

Unofficial Hayabusa2 Update

SMPAG 11th Meeting

October 18, 2018

Knoxville, TN U.S.

Rob Landis and Dan Mazanek (NASA)

[Based on data/information provided by JAXA and Paul Abell (NASA)]



Google Earth, JAXA, Thomas Appéré

Image Landsat / Copernicus

300 m

(162173) Ryugu at a glance

Discovered on 10 May 1999 (by LINEAR)

C-type

Orbital period: 1.30 years

Earth MOID: 0.0006 AU

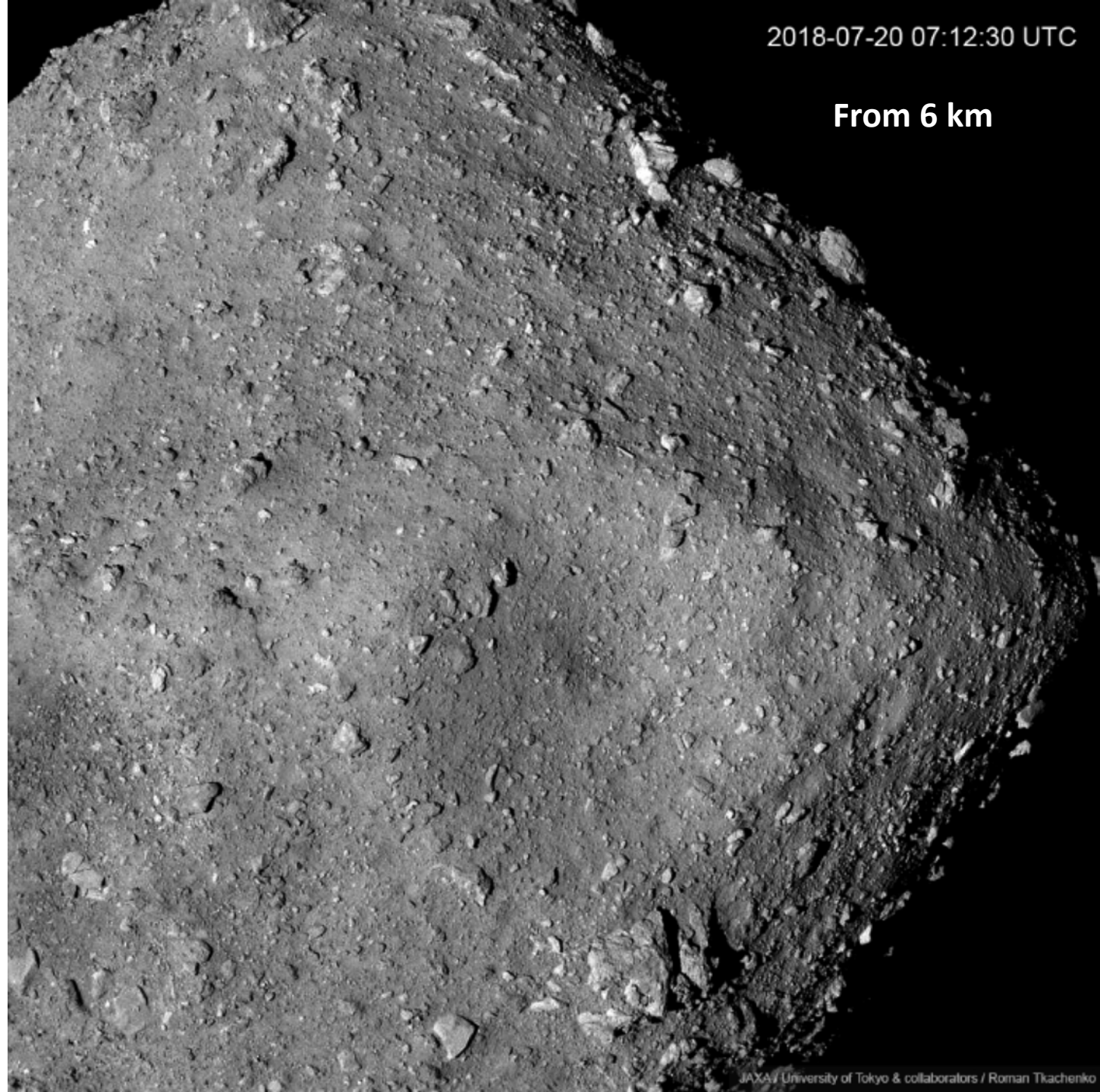
Diameter: ~865 meters

Rotation period: 7.63 hours

H_{mag} : 18.7

Current companions:

