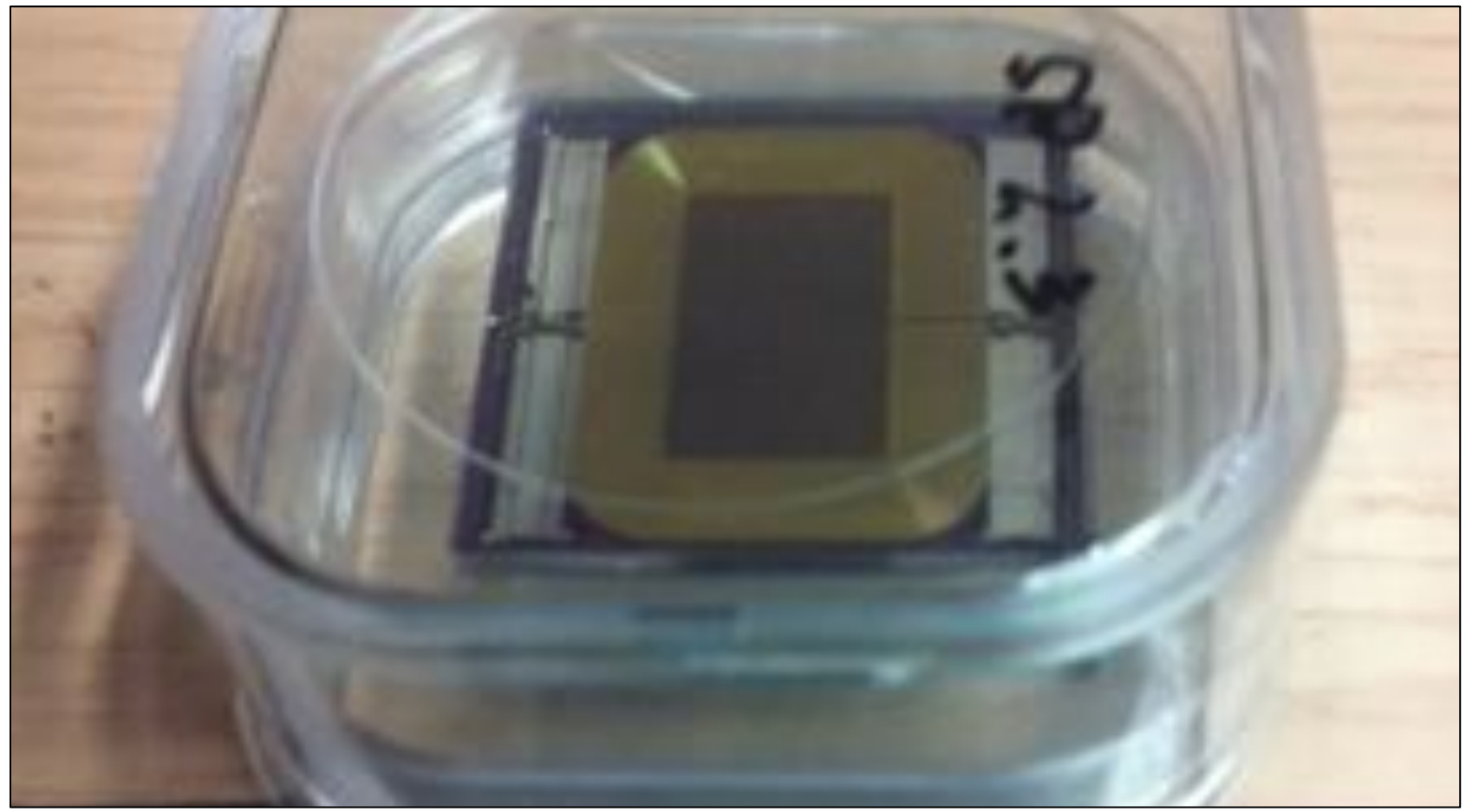


Microseismometer Sensor Head

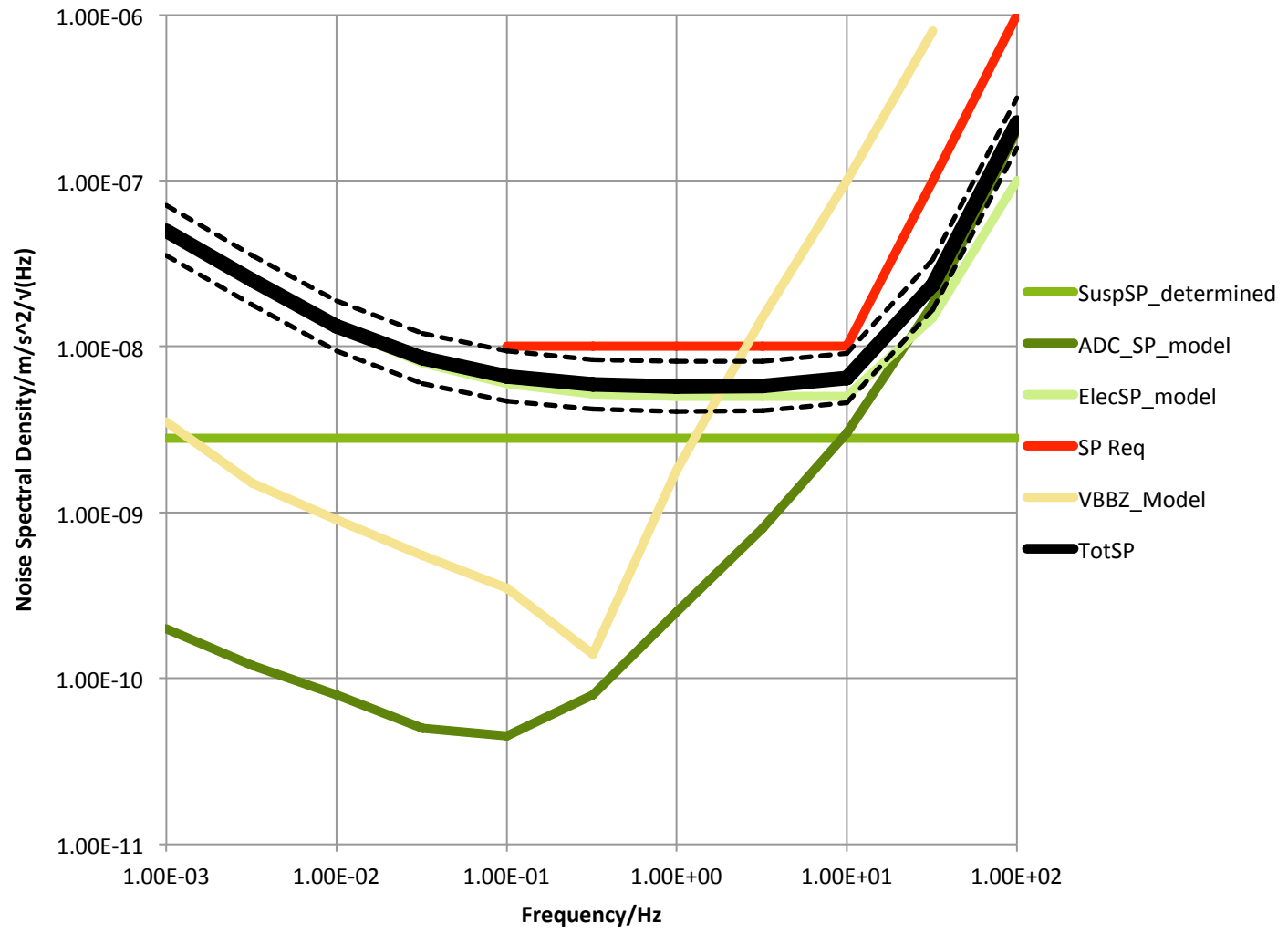
Three enclosures, x y and z, fabricated at Oxford each contain their proximity electronics and a single-axis micromachined silicon sensor from Imperial



