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CHANGES IN THE HELIOSPHERIC MAGNETIC FIELD IN THIS SOLAR CYCLE: ULYSSES OBSERVATIONS

When solar cycle 23 began in May, 1996, the Ulysses spacecraft was at 38° heliolatitude and a heliocentric distance of 3.7 AU and headed toward the equator and 5.3 AU which were reached in Dec.1997. Ulysses is now at 30° S headed for the south pole so that the spacecraft has been at relatively low latitudes and large distances during this entire interval. Since the beginning of the new cycle, we have sought evidence of changes in the HMF indicating the onset of solar activity leading to the next maximum. Three indicators of the onset have been identified: (1) an abrupt increase in field magnitude in mid-1997 followed by a second increase in early 1998, (2) evidence of an increase in the inclination of the Heliospheric Current Sheet and (3) the reappearance and gradual increase in the numbers of Coronal Mass Ejections and Magnetic Clouds. The relative abruptness of these changes can be taken advantage of to seek corresponding changes in the sun and solar magnetic field. We have continued to monitor changes in the field during the march to solar maximum. The Ulysses results will be presented and compared with simultaneous changes in other indicators of solar activity at the sun and throughout the heliosphere including the onset and evolution of cosmic ray modulation.

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2.Cycle 23 and Heliospheric Consequences

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5.N/A

6.No

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