DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

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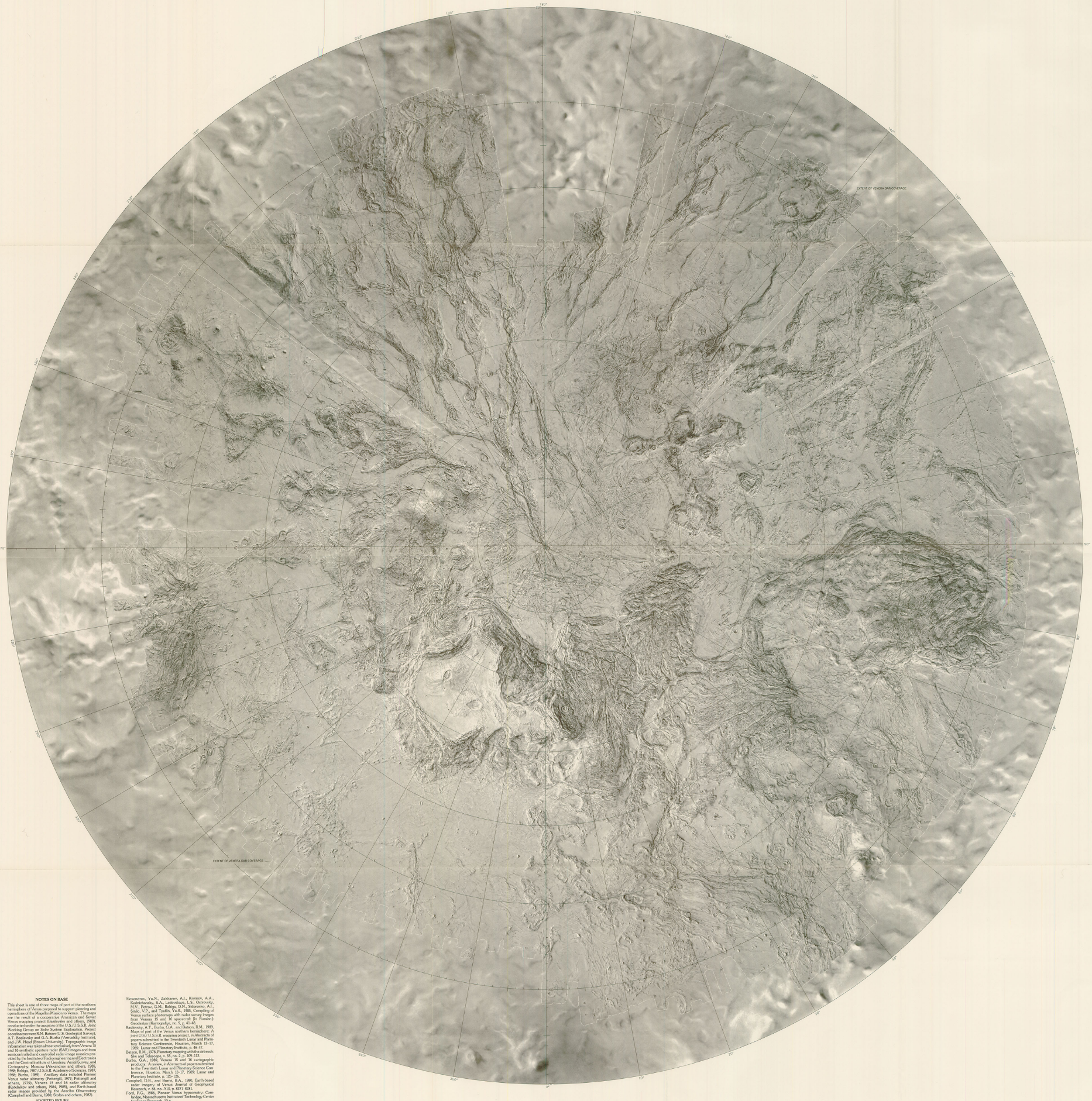
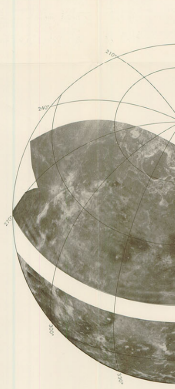
U.S./U.S.S.R. JOINT WORKING GROUP ON SOLAR SYSTEM EXPLORATION

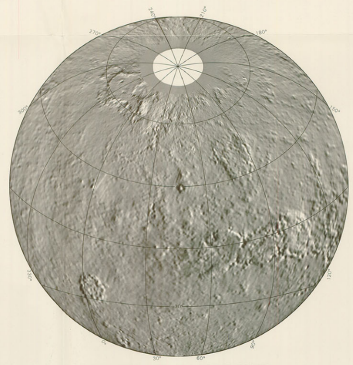
ATLAS OF VENUS
1:15,000,000 TOPOGRAPHIC SERIES
NORTHERN HEMISPHERE
V 15M 90/0 R, 1989
I-2041 SHEET 2 OF 3



