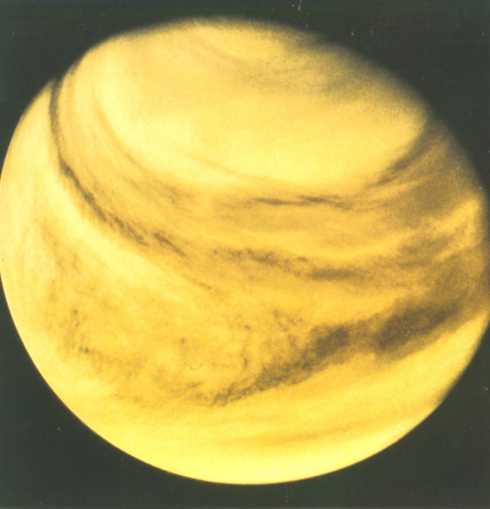


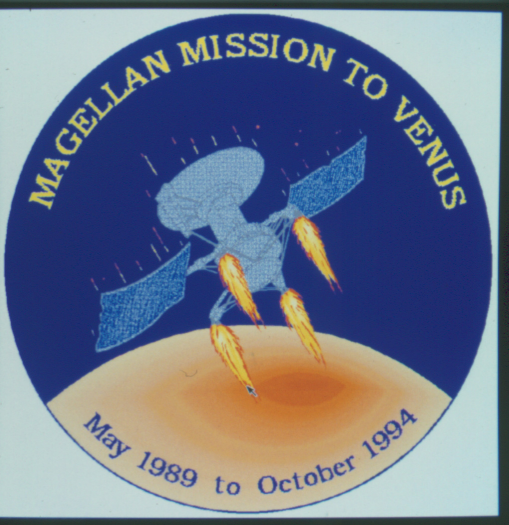
A STEAMY SWAMP


ВЕНЕРА-9 22.10.1975 ОБРАБОТКА ИППИ АН СССР 28.2.1976
ВЕНЕРА-10 25.10.1975 ОБРАБОТКА ИППИ АН СССР 28.2.1976

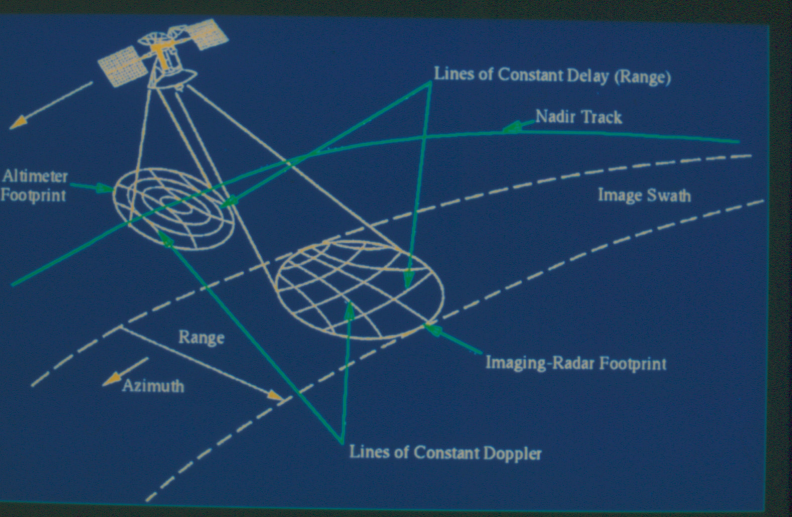
Color as seen on the surface of Venus

Color with atmospheric effects removed

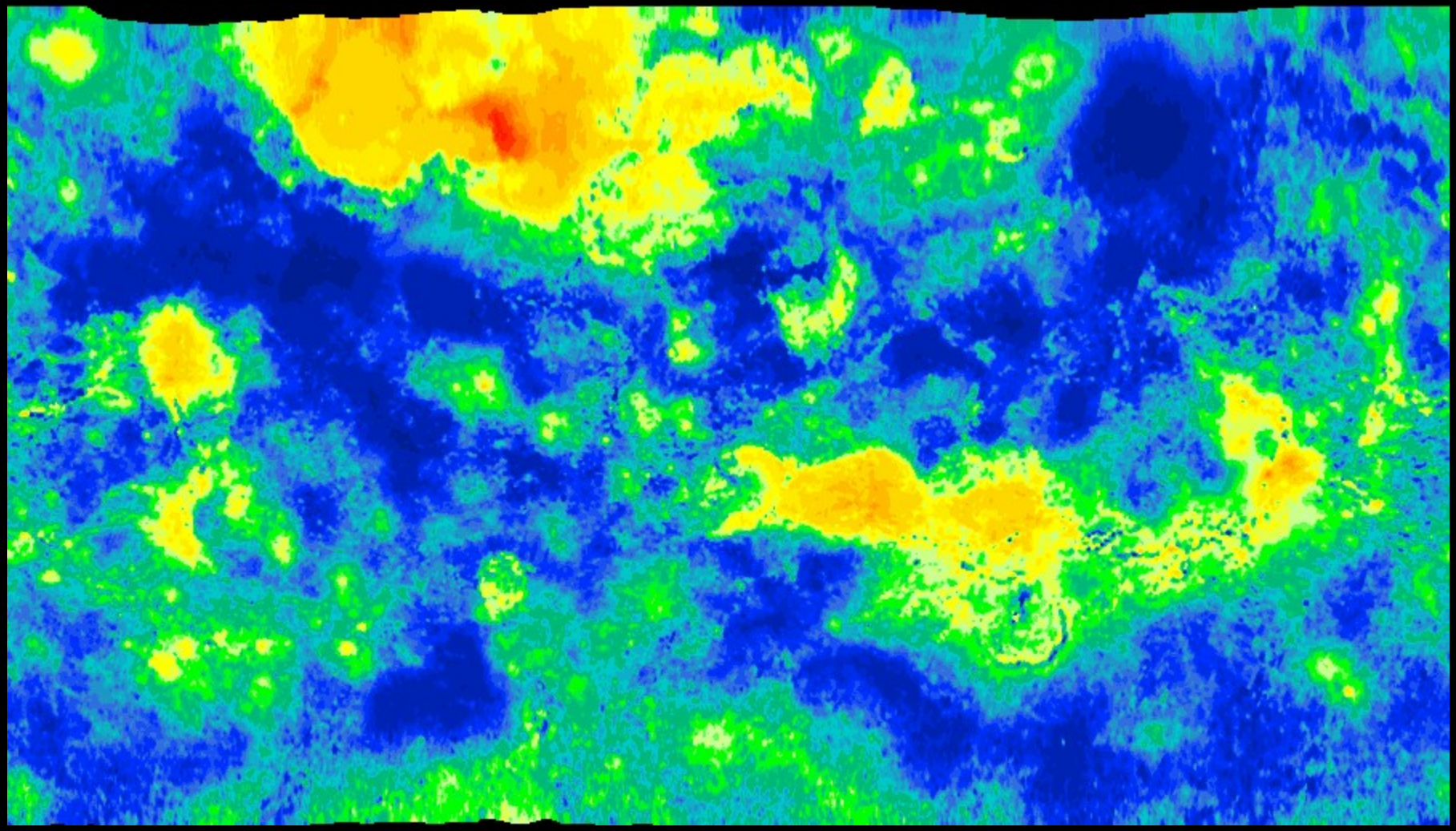
VENERA 13


MAGELLAN MISSION TO VENUS
May 1989 to October 1994

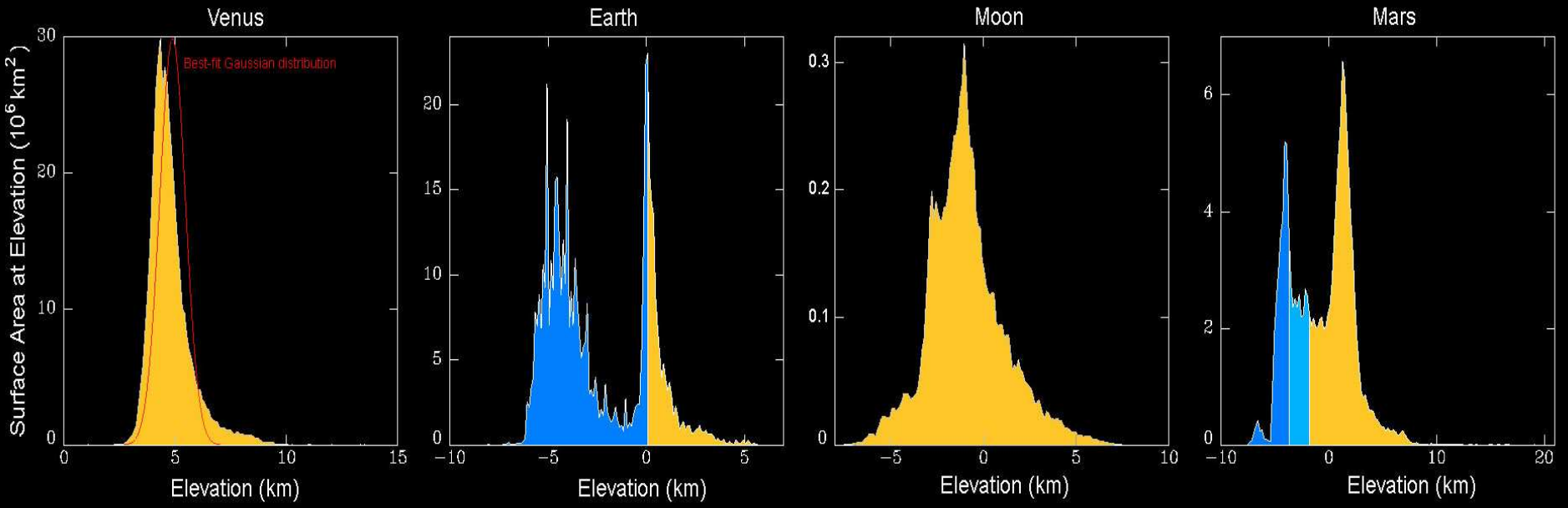

USA


