

CaSSIS: The European Space Agency's flagship imager of the Martian surface

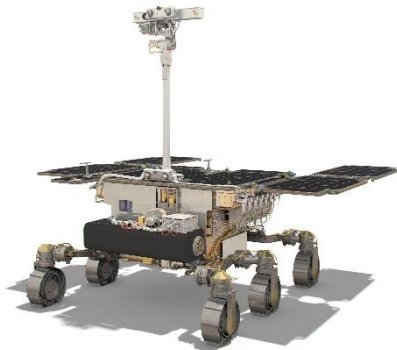
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RAS Poster Exhibition 2020

exomars

- The European Space Agency's (ESA) most recent and ongoing mission to Mars.
- Joint ESA-Roscosmos venture.
- Primary goal: Search for past and present life on Mars.
- Two stage mission.



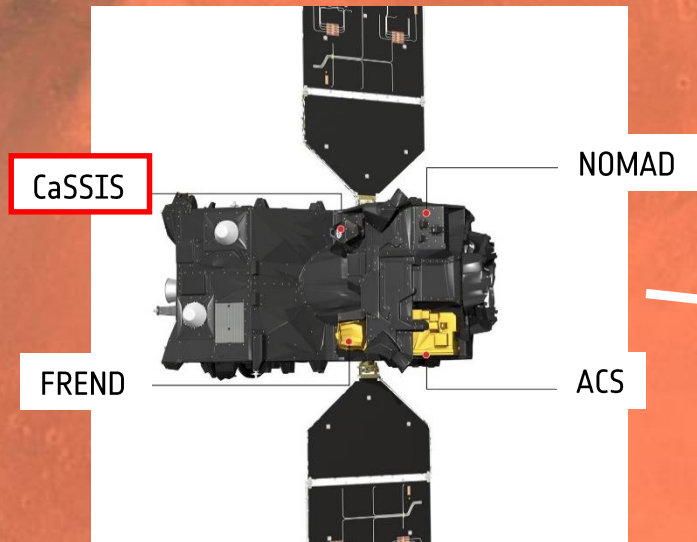
Rosalind Franklin Rover



- Launching in 2022.
- Primary goal: Search for subsurface signs of past and present life.
- Contains 9 instruments, with a 2m drill.
- Relays with the Trace Gas Orbiter.



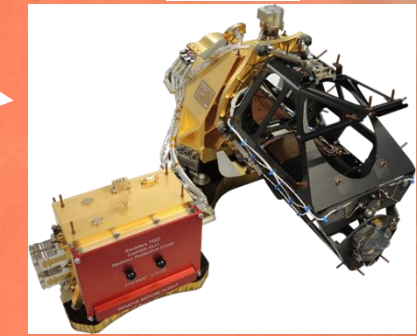
Trace Gas Orbiter (TGO)



- Launched 2016.
- Began science operations in 2018.
- Contains 4 instruments, telescope (CaSSIS), two spectrometers (NOMAD+ACS) and exotic particle detector (FREND).
- Primary goal: Map and categorize surface geology, identify atmospheric trace gases and identify surface/subsurface water.