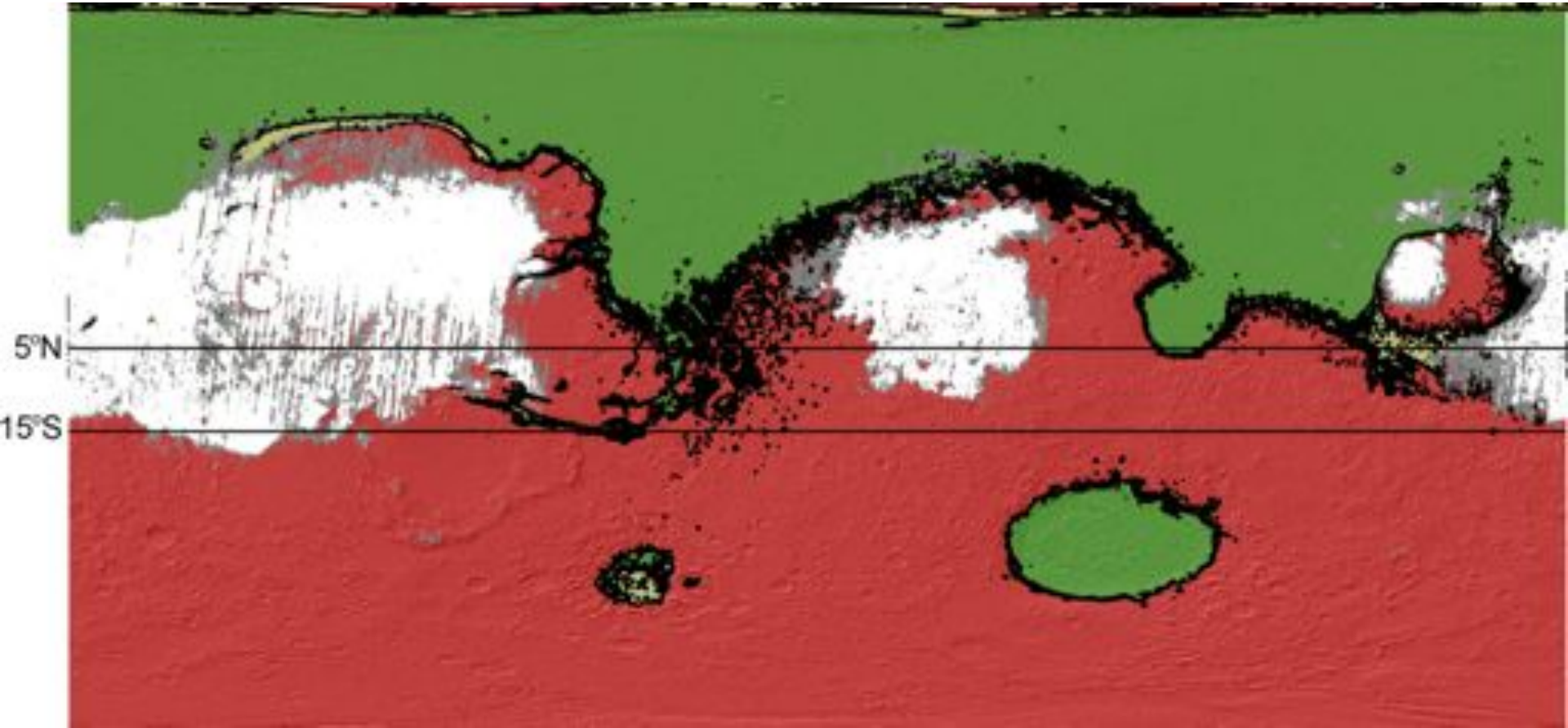
Delivery of first sensor

