Heliospheric magnetic fields and termination shock crossing: Voyager 1

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Measurements of the heliospheric magnetic field (HMF) with the dual magnetometer system on the twin USA Voyager 1 and 2 spacecraft (V1 and V2) began in 1977.

This presentation provides an overview of the observed HMF and its fluctuations from 1 to 100 AU covering well over a full solar magnetic cycle of 22 years. V1 crossed the termination shock (TS) in late 2004 and entered the heliosheath where it has remained ever since. The quasi-perpendicular TS showed a permanent increase in averaged HMF magnitude, by a factor of 2-4, the ratio depending upon scale size/time scale chosen. In 2005, sector boundaries were observed in the subsonic heliosheath. Significantly different statistical and physical characteristics of the fluctuations of the sub-sonic heliosheath field have been identified when compared to those in the supersonic solar wind within the heliosphere. The heliosheath is identified as a new regime of a magnetized, collisionless astrophysical plasma.