CaSSIS

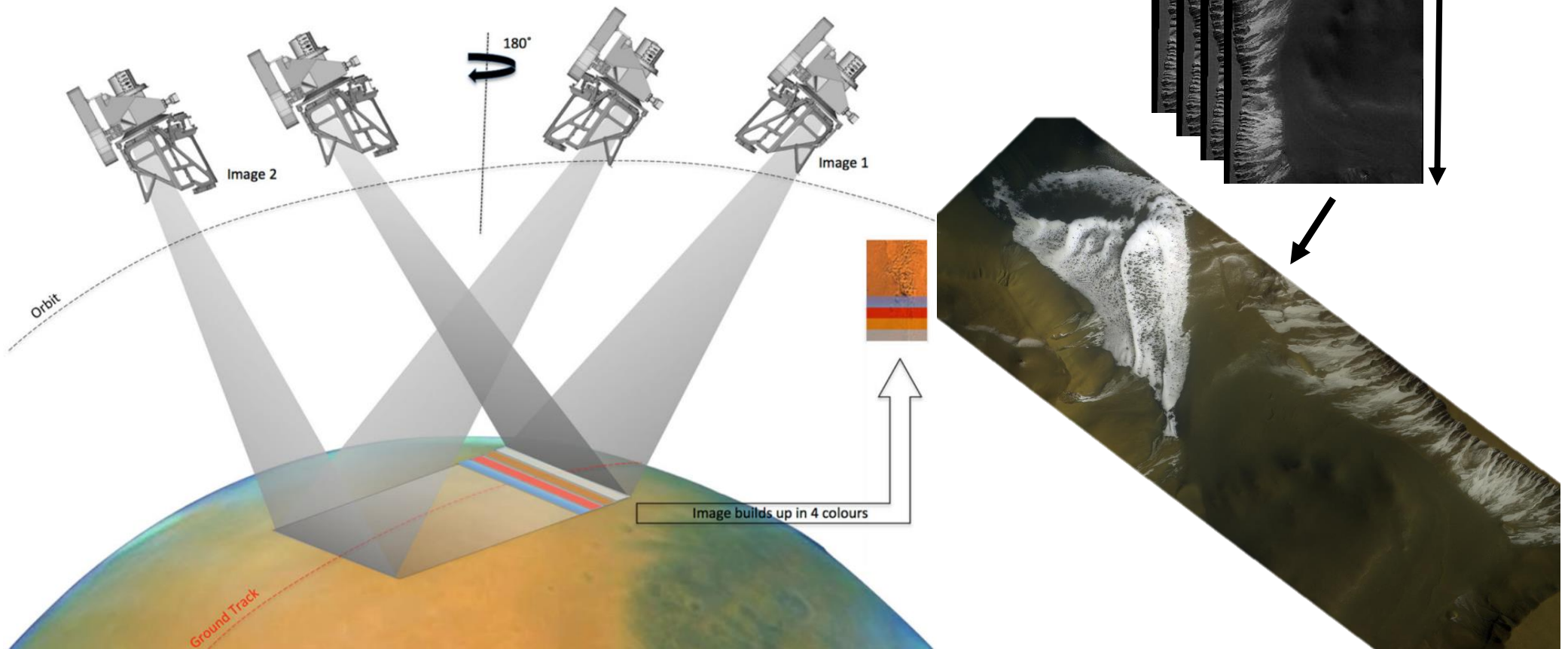


- Colour and Stereo Surface Imaging System (CaSSIS).
- Images Martian surface in 4 filters with 4.6m/pixel.
- Stereo images possible due to novel rotation mechanism.
- Built and operated by the University of Bern.

CaSSIS: how does it work?

- Push frame imager, with four filters, 4.6m/pixel.
 - Series of exposures acquired, combined to make final images (roughly 9x45km).
 - Individual filter images combined to make colour product.
- Mounted 10deg off TGO nadir.
 - Onboard rotation mechanism allows for 360deg rotation.
 - In-situ stereo images possible!