- Hayabusa2 spacecraft (JAXA) – operating around Ryugu
- Robotic probes on the surface (so far!):
 - 2 MINERVA-type rovers (JAXA)
 - MASCOT lander (DLR/CNES)



Brief Summary of Hayabusa2 Mission

Launched on 3 December 2014

Arrived at Ryugu on 27 June 2018

Touchdown 1 Rehearsal #1 on 11-12 September – descent stopped ~600 m (Lidar/low albedo issue - corrected)

MINERVA-II-1 (A and B) deployment on 21 September

- Operating autonomously and sending data back to Hayabusa2
- Solar powered and could last quite a bit longer on Ryugu

MASCOT deployment on October 3

- Operated on the surface for 17 hrs for 2+ rotations of the asteroid Ryugu
- Bounced 8 times during deployment; made three hops and one mini-move to study Ryugu's surface
- Batteries lasted about one hour longer than expected and all four of its instruments operated nominally
- All the science data uploaded to Hayabusa2 prior to MASCOT depleting its batteries

Touchdown 1 Rehearsal #2 on 14-16 October – descended to 22.3 m before moving back to the home position (20 km altitude); confirmed operation of the Laser Range Finder (LRF); high resolution images of primary landing site obtained

Touchdown 1 is Rehearsal #3 planned for 24-25 October – possible deployment of a target marker to test autonomous navigation

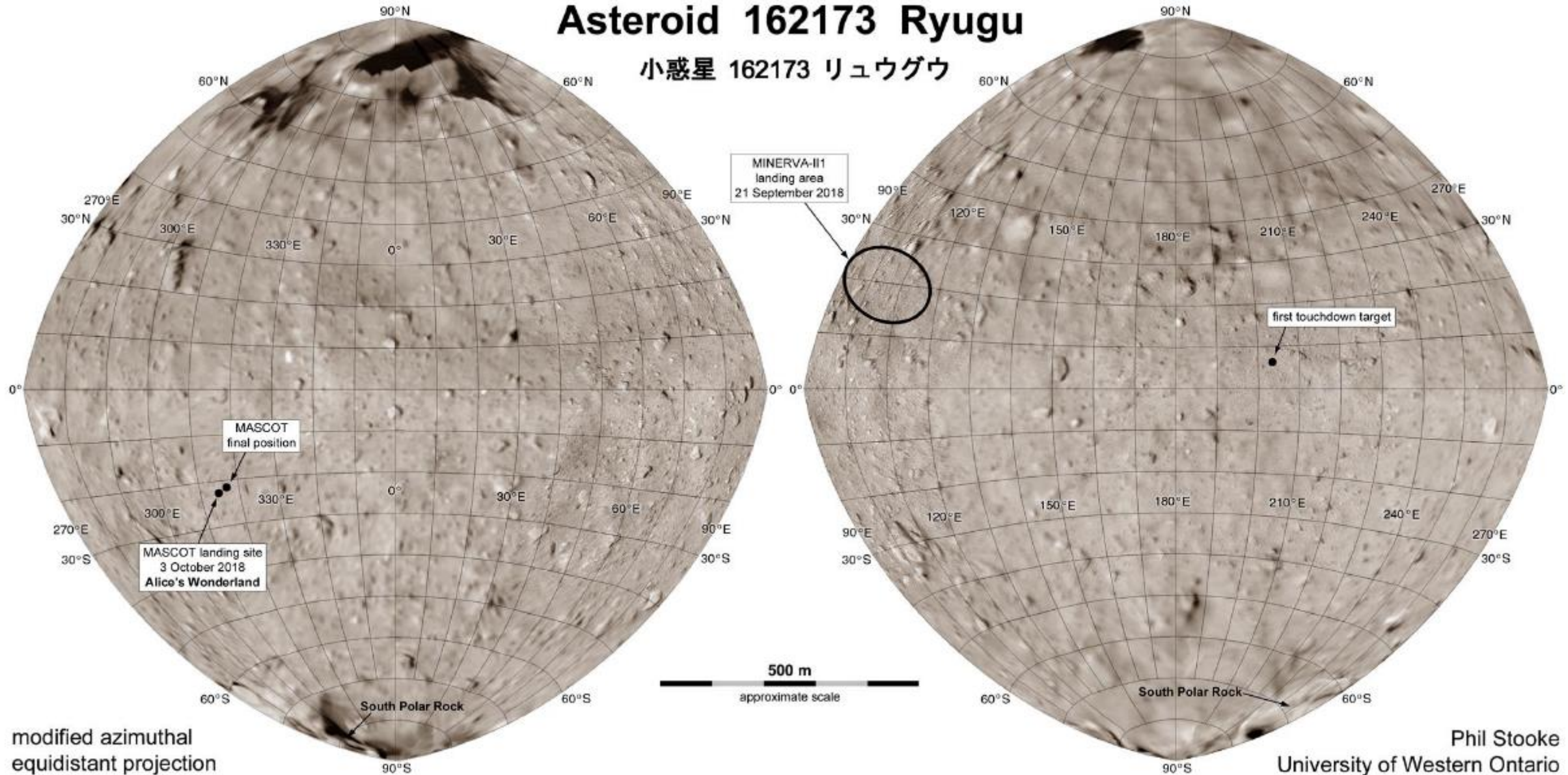
Touchdown 1 is planned for January/February 2019

