

**PLAINS MATERIALS**

**Smooth plains material** - Very low radar backscatter coefficient material emanating from Marat quadrangle. Unit has lobate margins. May contain several small edifices (<10 km diameter) and northeast-trending wrinkle ridges. Embays units pT and pD. Type locality: lat 24.3° S, long 223.5° E. Interpretation: Extensive volcanic plains material having very smooth surfaces later deformed by compressional stresses.

**Tausig regional plains material** - Most extensive plains unit in map area. Material characterized by low radar backscatter coefficients, small-scale variations in backscatter. Some individual flows can be identified; few widespread wrinkle ridges in northeastern area. Includes Wawalag Plania. Type locality: lat 21.0° S, long 238° E. Interpretation: Extensive volcanic plains material comprised of many individual flows.

**Undulating plains material** - Material having low to intermediate backscatter in southeastern part of quadrangle. Characterized by shallow rolling topography. Heavily deformed in part by north-south-trending lineaments. Some coronae formed with associated volcanic material in western region of unit. Contains clusters of small volcanic edifices and knipkas of high-standing, highly deformed material (unit pT). Embays unit pT, but not pD. Type locality: lat 24.5° S, long 232.0° E. Interpretation: Volcanic plains deformed by extensional stresses associated with Thakalad Lines.

**Lobate plains material** - Extensive unit in northeastern part of map area comprised of low backscatter coefficient material. Some mantling of backscatter on small scale. Has lobate boundaries, topographically controlled. Contains a number of small- to intermediate-size volcanic edifices and coronae. Some widespread fracturing present. Embays units pT, pD, and pD. Type locality: lat 7.5° S, long 235.0° E. Interpretation: Extensive uniform plains material.

**Lined plain material** - Material having generally intermediate to low backscatter coefficients. Contains small-scale linear and curvilinear fractures and ridges associated with corona uplift and formation. Other fractures associated with Parga Chasma rift system. High-standing outcrops of material surrounded by later volcanic flow material. Embayed by unit pT and younger volcanic flows. Type locality: lat 17.1° S, long 222.1° E. Interpretation: Early plains unit of large-scale volcanic material subjected to several episodes of tectonic deformation.

**Fractured plains material** - Intermediate backscatter coefficient material highly deformed by fractures and lineaments predominantly trending in a north-south direction. High-standing in relation to surrounding units, has lobate margins. Contains numerous small volcanic edifices. Embayed by units pT and pD, but not pD. Type locality: lat 19.5° S, long 237.5° E. Interpretation: Volcanic material deformed by multiple episodes of crustal extension. Some deformation associated with formation of Parga Chasma rift system.

**Uniform plains material** - Uniform intermediate backscatter material in northeastern part of map area. Contains very few fractures and ridges, most concentrated in southern part of unit. Mainly lobate margins, shows some small-scale fracturing with adjacent lobate plains material (unit pT). Embayed by unit pT. Type locality: lat 1.0° S, long 234.0° E. Interpretation: Volcanic plains unit having uniform surface texture. Deformed in part by Parga Chasma rift system and stages of corona formation.

**Densely fractured plains material** - Small outcrops of intermediately deformed material having strong radar backscatter coefficients. May display multifaceted deformation. Embayed by all other plains units. Type locality: lat 24.5° S, long 221.0° E. Interpretation: Highly deformed material which may represent earlier plains material.

**VOLCANIC MATERIALS**

**Haki Fictus material** - Flow material having low to high radar backscatter coefficients. Low backscatter flows commonly around margins of unit. Boundaries are lobate. Some flows show a streamlined morphology including the presence of several sinuous streaks or channels. Unit also includes several small edifices. Cut by single east-west-trending fracture associated with Parga Chasma. Embays units pD, pT, and pT. Type locality: lat 6.8° S, long 230.5° E. Interpretation: Extensive volcanic flow material from unknown source.

**Nigro Fictus material** - Material having strong homogeneous radar backscatter. Unit boundary is well defined with lobate margins. Source of flows is not observed within quadrangle. Material pooled, controlled by older Tabala Corona material (unit pD). Embays unit pT. Type locality: lat 4.5° S, long 210.0° E. Interpretation: Volcanic flow material that has a rough surface texture; originates west of map area.

**Isolated flow material** - Small irregular outcrops of variable radar backscatter. Flows have digitate to lobate boundaries, typically topographically controlled. Small pits or fractures commonly observed but typically in situ or obvious source can be seen. Embays all local units. Type locality: lat 1.0° S, long 237.0° E. Interpretation: Volcanic material erupted as flows having low effective viscosity.

