

PLANetary MAPping at different scales: insights on Mercury and the Moon

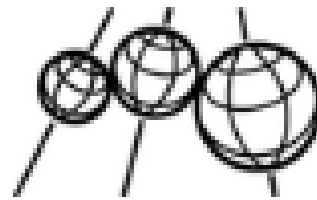
PhD student: Gloria Tognon



Padova, 26.10.2018



Planetary Bodies of Interest



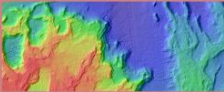
PLANMAP project

Data Merging from available sources

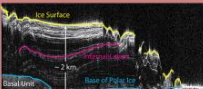
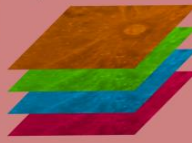
VIS Imagery



DTM



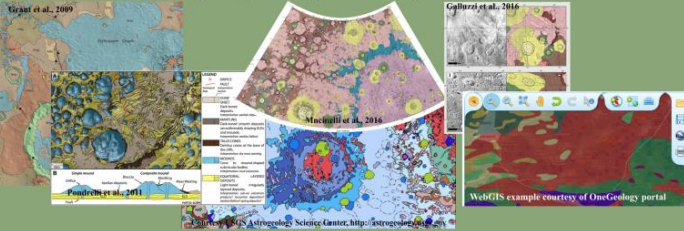
Spectral cubes



Radar sounder

Products

Regional and High-resolution (Moon, Mars) geological maps served by WebGIS



Virtual reality environments for astronauts and scientists training, integrated with geological informations



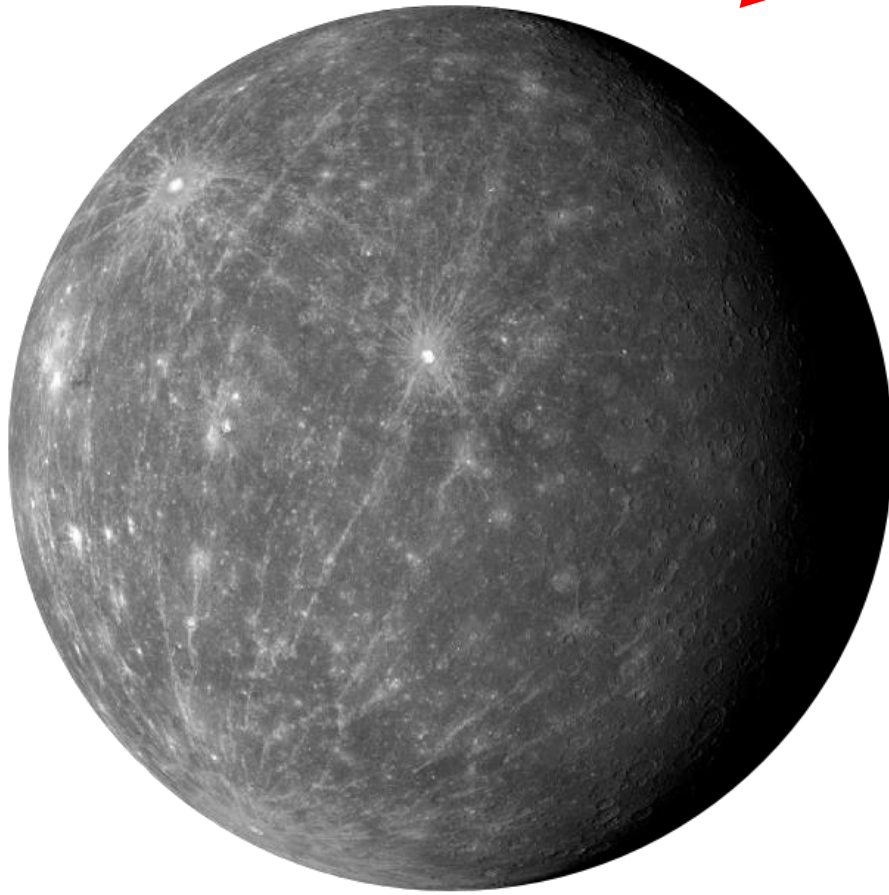
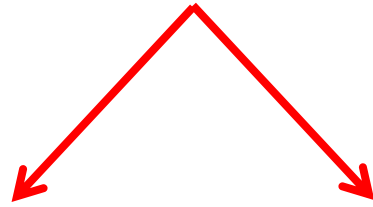
- Highly informative geological maps
- Multiple data sources
- 3D geological representations
- Future space missions



PLANMAP mapping products:

- Standard USGS-like geological maps
- Integrated geo-spectral and geo-stratigraphic maps
- Geo-structural maps
- Geo-modelling maps
- Landing site and traverse maps
- In-situ integrated maps
- Digital outcrop models
- Subsurface models
- 3D models for Virtual Reality environments