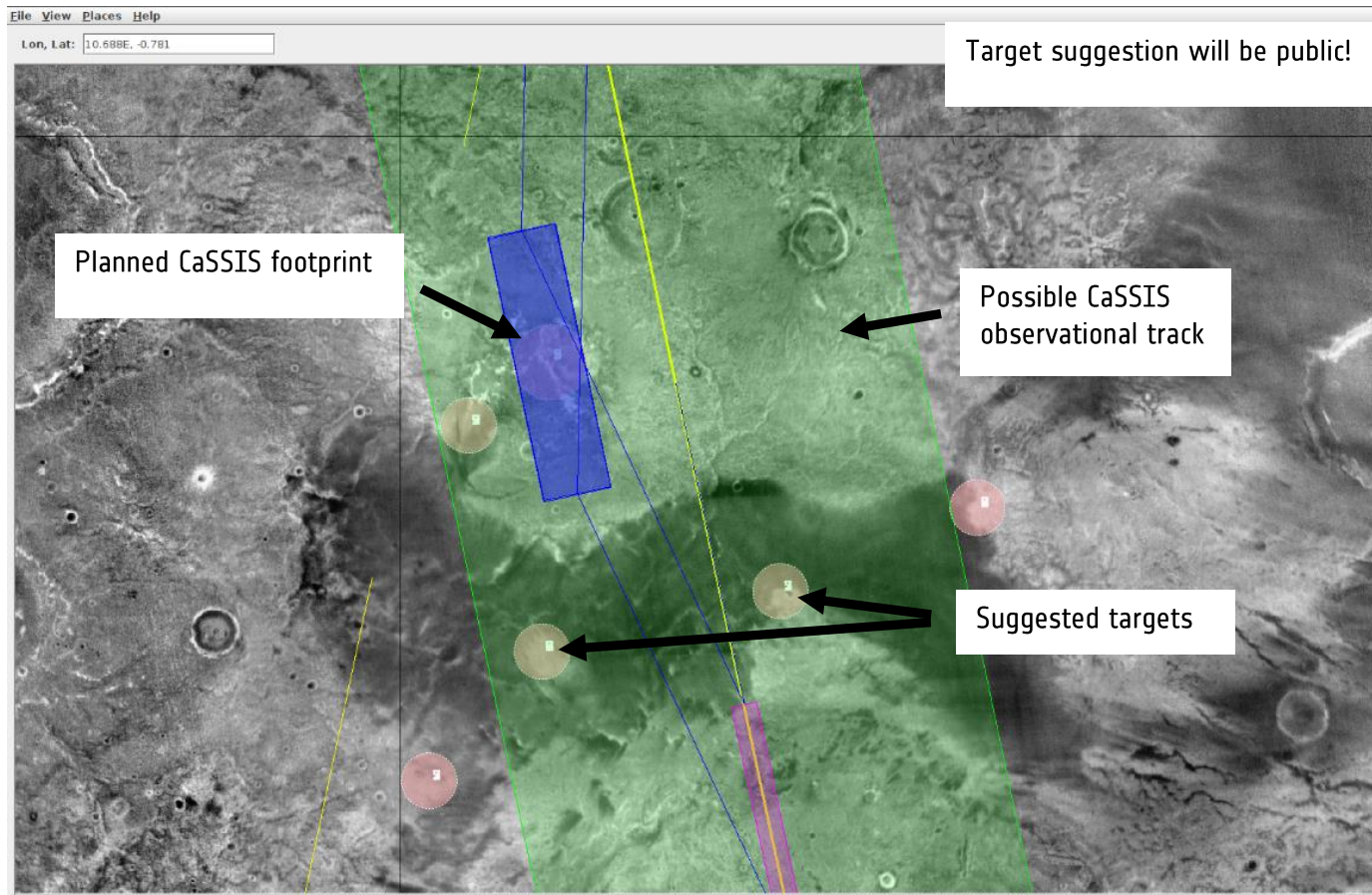
CaSSIS: Stereo rotation in action.



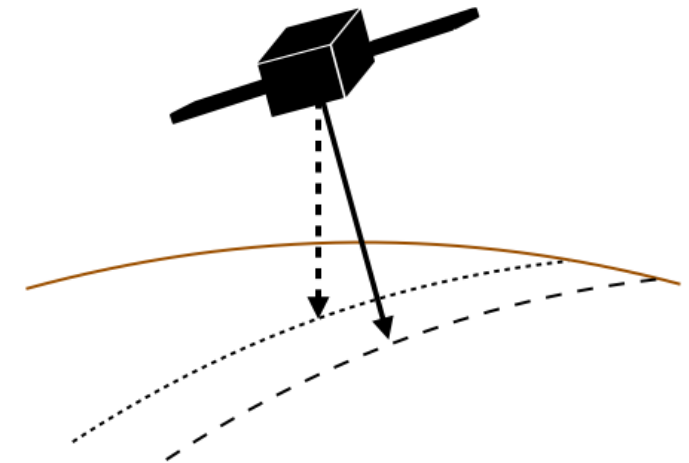
CaSSIS: how do we plan?

- Specially built software from University of Arizona.
- Users suggest targets for observation.
- Member of science team plans two weeks of observations.

- Read in orbital trajectory of TGO.
- Spacecraft can roll ± 5 deg for CaSSIS observations.
- Number of images dependent on downlink volume.



Side view:



- Targets suggestion will be publically available.
- Targets assigned priority according to scientific importance.
- Target priority used to filter which images are observed in given time range.

CaSSIS: Image favorites

- See more on Twitter (@ExoMars_CaSSIS) and Instagram (@unibe_cassis)!

