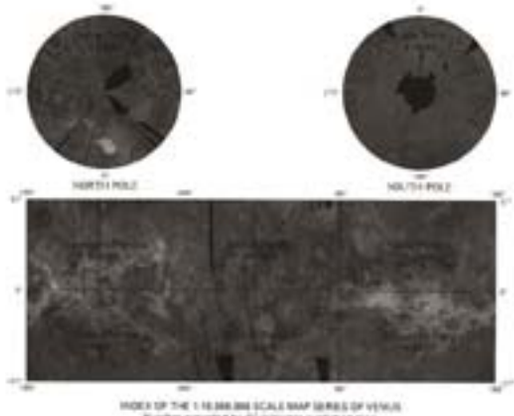
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared for the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ATLAS OF VENUS
1:10,000,000 SERIES
V 10M 30/240 CMRN, 1998
I-2657 SHEET 2 OF 4



INDEX OF THE 1:10,000,000 SCALE MAP SERIES OF VENUS
Number preceded by "I-" indicates published map.

NOTES ON BASE

The sheet is one in a series of maps of Venus at nominal scales of 1:50,000,000 and 1:10,000,000 (Planetary Cartography Working Group, 1984, 1993; Batson and others, 1990). 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).

ADOPTED FIGURE

The figure of Venus used for the computation 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 provisional images of Venus. Slightly larger values of the mean radius of Venus have subsequently been reported based on Pioneer Venus (Pettengill and others, 1980) and Magellan altimetry (Ford and Pettengill, 1992).

PROJECTION

The Mercator projection is used for this sheet. The scale is 1:16,324,269 at 0° latitude; it is 1:9,181,590 at 60° latitude, as is the scale at this latitude in the polar stereographic projection. Due to the retrograde rotation of Venus, longitude increases from east to west in accordance with usage of the International Astronomical Union (1973).

CONTROL

Planimetric control is derived from the radio-tracked positions of the spacecraft. The first meridian passes through the central peak of the crater Ariadne at lat 43.8° N., according to current International Astronomical Union convention. (Ariadne replaces the bygone "Eve," which, at the same longitude, originally fixed the location of the prime meridian (Davies and others, 1980).) The nonconic cartographic coordinate system was described by Davies and others (1992).

MAPPING TECHNIQUES

This map image base is compiled from the synthetic aperture radar (SAR) image mosaic shown by overlayed open- the relief image used as a relief base is shown in Magellan SAR datasets were originally processed by the Jet Propulsion Laboratory. Full-resolution (75 m/pixel) image strips were compressed and researched to produce (1) MIDR's (Compressed Data Mosaicked Image Data Records, 225 m/pixel) (Pettengill and others, 1992); (2) FMIDR's were assembled and reprocessed. (Cycle 1 and 2 left-looking and Cycle 2 right-looking data records were used in the SAR) image mosaic. (Cycle 1 radar operations commenced September 15, 1990, and ended May 1, 1991; Cycle 2 began May 16, 1991, and ended January 17, 1992; Cycle 3 began January 17, 1992, and ended September 13, 1992).

The underlying relief image was controlled by interpolation and digital manipulation of computer-generated relief images from the Magellan altimetry data. Topographic information obtained from Magellan radar altimeter measurements was rendered as a shaded relief image by converting the slope segments between altimeter values to reflectance values, using methods described by Lloyde (1985). All landforms were shown as if illuminated from the west. Data for shaded relief were derived from computer processing of radar altimeter information provided by the Massachusetts Institute of Technology (Pettengill and others, 1991). Interpolation image-processing was then used to remove artifacts and to enhance the digital image details by use of geological and photo-interpretive methods described by Inge and Bridges (1976). Synthetic aperture radar (SAR) imagery was used to confirm geographic features and control as well as to aid in adding distinctive surface features revealed by the sharper resolution of the SAR images. Gaps in coverage by the Magellan radar altimeter were filled by lower resolution image data from the Pioneer Venus Mission, constituting artistic portrayal of detail.

SAR mosaic processing was done by Robert M. Soufrentis, creation of the shaded relief base and image compilation were done by Ralph Aeschliman.

NOMENCLATURE

Names on this sheet are approved by the International Astronomical Union (1985, 1985, 1986, 1991, 1994, 1996).

V 10M 30/240 (1998) — Abbreviation for Venus, 1:10,000,000 series, version of map, lat 30° N., long 240° (central), revised (CR) with shaded relief (R) and nomenclature (N).

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RADAR IMAGE AND SHADED RELIEF MAP OF THE GUINEVERE PLANITIA REGION OF VENUS

V 10M 30/240 CMRN

1998