

NORTH POLAR REGION



NOTES ON DATA

This sheet is one in a series of maps of Venus at a contour scale of 1:50,000,000 and 1:10,000,000 (Planetary Cartography Working Group, 1984, 1995; Rowan, 1994). It is based on data from the Magellan Synthetic Aperture Radar (SAR) and radar altimetry instruments. The Magellan Mission was described by Saunders and Pettengill (1991). Magellan radar characteristics were described by Pettengill and others (1991).

ADDITIONAL INFO

The figure of Venus used for the construction of the map projection is a sphere with a mean radius of 6,051.8 km, consistent with the preliminary gravity figure reported by Phillips and others (1979) that was used for previous maps of Venus. Slightly larger values of the mean radius of Venus have subsequently been reported based on Pioneer Venus (Pettengill and others, 1982) and Magellan altimetry (Ford and Pettengill, 1992).

PROJECTION

The Mercator projection is used between the 57° parallels, and the polar stereographic projection is used for the polar regions north and south of the 57° parallels. The scale is 1:50,000,000 at 30° N (Pettengill and 1:30,173,561 at 190° (polar stereographic), both projections share a common scale of 1:27,919,443 at 0° lat. Due to the unique relation of Venus, longitude increases from east to west in accordance with usage of the International Astronomical Union (IAU).

CONTROLS

Planimetric control is derived from the radio-labeled position of the spacecraft. The lat. coordinate passes through the central point of the outer Airy disk, at 40° 43' N, according to current International Astronomical Union conventions. (Ford et al. replaces the feature "lat." which, at the same longitude originally listed the location of the space station (Saunders and others, 1980).) The Venusian cartographic coordinate system was described by Deane and others (1992).

CONTOURS

Because Venus has no surface water and hence no sea level, the topographic datum (the zero contour) is defined as a sphere with a radius of 6,051.8 km. Data for topographic contours were derived from computer processing of Magellan radar altimetry data provided by the Massachusetts Institute of Technology (Pettengill and others, 1991). These contours were then corrected and brought into accord with the relief image (see Mapping Techniques below).

MAPPING TECHNIQUES

Topographic information obtained from Magellan radar altimetry measurements has been shown as shaded relief by converting the slope regions between elevation values to reflective values, using methods described by Edwards (1987). An algorithm was shown as if downloaded from the user. Data for shaded relief were derived from computer processing of radar altimetry information provided by the Massachusetts Institute of Technology (Pettengill and others, 1991).

Topographic image processing was used to correct artifacts to enhance the digital image details, and to add distinctive colors between data from SAR images by use of artificial and photomicroscopic methods previously used in artificial cartography described by Tye and Bridges (1976). Gaps in coverage in the Magellan radar altimetry data that do occur (notably image data from the Pioneer Venus and Ulysses 15 and 16 missions, including unknown portions of detail. Contours were generated

at one kilometer elevation intervals from the altimetry data and modified in the relief image. From these shaded contours, the zero datum was generated.

Colors were chosen to best fit criteria on reliability, color stability, and information. That is, the colors help the viewer automatically see and interpret as higher or lower than other elevations. Also, colors were chosen to help the viewer see the same or opposite. A difference color contrast between a red and green and a red and brown was chosen to decrease the 0 km contour boundary (scale of 6,051.8 km). The color data was then merged with the relief image.

Shaded relief image interpretation and cartographic elevation contours, and cartographic processing by Ralph Rowan.

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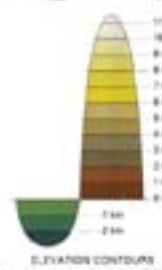
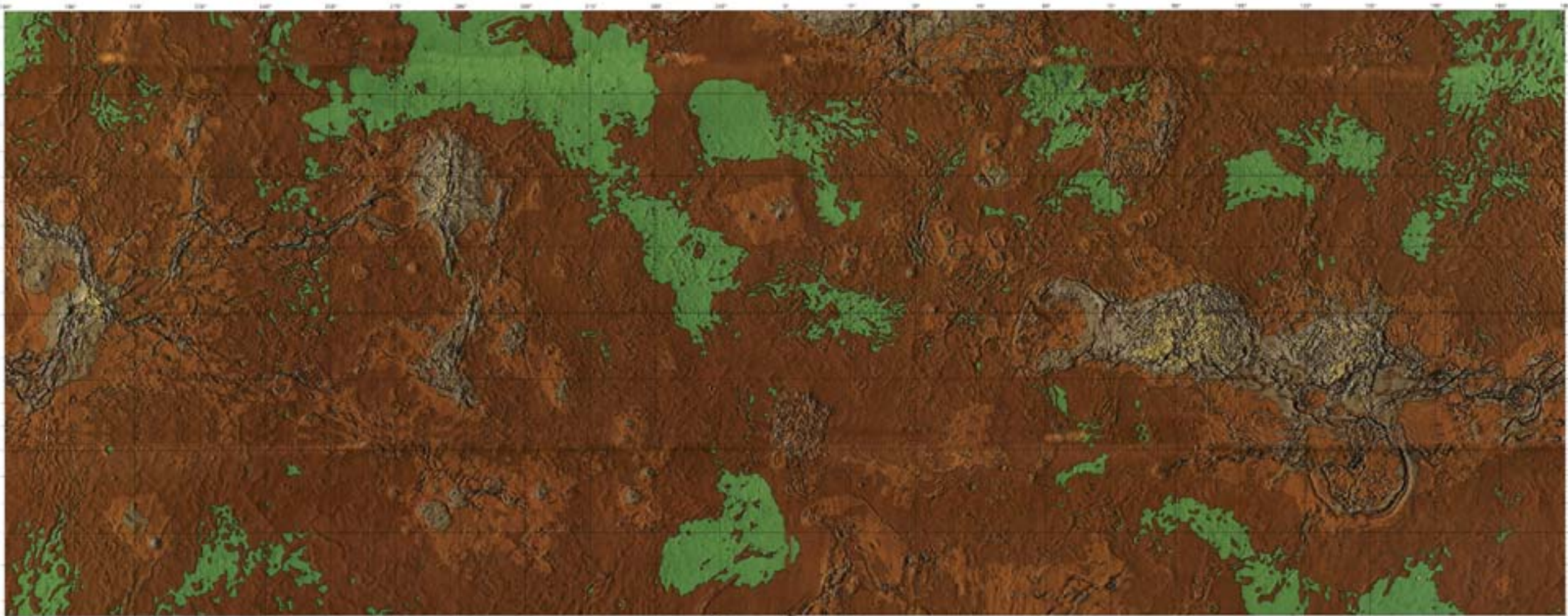
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SOUTH POLAR REGION



TOPOGRAPHIC MAP OF VENUS
V 50M 0/0 RTK
1997

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Small text at the bottom right corner providing additional information about the map's production and distribution.