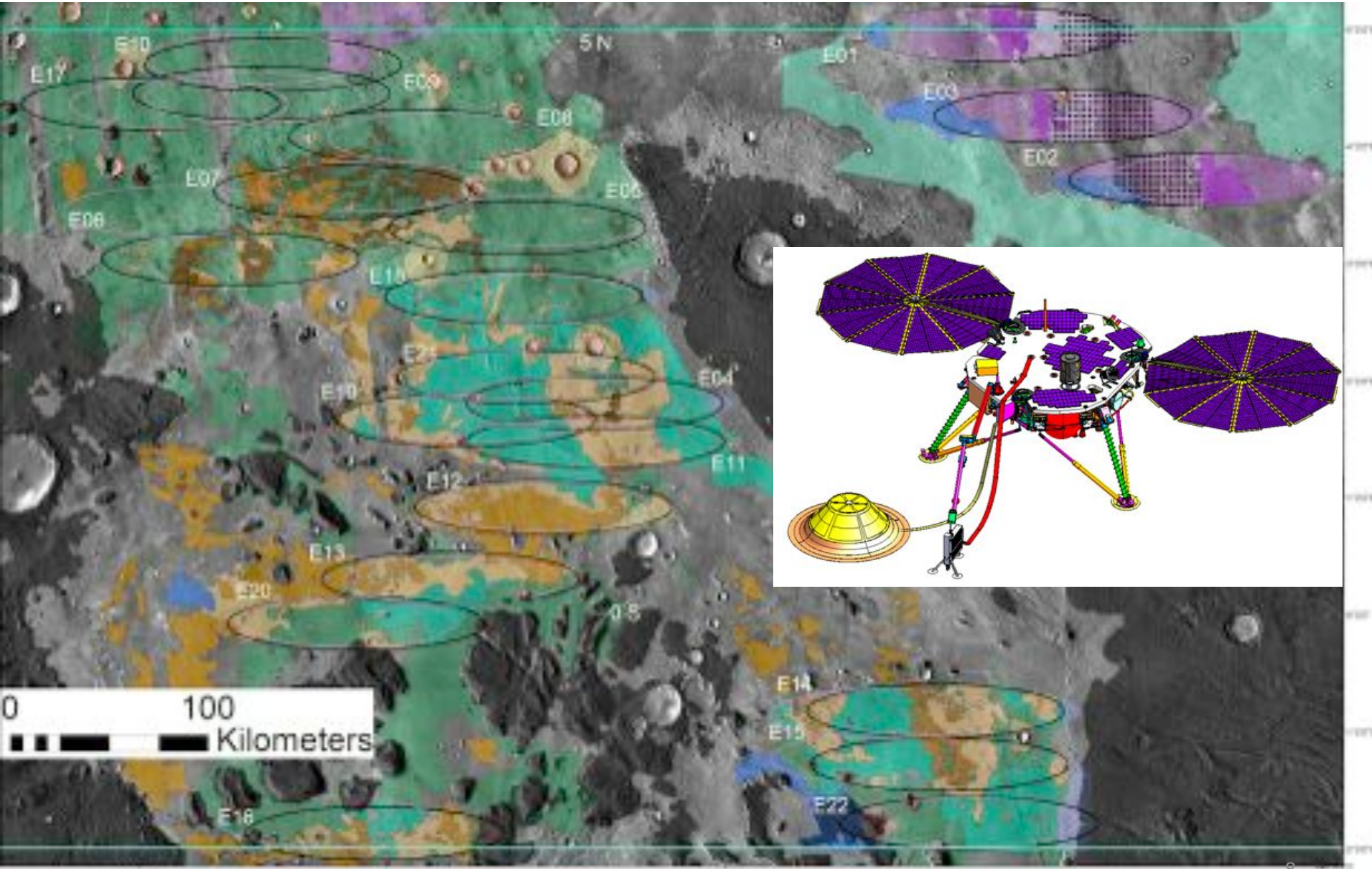


SP noise budget current status