Lines of Constant Delay (Range)
Nadir Track
Altimeter Footprint
Image Swath
Range
Azimuth
Imaging-Radar Footprint
Lines of Constant Doppler

Pioneer Venus Topography



Inner Solar System Hypsographic Comparisons



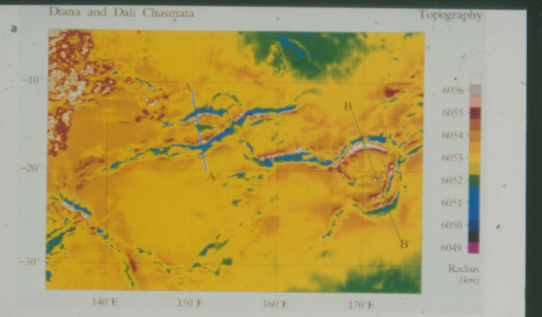


Plate 4. (a) Relief over Diana and Dali chasmata; (b) topographic profile along A–A'; (c) topographic profile along B–B'.

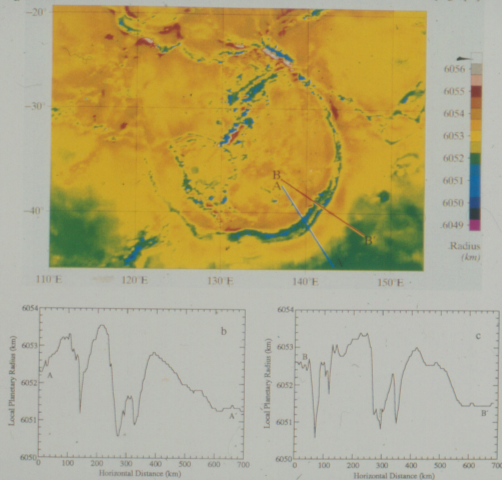
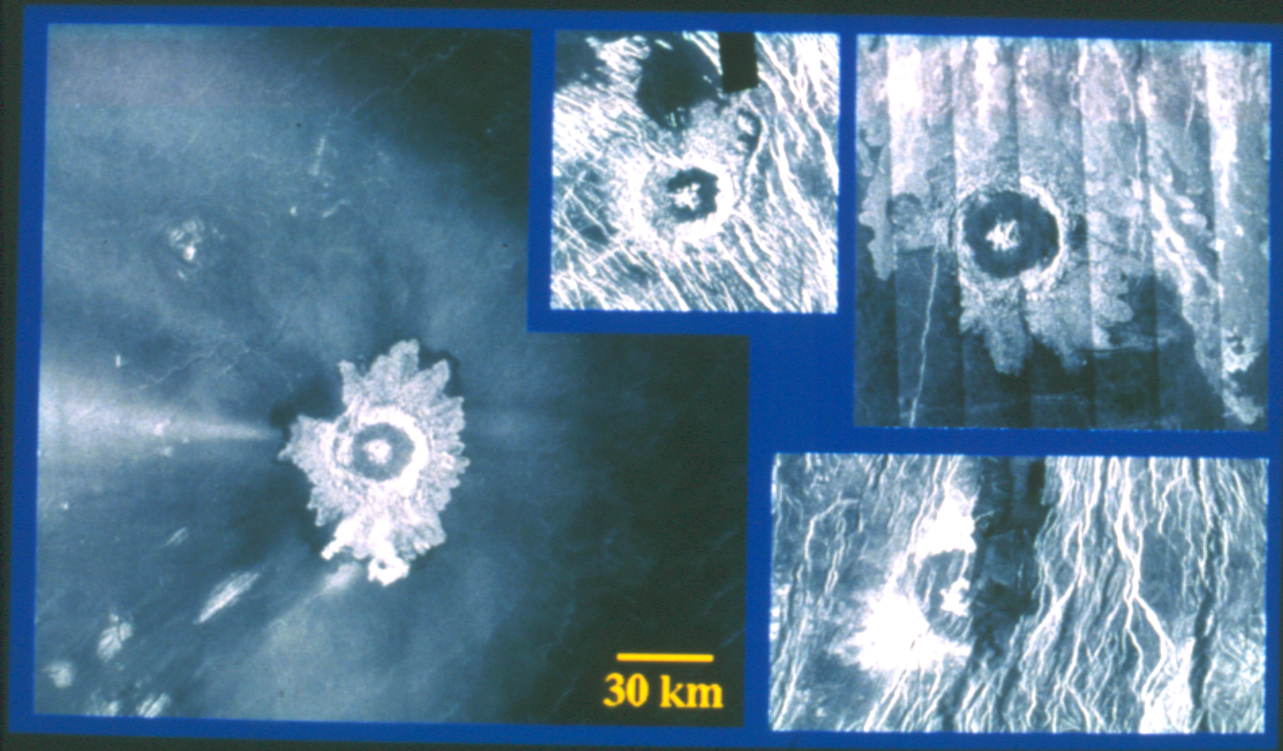
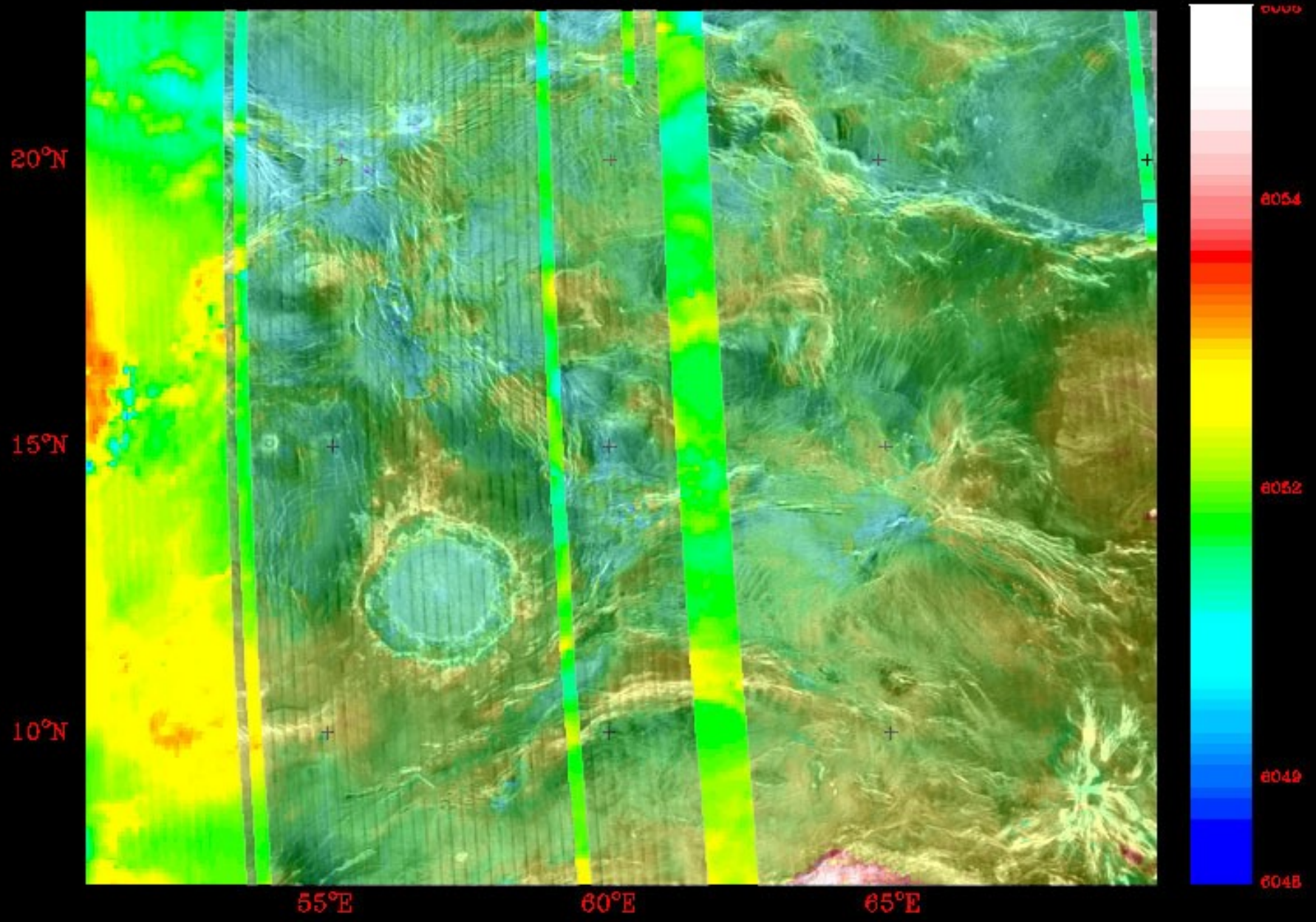