**Lumina Corona flow material** - Low radar backscatter material surrounding unit of Marat Corona. Lobate margins, unclear in places. Deformed by few widespread multidirectional lineaments, less than surrounding units. Contains some small volcanic edifices. Embays unit pT, but not pD. Type locality: lat 3.7° S, long 219.5° E. Interpretation: Lava flows originating from fractures produced by deformation and extension associated with Parga Chasma rift system.

**Edifice field material** - Characterized by a concentration of small (<10 km diameter) volcanic edifices of variable morphology but dominantly shields. Size, shape, and density of edifices vary considerably; typical dimensions are 100-300 km. Some edifices have associated compound flow. Backscatter coefficients vary considerably. Shows a range of embayment relationships. Type locality: lat 7.0° S, long 211.0° E. Interpretation: Local explosive center that produced collection of small edifices with or without associated flows.

**Mbokoni Mass flow material** - Material having flowlike form associated with large edifice Mbokoni Mass. Radar backscatter coefficients predominantly intermediate

**VOLCANIC CENTER MATERIALS**

**Lebona Patra flow material** - Backscatter of this unit is varied, with the majority having an extremely high backscatter coefficient. Flows have digitate to lobate boundaries, and some individual flows extend up to 400 km from caldera. Sinuous to linear, channel-like forms contained within some flows. Some flows fed by fissures or faults associated with Parga Chasma rift system. Embays units M2, M1, and pT. Type locality: lat 23.0° S, long 225.5° E. Interpretation: Volcanic material associated with 40-km-wide caldera.

**Gwa Moss flow material** - Some individual flows show variable radar backscatter coefficient. Material is similar in backscatter to surrounding plains (unit pT). Unit margins lobate but in places difficult to define. Unit is cut by Parga Chasma rift system. Superposes unit pT. Type locality: lat 21.0° S, long 239.5° E. Interpretation: Volcanic material associated with central volcano.

**Hakalad Patra flow material** - Flows having variable (but mainly low to intermediate) backscatter coefficients. Individual flows that have lobate morphologies and well-defined margins can be identified. Unit includes several small edifices scattered throughout the unit. Northern portion of flows is controlled by older ridged material. Superposes units pD, pT, and pT. Type locality: lat 23.5° S, long 220.0° E. Interpretation: Volcanic lava flows controlled by central volcano.

**Malbaran Patra flow material** - Unit composed largely of flows that have homogeneous radar backscatter. More diffuse, higher backscatter material surrounds center of unit. Individual flows having digitate morphologies can be seen. Unit boundary is lobate. Superposes units pT and pT. Type locality: lat 18.2° S, long 224.0° E. Interpretation: Volcanic material associated with central volcano.

**Tam Moat flow material** - Diffuse flows having mainly radar-dark backscatter associated with simple cone-shaped edifice. Central area surrounded by halo of radar-dark backscatter material. Unit margins lobate but in places difficult to define. Unit is cut by fractures associated with Parga Chasma rift system. Superposes units pT, pT, and pT. Embayed by unit pT. Type locality: lat 12.8° S, long 231.0° E. Interpretation: Volcanic material associated with central volcano.

**Vilpex-Power Patra flow material** - Material of low radar backscatter confined within center of Vilpex-Power Patra. Unit has lobate margins. Center of unit contains small shields. Material deformed by concentric and radial fractures. Embays units pT and pT. Type locality: lat 21.8° S, long 210.0° E. Interpretation: Lava flows erupted from inner wall of flow to both of caldera.

**Volcanic center material** - Material of variable radar backscatter associated with intermediate-size volcanic edifices greater than 10 km in diameter. A summit pit or caldera may be present. Flows have irregular lobate margins, individual flows that caldera walls and exterior margins of unit. Few small edifices scattered throughout. Greatest dimension of depression is approximately 160 km. Embays unit pT. Type locality: lat 10.0° S, long 237.0° E. Interpretation: Central volcano having associated lava erupted from summit or flanks.

**Jonni Patra flow material** - Material having intermediate backscatter coefficients and lobate unit boundaries. Majority of material is visible on northern side, some individual flows can be recognized. Dashed interior is slightly lower in backscatter than caldera walls and exterior margins of unit. Few small edifices scattered throughout. Greatest dimension of depression is approximately 160 km. Embays unit pT. Type locality: lat 6.2° S, long 213.0° E. Interpretation: Volcanic lava flows associated with caldera.

**Vilpex-Power Patra volcanic material** - Blocks of high-standing material having strong radar backscatter coefficients. Contains numerous closely spaced fractures oriented in more than one direction. Embays units pT, pT, and pT. Type locality: lat 21.5° S, long 210.5° E. Interpretation: Volcanic material associated with formation of Vilpex-Power Patra.