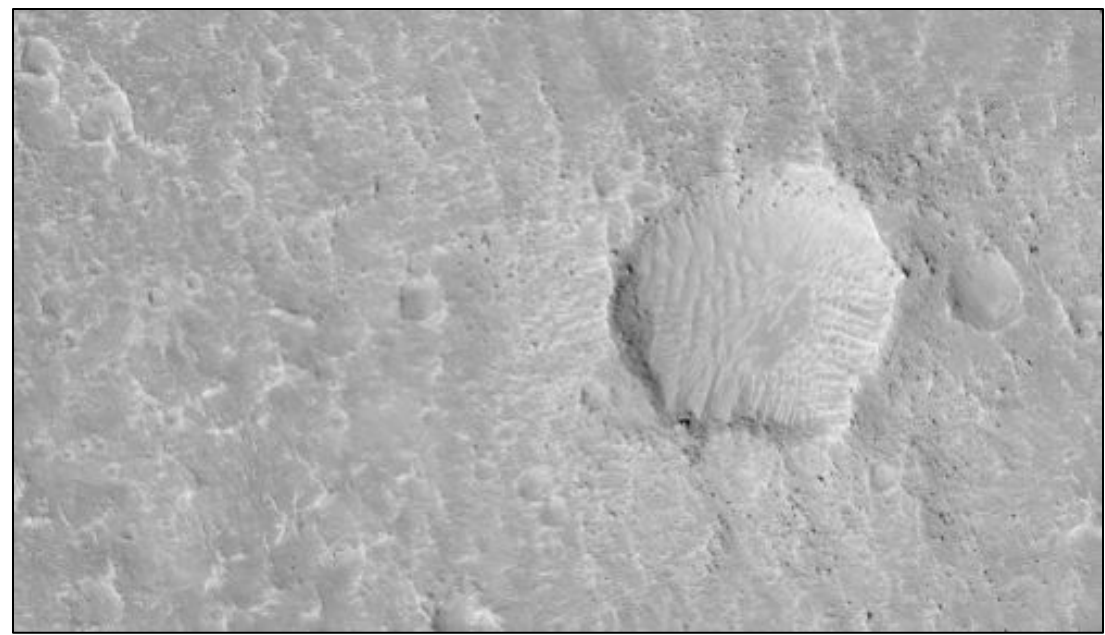


Where to Land





Assumptions



- What we've got