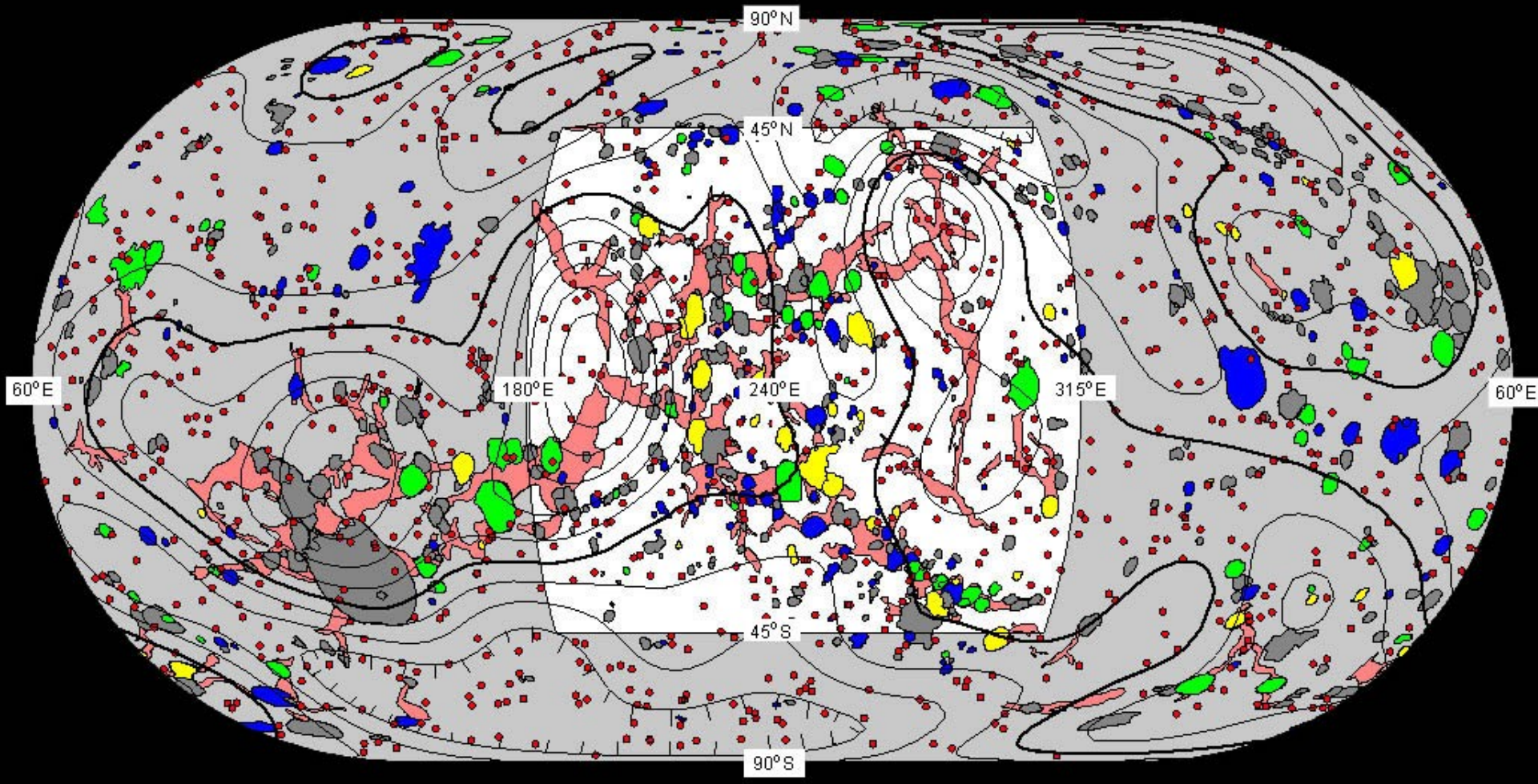
Plate 3. (*a*) Relief over Artemis Chasma; (*b*) topographic profile along A–A'; (*c*) topographic profile along B–B'.