**CORONA MATERIALS**

**Plains Coronae**

**Oneshate Corona flow material** - Very low backscatter flow material having well-defined interior to lobate margins. Unit centered on ridge region in western half of corona. Few individual flows can be delineated. Unit also includes small shields within center of unit. Predates major part of radial fracturing. Superposes unit pT. Type locality: lat 17.8° S, long 221.2° E. Interpretation: Late-stage volcanic flow material that occurred during or after formation of Oneshate Corona annulus.

**Holla Corona flow material** - Intermediate radar backscatter material having lobate margins surrounding corona. Some boundaries are not well defined, individual flows are distinguishable within unit. Material deformed by concentric fractures. Superposes units pT and pT. Type locality: lat 13.5° S, long 237.0° E. Interpretation: Volcanic flow material associated with formation of Holla Corona.

**Emjeji Corona flow material, member 2** - Very low to intermediate backscatter material having lobate margins. Individual flows typically characterized by intermediate backscatter coefficients can be recognized. Deformed by widespread compressional wrinkle ridges. Contains few small edifices. Embays units pT, pT, and pT. Type locality: lat 22.0° S, long 214.0° E. Interpretation: Late-stage volcanic flow material associated with corona.

**Lumina Corona flow material** - Low radar backscatter material surrounding unit of Marat Corona. Lobate margins, unclear in places. Deformed by few widespread multidirectional lineaments, less than surrounding units. Contains some small volcanic edifices. Embays unit pT, but not pD. Type locality: lat 3.7° S, long 219.5° E. Interpretation: Lava flows originating from fractures produced by deformation and extension associated with Parga Chasma rift system.

**Emjeji Corona flow material, member 1** - Material having low radar backscatter coefficients and broad lobate margins. Exhibits few wrinkle ridges and cross-trending lineaments. Very few individual flows can be recognized. Embayed by units pT and pT. Type locality: lat 22.5° S, long 212.3° E. Interpretation: Early volcanic flow material associated with Emjeji Corona.

**Tabala Corona material** - High-standing arc of material having intermediate radar backscatter coefficients. Has undergone greater deformation than surrounding plains and flow units that embay it. Embayed by units pT and pT. Type locality: lat 5.0° S, long 210.7° E. Interpretation: Volcanic plains material deformed and deformed by formation of Tabala Corona.

**Lumina Corona material** - Plains material having high radar backscatter coefficients. Unit severely deformed by compressional and extensional fractures. Embayed by

**PLAINS CORONA MATERIALS**

**Tabala Corona volcanic center flow material** - Intermediate backscatter material within annulus of Marat Corona. High backscatter flows mainly north of source vent. Deformed by radial fractures and fractures. Unit has lobate margins. Individual flows having digitate flow field. Some flows predominate late-stage uplift of northern end of Marat Corona. Flows deformed by Parga Chasma rift system.

**Emjeji Corona flow material, member 2** - Material having variable radar backscatter coefficients surrounding annulus of corona. Individual flows have different morphology, mainly digitate. Backscatter coefficients vary within individual flows. Material deformed, more heavily around north side of corona annulus, by linear and arcuate east-west-trending fractures and grabens. Embays unit pT, but not pD. Type locality: lat 9.1° S, long 219.7° E. Interpretation: Late-stage volcanic flow material associated with formation of Marat Corona. Material deformed by uplift of corona and fractures associated with Parga Chasma rift system.

**Emjeji Corona flow material, member 1** - Material having low backscatter coefficients surrounding annulus of corona. Individual flows have different morphology, especially north and northwest of center. Most flows west of corona annulus. Northern and eastern outcrops heavily deformed by east-west-trending faults and fractures. Some areas (eastern and easternmost) display few to no individual flow structures. Contains some small edifices. Embays units pT, pT, and pT. Type locality: lat 10.0° S, long 219.5° E. Interpretation: Volcanic material associated with formation of Marat Corona. Material deformed by uplift of corona and faulting associated with Parga Chasma rift system.

**Aeruca Corona flow material, member 2** - Low to intermediate backscatter material within basin of corona. Unit has lobate margins, sections of boundary ill-defined. Few flows can be identified. Contains some small edifices. Material deformed by fractures that surround unit (M2, pT). Embays units pT and pT. Type locality: lat 19.5° S, long 238.5° E. Interpretation: Late-stage volcanic flow material associated with formation of Aeruca Corona.