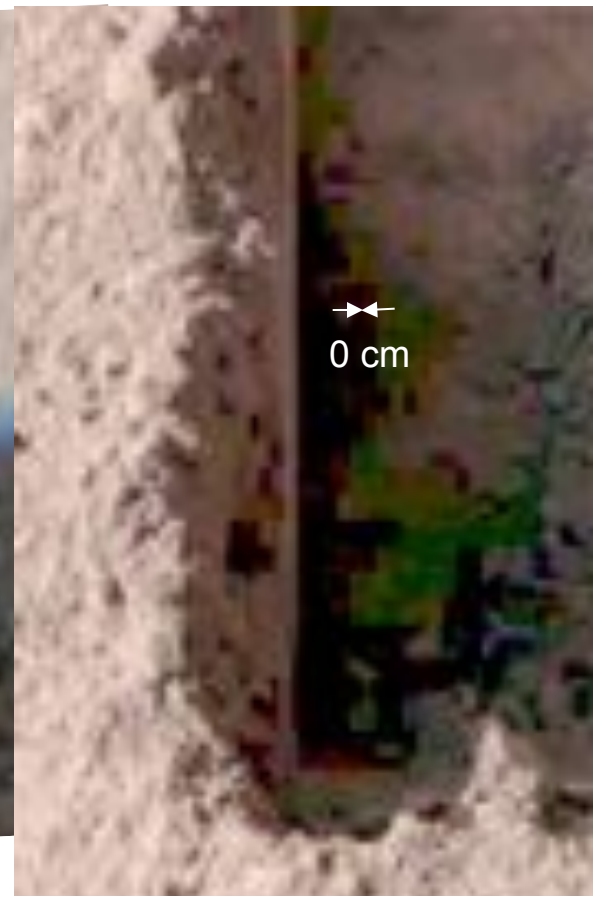
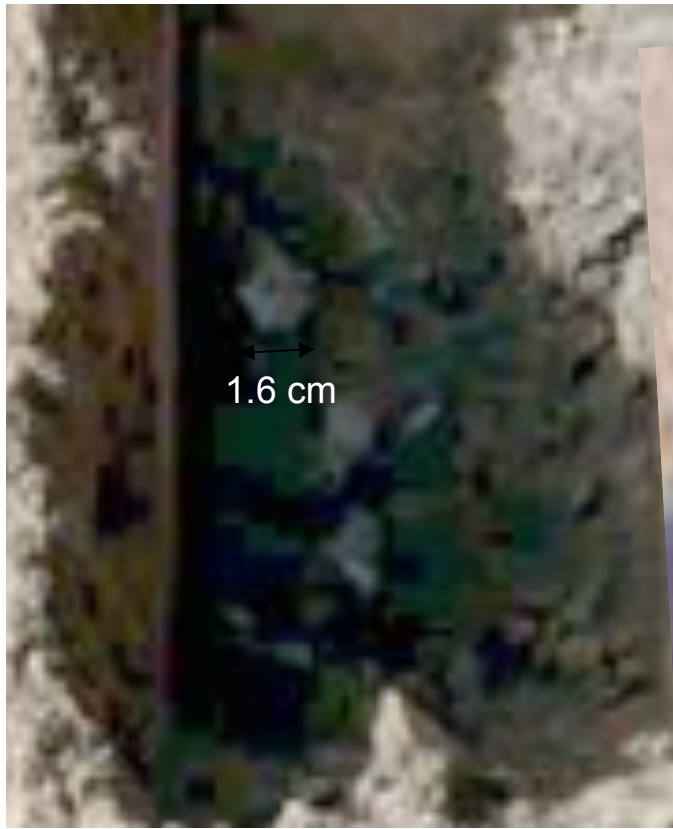