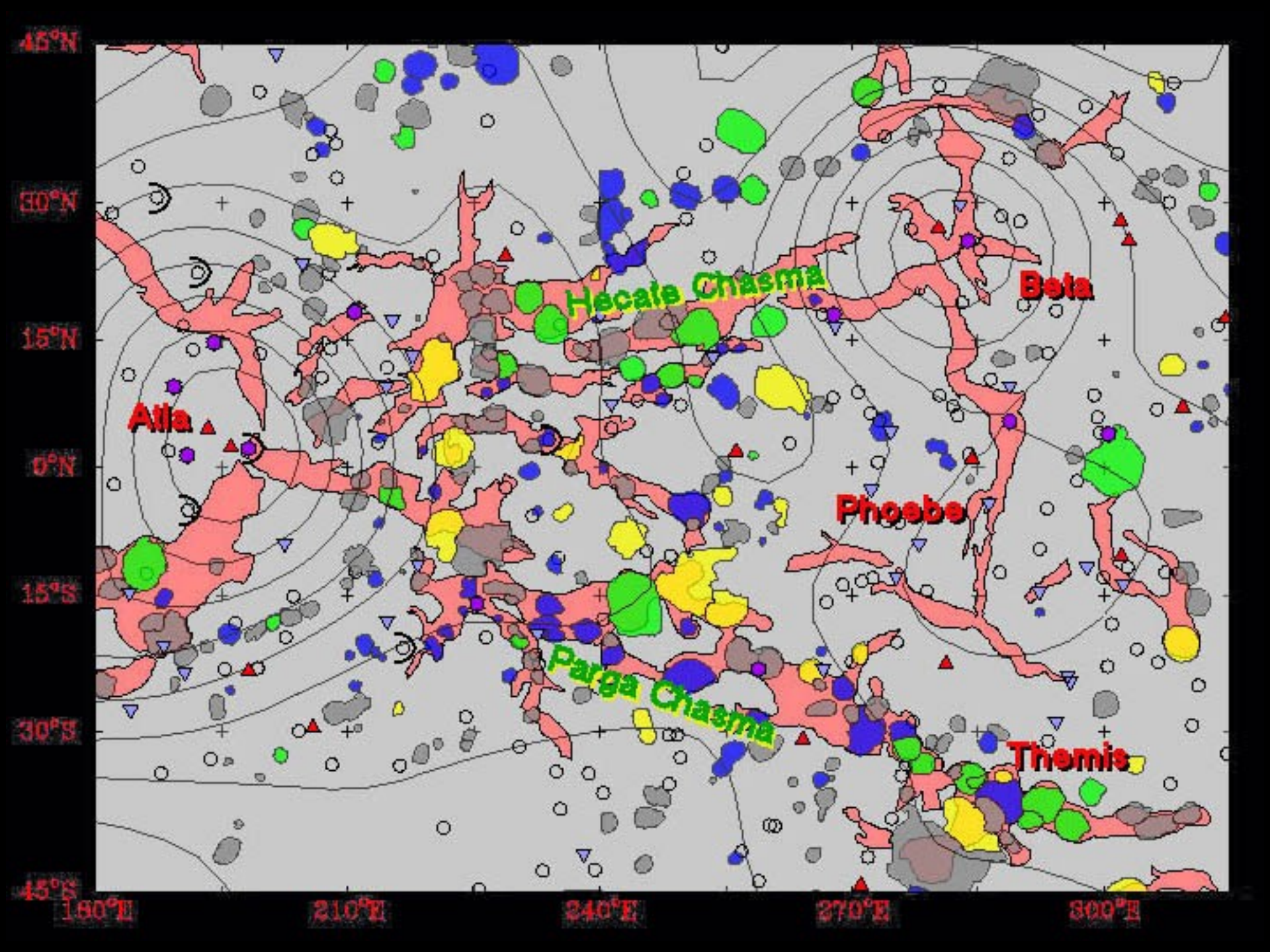

30 km

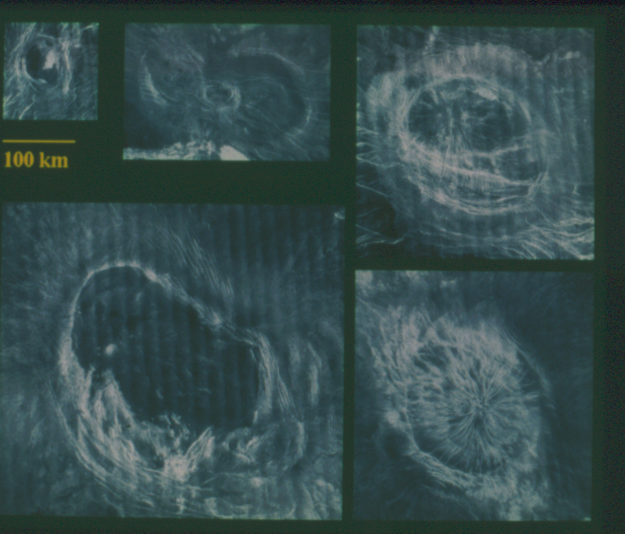
Mead Crater – Radar and Topography



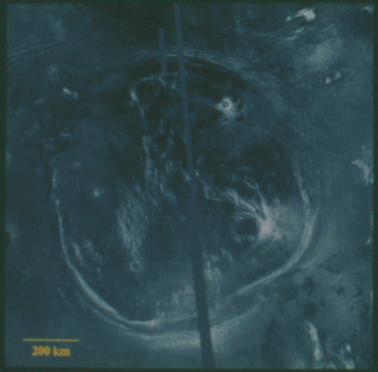
Venus Chasmata, Coronae, Craters, and Geoid (Eckert IV projection)



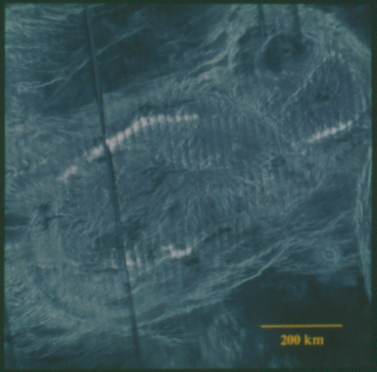

45°N
30°N
15°N
0°N
15°S
30°S
45°S
180°E
210°E
240°E
270°E
300°E
Hecate Chasma
Beta
Alla
Phoebe
Parga Chasma
Themis

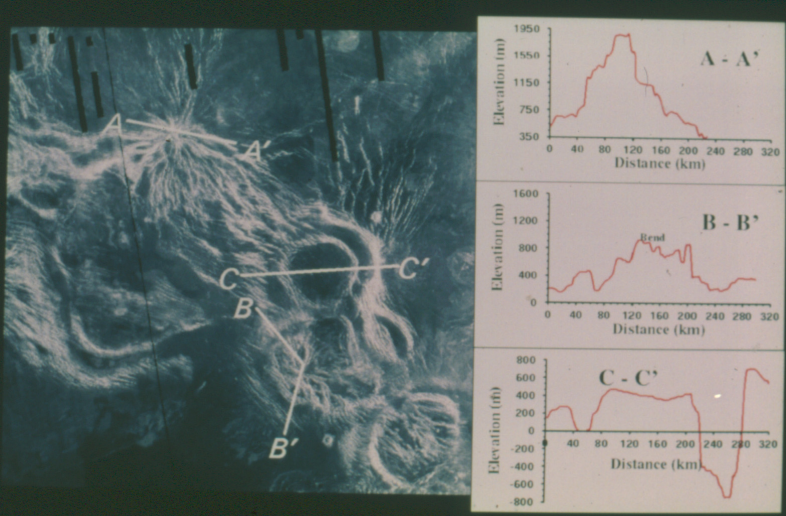

100 km

Heng – O



Ceres




A
A'
C
C'
B
B'
A - A'
Elevation (m)
1950
1550
1150
750
350
0 40 80 120 160 200 240 280 320
Distance (km)
B - B'
Elevation (m)
1600
1200
800
400
0
Bend
0 40 80 120 160 200 240 280 320
Distance (km)
C - C'
Elevation (ft)
800
600
400
200
0
-200
-400
-600
-800
40 80 120 160 200 240 280 320
Distance (km)

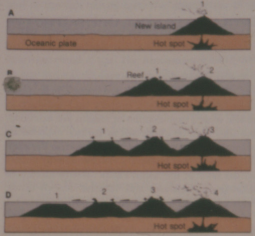
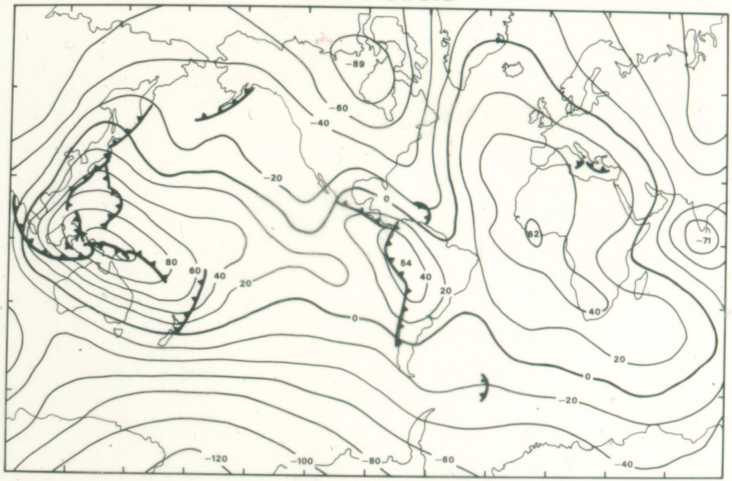
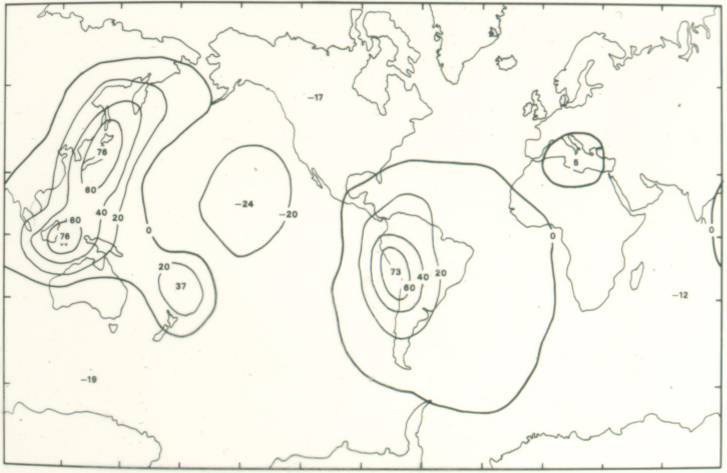


