

Lab 1 – Interpreting Geological Processes from Images

What processes are responsible for the landforms in each of the following images?

Use the web (try some of the “Research Links” on the course website) to look up feature names or landform descriptions from the list if they do not sound familiar to you.

More than one type of landform may be present in many of the images.

Record your interpretations below:

Landform list:

Central peak craters	Calderas
Rampart craters	Volcanoes
Slumps/Landslides	Valleys/Valley networks
Reverse faults/Wrinkle ridges	Outflow channels
Normal faults/Graben	Chaos terrain
Strike-slip faults	Dust devil tracks
Lava flows	Sand dunes
Lava tubes/channels	CO ₂ Ice

Image List (<http://earthweb.ess.washington.edu/ess-306/labs/lab1/>):

lab1_image01.jpg – Mercury, Brahms crater (75km diameter, Mariner 10)

lab1_image02.jpg – Mars, unnamed crater near (80.5 E 36N, 30km across, MRO CTX)

lab1_image03.jpg – Venus (74E, 2S, 24km across, Magellan Radar, PIA00248) Note what happened between the before and after images.

lab1_image04.jpg – Io, Amirani (180km across, Galileo, PIA02567)

lab1_image05.jpg – Io, Tvashtar Catena (240E, 60N, 250km across, Galileo, PIA02550)

lab1_image06.jpg – Mars, Valles Marineris (282E, 8S, 170km across, M01 THEMIS)

lab1_image07.jpg – Venus, (77E, 30N, 225km across, Magellan Radar, C1-MIDR 30N279)

lab1_image08.jpg – Mars, Vastitas Borealis (319E, 61N, 7km across, MRO HiRISE, PSP_001481_2410)

lab1_image09.jpg – Moon, Daedalus crater (93km across, Apollo 11)

lab1_image10.jpg – Moon, Oceanis Procellum (Apollo 15 AS-15-88-11983)

lab1_image11.jpg – Mars, Elysium (123E, 21N, 19km across, M01 THEMIS, V16933019)

lab1_image12.jpg – Europa, Astypalaea Linea (169E, 63S)

lab1_image13.jpg – Mars, Proctor Crater (31E, 48S, ~1km across, MRO HiRISE, ESP_011909_1320)

lab1_image14.jpg – Mars (342E, 2N, 700km across, M01 THEMIS)

More Challenging Images:

lab1_image15.jpg – Mars (259E, 85S, several km across, HiRISE, ESP_013049_0950) Hint: Look at the latitude.

lab1_image16.jpg – Titan (103E, 19S, 170km across, Cassini Radar, PIA11802) Hint: Darker areas in radar images are very smooth at centimeter to meter scales.

Lab1_image17.jpg – Mars, Apollinaris Patera (174E, 9S, 350km across, M01 THEMIS) There are many landforms and processes in this image. Try to pick out at least three.