fields from photospheric magnetograms has been generalized to allow for an arbitrarily shaped non-spherical source surface. This concept was introduced by Schulz et al. (Solar Phys., 60, 83, 1978), who demonstrated that defining the source surface as an isogaus surface of the extrapolated photospheric field resulted in significantly better agreement with an MHD dipole solution. Levine et al. (BAAAS, 11, No. 4, 697, 1980) have generalized the technique to allow for a completely arbitrary set of input data. The model is now well enough developed that it may be compared with soft x-ray, coronagraph and eclipse images. These comparisons will be shown, together with reference comparisons using the older spherical source surface model. Some of the interplanetary implications of the non-spherical source surface model will be discussed.

SS.05.03 Coronal Holes, Solar Wind Streams, and Geomagnetic Disturbances During 1978 and 1979, R.R. Sheeley, Jr., NRL, and J.W. Harvey, KPNO-We have extended our long-term study of coronal holes, solar wind streams, and geomagnetic disturbances through the rising phase of sunspot cycle 21 into the era of sunspot maximum. During 1978 and 1979, coronal holes reflected the influence of differential rotation, and existed within a slowly-evolving large-scale pattern despite the relatively high level of sunspot activity. The long-lived 28-50 day pattern is not produced by a rigidly-rotating quasi-stationary structure on the Sun, but seems to be produced by a non-stationary migratory process associated with solar differential rotation. The association between coronal holes and solar wind speed enhancements at Earth continues to depend on the latitude of the holes (relative to the heliographic latitude of Earth), but even the best associations since 1976 have had speeds of only 500-600 km/sec rather than the values of 600-700 km/sec that usually occurred during the declining phase of sunspot cycle 20.

Invited

SS.06.03 Ionization States of Solar Particles: Review of Past, Present, and Future Measurements. G. Boeckler, Univ. of Md.

SS.07.03 Dynamic Simulation of Coronal Mass Ejections. R. S. Steinolfson and S. T. Wu, U. of Ala. in Huntsville. A model is developed for the formation and propagation of the loop-like coronal transients in which mass is ejected from near the solar surface to the outer corona. The mass ejections are simulated with numerical solutions of the time-dependent, 2-D, dissipative, MHD equations of motion. The main difference between this model and previous similar models is that in the present model the initial state for the transient is assumed to be a coronal streamer, while in previous models the initial state has been a hydrostatic atmosphere with a force-free magnetic field. In a coronal streamer the atmosphere is not stationary and the magnetic field is not force-free. The streamer configuration is obtained by starting the numerical calculation with a state consisting of a polytropic, hydrodynamic solution to the steady-state radial equation of motion coupled with a force-free dipole magnetic field. The numerical solution of the time-dependent equations then gradually approaches a stationary streamer configuration which becomes the initial state for the transient simulation. A sudden increase in the pressure at the base of the closed-field region in the streamer simulates the solar event responsible for the transient. The transient produced in this manner is compared with one produced in previous models in which the atmosphere is initially stationary with a force-free magnetic field. We show that the transient in the present model compares considerably better with observations, particularly with the important observation of the shape of the expanding loop. Observations show the loop expanding mainly in the radial direction with little or no lateral movement of the "legs" of the loop. This behavior is reproduced in the present model, while in previous models the transient expands both radially and latitudinally.

SS.08.03 Simultaneous Measurement of Coronal Faraday Rotation and Total Electron Content During Solar Occultation of PSR 0525+21. R.A. Howard, (NRL), M.K. Bird, (Astronomical Institute, Univ. of Bonn), M.J. Rookem, D.J. Michels, N.R. Sheeley, Jr., (NRL). During the period June 12-14, 1979, the apparent position of the pulsar PSR 0525+21 passed through the southern solar corona in a path parallel to the ecliptic. At its closest approach it was about 4.7 R_e on June 13, 1979. During the occultation the linearly polarized component of the pulsar radiation experienced excess Faraday rotation due to the higher electron density and magnetic field in the corona. This rotation has been measured at the 100 m radio telescope of the Max-Planck-Institut fur Radioastronomie in Effelsberg (Nature 283, 459, 1980). The total electron content in the line of sight to the pulsar has been determined from a polarization analysis of the white light images obtained from the NRL SOLWIND coronagraph in the P79-1 spacecraft. In a comparison of the two sets of data, the most interesting feature occurred on June 14 when the pulsar was at 5 R_e and a position angle of 200° just at the edge of a streamer. In this region the rotation measure changed from -12