
europlanet 2024
Research Infrastructure

Geology & Planetary Mapping
Winter School
07-11 February 2022

MERCURY PRACTICAL

Dr. Valentina Galluzzi[1]

Instructors: Alistair Balance[2], Marc Canale[2], Lorenza Giacomini[1], Annie Lennox[2]

1. Istituto Nazionale di Astrofisica (INAF), Istituto di Astrofisica e Planetologia Spaziali (IAPS), Rome, IT
2. Faculty of Physical Sciences, The Open University, Milton Keynes, UK

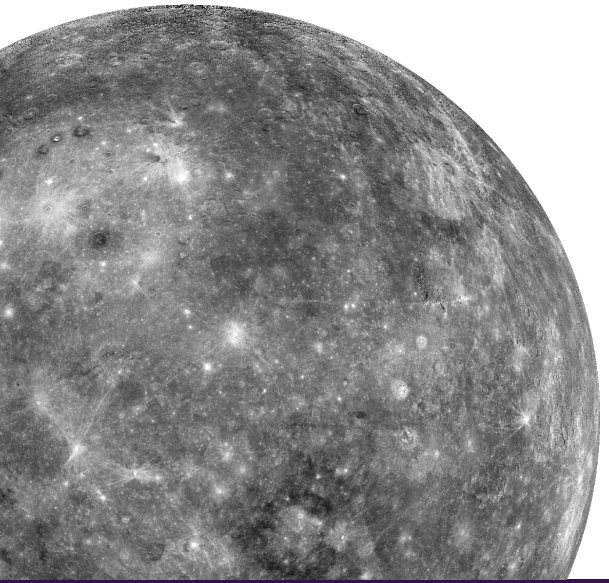
Geology & Planetary Mapping Winter School

EPN 2024 Research Infrastructure

European Union's Horizon 2020 - grant agreement No 871149.

GMAP
Geological Mapping

Mercury Practical Schedule



11:50-12:00	Zoom link change for Mercury practical	
12:00-12:30	**Mercury practical introduction**	V. Galluzzi
12:30-14:00	Lunch	
14:00-15:15	**Mercury tile mapping**	instructors
15:15-15:30	Break or unsupervised mapping	
15:30-16:45	**Mercury tile mapping**	instructors
16:45-17:00	Cloud upload and reconveen	
17:00-17:50	**Map discussion and merge**	V. Galluzzi et al.
17:50-18:00	Reconveen to plenary room	
18:00-19:00	**Invited Talk: Mercury's Tectonics**	Prof. K. Crane

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871149.

Mercury Practical Introduction

Dr. Valentina Galluzzi

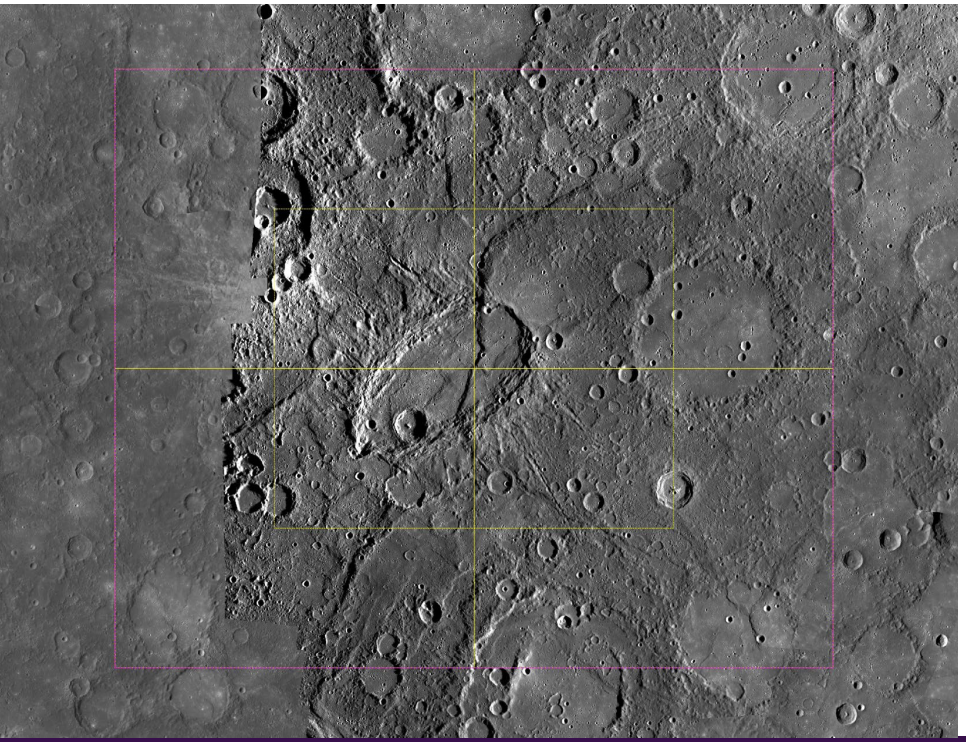
Istituto Nazionale di Astrofisica (INAF), Istituto di Astrofisica e Planetologia Spaziali (IAPS)

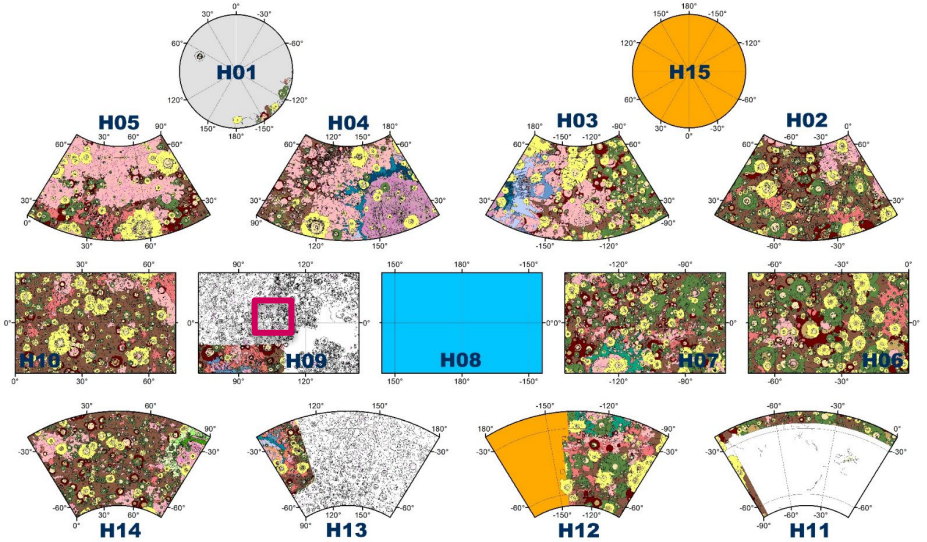
Via del Fosso del Cavaliere, 100, Tor Vergata, 00133 – Rome, IT

valentina.galluzzi@inaf.it

Mapping area

Beagle Rupes is one of the most prominent lobate scarps on Mercury.
Quick map link: https://bit.ly/3Gv0VAA





This area is currently being mapped by the European Mercury Mapping team. It is part of the **Eminescu quadrangle** where our colleagues **Mayssa El Yazidi** and **Gloria Tognon** are doing the linework!