Figure 19.13 The origin of linear chains of volcanic islands and seamounts is explained by the plate tectonic theory. **(A)** A volcanic island or seamount is built up by extrusions from a fixed hot spot, or source of magma, in the mantle. **(B)** As the plate moves, the volcano moves away from the source of magma and becomes dormant. The surface of the island can then be eroded to sea level, and reefs can grow to form an atoll. A new island is formed over the hot spot. **(C)** Continued plate movement produces a chain of islands. **(D)** The islands of the chain are progressively older away from the hot spot. **(E)** An abrupt change in the direction of plate movement is indicated by a change in the direction of a chain of islands. The Emperor seamount chain began to form more than 40 million years ago, when the Pacific plate was moving northward. About 23 million years ago, the plate moved northwestward and started to form the Midway-Hawaiian chain. **(F)** The Hawaiian Islands are progressively older away from the area of recent volcanic activity. The numbers refer to the ages, in millions of years, of the volcanic basalts.

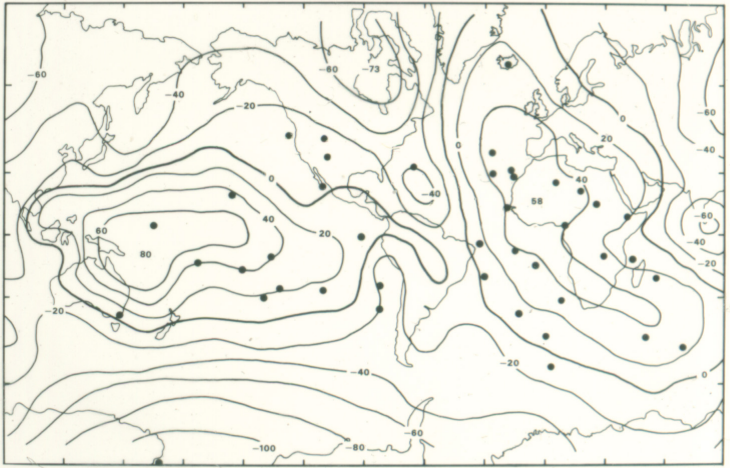
GEM 8 GEOID

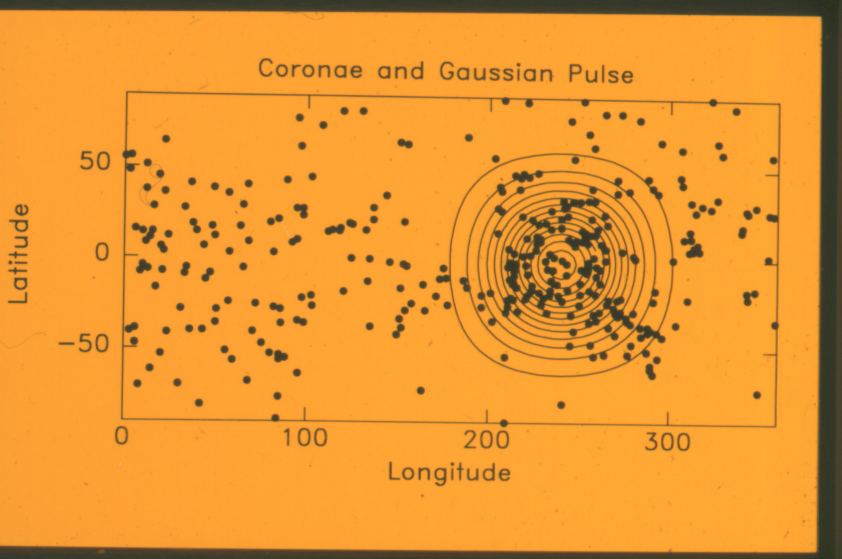


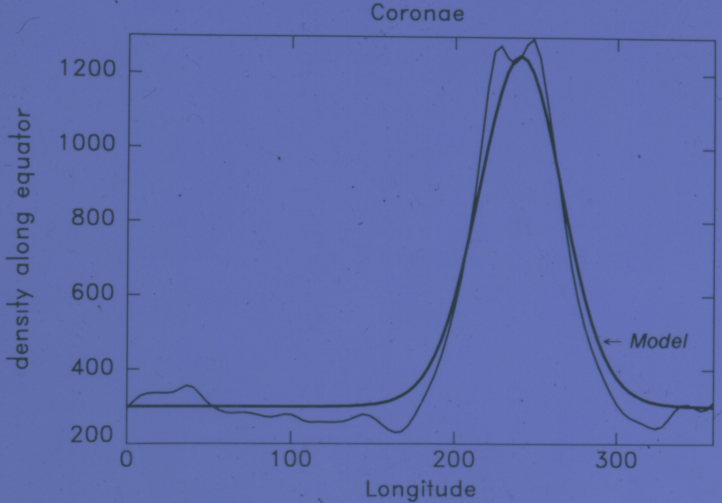
TRENCH GEOID



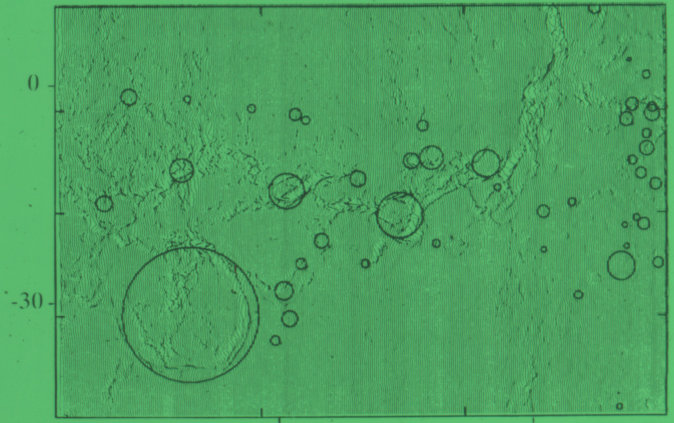
RESIDUAL GEOID

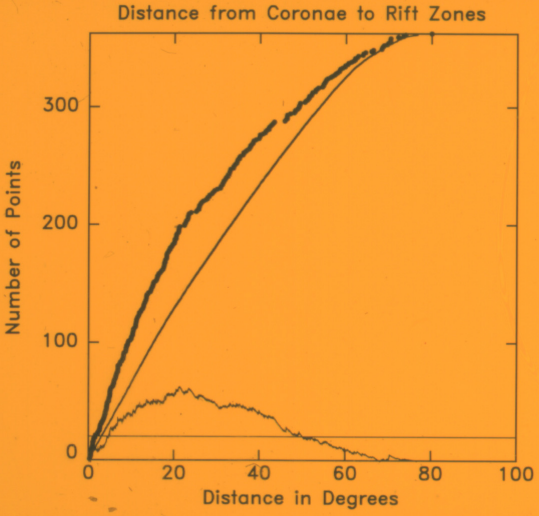


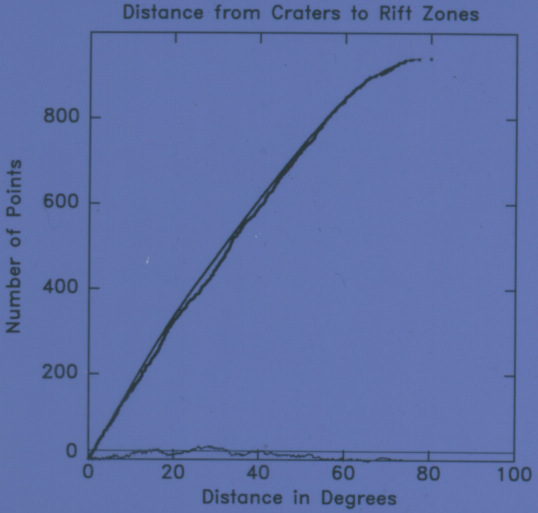

Coronae and Gaussian Pulse
50
0
−50
Latitude
0
100
200
300
Longitude

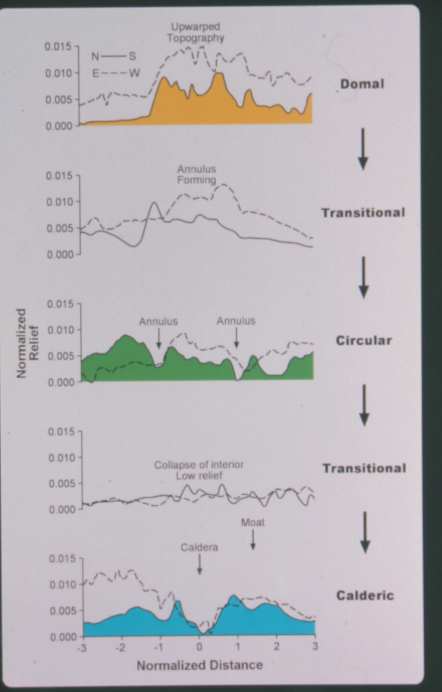

Coronae
1200
1000
800
600
400
200
density along equator
0
100
200
300
Longitude
← Model

Coronae and Topography




Distance from Coronae to Rift Zones
Number of Points
300
200
100
0
0
20
40
60
80
100
Distance in Degrees


Distance from Craters to Rift Zones
Number of Points
800
600
400
200
0
0
20
40
60
80
100
Distance in Degrees


Upwarped Topography
N S
E W
Domal
Annulus Forming
Transitional
Annulus
Annulus
Circular
Collapse of interior Low relief
Transitional
Moat
Caldera
Calderic
Normalized Relief
0.015
0.010
0.005
0.000
-3
-2
-1
0
1
2
3
Normalized Distance


