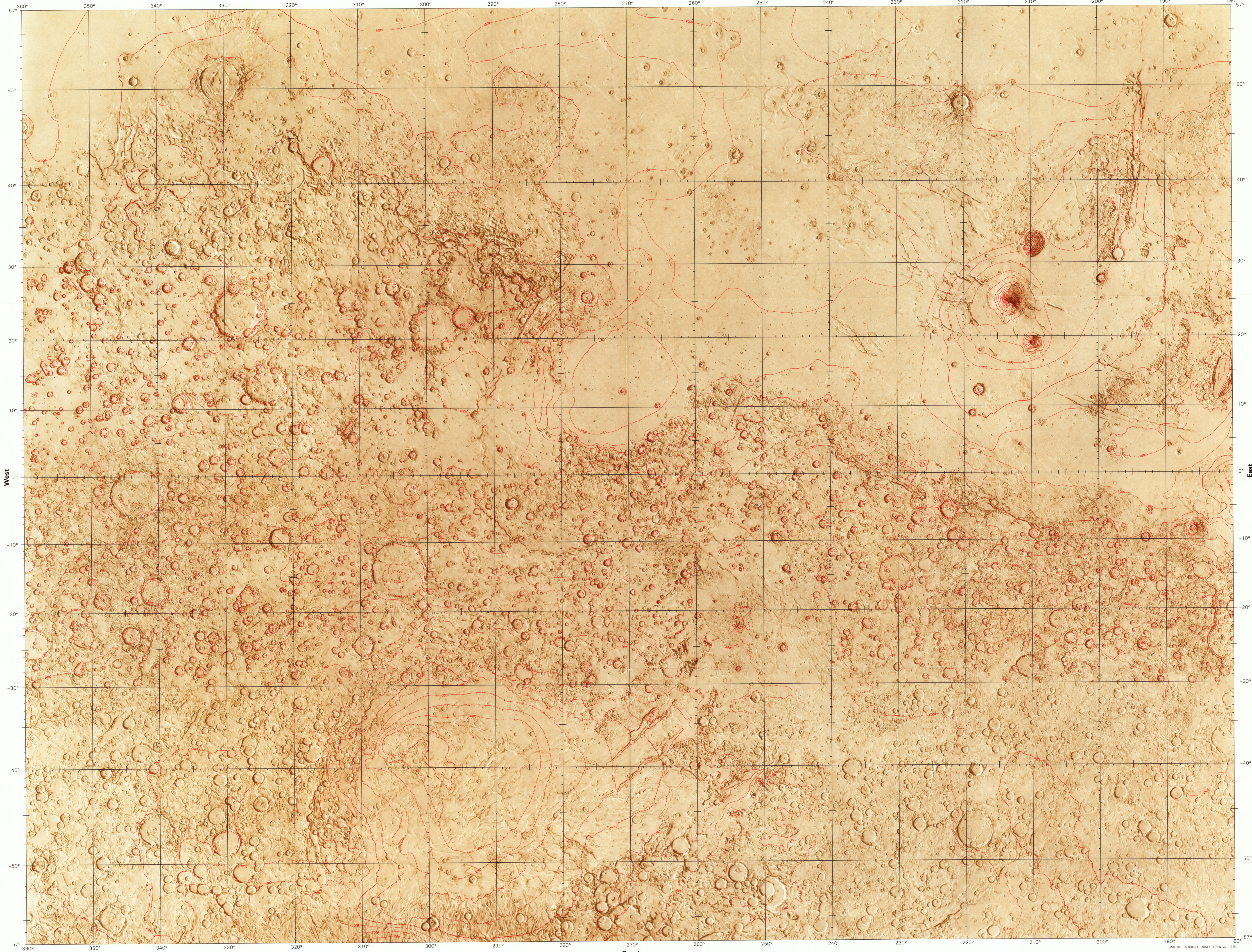




NOTES ON BASE

This map is one of a series of topographic map sheets covering the entire surface of Mars at nominal scales of 1:15,000,000 and 1:2,000,000. The major sources of map data were various experiments from the Viking and Mariner 9 missions. Source of the shaded relief base was U.S. Geological Survey (1985).
M 15M 0/270 TR: Abbreviation for Mars; 1:15,000,000 series; center of map, lat 0°, long 270°; contours (T), shaded relief (R).