Mapping area

Beagle Rupes is one of the most prominent lobate scarps on Mercury.
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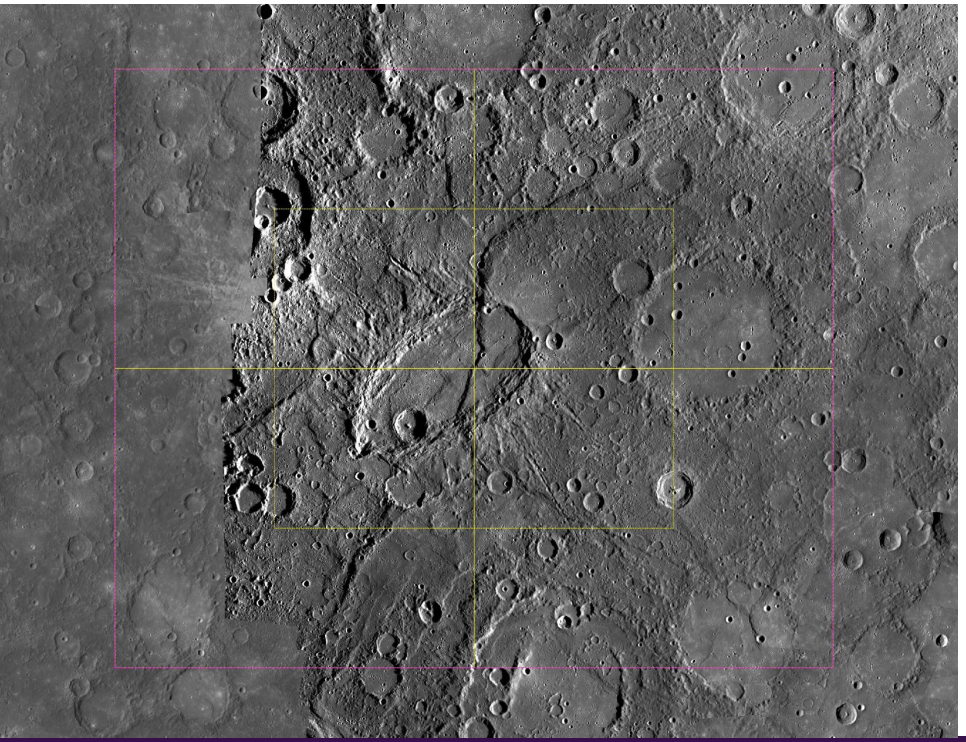
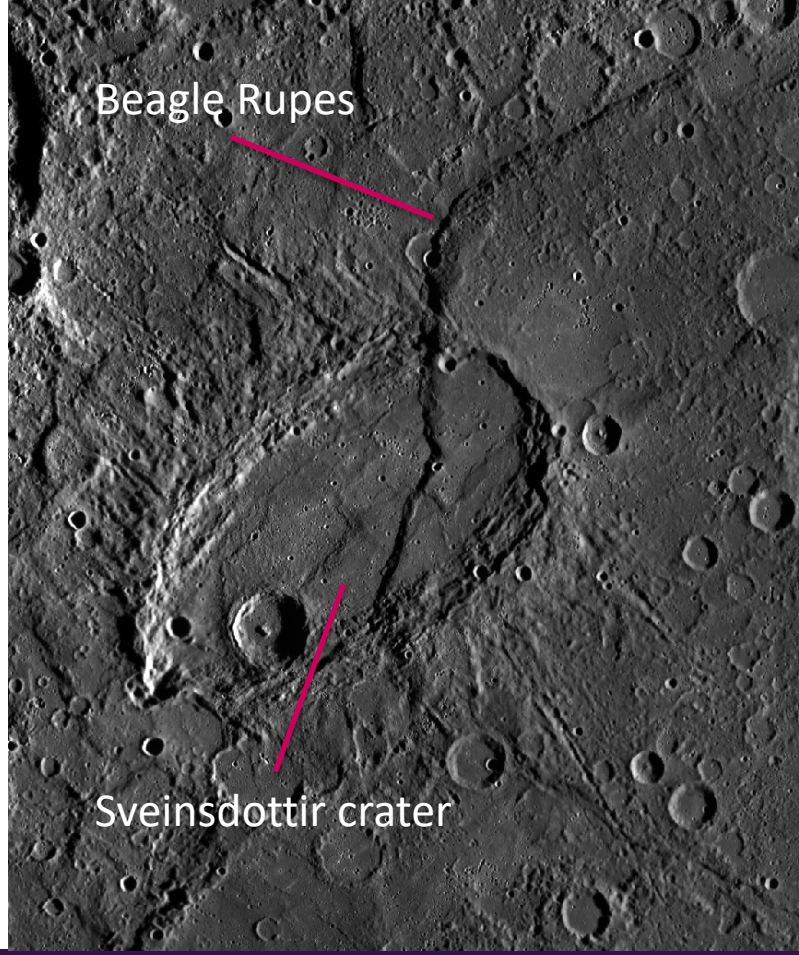
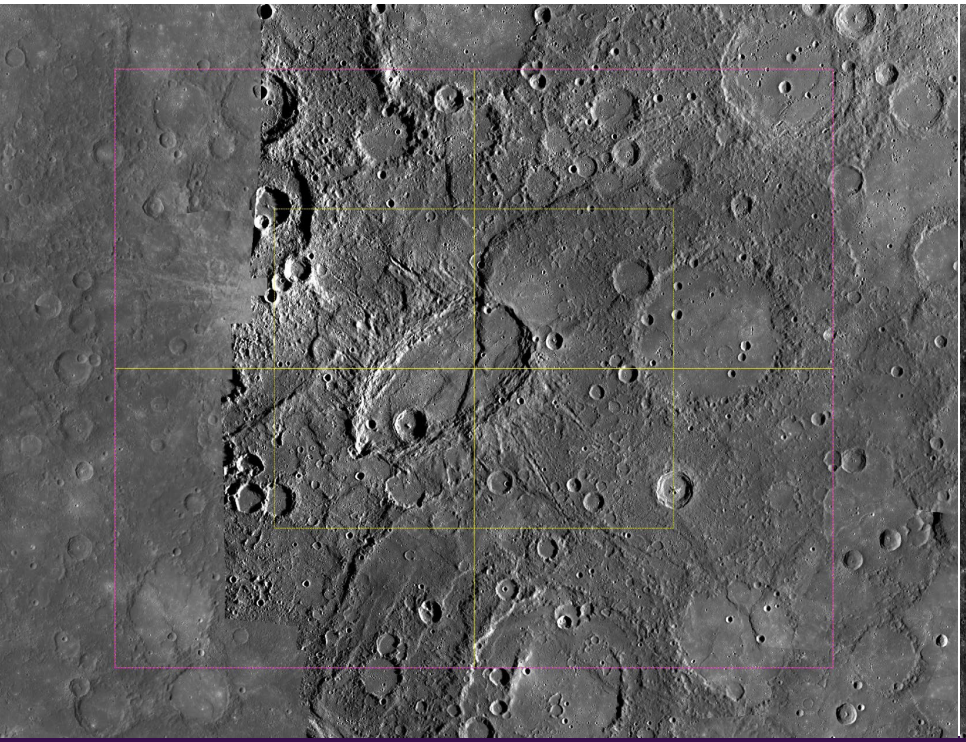