**Aeruca Corona flow material, member 1** - Intermediate backscatter coefficient primarily northern of corona. Similar backscatter to surrounding plains (unit pT). Boundaries lobate and unclear in places. Unit cut by east-west-trending lineaments. Superposed by unit pT, but not pD. Type locality: lat 18.8° S, long 237.0° E. Interpretation: Earliest stage volcanic flow material associated with formation of Aeruca Corona. Deformed by fractures related to Parga Chasma rift system.

**Va-Yeru Corona flow material, member 2** - Most extensive flows originating from corona, generally having variable radar backscatter coefficients. Flows have digitate morphology, and backscatter can vary within individual flow units. Central area of corona is marked by radial fractures and grabens. Superposes units pT, pT, pT, and pT. Type locality: lat 18.5° S, long 214.5° E. Interpretation: Late-stage volcanic flow material associated with Va-Yeru Corona.

**Va-Yeru Corona flow material, member 1** - Very low radar backscatter material occurring around southern margins of corona. Superposed by units pT and pT. Type locality: lat 11.2° S, long 217.0° E. Interpretation: Intermediate-stage volcanic flow material occurred after formation of Va-Yeru Corona and material recognizable.

**Obduwa Corona flow material** - Extensive flows originating from annulus of corona, generally having variable radar backscatter coefficients. Flows have digitate morphology and backscatter can vary within individual flow units. Central area of corona is marked by radial fractures and grabens. Superposes units pT, pT, pT, and pT. Type locality: lat 10.0° S, long 214.0° E. Interpretation: Late-stage volcanic flow material associated with Obduwa Corona.

**Nodo Corona flow material** - Low backscatter coefficient flows having lobate margins within basin and western most of Noda Corona. Some individual flows, possibly associated with small edifices can be identified within unit. Superposes unit pT. Type locality: lat 20.2° S, long 230.2° E. Interpretation: Volcanic flow material associated with formation of Noda Corona.

**Saming Corona flow material** - Material having low backscatter coefficients on topographic rim and plains north of rim. Unit has lobate margins, no discernible flows. Superposes unit pT. Type locality: lat 23.0° S, long 229.0° E. Interpretation: Volcanic flow material erupted from rim of Saming Corona.

**Kolias Corona flow material** - Very low backscatter material having lobate margins primarily consisting from Kolas Corona, west of map area. Some low to intermediate backscatter digitate flows can be identified within unit. Embays units pT, pT, pT, and pT. Type locality: lat 15.5° S, long 210.5° E. Interpretation: Volcanic flow material associated with formation of Kolas Corona.

**Thoreau Corona flow material** - Radar dark flow material having lobate margins associated with Thoreau Corona, east of map area. Few individual flows recognizable. Embays units pT and pT. Type locality: lat 16.2° S, long 239.5° E. Interpretation: Volcanic flow material associated with formation of Thoreau Corona.

**Aeruca Corona flow material** - Radar dark flow material having lobate margins associated with Aeruca Corona, east of map area. Material is deformed by east-west-trending lineaments. Embays unit pT. Type locality: lat 7.5° S, long 239.5° E. Interpretation: Volcanic flow material associated with formation of Aeruca Corona.

**Undifferentiated corona material, member 2** - Material having mainly radar-dark backscatter coefficients south of Marat Corona. Flows primarily in southern part of unit, some flow fronts can be distinguished. Has lobate margins, unclear in places. May include some small volcanic edifices. Cut by northwest-southeast trending lineaments. Superposes units pT and pT, but not pD. Type locality: lat 14.5° S, long 218.5° E. Interpretation: Volcanic flow material associated with one or more coronae. Deformation associated with corona formation and Parga Chasma rift system. Some material may be older deformed plains (possibly unit pT).

**Undifferentiated corona material, member 1** - Material having variable backscatter coefficients associated with a cluster of conical structures (Vilpex edde Corona) south of Lebona Patra. Includes some heavily deformed ridges and troughs and vari-

Descriptions of nomenclature used on map are listed at <http://planetary.usgs.gov>

SCALE 1:5 168 991 (1 mm = 5.199 km AT 0° LATITUDE)

1:1 168 991 (1 cm = 5.199 km AT 0° LATITUDE)

PLANETARY RADARS IN METERS

MICROWAVE EMISSIVITY

Prepared on behalf of the Planetary Geology and Geophysics Program, Solar System Exploration Division, Office of Space Science, National Aeronautics and Space Administration

