

An Extensive Search for Interplanetary Slow-mode Shocks: Ulysses 1 1996 Fall AGU Meeting

2 010102343
 3 (a) C. M. o JPL/NASA
 MS 169-506
 4800 Oak Grove Dr.
 Pasadena, CA 91109-8099

R. Sakurai, C. M. Ho, B. T. Tsurutani, and B. L. Goldstein (all at Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109; e-mail: cho@jplsp.jpl.nasa.gov)
 A. Balogh (Imperial College of Science & Technology, The Blackett Laboratory, SW7 2BZ, London, England)

To generate slow-mode shocks in the interplanetary space, certain plasma constraints should be satisfied. The plasma needs to be low β such that the sound speed is below the Alfvén speed. Also the ion temperature has to be less than the electron temperature to avoid strong Landau damping. As Richter (1991) has pointed out, it is relatively rare for the solar wind to have these two conditions met simultaneously. Previous searches using Helios 1 (0.3 to 1.0 AU) and other spacecraft observations yielded only very few clearly identifiable slow shocks.

(b) Tel: (818) 354-7894
 (c) Fax: (818) 354-8895

Ulysses has accumulated five years of interplanetary solar wind plasma and IMF measurements. These data cover from 1 to ~5 AU and all heliographic latitudes. Based on these data, we perform an extensive search for the slow-mode shocks. We find a considerable number of discontinuities that have large magnetic field magnitude changes and also large field normal components. We have studied these events to determine whether or not they satisfy the slow-mode shocks criteria. These discontinuities are found in particular regions of high-speed streams. These findings will be discussed.

(a) Interplanetary Shocks
 (b)

- 6
- 7. 0%
- 8. \$50
- 9. Contributed
- 10.
- 11.