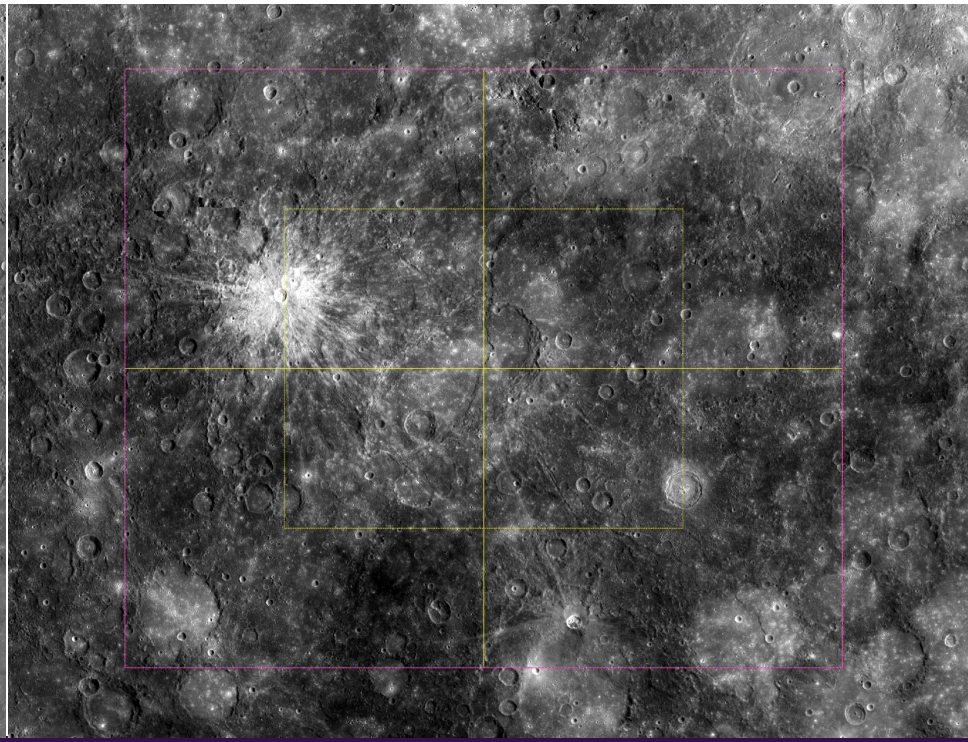


Available Monochrome Basemaps

Moderate incidence angle (regardless of sun direction), BDR 166 m/pixel
Good for morphological features interpretation

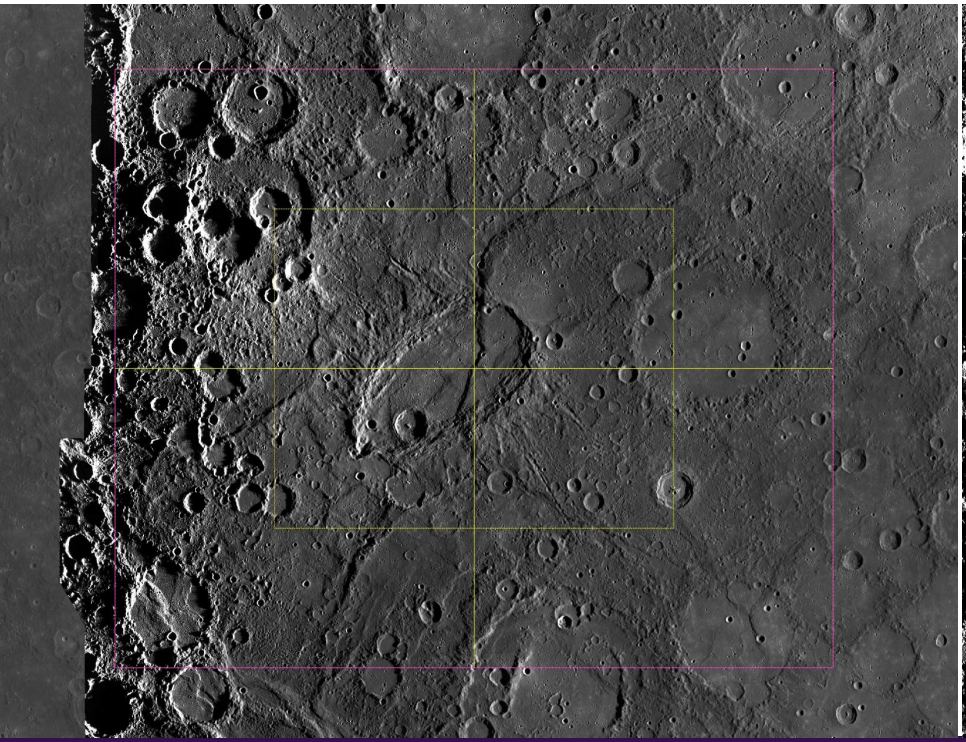


Low incidence angle, LOI 166 m/pixel
Good for recognizing bright and dark features

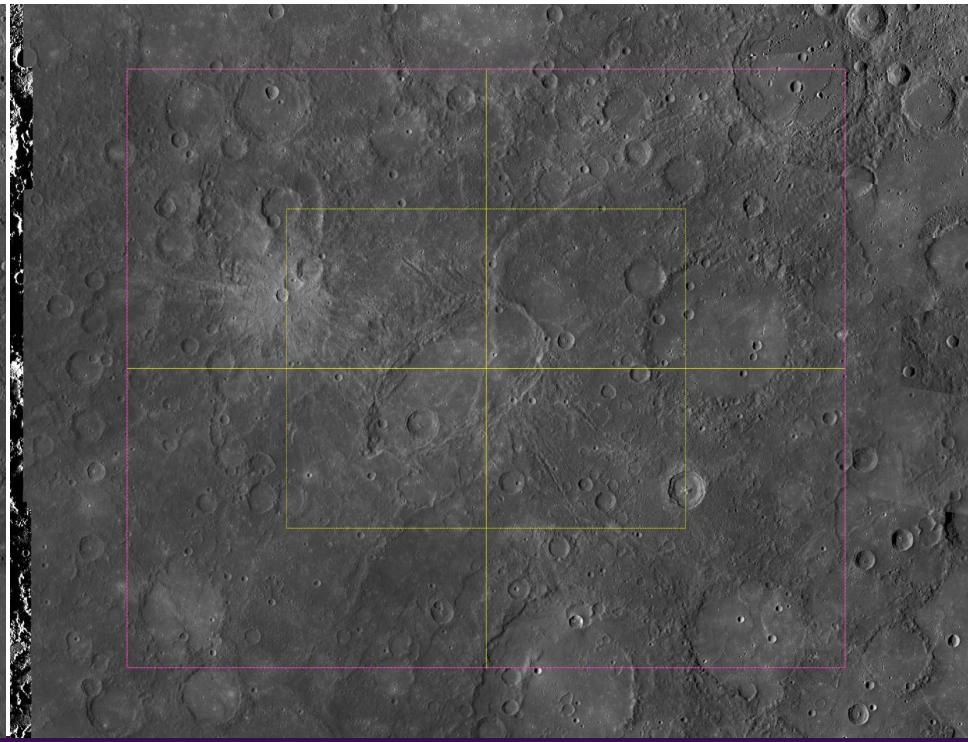


Available Monochrome Basemaps

High incidence (where available) angle from east, HIE 166 m/pixel
Good for morphological features interpretation under a different light