PhD project targets



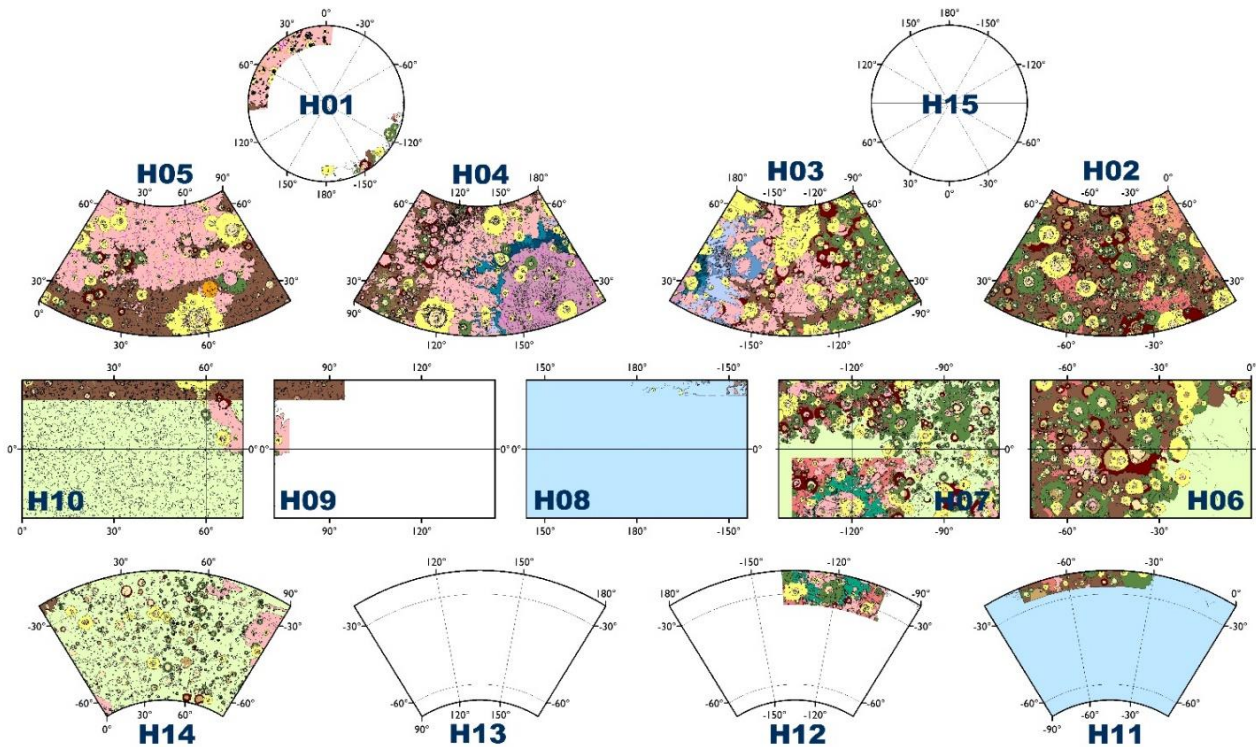
Mercury



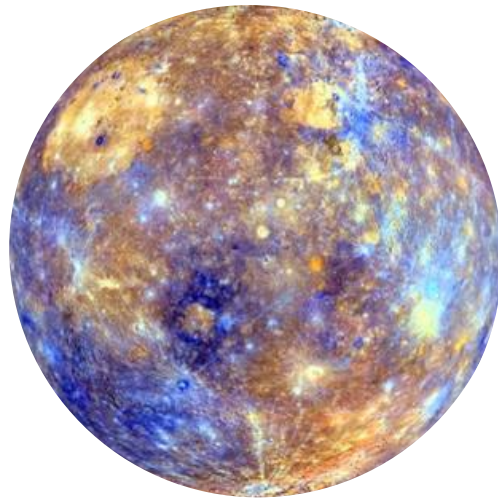
Moon



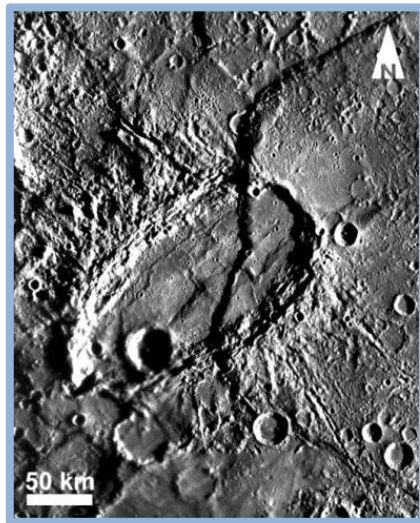
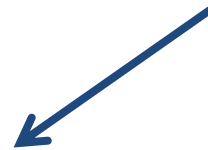
Quadrangle based 1:3M regional maps



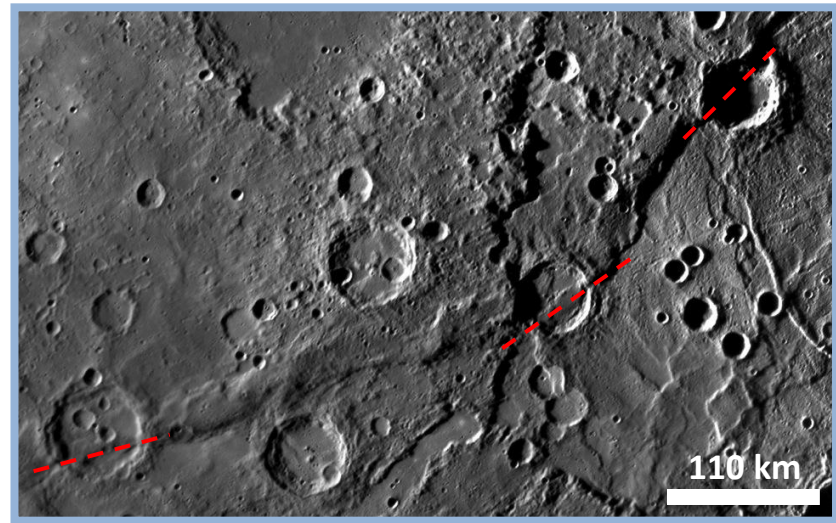
Color variegation



Looking for ...