What we'd like

Science Operations Center, Tucson



Water Ice identified during Phoenix mission



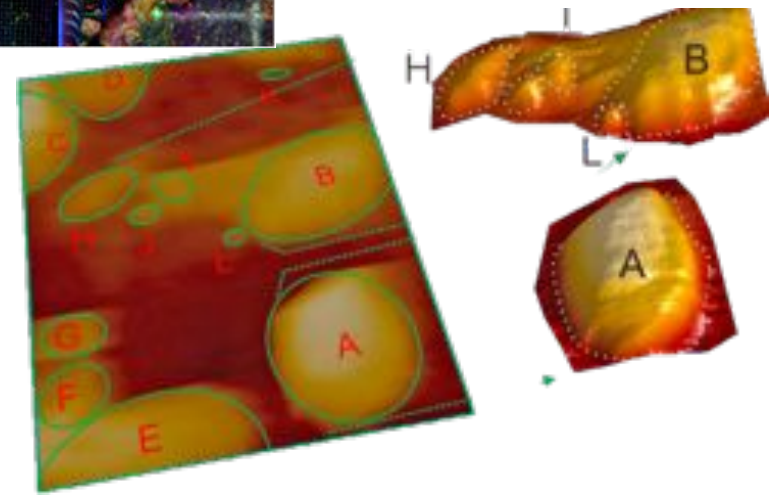


Microscopy Station on Phoenix



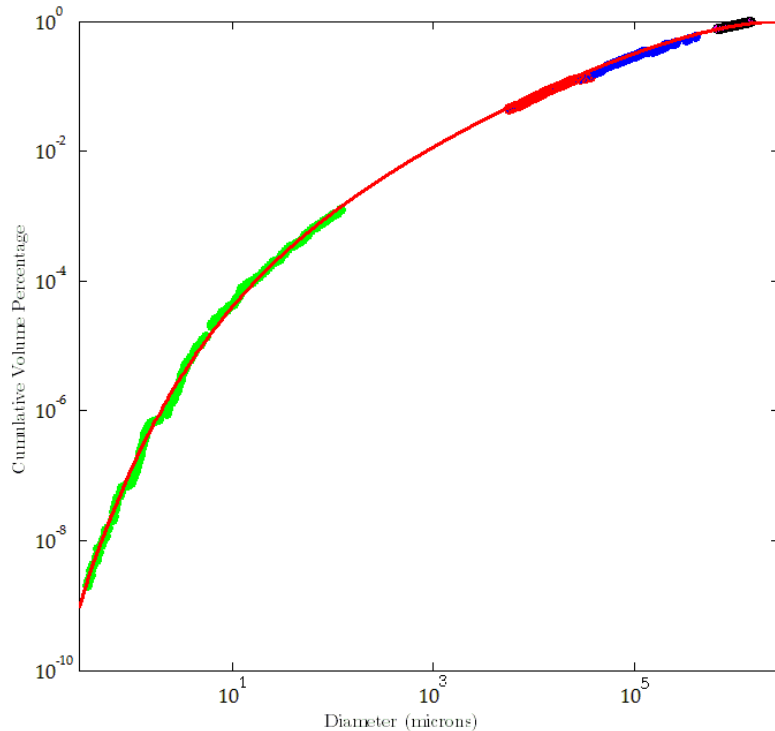
Microscopy data from Phoenix

- In 2008 Imperial provided the only UK hardware to the Phoenix mission
- Helped produce the first microscope data from Mars, down to 100nm resolution

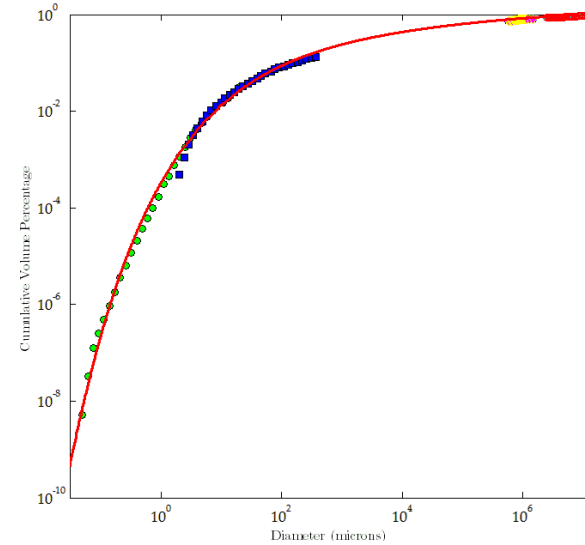


Modelling our data

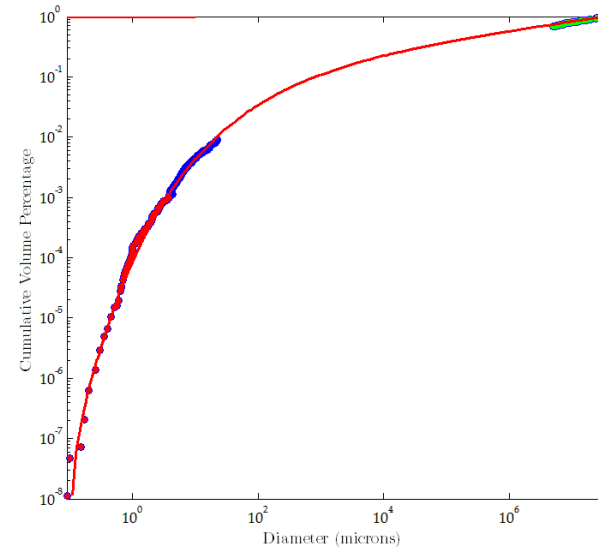
- We've developed a model from fragmentation theory to explain the particle size distributions we see
 - Mars