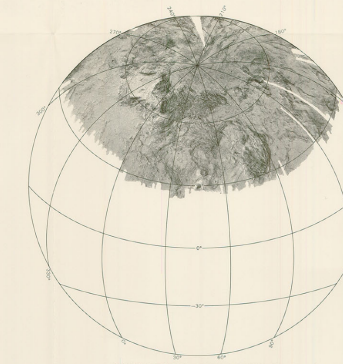
SCALE 1:15 000 000 (1 mm = 15 km) AT 40° LATITUDE
(1:18 261 561 AT 90° LATITUDE)
POLAR STEREOGRAPHIC PROJECTION



LOCATION OF EARTH-BASED RADAR IMAGES
(LAMBERT AZIMUTHAL EQUAL-AREA PROJECTION)



DIGITAL SHADED RELIEF MAP BASED ON PIONEER VENUS ALTIMETRIC MEASUREMENTS
(LAMBERT AZIMUTHAL EQUAL-AREA PROJECTION)



LOCATION OF VENERA 15 AND 16 RADAR IMAGES
(LAMBERT AZIMUTHAL EQUAL-AREA PROJECTION)

NOTES ON BASE

This sheet is one of three maps of part of the northern hemisphere of Venus prepared to support planning and operations of the Magellan Mission to Venus. The maps are the result of a cooperative American and Soviet Venus mapping project (Baslavsky and others, 1989), conducted under the auspices of the U.S./U.S.S.R. Joint Working Group on Solar System Exploration. Project coordinators were R.M. Batson (U.S. Geological Survey), A.T. Basilevsky and G.A. Burba (Vernadsky Institute), and J.W. Head (Brown University). Topographic image information was taken almost exclusively from Venera 15 and 16 synthetic aperture radar (SAR) images and from semicontrolled and controlled radar-image mosaics provided by the Institute of Radioengineering and Electronics and the Central Institute of Geodesy, Aerial Survey, and Cartography, Moscow (Alexandrov and others, 1985, 1988; Rzhiga, 1987; U.S.S.R. Academy of Sciences, 1987, 1988; Burba, 1989). Ancillary data included Pioneer Venus radar altimetry (Pettengill, 1977; Pettengill and others, 1979), Venera 15 and 16 radar altimetry (Kotelnikov and others, 1984, 1985), and Earth-based radar images provided by the Arecibo Observatory (Campbell and Burns, 1980; Stofan and others, 1987).

ADOPTED FIGURE

The figure of Venus used for computation of this map projection is a sphere with a mean radius of 6051.9 km (Ford, 1986).

PROJECTION

The Polar Stereographic projection is used for this map, with a scale of 1:15,000,000 at lat 40° N. and 1:18,261,561 at lat 90° N. Due to the retrograde rotation of Venus, longitude increases from west to east in accordance with usage of the International Astronomical Union (1983).

CONTROL

Planimetric control is taken from the radar-image mosaic provided by the U.S.S.R. that is based on the tracked position of the spacecraft (Akim and others, 1986; Tyuflin and others, 1989). According to current IAU convention, the 0° meridian passes through the center of a craterlike feature, Eve (lat 32° S.), located within Alpha Regio, a feature of the southern hemisphere that is outside the area shown on this map (Masursky and others, 1980). No simple statement for accuracy can be given, but discrepancies as great as 10 km (0.3°) are likely to exist (Alexandrov and others, 1985; Tyuflin and others, 1989).

MAPPING TECHNIQUE

The shaded relief image was made by mapping methods described by Inge and Bridges (1976) and Batson (1978). All landforms are shown as if illuminated from the west, regardless of the illumination shown on the radar images. This map provides a composite view of the surface, incorporating high-frequency SAR information with regional- and continental-scale information from both Earth-based radar images and altimetric soundings taken along each orbital track. Low-resolution Pioneer Venus altimetric data were used to complete areas south of the SAR coverage and in gaps located east of Tellus Tessera and Uni Dorsa, south of Nightingale Corona, west of Beta Regio, between Ulfrun Regio and Venilia Mons, and in the Vedma Dorsa area. Additional data were taken from manually compiled SAR mosaics to fill gaps located in Ulfrun Regio; southwest of Tellus Tessera, Tepev Mons, and Bell Regio; and west of Hathepsut Patera. (See sheet 1 for location of features.)

Shaded relief interpretation and portrayal were made by Patricia M. Bridges.

NOMENCLATURE

V 15M 90/0 R: Abbreviation for Venus; 1:15,000,000 series; center of sheet, lat 90° N., long 0°; shaded relief (R).

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SHADED RELIEF MAP OF PART OF THE NORTHERN HEMISPHERE OF VENUS

V 15M 90/0 R

1989

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NOTE TO USERS

Users noting errors or omissions are urged to indicate them on the map and to forward it to U.S. Geological Survey, Building 4, Room 404, 2255 North Gemini Drive, Flagstaff, AZ 86001. A replacement copy will be returned.