

INITIAL PIONEER VENUS MAGNETOMETER OBSERVATIONS. C.T. Russell, R.C. Elphic, and J.A. Slavin, Institute of Geophysics and Planetary Physics, University of California, Los Angeles, California 90024.

Initial observations by the Pioneer Venus magnetometer in the sunlit ionosphere reveal that the planetary magnetic field plays no role in the deflection of the solar wind around the planetary obstacle. Rather, the ionosphere forms an effective barrier which, on most occasions, efficiently excludes the magnetic field draped across the planet by the solar wind. The ionosphere also efficiently excludes any intrinsic planetary field that may exist below the ionosphere. A very striking exception to the generally low magnetic field strength in the ionosphere is the existence of magnetic flux ropes whose intensity surpasses that of even the flux piled up outside of the ionosphere. These flux ropes consist of a straight central field wrapped with helical field lines whose pitch increases with distance from the center of the rope. The source of these ropes may be the penetration of bundles of flux from the draped flux above the ionosphere or due to the penetration of the intrinsic field of the planet into the ionosphere from below. At this writing the available data do not distinguish between these two possibilities.

Data to be obtained during the months of January and February will probe the nighttime ionosphere. In this region we expect that ionospheric current systems will be weaker and the planetary magnetic field will be directly measurable. These data will also be discussed.