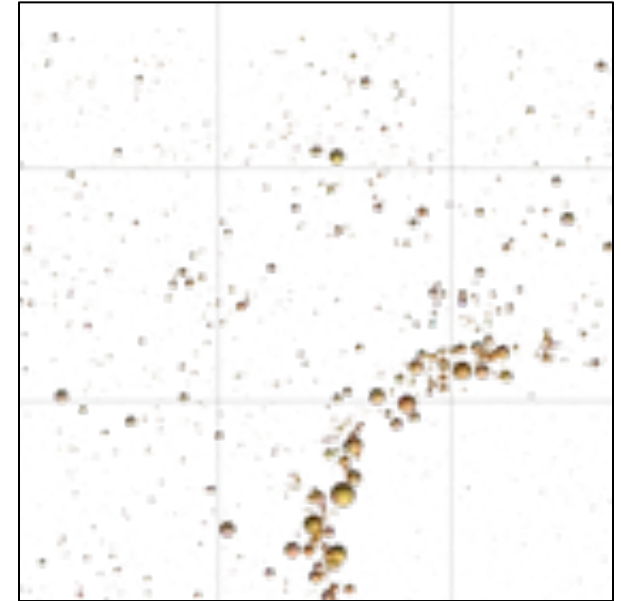
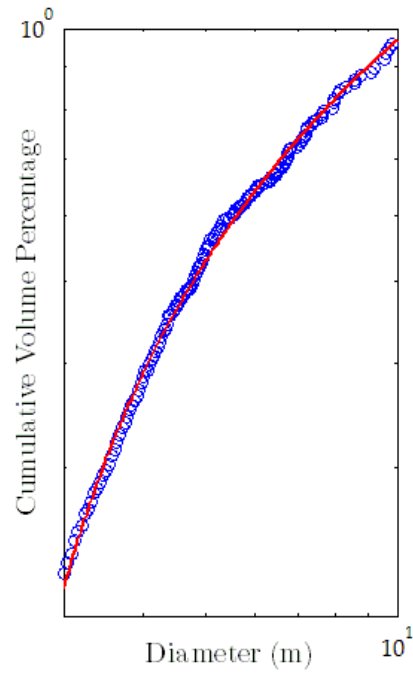
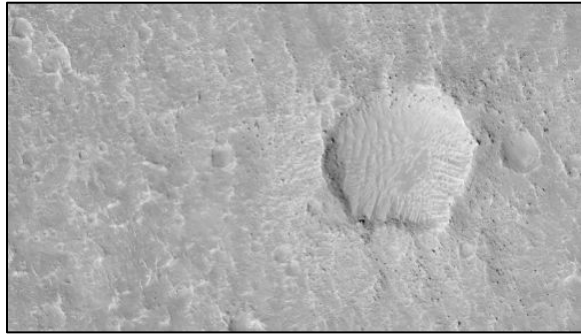
- The Moon



- Comet Itokawa



Extending from HiRISE



- Look below the resolution of HiRISE

Thanks

- The Imperial Team:
 - Aifric Delahunty, Gunagbin Dou, Anisha Mukherjee, Constantinos Charalambous
- The Oxford Team
 - Simon Calcutt, Neil Bowles, Paul Coe, Jon Temple
- Kinemetrics, Inc.
 - Ian Standley
- JPL
 - Matt Golombek: landing site selection
 - Bruce Banerdt: PI (thanks for the rocket!)
- UK Space Agency
 - For the supporting our participation in Phoenix and InSight