LARGE-SCALE INTERACTION OF THE SOLAR WIND WITH COMETS HALLEY AND GIACOBINI-ZINNER.

John C. Brandt, Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, CO, and Malcolm B. Niedner, Jr., Laboratory for Astronomy and Solar Physics, NASA/Goddard Space Flight Center, Greenbelt, MD

In situ measurements of comets Halley and Giacobini-Zinner have confirmed ~~our~~ view of the basic physics of the comet solar-wind interaction. ~~The ideas of Biermann as extended by Alfven are correct;~~ the solar-wind magnetic field is captured by the comet through the mechanism of field-line loading by cometary ions and the field lines drape around the cometary ionosphere.

With this basic model in hand, ~~we review~~ the large-scale structure of the plasma tail as revealed by submissions to the Large-Scale Phenomena Network of the International Halley Watch. The turn-on and turn-off of plasma activity seem consistent with ~~the~~ theory ~~by Mendis and Flammer (1984)~~. ~~Approximately~~ 16 obvious disconnection events (DEs) have been recorded. Preliminary results indicated agreement with the sector-boundary model of Niedner and Brandt (1978); a detailed analysis will be required for all DEs in order to make a definitive statement. A study ~~by Niedner and Schwingenschuh (1986)~~ of plasma activity around the time of the VEGA encounters provides strong support for the sector-boundary model and illustrates once again the power of simultaneous remote and in situ measurements.

Estimates of the final large-scale phenomena archive indicate a total of more than 5000 images with coverage from November 1985 to June 1986. This data base should provide a firm observational footing for our physical picture of the solar-wind interaction with comets and the large-scale structure and evolution of plasma tails.