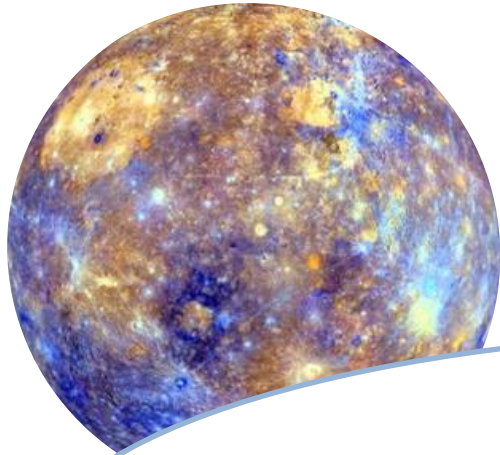


Deformed craters

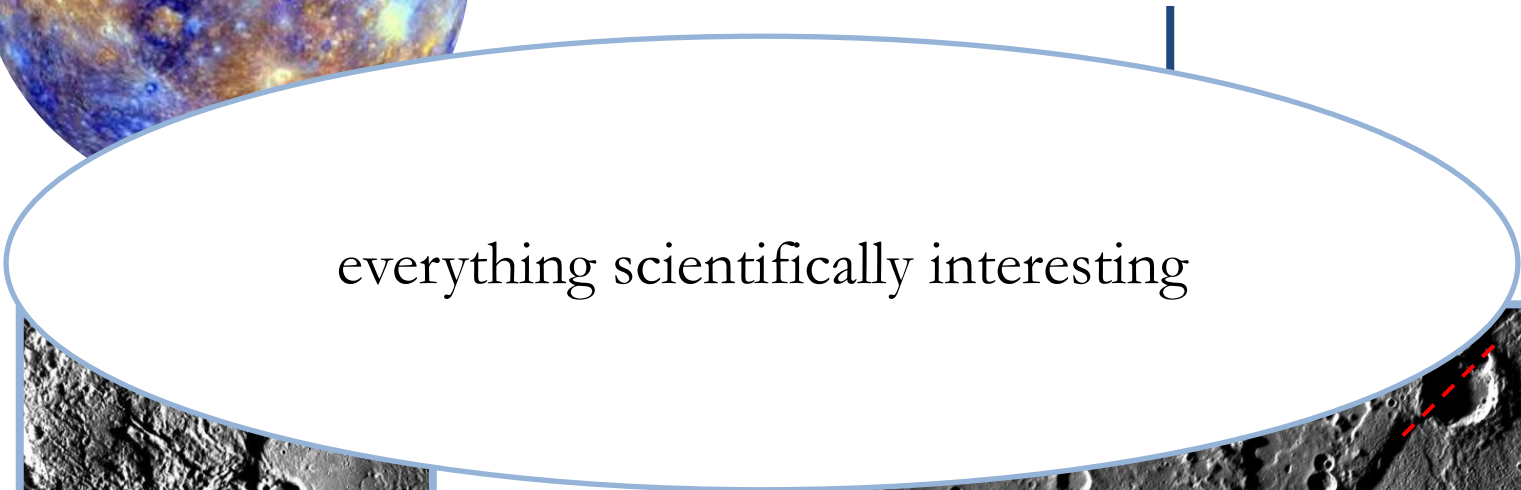


Craters cut by fault systems

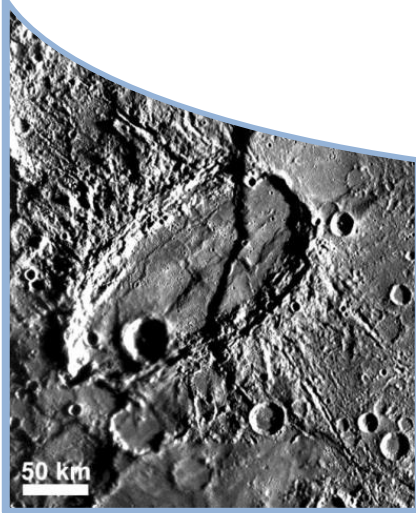
Color variegation



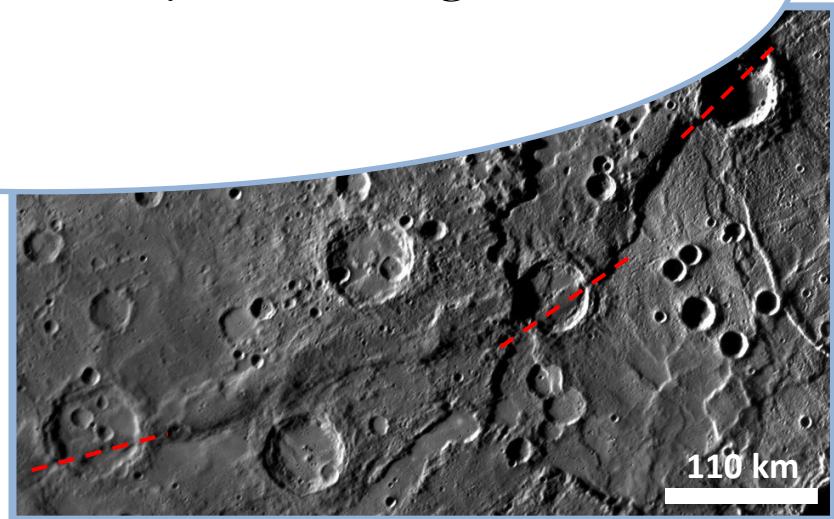
Looking for ...



