



THE MOONS OF SATURN: Preliminary Maps – 2

Dione

Map of Dione, third largest of Saturn's satellites (diameter $1,120 \pm 20$ kilometers), was prepared from photos taken by the Voyager 1 spacecraft. Drawn at 1:10,000,000 scale by Patricia M. Bridges of the U.S. Geological Survey's Branch of Astrogeologic Studies, it is reproduced here at 1:9,000,000 (1 centimeter = 90 km at the equator). The 0° meridian of longitude always faces Saturn, and the left half of the map shows the side of Dione that faces ahead as it moves around the planet. The placement of surface features shown (still being refined) is estimated to be accurate to within ± 50 km over 66 percent of the mapped area. The photos used in preparing the map range in resolution from about 40 to 3 km per line pair.

Light-colored, "wispy" features dominate Dione's trailing hemisphere, in contrast to the conspicuously cratered terrain on the leading side. It has been suggested that the wisps may be water that issued from cracks in the crust and then froze out onto the surface along them. Such cracks might have formed from expansion of the crust as Dione's water-rich interior froze, after which the leading-hemisphere wisps might have been erased as the satellite ran into large numbers of meteorites. Alternatively, the cracks may have resulted from a major impact, such as the one that may have formed the large, dark, ring-shaped feature centered at about 10°N by 285°. Note also a canyon at about 65°W, extending almost from equator to north pole. — **Jonathan Eberhart**

