

Exploring the Solar System and Beyond

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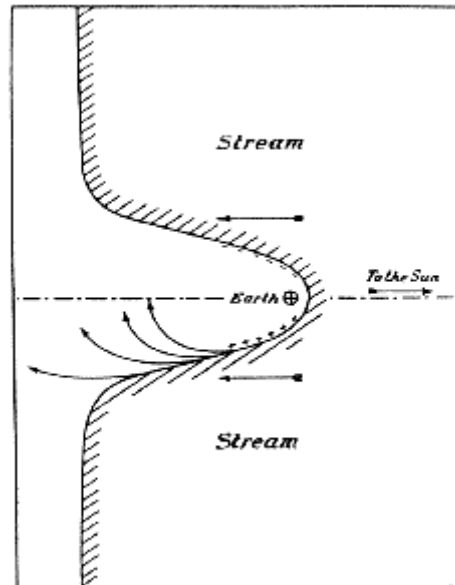
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Plan of Presentation

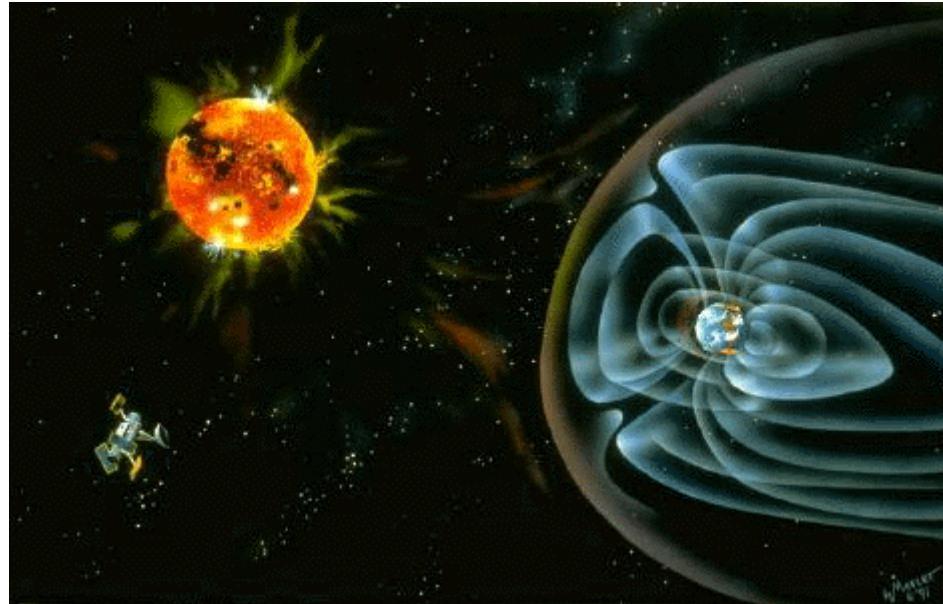
1. History Before the Spacecraft Era
 - Chapman-Ferraro Cavity
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 - Magnetosphere
 - Heliosphere
3. Beyond the Heliosphere
 - Voyager mission
 - Toward the Boundaries of the Heliosphere
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Chapman-Ferraro Cavity



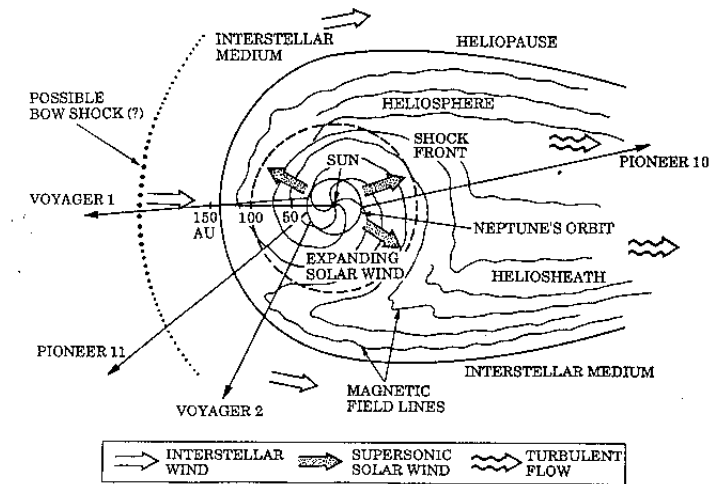
The formation of the Chapman-Ferraro cavity. Arrows trace the paths of ions and electrons by which Chapman and Ferraro proposed to account for ring current effects (Chapman and Ferraro, 1930).

