Geophysical Research Abstracts, Vol. 9, 04706, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04706

The radial evolution of solar wind structure: Ulysses observations near 5 AU

L. Jian (1), **C.T. Russell** (1), J.G. Luhmann (2), R.M. Skoug (3), J.T. Steinberg (3)

(1) Institute of Geophysics and Planetary Physics, University of California, Los Angeles, CA, USA, (2) Space Sciences Laboratory, University of California, Berkeley, CA, USA, (3) Space Science and Applications, Los Alamos National Laboratory, NM, USA (jlan@igpp.ucla.edu)

We have completed surveys of the solar cycle variation of solar wind disturbances at 0.7 AU using PVO data and at 1 AU using Wind and ACE data. There is no similar data set at a fixed heliocentric distance over a solar cycle. However, since launched in June 1990, Ulysses has passed aphelion (5.4 AU) 3 times, 1992, 1997-1998, 2003-2004. Thus we can examine slices of solar cycles at this distance. We confine our study to when Ulysses is near aphelion and also within +/- 15 degree of heliographic latitude. Using the well-known signatures in the plasma and magnetic field, as well as some compound parameters, such as total perpendicular pressure, entropy and beta, interplanetary CMEs (ICMEs) and stream interaction regions (SIRs) are identified and quantitatively described. We examine the occurrence rate, shock association rate, radial extent, and expansion velocity, etc., of these two types of solar wind disturbances and compare their behavior as a function of the solar cycle and with properties of these events at 0.7 and 1.0 AU.