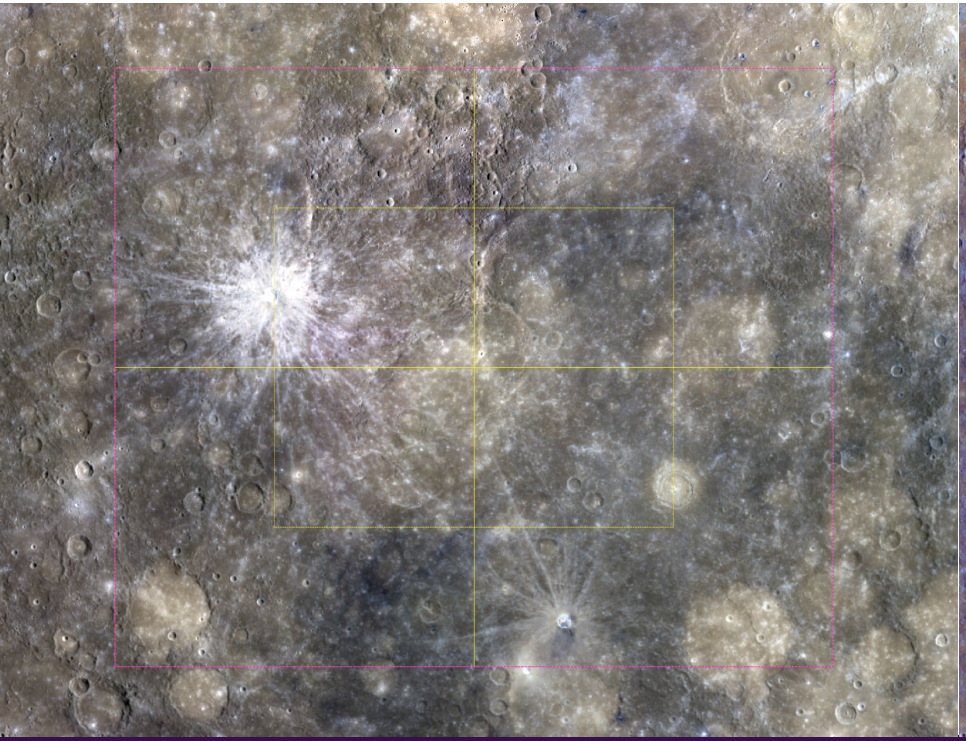


High incidence (where available) angle from west, HIW 166 m/pixel
Good for morphological features interpretation under a different light