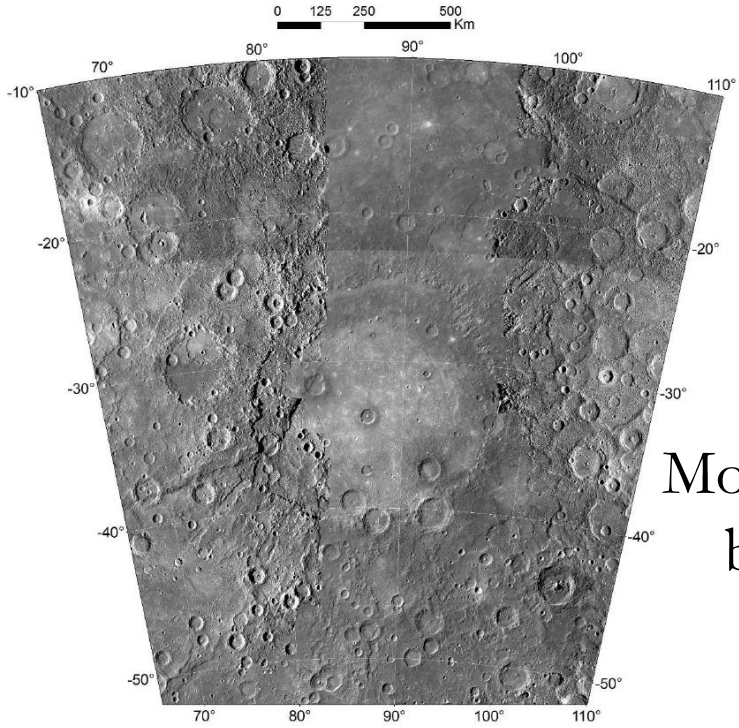
everything scientifically interesting



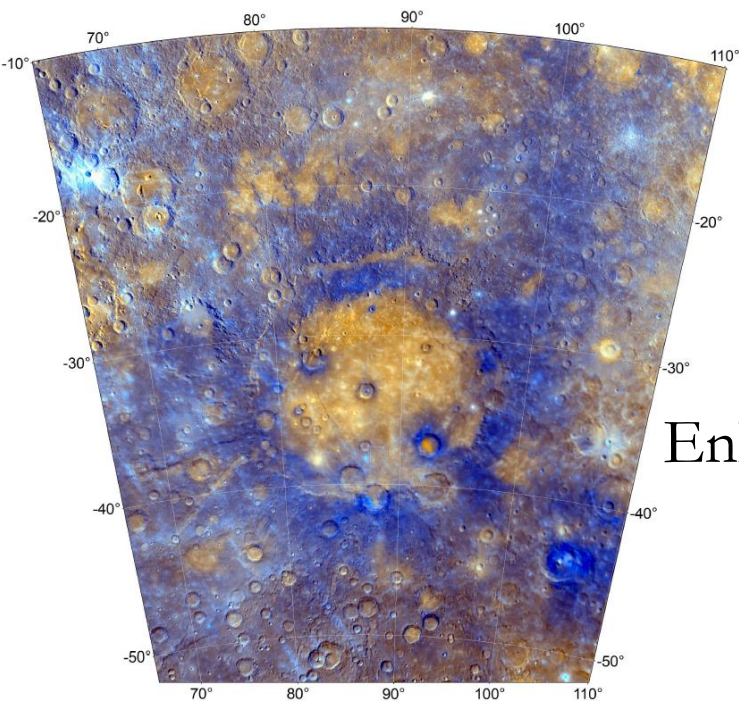
Deformed craters



Craters cut by fault systems

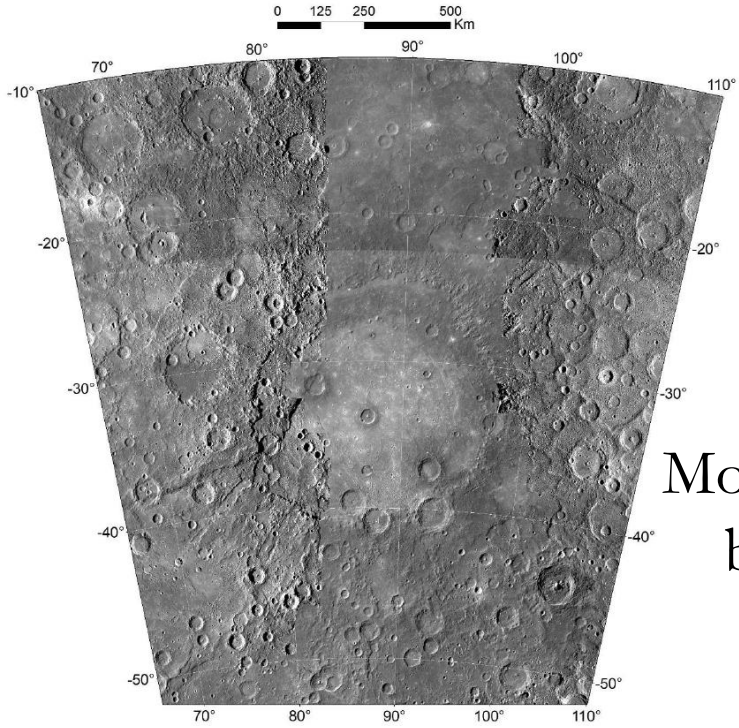


Monochrome
basemap

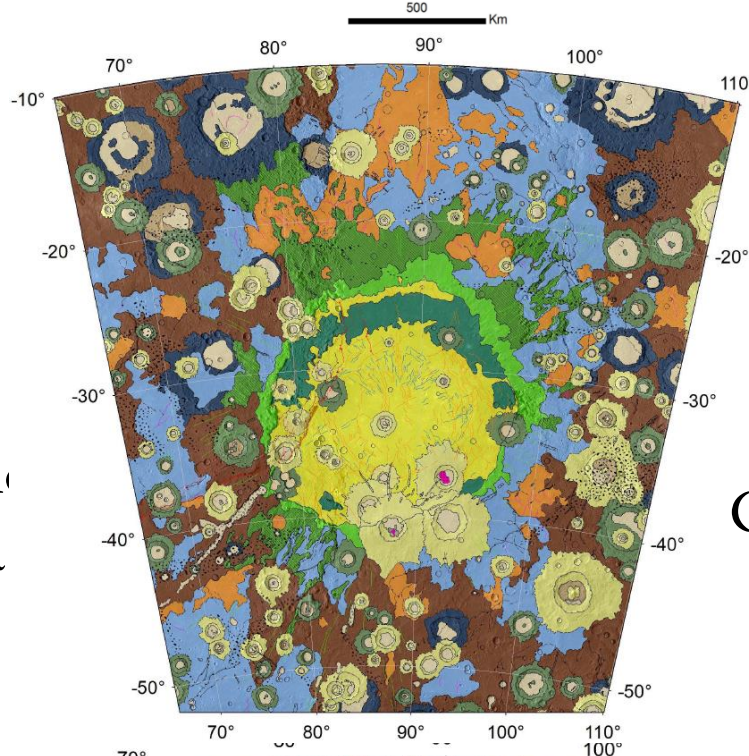


Enhanced colour
