

NOTES ON BASE

This map is one of a set of topographic map sheets covering areas of special interest on Mars at nominal scales of 1:1,000,000 and 1:250,000 (Barton, 1973, 1976). The major source of map data was the Mariner 9 television experiment (Christiansen and others, 1973).

ADOPTED FIGURE

The figure of Mars used for the computation of the map projection is an oblate spheroid (Batterson, 1973) with an equatorial radius of 3393.4 km and a polar radius of 3375.7 km. This is not the best figure which is defined below under the heading "contours."

PROJECTION

The transverse Mercator projection is used for this sheet, with a scale of 1:1,000,000 at long 39°. Longitudes increase to the west in accordance with usage of the International Astronomical Union (IAU, 1971). Latitudes are geographic (de Vaucouleurs and others, 1973).

CONTROL

Planimetric control is provided by photogrammetric triangulation using Mariner 9 pictures (Davies, 1973; Davies and Arthur, 1973) and the radio-tracked position of the spacecraft. The first meridian passes through the crater Ary (lat 5.19° S, long 39° W) within the crater Ary. No simple statement is possible for the precision, but local consistency is 2 km.

MAPPING TECHNIQUE

A mosaic of rectified Mariner 9 pictures was assembled at a scale of 1:1,000,000. Shaded relief was copied from the mosaic and portrayed with uniform illumination with the sun to the west. Many Mariner 9 pictures besides those in the base mosaic were examined to improve the portrayal (Levinthal and others, 1973; Green and others, 1975; Inge and Bridges, 1976). The shading is not generalized and may be interpreted with nearby photographic reliability (Inge, 1972).

Shaded relief analysis and representation were made by Jay L. Inge. Shaded relief analysis and representation were made by Jay L. Inge.

ALBEDO MARKINGS

The markings superimposed on the shaded relief were hand copied from pictures that were computer enhanced especially to show low-frequency tone variation (Barton and Inge, 1976). The surface in these pictures is illuminated from a variety of angles from the camera line of sight. The markings therefore delineate boundaries of local brightness variations only and should not be considered as a true measure of albedo. No attempt was made to use Earth-based telescopic albedo data.

Airbrush portrayal of albedo markings was done by Jay L. Inge.

CONTOURS

Since Mars has no seas and hence no sea level, the datum (the 0-m contour line) for altitudes is defined by a gravity field described by spherical harmonics of fourth order and fourth degree (Lorenz and Lorell, 1973) combined with a 6.1-millibar atmospheric pressure surface derived from radio-occultation data (Kliore and others, 1973; Christiansen, 1975).

The contour lines (Wu, 1973) were compiled from Earth-based radar determinations (Downs and others, 1971; Pettengill and others, 1971) and measurements made by Mariner 9 instrumentation, including the ultraviolet spectrometer (Hord and others, 1974), infrared interferometer spectrometer (Conrath and others, 1973), and stereoscopic Mariner 9 television pictures (Wu and others, 1973).

Formal analysis of contour line accuracy has not been made. The estimated vertical accuracy of each source of data indicates a probable error of 1-2 km.

COLOR

No attempt was made on the map to duplicate precisely the color of the Martian surface, although the color used does approximate it.