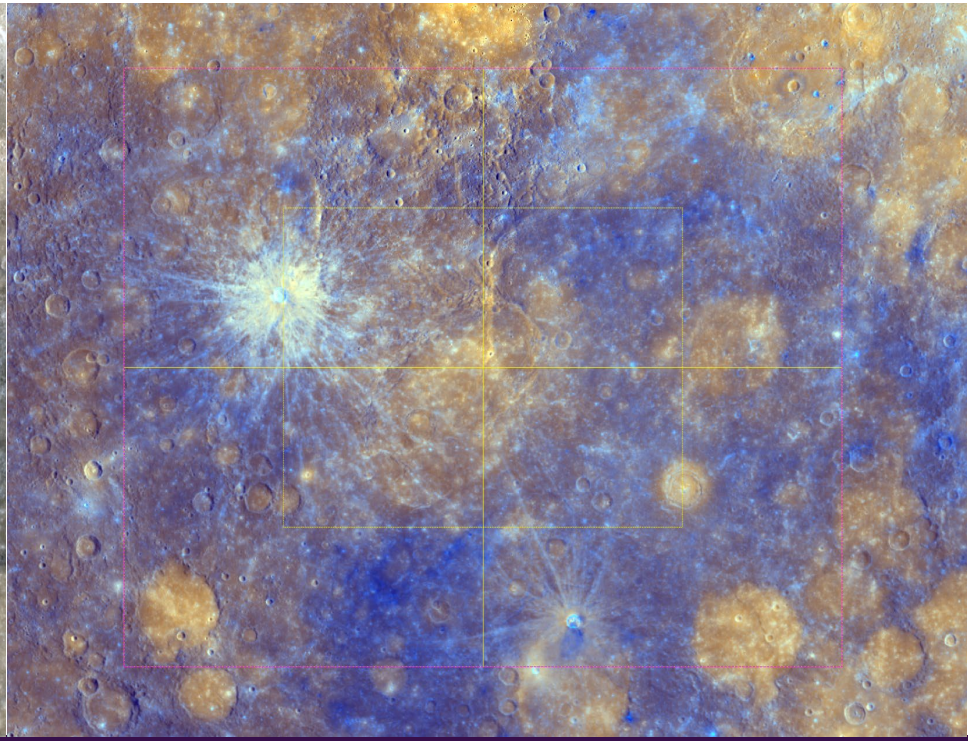


Available Color Basemaps

Color basemap, MDR 665 m/pixel
Good for color-units interpretation

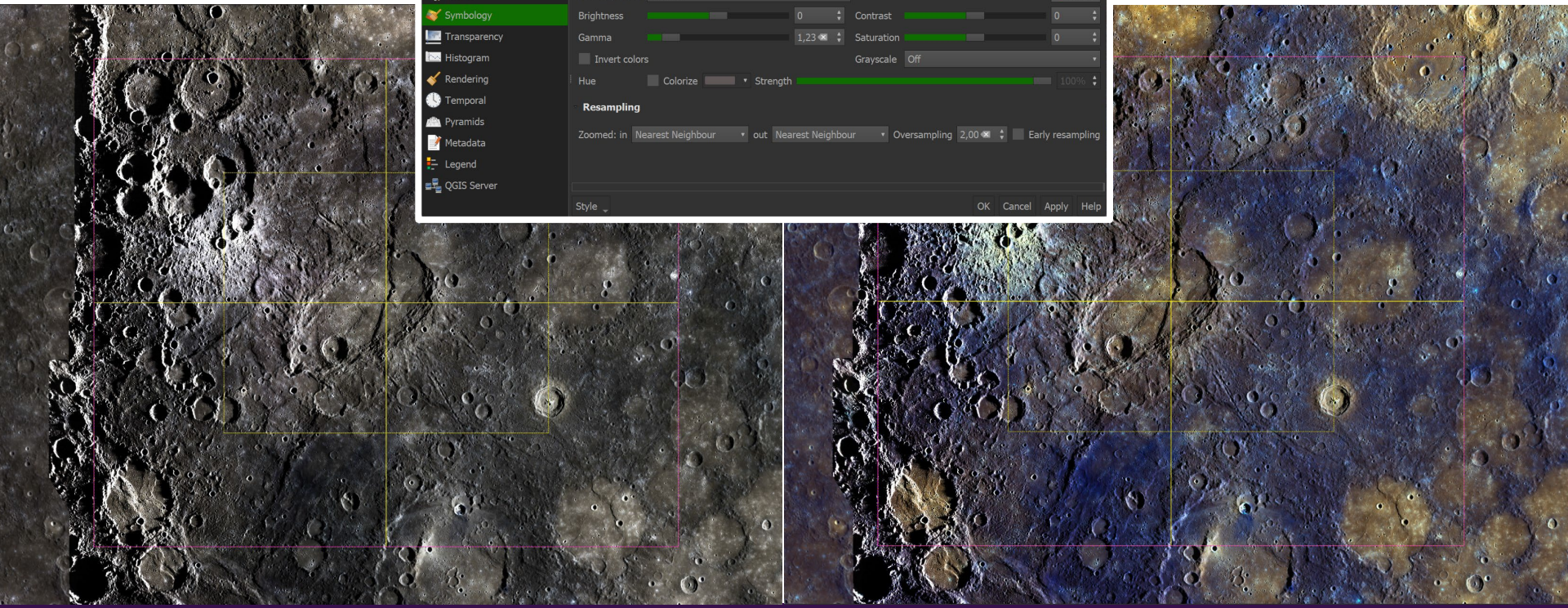


Enhanced color basemaps, PCA 665 m/pixel
Good for color-units interpretation



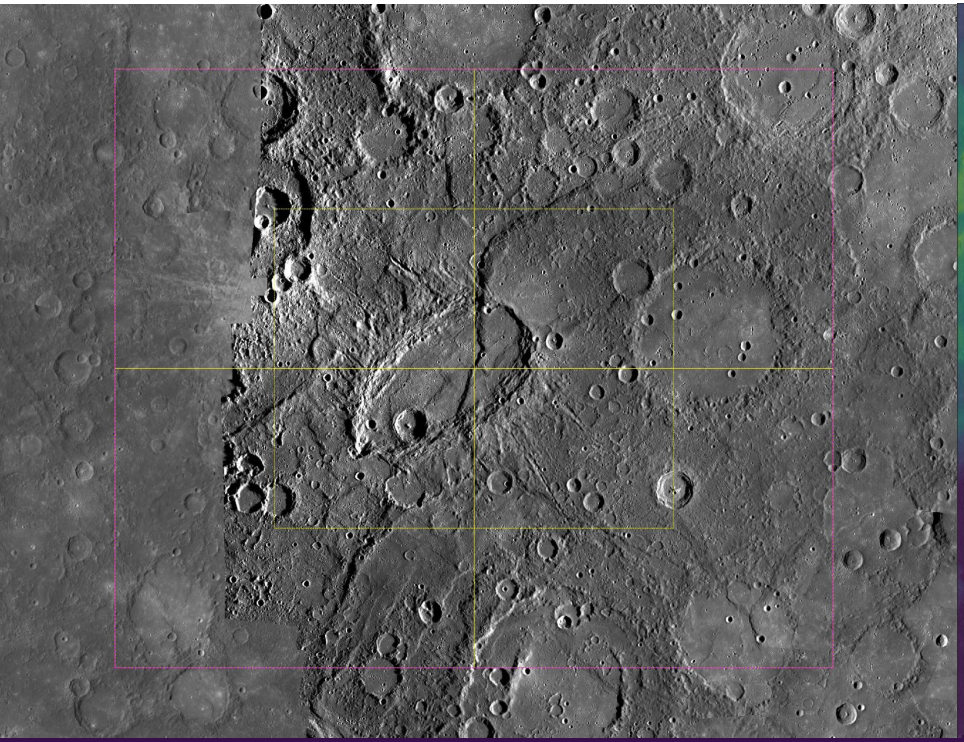
Available Color Basemaps

You can exploit monochrome basemaps resolution by putting the color basemaps in blending mode (e.g., overlay)

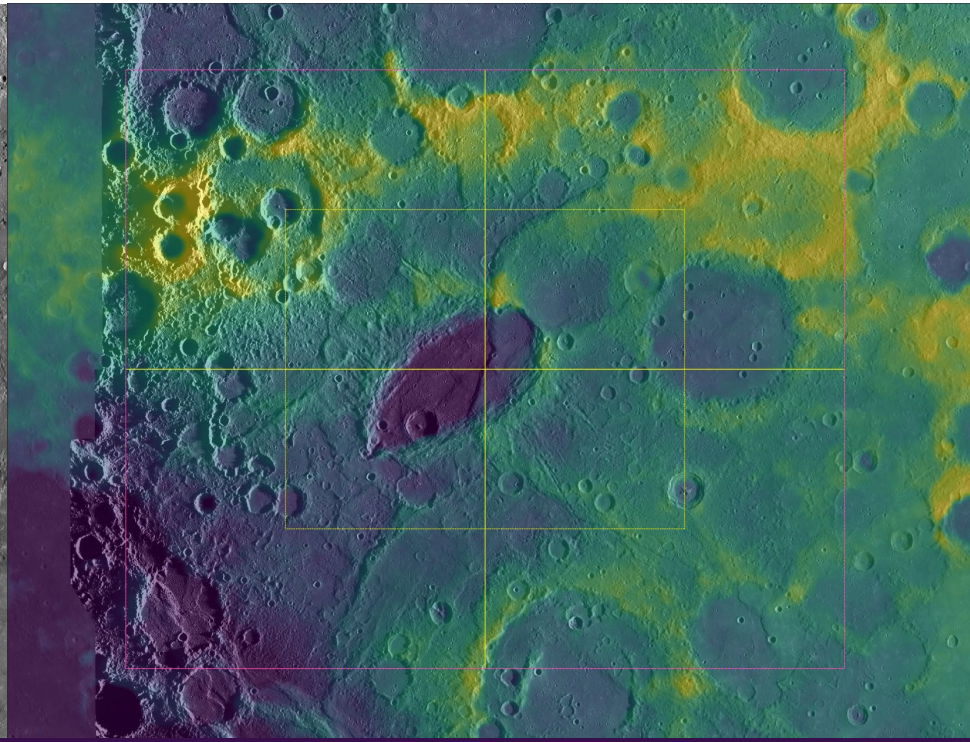


Topography

Moderate incidence angle (regardless of sun direction), BDR 166 m/pixel
Good for morphological features interpretation

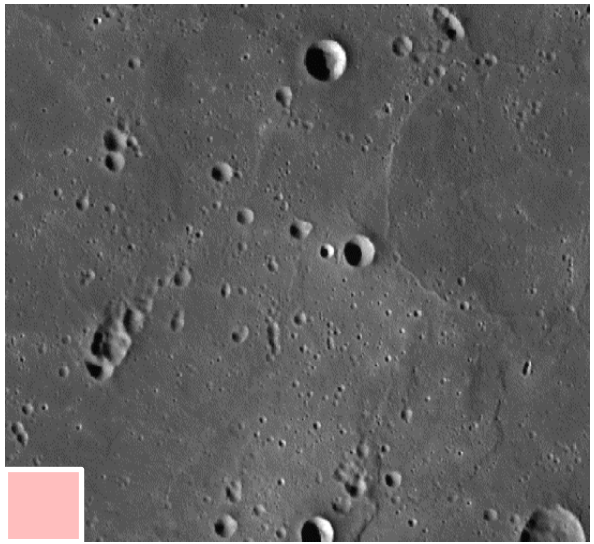


USGS stereo topography, 665 m
Good for recognizing proximal ejecta blanket extent