basemap

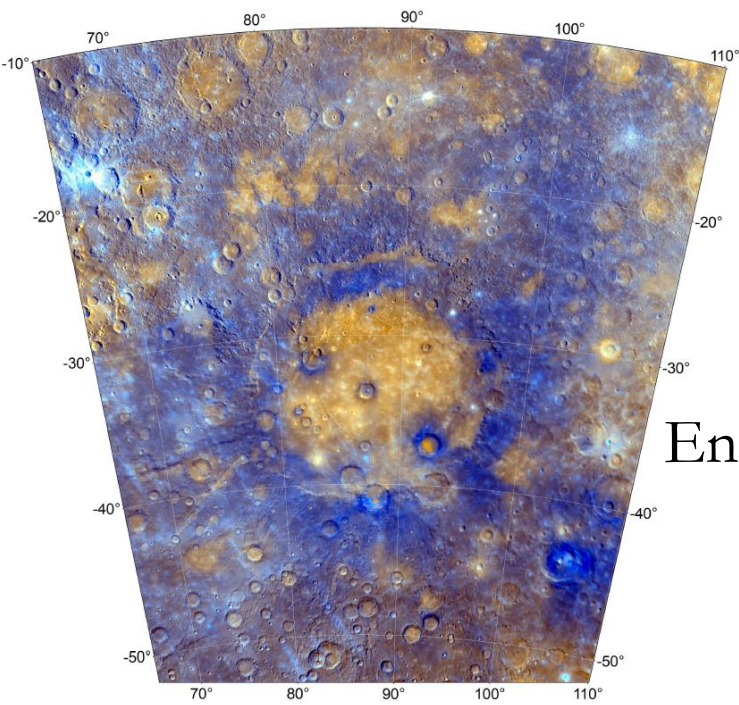




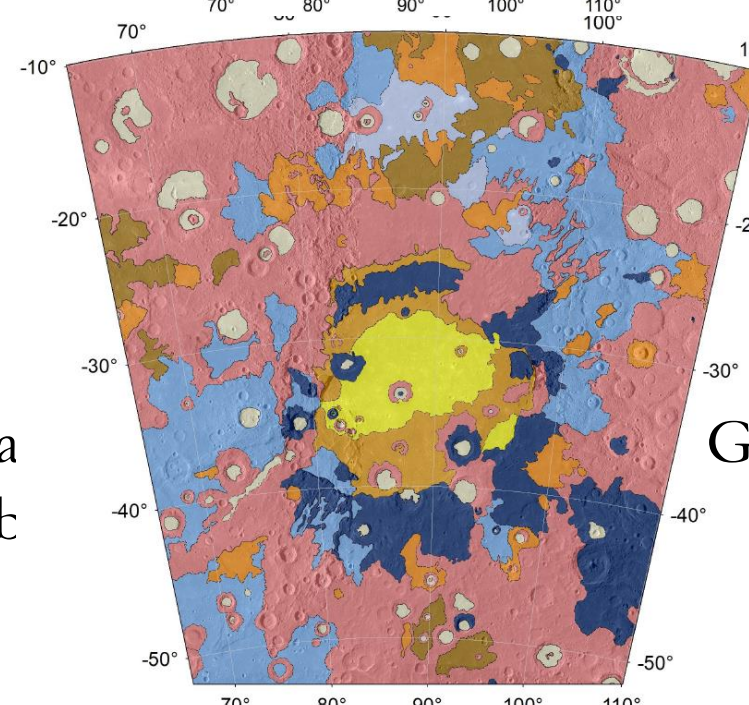
Monba



Geological map

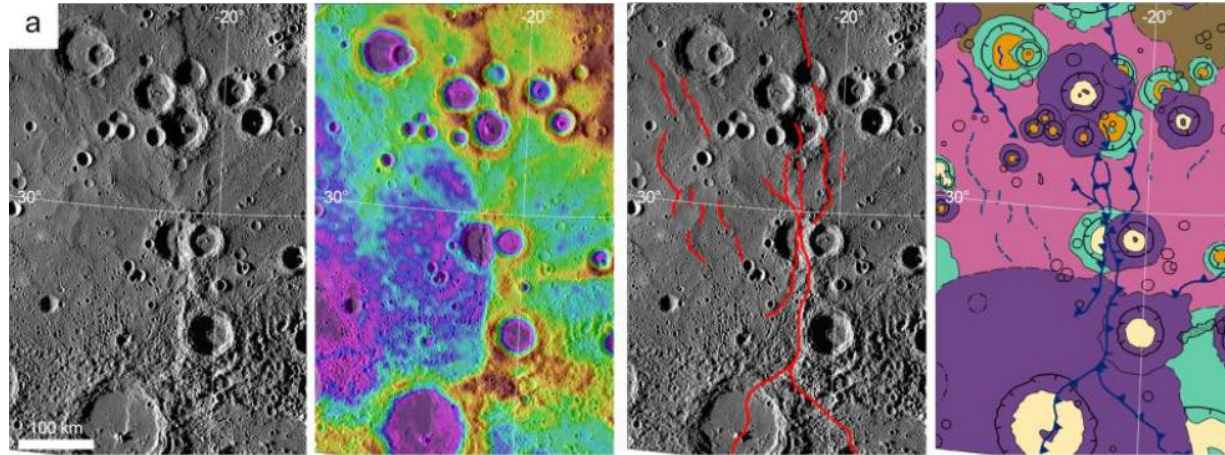


Enhab



Geo-stratigraphic map

Monochrome DTM Faults Geo-structural
 basemap topography mapping map



Crater
 displacement