MASCOT Deployment



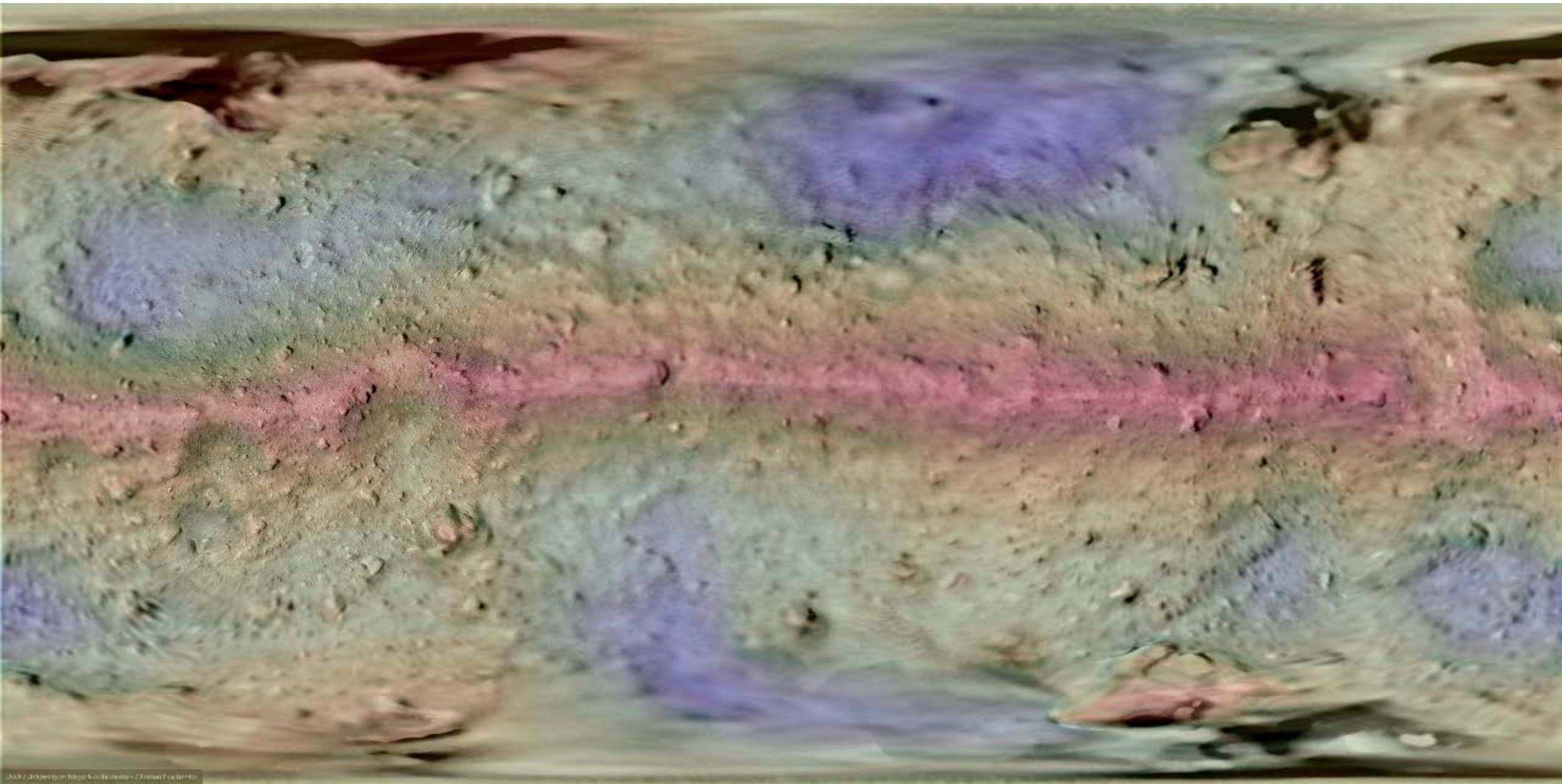
Asteroid 162173 Ryugu

小惑星 162173 リュウグウ

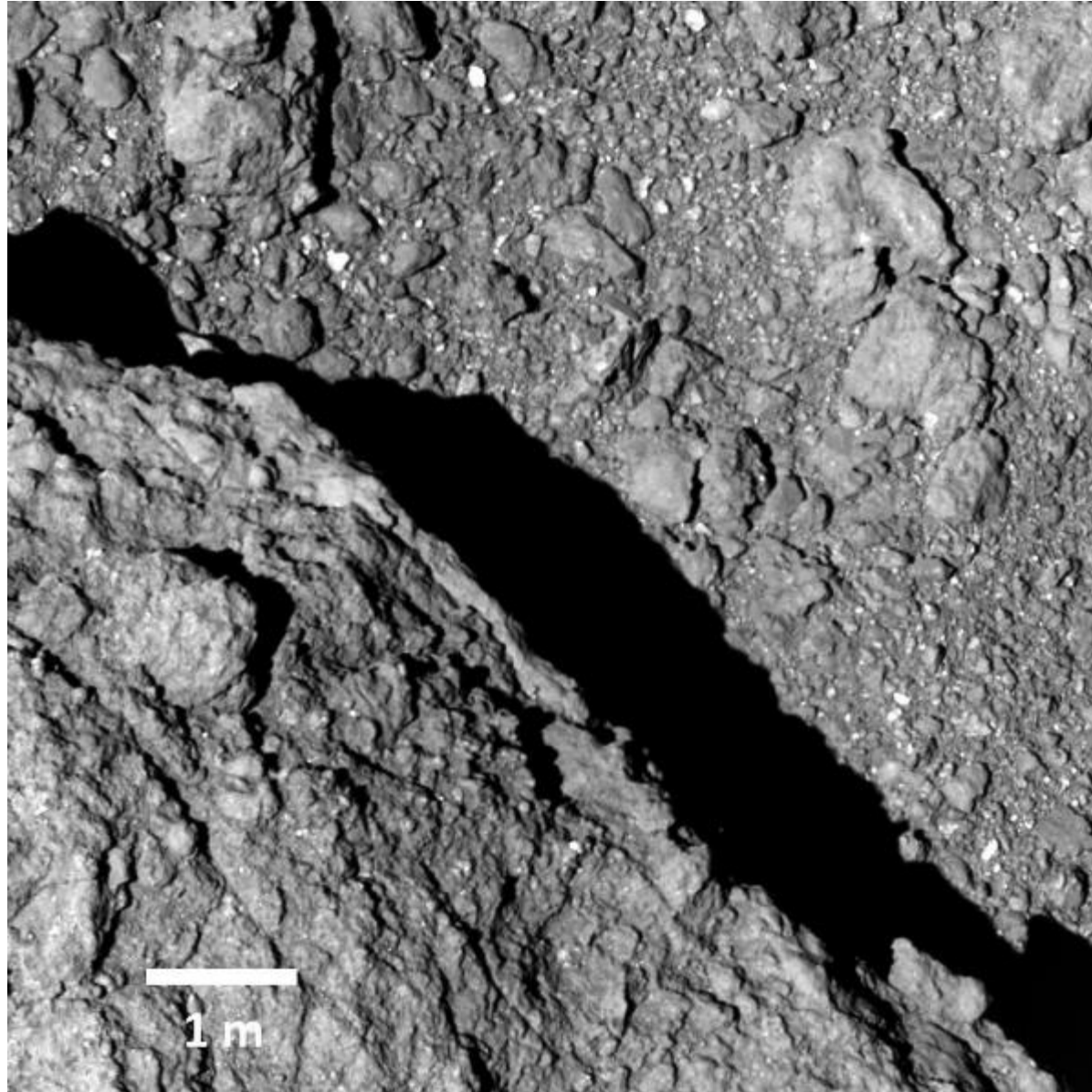


Phil Stooke
University of Western Ontario

Topographical Map of Ryugu



High Resolution Image of Surface



(Image credit: JAXA, University of Tokyo, Kochi University, Rikkyo University, Nagoya University, Chiba Institute of Technology, Meiji University, Aizu University, AIST).