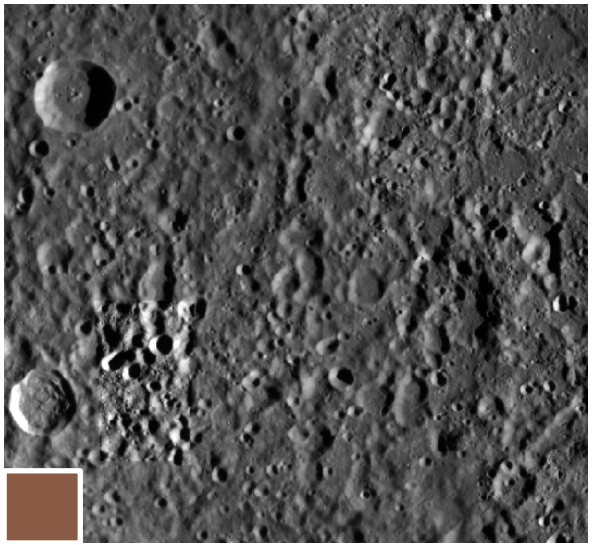
Terrain Units

smooth plains



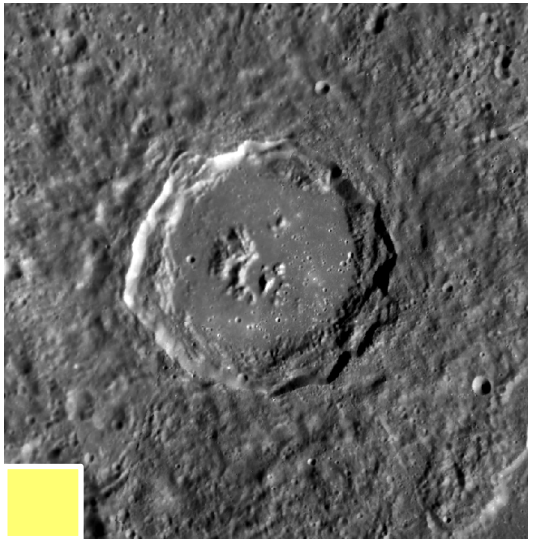
intermediate plains

intercrater plains



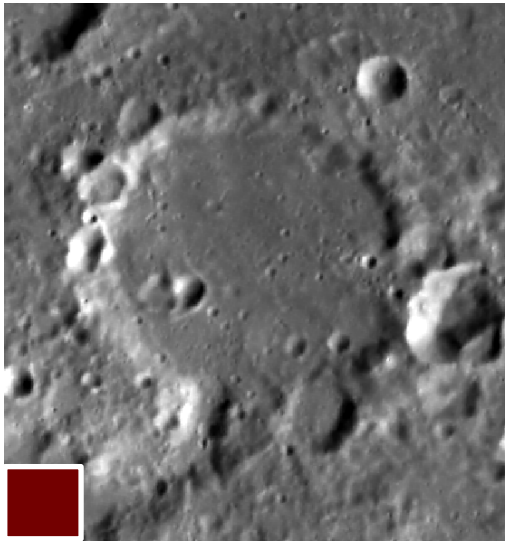
Crater materials

C3—fresh



C2—degraded

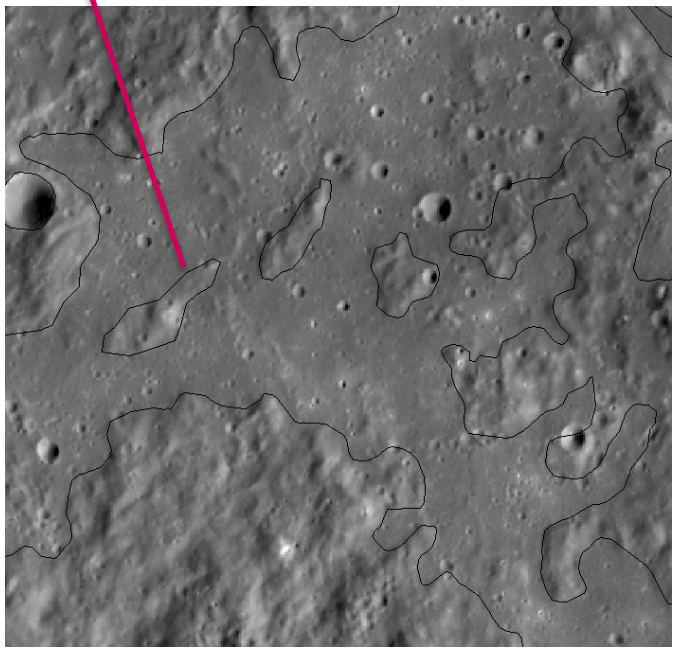
C1—very degraded



Mapping contacts and crater rims

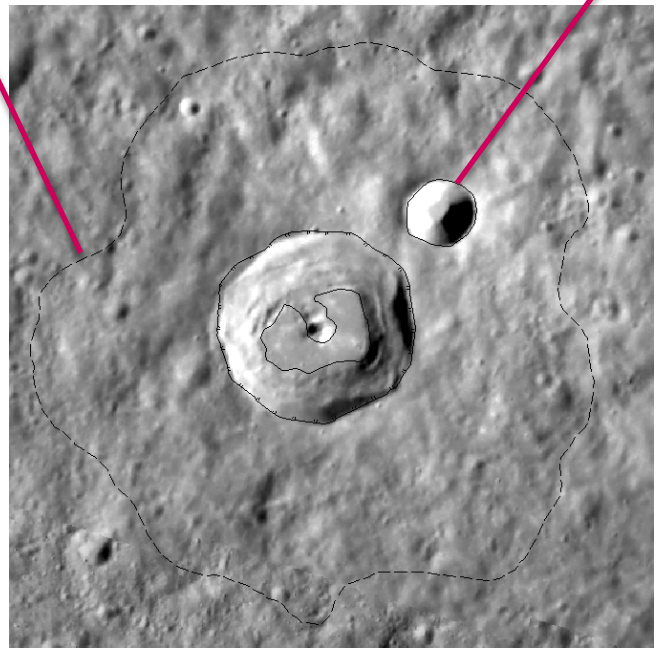
mapping scale: never zoom in beyond ~1:400,000-scale