Horizontal and vertical
 slip component



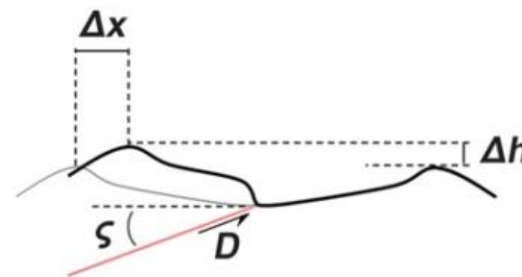
Trigonometry



Slip
 plunge



Amount of
 displacement



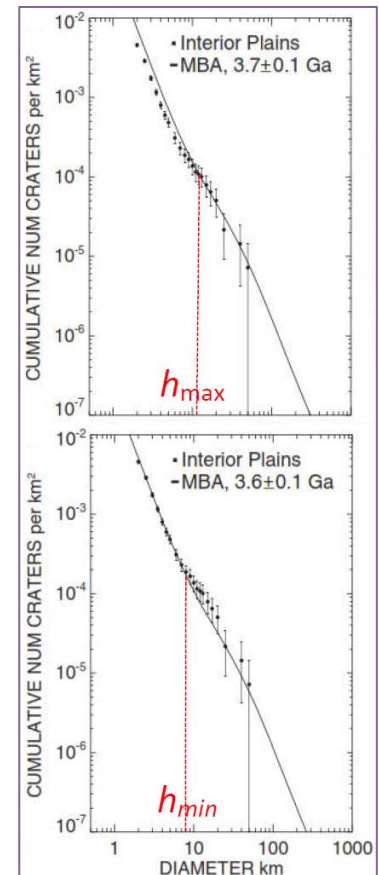
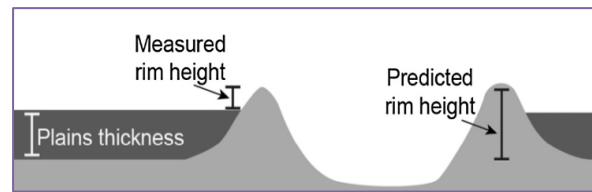
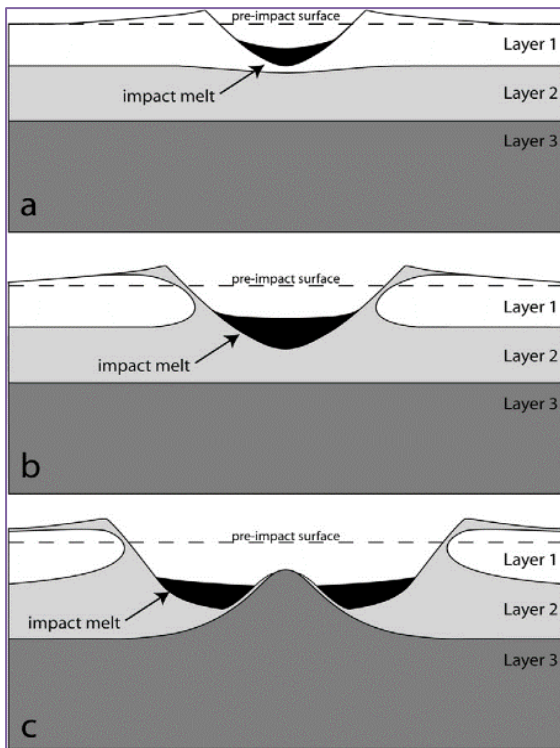
3D modelling