Atla
Higher
Steeper
Beta
Lower
Slumped?
Strong
Upwelling
Weakened
Upwelling

THE GEOLOGICAL SOCIETY OF AMERICA®

3300 Penrose Place ■ P.O. Box 9140 ■ Boulder, CO 80301-9140, USA

978-0-8137-2430-0

Edited by G.R. Foulger and D.M. Jurdy

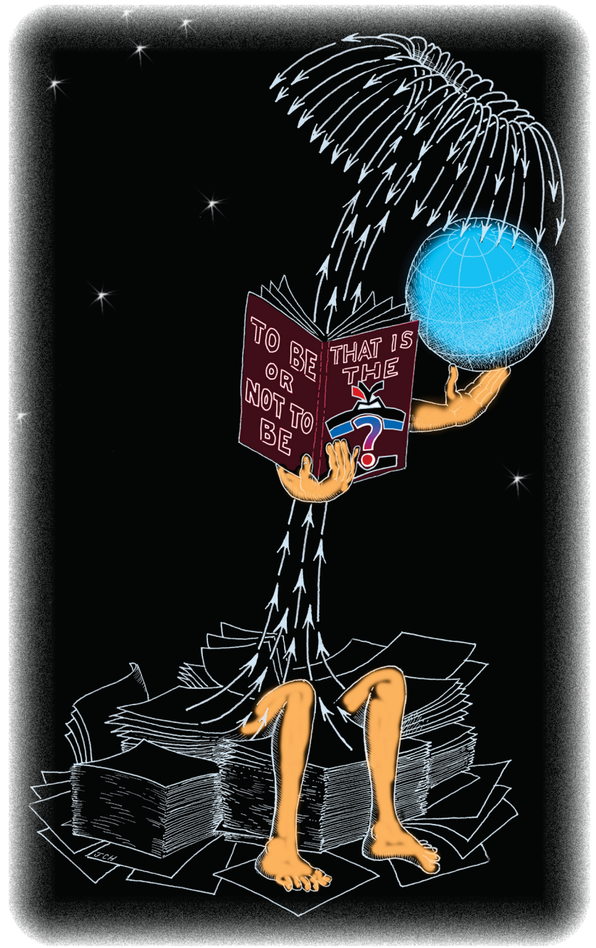
Plates, Plumes, and Planetary Processes