certain contacts



approximate contacts

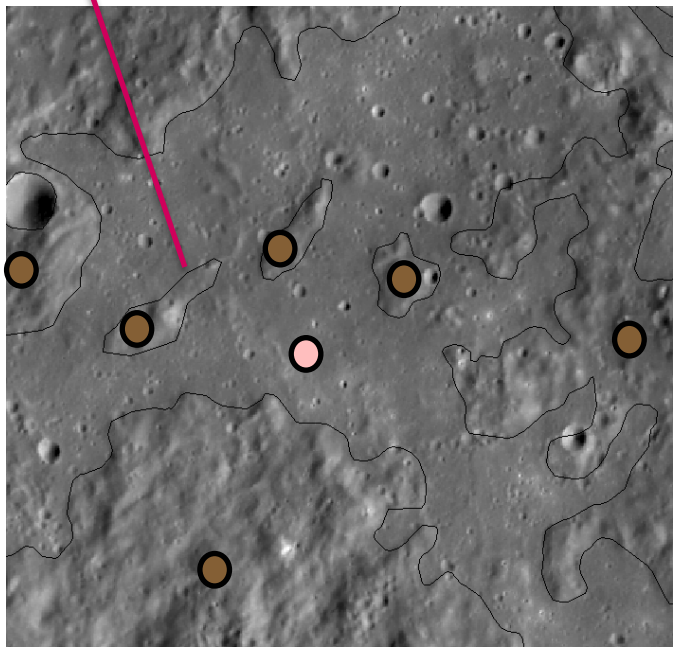
Crater rims use linear features



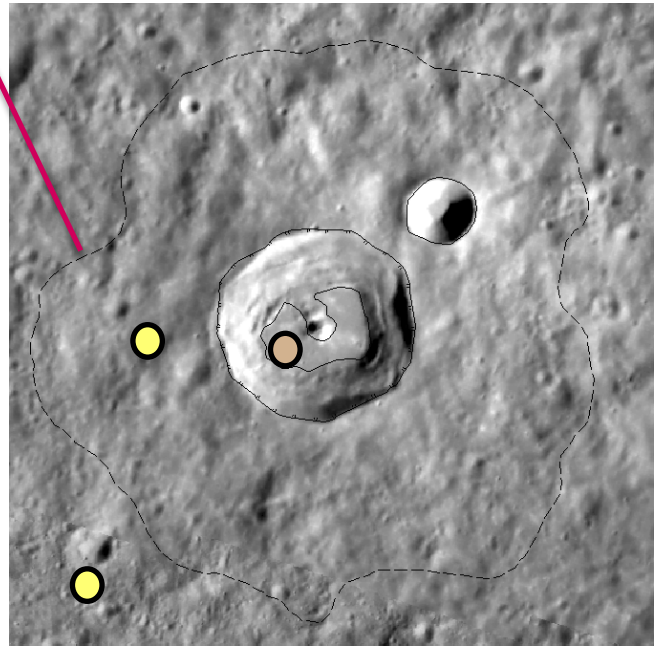
Mapping contacts, i.e. units interpretation

mapping scale: never zoom in beyond ~1:400,000-scale

certain contacts



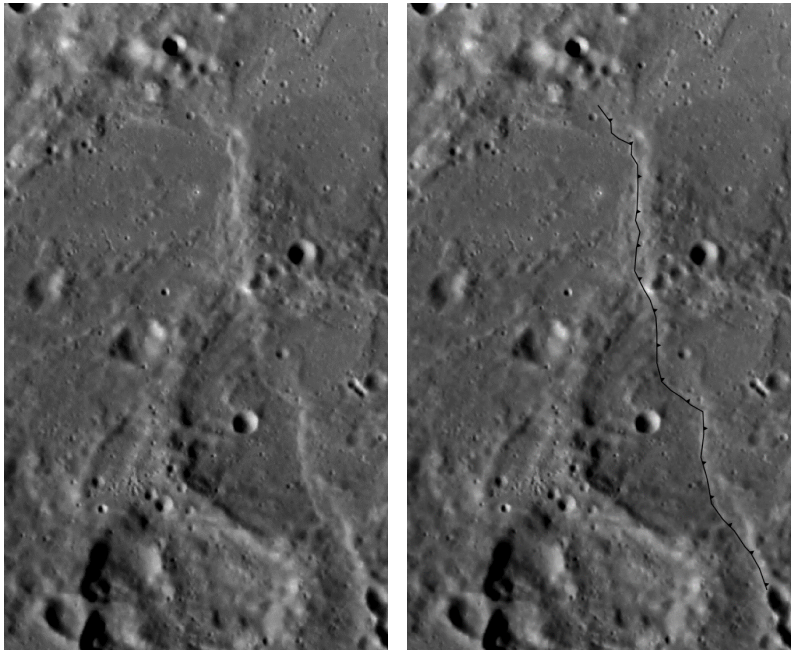
approximate contacts



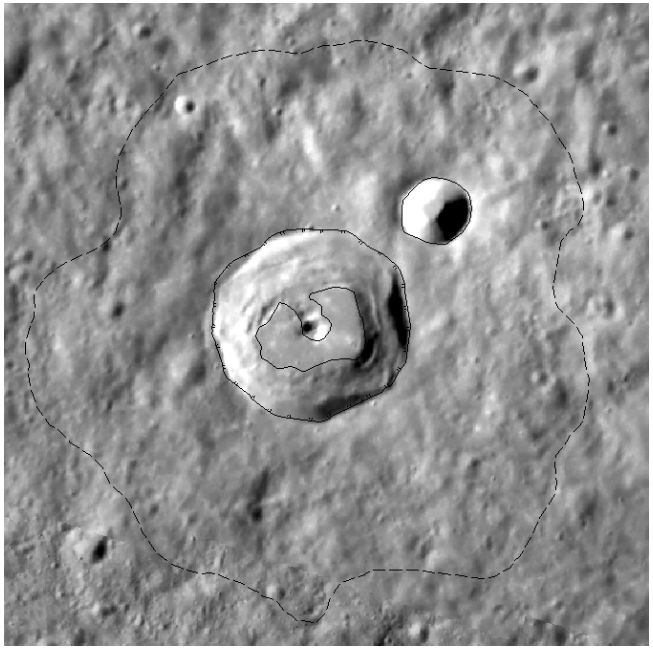
Mapping linear features, i.e. apparent morphology

mapping scale: never zoom in beyond ~1:400,000-scale

thrusts, draw at the base of the scarp



crater rims, draw the crest



Mapping area

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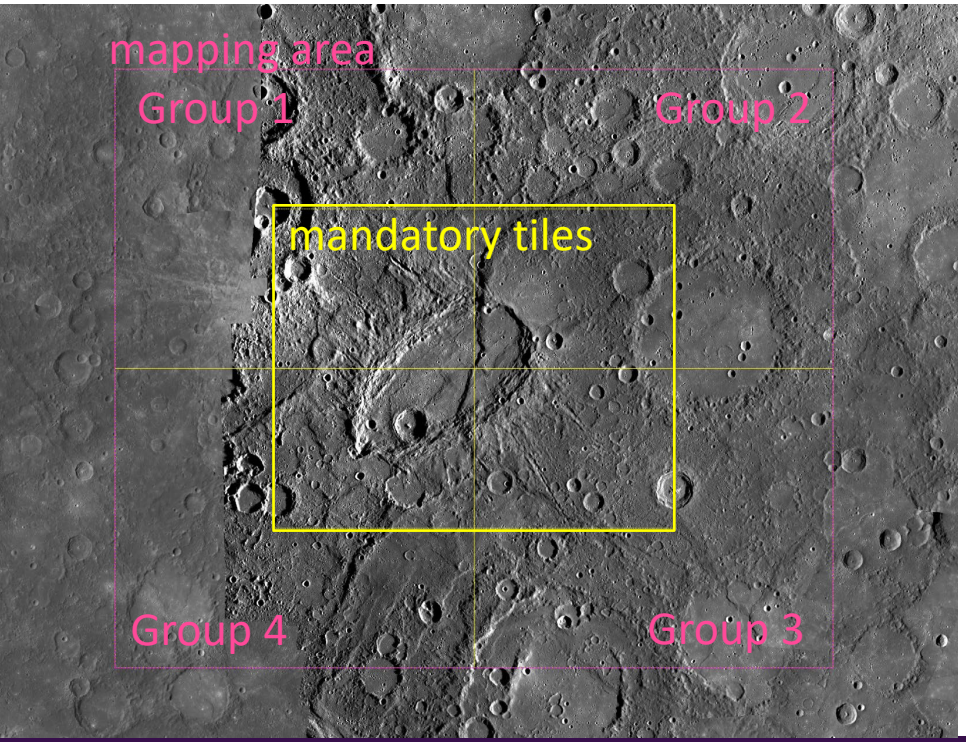