ADOPTED FIGURE

The figure of Mars used for the computation of the map projection is an oblate spheroid (flattening of 1/192) with an equatorial radius of 3393.4 km and a polar radius of 3375.7 km. Because Mars has no surface water, and hence no sea level, the datum (the 0 km contour line) for elevations is defined by a gravity field described by spherical harmonics of fourth order and fourth degree (Jordan and Lorell, 1973) combined with a 6.1-millibar atmospheric pressure surface derived from radio occultation data (Kilore and others, 1973; Christensen, 1975). This datum can be approximated by a triaxial ellipsoid with semi-major axes of A=3394.6 km and B=3393.3 km and a semi-minor axis of C=3376.3 km. Semi-major axis A intersects the Martian surface at long 105° (Wu, 1978, 1981).

PROJECTIONS

The Mercator projection is used between the ±57° parallels, and a Polar Stereographic projection is used for the polar regions north and south of the 55° parallels. Longitude increases to the west in accordance with astronomical convention for Mars. Latitudes are areographic.

CONTROL

Horizontal and vertical controls were established by analytical photogrammetric aerotriangulation (Wu and Schaler, 1984), using the General Integrated Analytical Translation (GIANT) program of the U.S. Geological Survey. Primary controls used in the control network include the Viking Orbiter Secondary Experiment Data Record, radio occultation measurements from both Mariner 9 and Viking missions (Lorell and others, 1972; Kilore and others, 1973; Lindal and others, 1979). Earth-based radar observations (Pettengill and others, 1971; Downs and others, 1975), and the Mars primary control network of the Rand Corporation (Davies and others, 1978).

CONTOURS

Between the ±30° parallels, contour lines were transferred from the 1:2,000,000-scale topographic maps originally compiled from stereoscopic Viking Orbiter pictures on analytical stereoplotters (Wu and others, 1982). Contour lines above and below lat ±30° were compiled from measurements made by both Viking and Mariner 9 experiments, including the ultraviolet spectrometer (Hord and others, 1974), infrared interferometer spectrometer (Conrath and others, 1973), and elevation data from both the Mars primary control network (Davies and others, 1978) and the Mars planetwide control network (Wu and Schaler, 1984). Elevation values (expressed in meters) are given with respect to the adopted Mars topographic datum. As the stereoscopic compilation of 1:2,000,000-scale topographic maps progresses, we plan to update periodically this map and the two other 1:15,000,000-scale maps, as well as to improve the estimated elevation accuracy shown on their index maps of probable error.

NOTE TO USERS

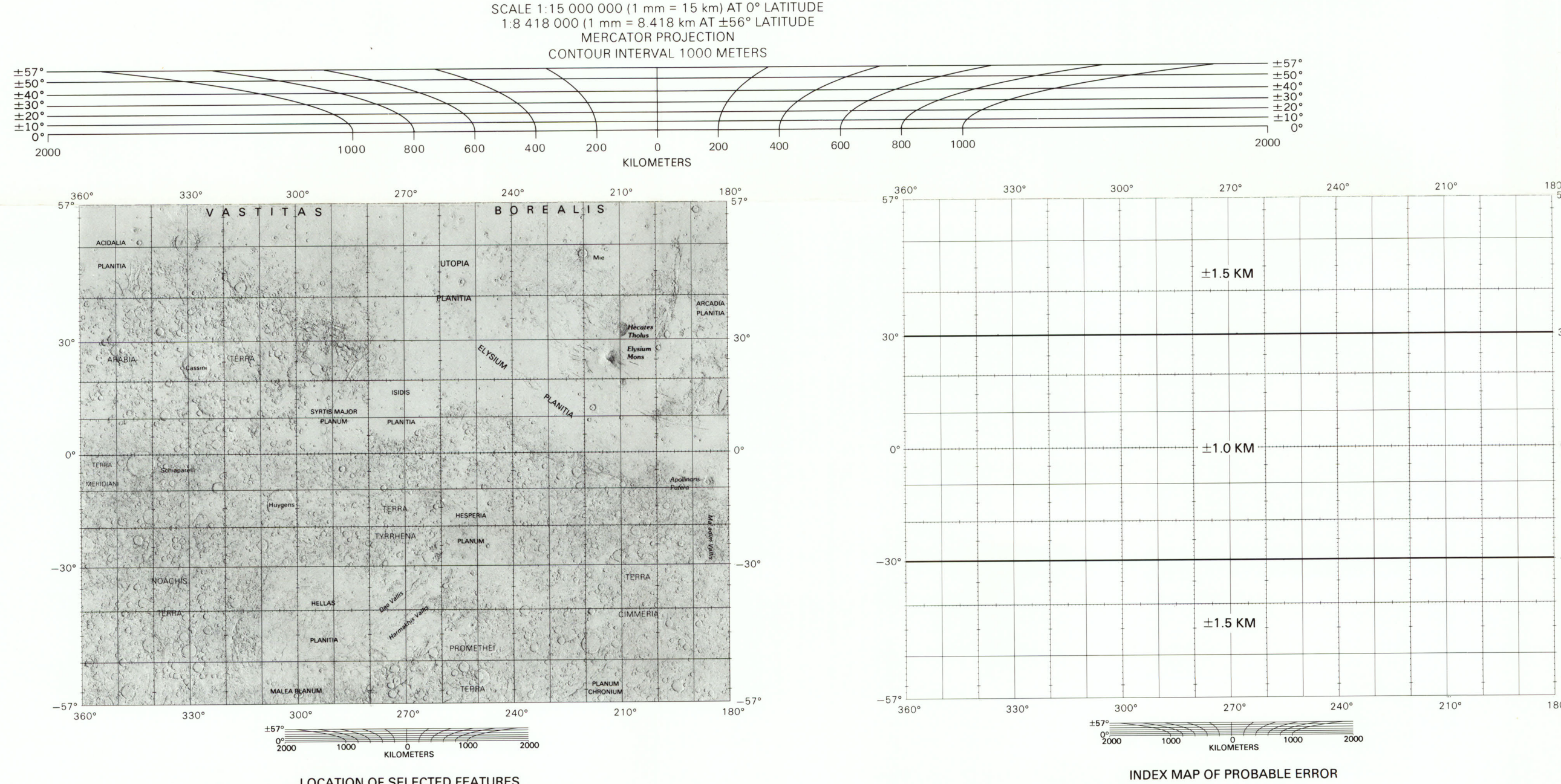
Users noting errors or omissions are urged to indicate them on the map and to forward it to U.S. Geological Survey, Room 412, Building 4, 2255 North Gemini Drive, Flagstaff, AZ 86001. A replacement copy will be returned.