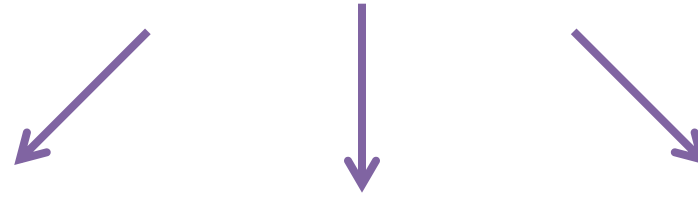
Maximum crater excavation depth

Crater rim heights

Crater counting for age models



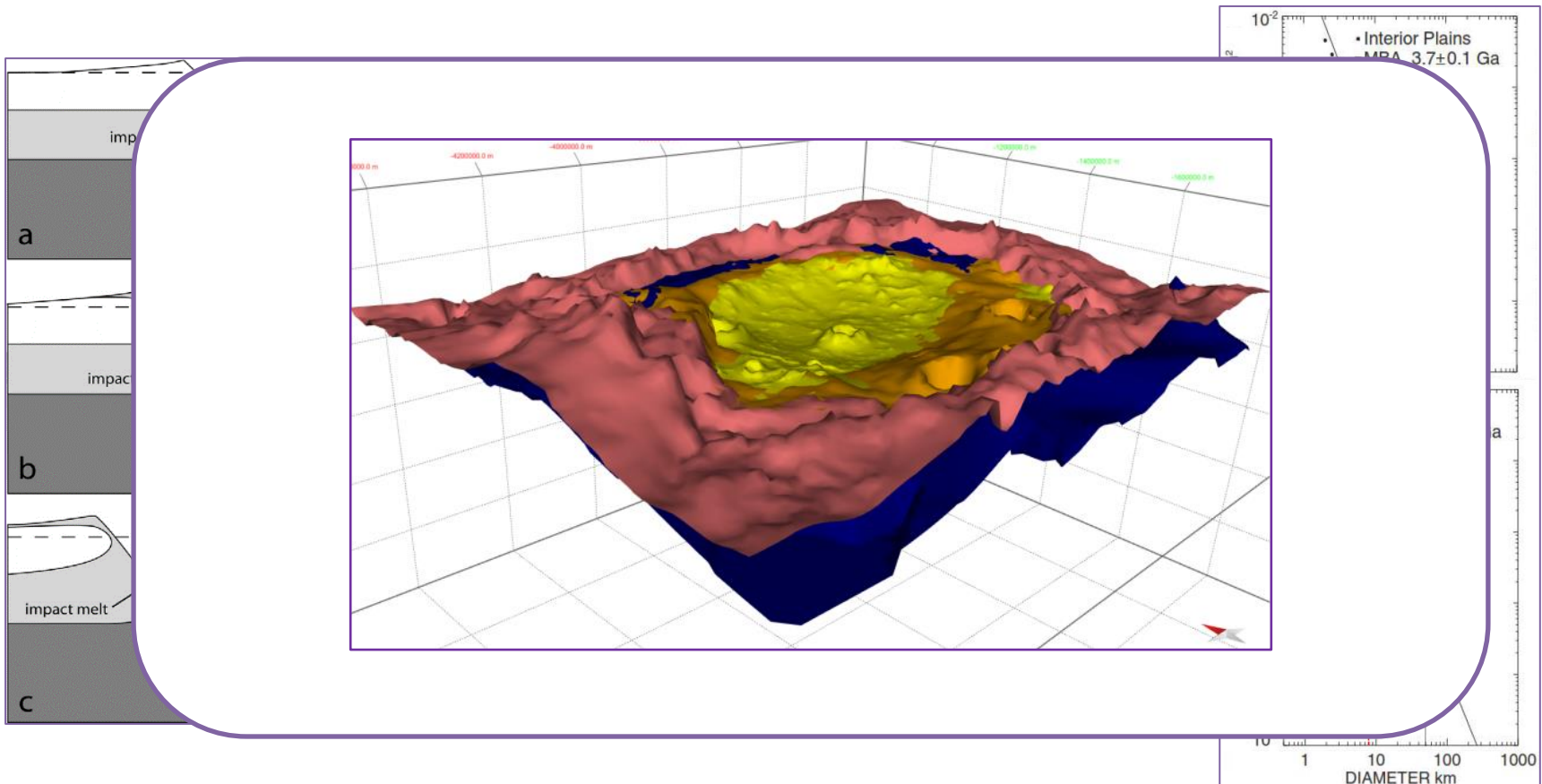
3D modelling



Maximum crater excavation depth

Crater rim heights

Crater counting for age models

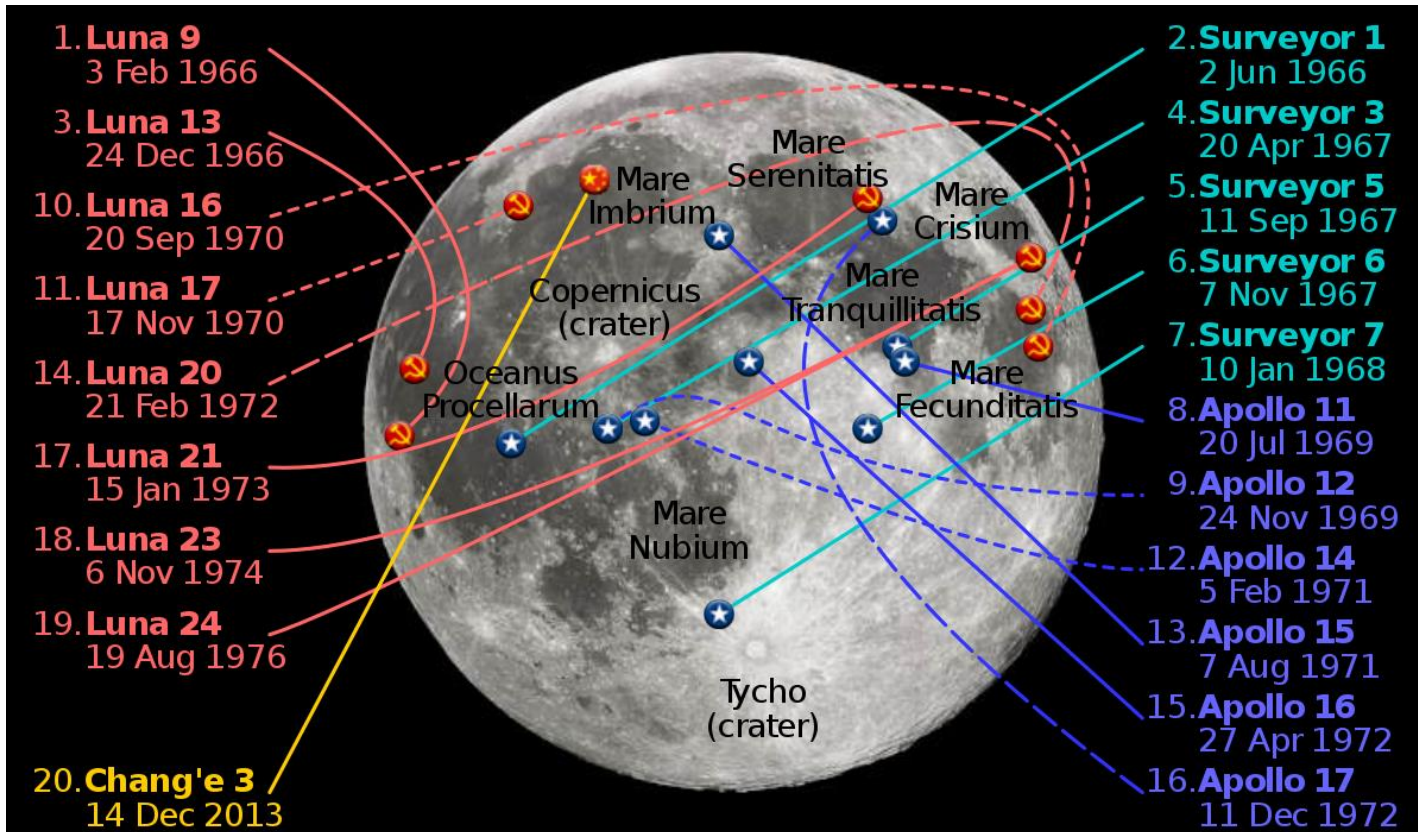




Landing site

=