Special Paper 430

THE GEOLOGICAL SOCIETY OF AMERICA®

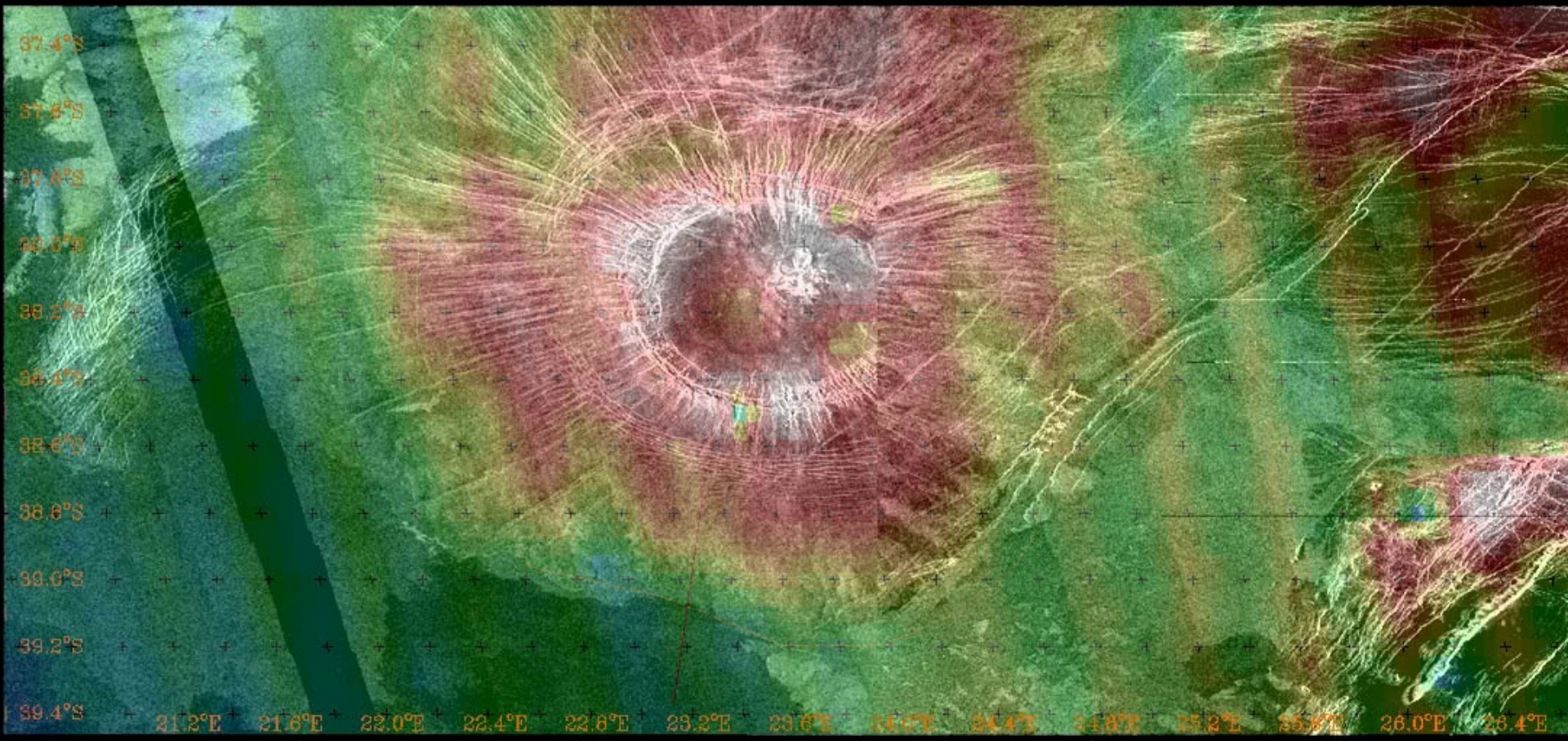
Special Paper 430

Plates, Plumes, and Planetary Processes

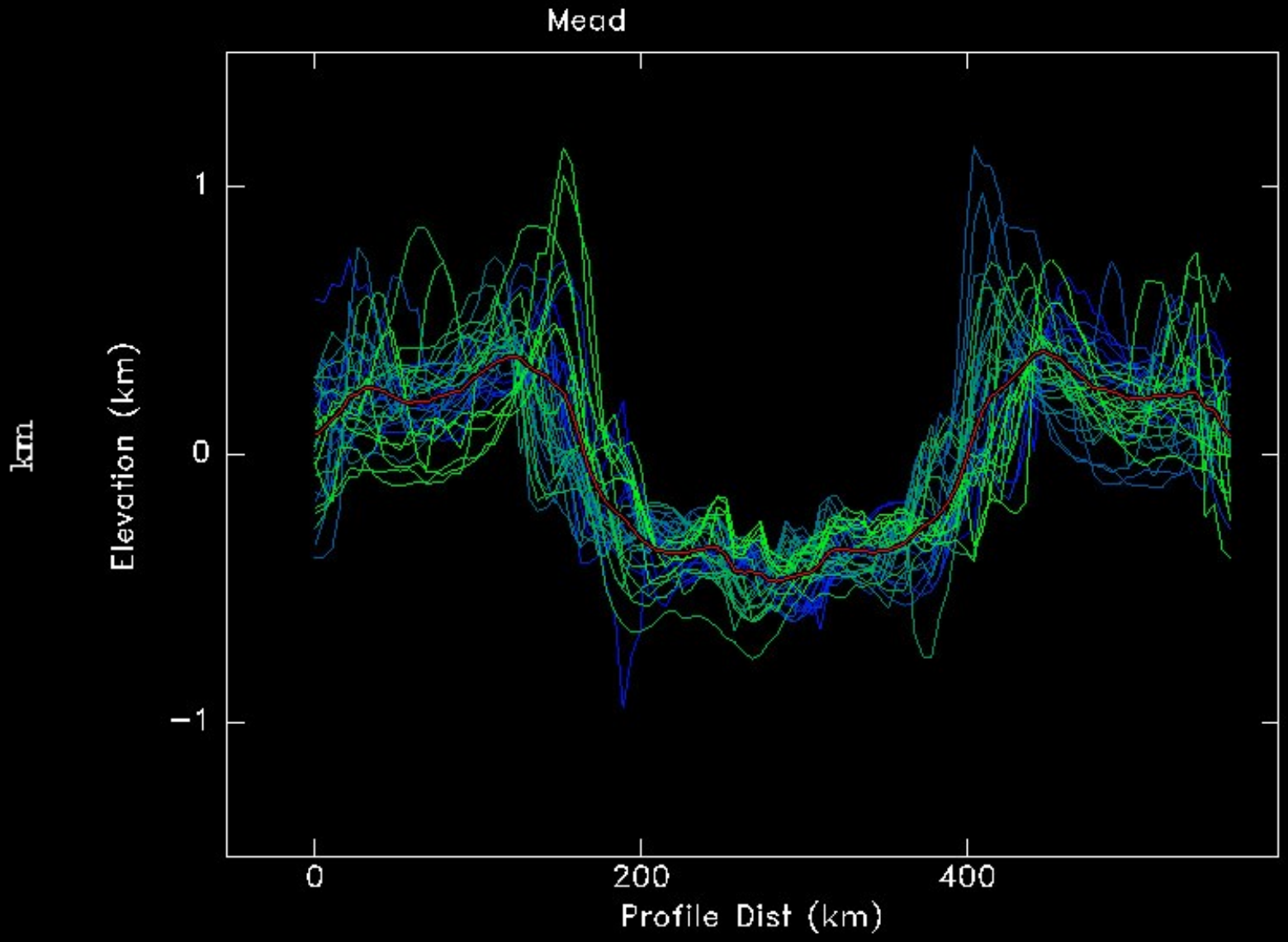


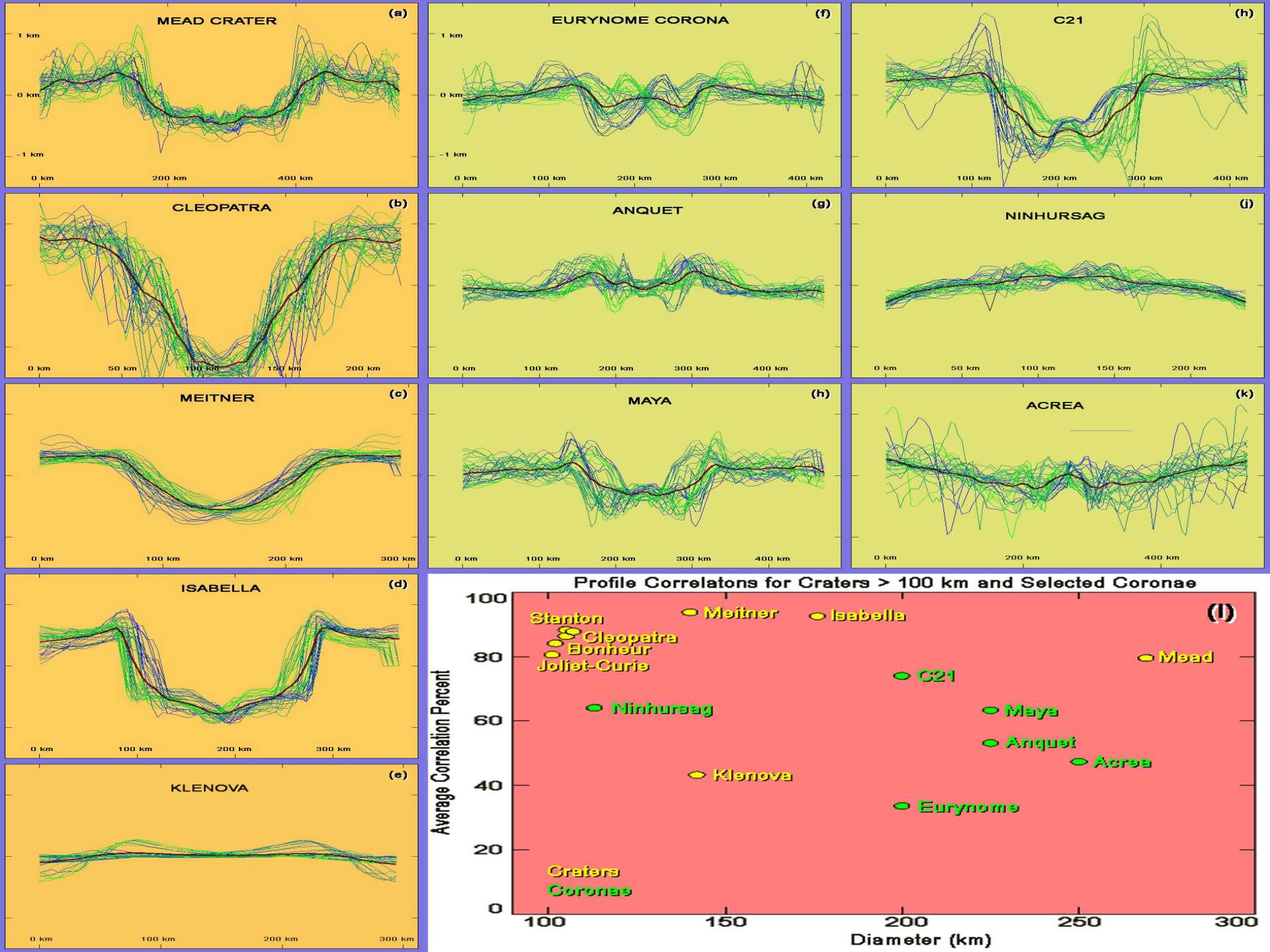
edited by Gillian R. Foulger and Donna M. Jurdy

Ninhursag – Corona or Crater?