COLOR

Color on map was purposely suppressed to enhance contour lines.

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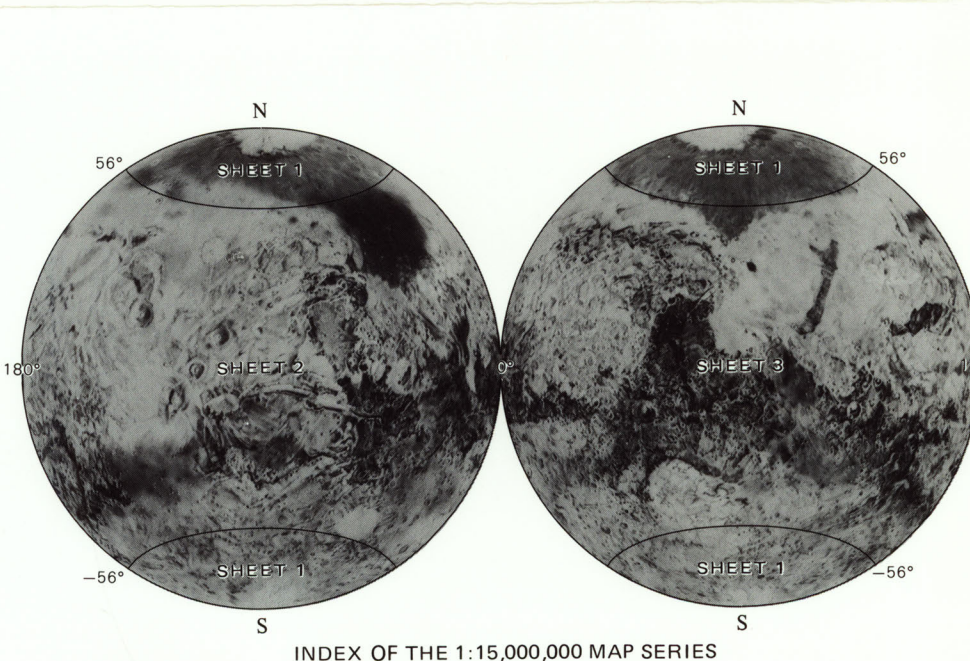
LOCATION OF SELECTED FEATURES
Contrast in the reduced base map was purposely suppressed to emphasize the names. All names have been approved by the International Astronomical Union.

TOPOGRAPHIC MAP OF THE EASTERN EQUATORIAL REGION OF MARS

M 15M 0/270 TR

1989

Prepared on behalf of the Planetary Geology Program, Solar System Exploration Division, Office of Space Science, National Aeronautics and Space Administration, under contract W-15,814.



INDEX OF THE 1:15,000,000 MAP SERIES



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I
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