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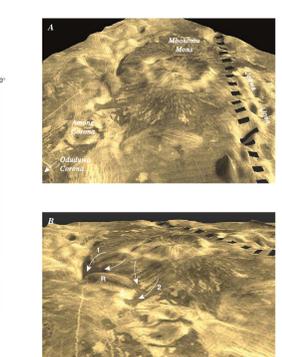
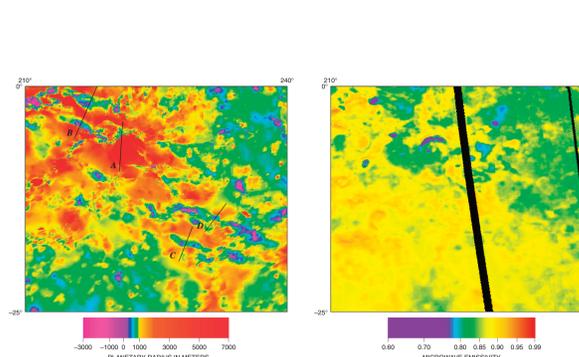
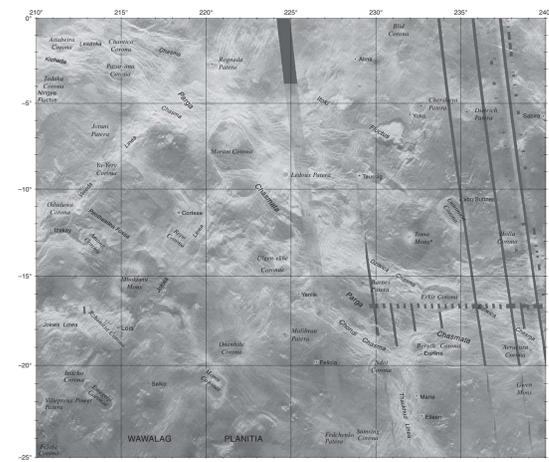


Figure 2. Altimetry of Tausig quadrangle. Lines A, B, C, and D represent topographic profiles shown in figure 7.

Figure 3. Emissivity of Tausig quadrangle.

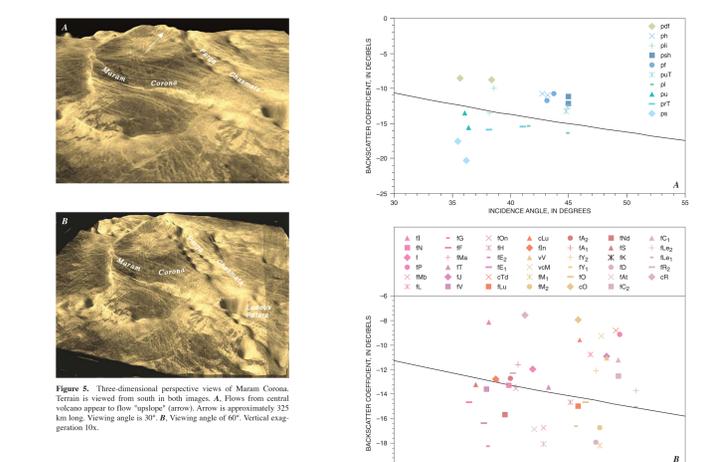


Figure 4. Three-dimensional perspective views of Mbokoni Mass. Terrain is viewed from south in both images. A, Flows from central volcano appear to flow "uphill" (north). Arrow is approximately 325 km long. Viewing angle is 60°. B, Viewing angle of 60°. Vertical exaggeration 10x.

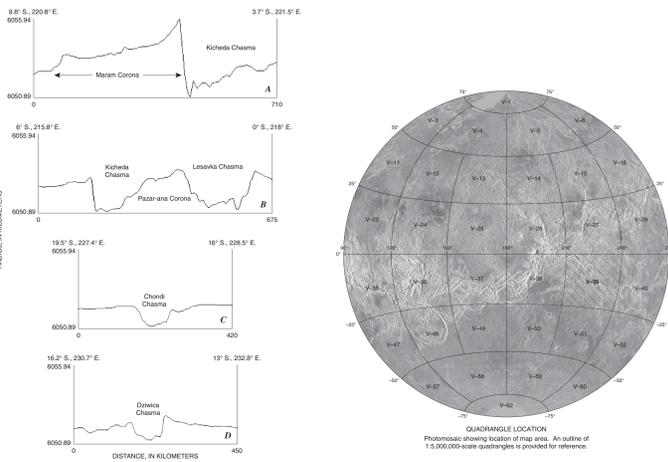


Figure 7. Four topographic profiles across Parga Chasma, A, Marat Corona and Kicheda Chasma. B, Kicheda and Lesvaka Chasma. C, Chond Chasma. D, Driwika Chasma. Note low water flanks of rift are raised and slope away from trough (especially conspicuous at Marat Corona), indicating uplift and extension during formation. Profile locations shown in figure 2.

\*Name provisionally approved by International Astronomical Union

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