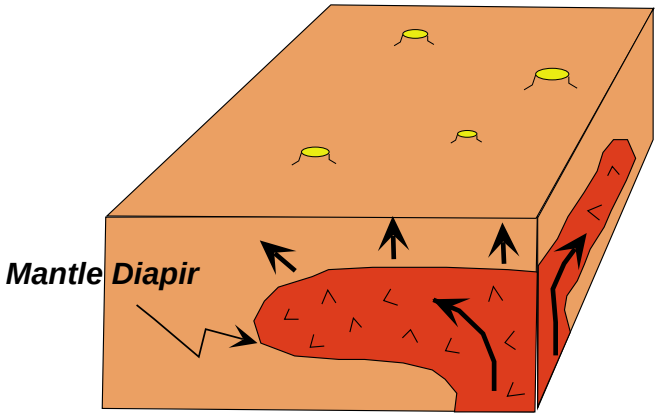


Cross-Correlation Example

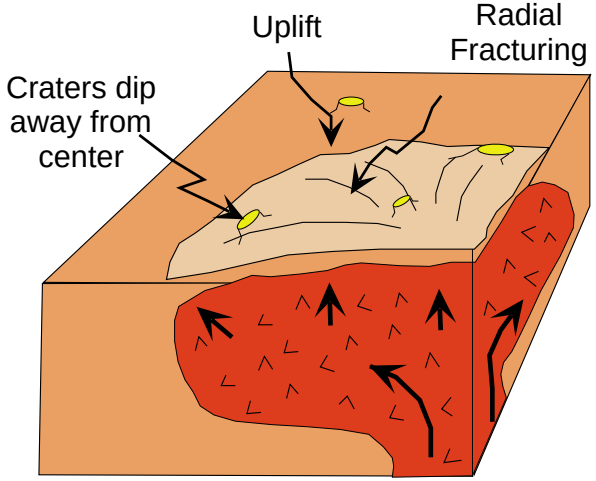



MEAD CRATER
(a)
1 km
0 km
-1 km
0 km
200 km
400 km
EURYNOME CORONA
(f)
1 km
0 km
-1 km
0 km
100 km
200 km
300 km
400 km
C21
(h)
0 km
100 km
200 km
300 km
400 km
CLEOPATRA
(b)
0 km
50 km
100 km
150 km
200 km
ANQUET
(g)
0 km
100 km
200 km
300 km
400 km
NINHURSAG
(j)
0 km
50 km
100 km
150 km
200 km
MEITNER
(c)
0 km
100 km
200 km
300 km
MAYA
(h)
0 km
100 km
200 km
300 km
400 km
ACREA
(k)
0 km
200 km
400 km
ISABELLA
(d)
0 km
100 km
200 km
300 km
KLENOVA
(e)
0 km
100 km
200 km
300 km
Profile Correlatons for Craters > 100 km and Selected Coronae
(l)
Average Correlation Percent
100
80
60
40
20
0
Stanton
Meitner
Isabella
Cleopatra
Bonheur
Joliot-Curie
Mead
C21
Ninhursag
Maya
Anquet
Acrea
Klenova
Eurynome
Craters
Coronae
100
150
200
250
300
Diameter (km)

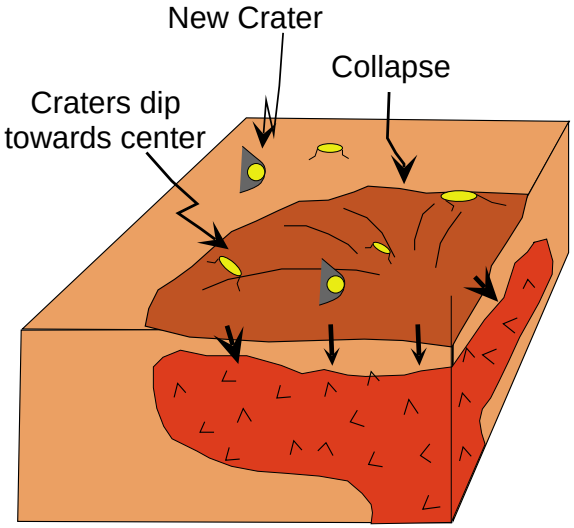
Uplift Hypothesis



Stage 1
Initiation



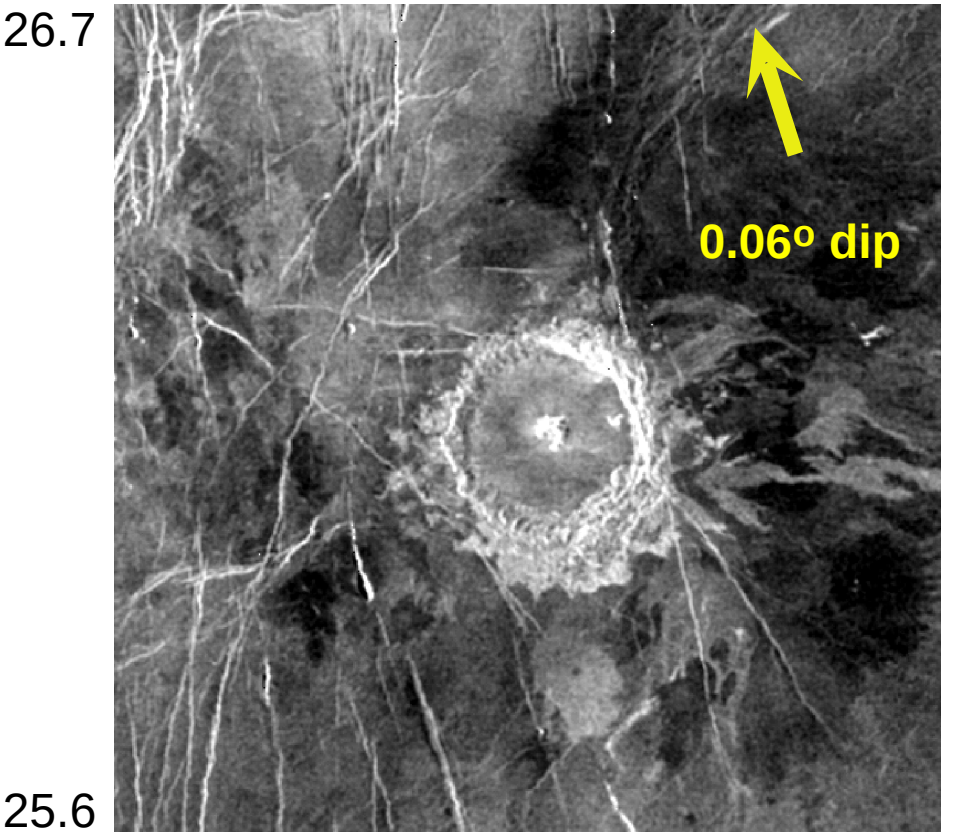
Stage 2
Uplift with Radial Fracturing



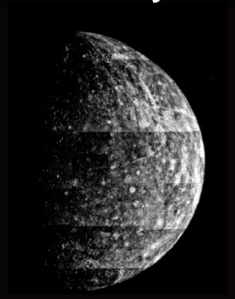
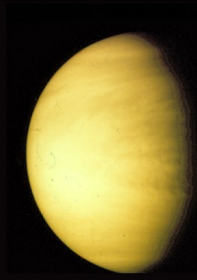
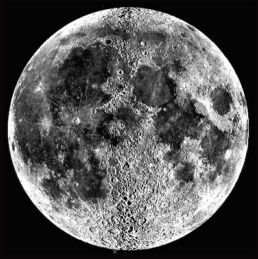
Stage 3
Collapse

(after Ernst et al., 1995)

West (26.1^{o} N, 303.0^{o} E, 28.0 km)



Classified as embayed-only, however, image analysis reveals a slightly disturbed ejecta blanket. Note the radar-bright outflows to the E and SE opposite in direction to current dip.

	Mercury	Venus	Earth	Moon	Mars
					
Radius (km)	2439	6052	6378	1738	3398
Mass (kg)	3.30×10^{23}	4.87×10^{24}	5.98×10^{24}	7.35×10^{22}	6.42×10^{23}
Density (kg/m^3)	5420	5250	5520	3340	3940
Distance from the Sun (A.U)	0.387	0.723	1.000	---	1.524

Conclusions

- While Venus closely resembles Earth on a global scale, there are very significant differences between the two:
  - Atmospheric composition, density, and temperature
  - Tectonic style
  - Volcanic style
  - Crater distribution

Io — Tvashtar Catena

I25 (26 Nov 1999)

+ C21 low-resolution color
+ fire fountain sketch

I27 (22 Feb 2000)

visible wavelength data
+ IR data of active lava flow