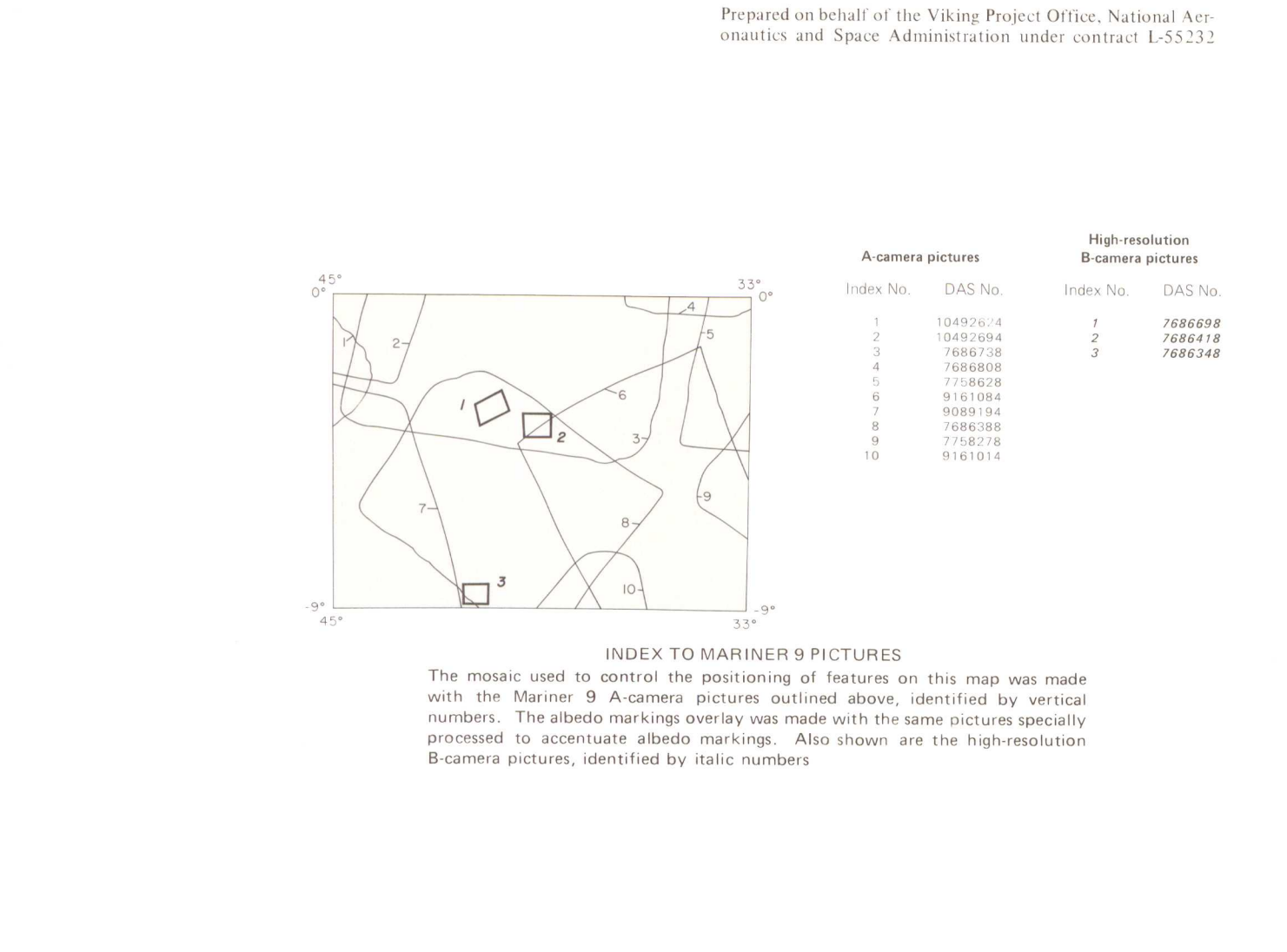
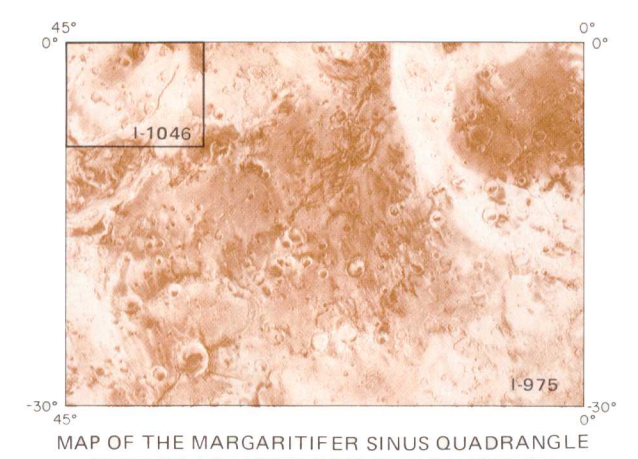
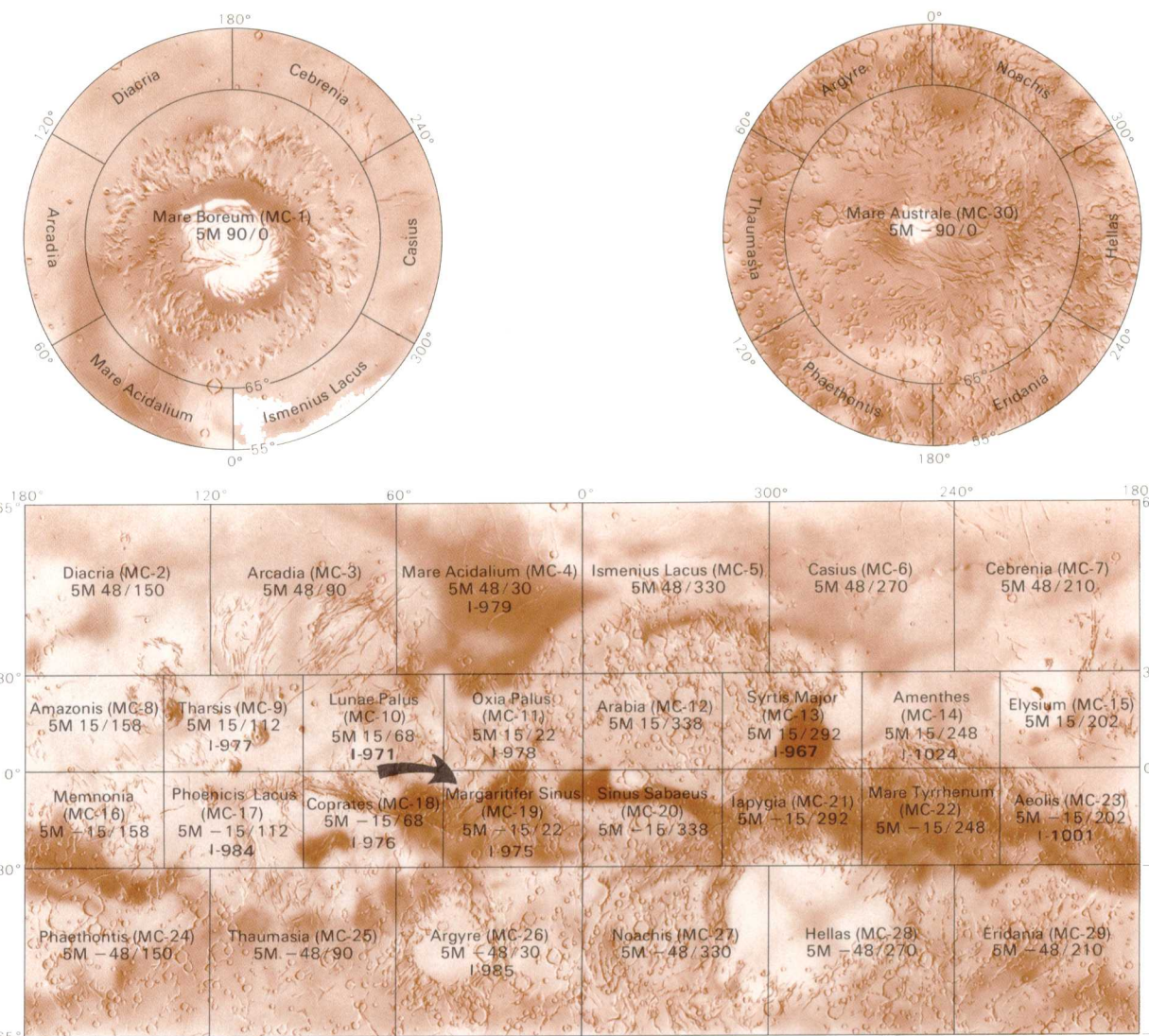
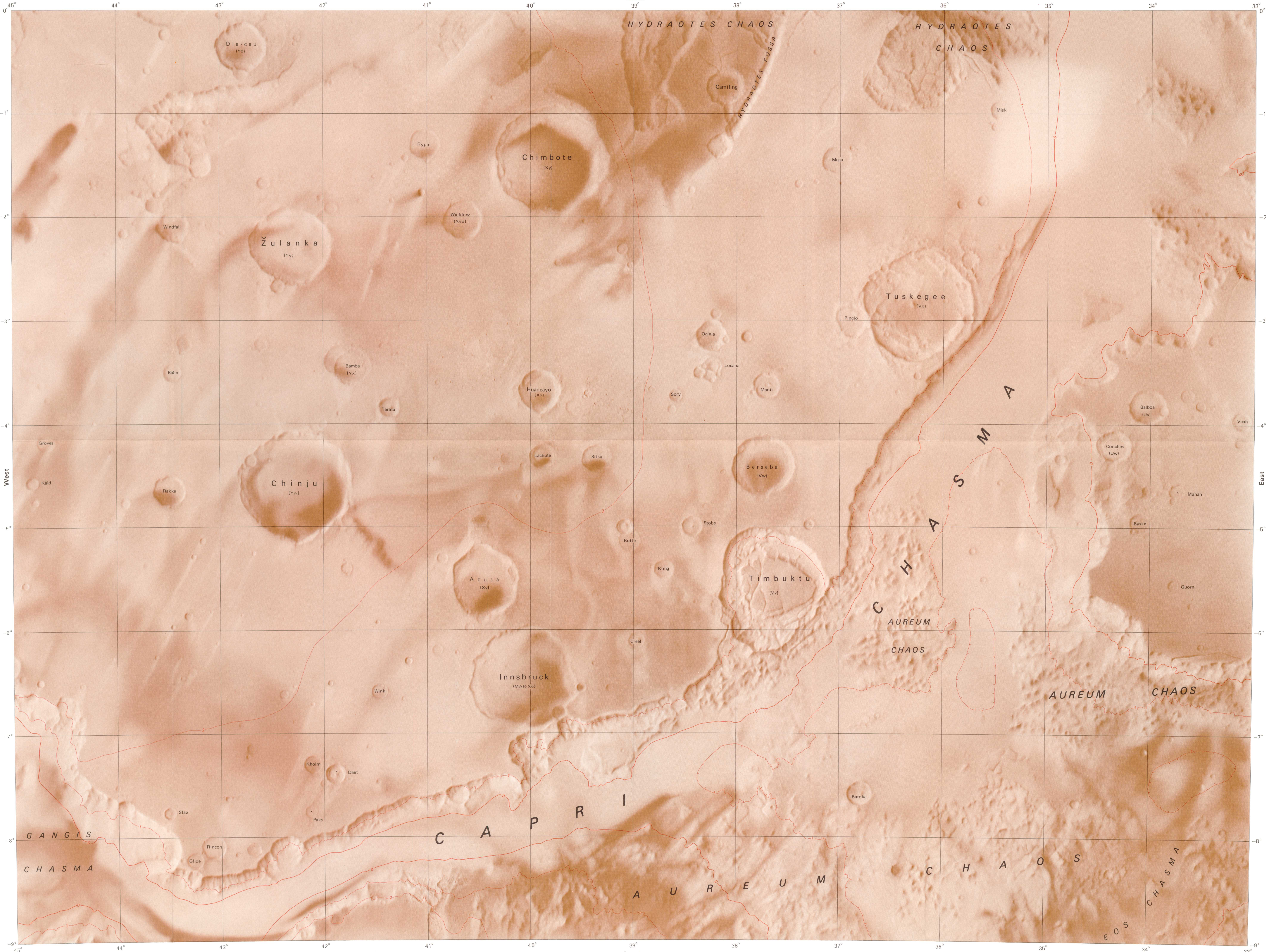
NOMENCLATURE

Names on this sheet are approved by the International Astronomical Union (1974, 1977) except for the following: Hydrotus Fossae. Named craters bearing double letters in parentheses are designated by the same letters on the 1:500,000 Margaritifer Sinus sheet which covers this area. Double and triple letter designations refer to position on the map and are derived from a grid based on equatorial meridian and parallel; the alphabet (I and O omitted) runs in the direction of increasing longitude (west) and latitude (north). The complete designation of a crater is the name of the quadrangle followed by a double or triple letter. The prefix MAR (identifying the Margaritifer Sinus sheet) is part of the complete designation but, for brevity, it is not shown on most craters.

M 1M-4/39 RMC: Abbreviation for Mars, 1:1,000,000 series, center of sheet lat 4° S, long 39° W shaded relief map, R, with albedo markings, M, and contours, C.

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TOPOGRAPHIC MAP OF THE CAPRI REGION OF MARS
 VIKING C 1 LANDING SITE
 M 1M-4/39 RMC
 1977