a scientifically interesting
and safe place





Topography

Dust and boulders
index

Erosional features

Gravitational
anomalies

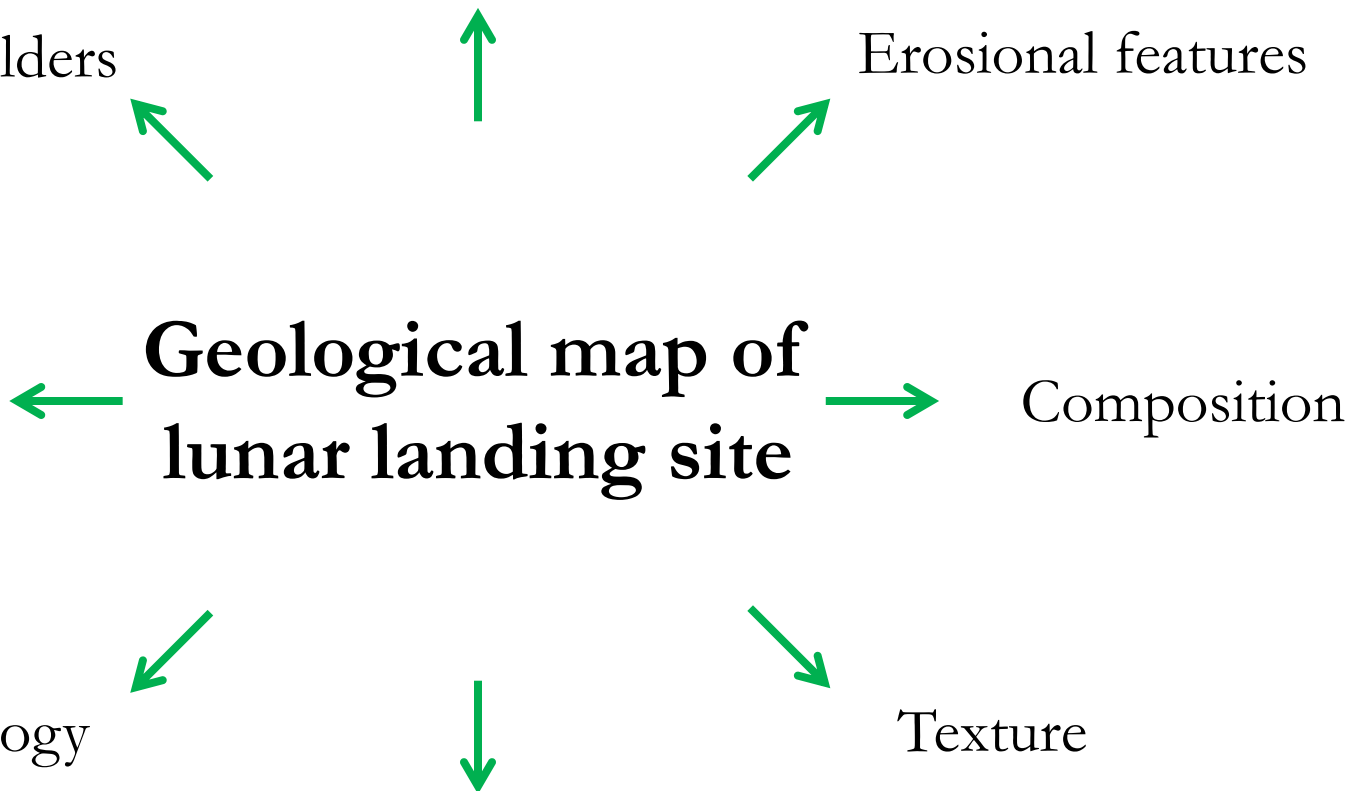
**Geological map of
lunar landing site**

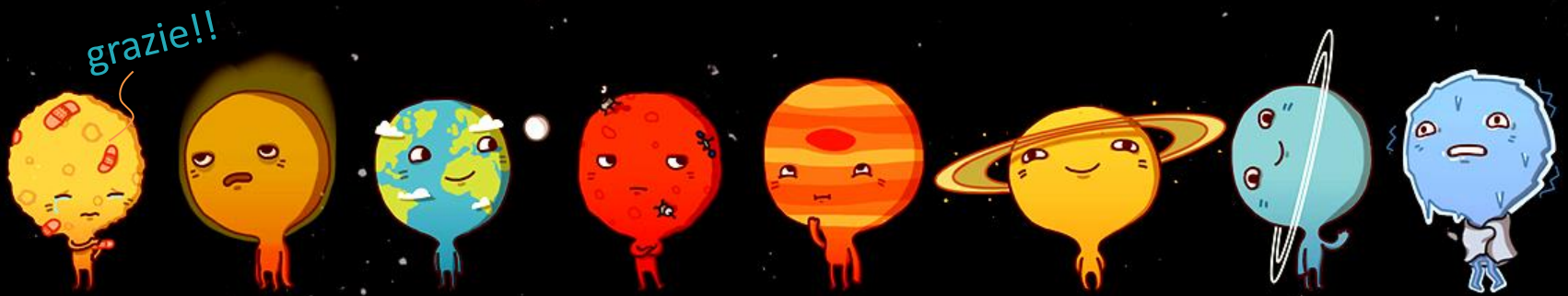
Composition

Morphology

Texture

Definition of
scientific objectives





Thanks for your attention