Tasks:

- Complete the mandatory tile of your group;
- ...If you have some time left, try mapping the rest of the group tile;
- ...If you have more time left, feel free to stop or continue mapping an area of your choice;
- Instructors will guide you through the mapping process;
- Instructors will ask you to share your screen;
- You can ask to share your screen yourself;
- One volounteer will represent the group and present his/her mapping work to everybody;
- You will reconveen at 17:00 discussing your tile and how to merge it to the others.

GMAP
Geological Mapping

Mercury practical instructors:
Group 1 | Annie Lennox

Doctoral studies in planetary mapping and geoscience at the Open University.

Current project involves geologically mapping Mercury's south polar quadrangle, Bach (H-15).

The Open University

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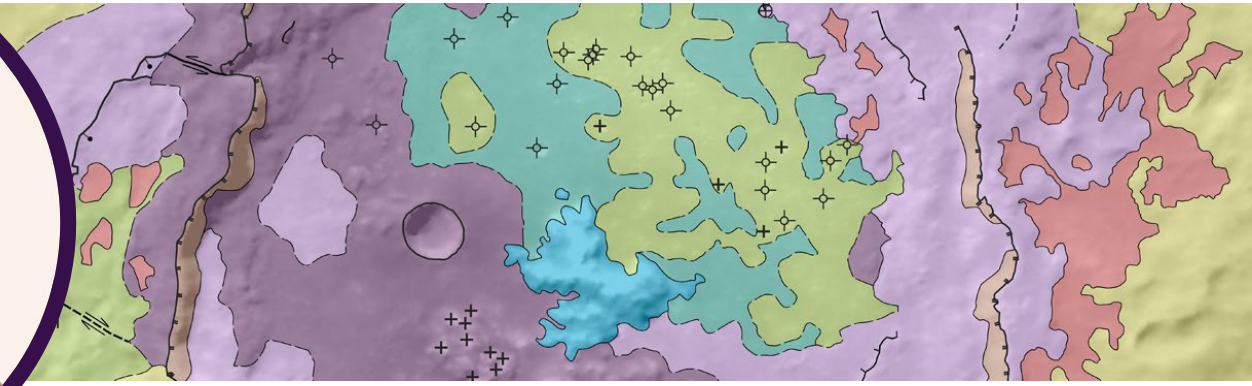
Mercury practical instructors:
Group 2|Marc Canale



Undergraduate studying Planetary Sciences at the Open University.
Alumni of PlanMap Winter School 2021.

Produced and presented map of Sibelius Crater, Mercury at the Geological Society's 2021 William Smith Meeting.

The Open University

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Geological Mapping

Mercury practical instructors:
Group 3 | Dr. Lorenza Giacomini

Staff researcher at the National Institute of Astrophysics (INAF), Institute for Space Astrophysics and Planetology (IAPS) in Rome.

Works on geological mapping of Mercury, considering both morphologic and spectral characteristics of the terrains.

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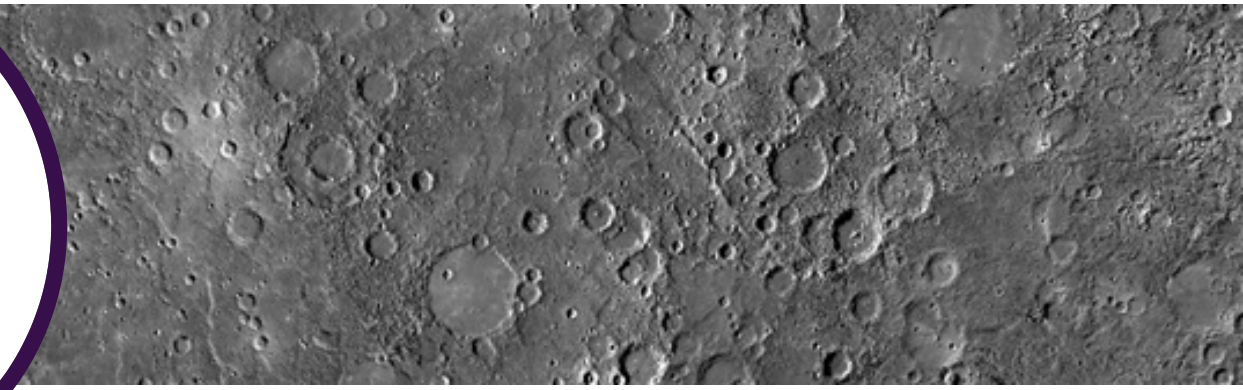
Mercury practical instructors:
Group 4 | Alistair Blance



Doctoral studies in planetary mapping and geoscience at the Open University.

PhD project on mapping the Discovery quadrangle in Mercury's southern hemisphere. Have recently been looking into crater ejecta features across Mercury, in addition to a chaotic terrain within the Discovery quadrangle

The Open University

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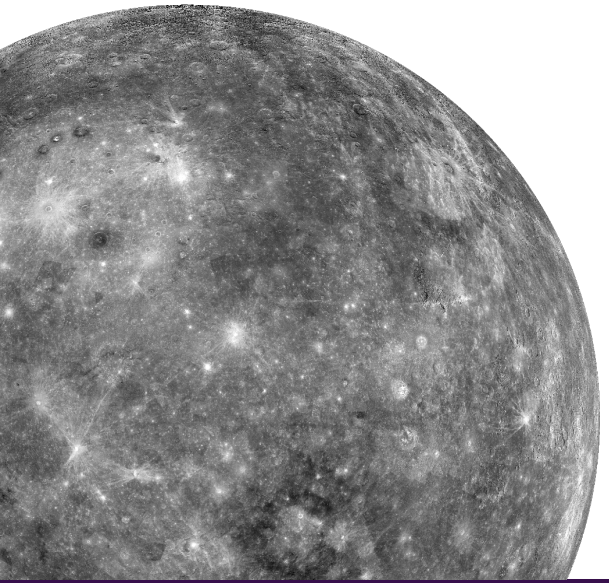
Mercury Practical Schedule



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