The Magnetosphere



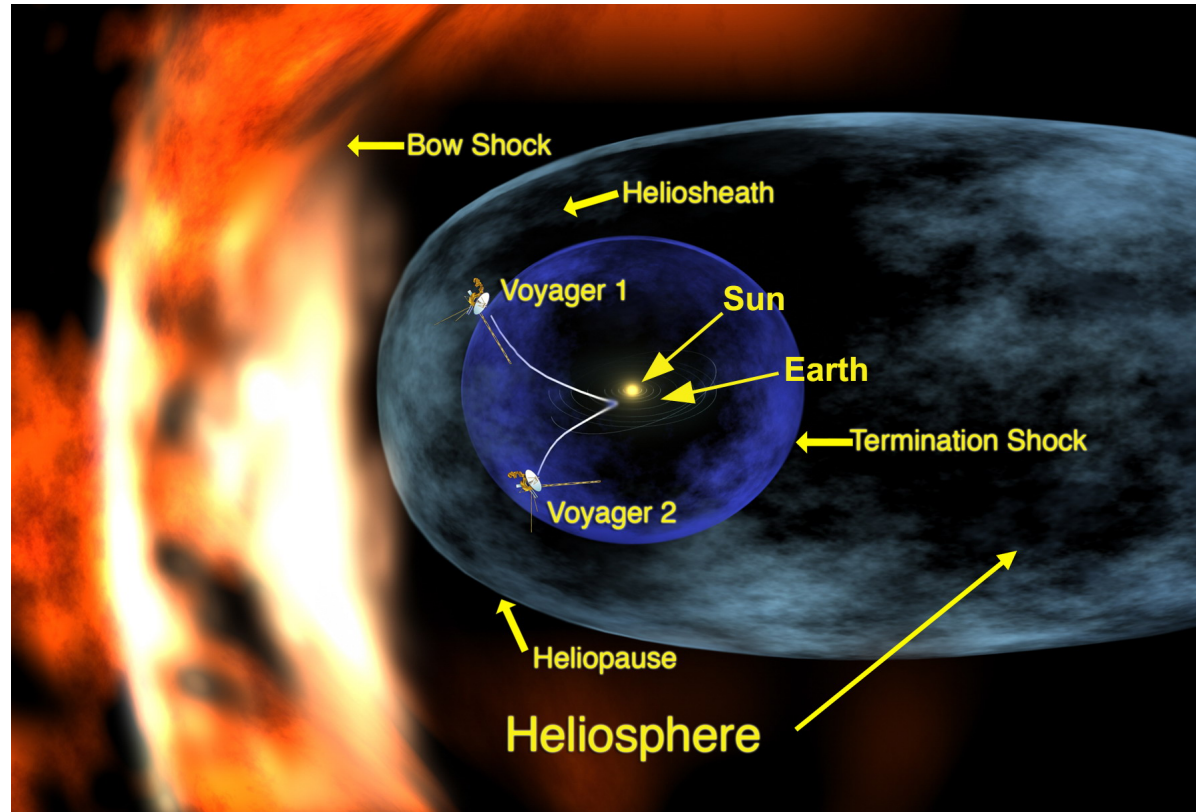
The solar wind and the terrestrial magnetosphere. The behavior of the solar wind, exerts an important impact on phenomena occurring in the Earth's environment.

The Heliosphere



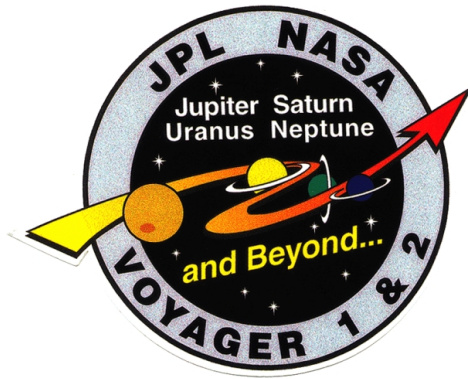
The interaction of the solar wind the very local interstellar medium. Shown are the boundaries of the heliosphere: inner shock front, heliopause, and outer bow shock. The heliopause is at the outermost extent of the solar wind. Beyond the heliopause lies the interstellar wind, this sketch is taken from The Voyager Neptune Travel Guide, JPL Publication 89-24.

The Heliospheric Boundaries



Schematic of the Heliospheric Boundaries.

Voyager Spacecraft



V1

7 – 60 AU (1980 – 1995)
70 – 90 AU (1999 – 2003)
95 – 107 AU (2005 – 2008)

V2

7 – 40 AU (1980 – 1990)
60 – 80 AU (2002 – 2006)
85 – 90 AU (2008 – 2009)

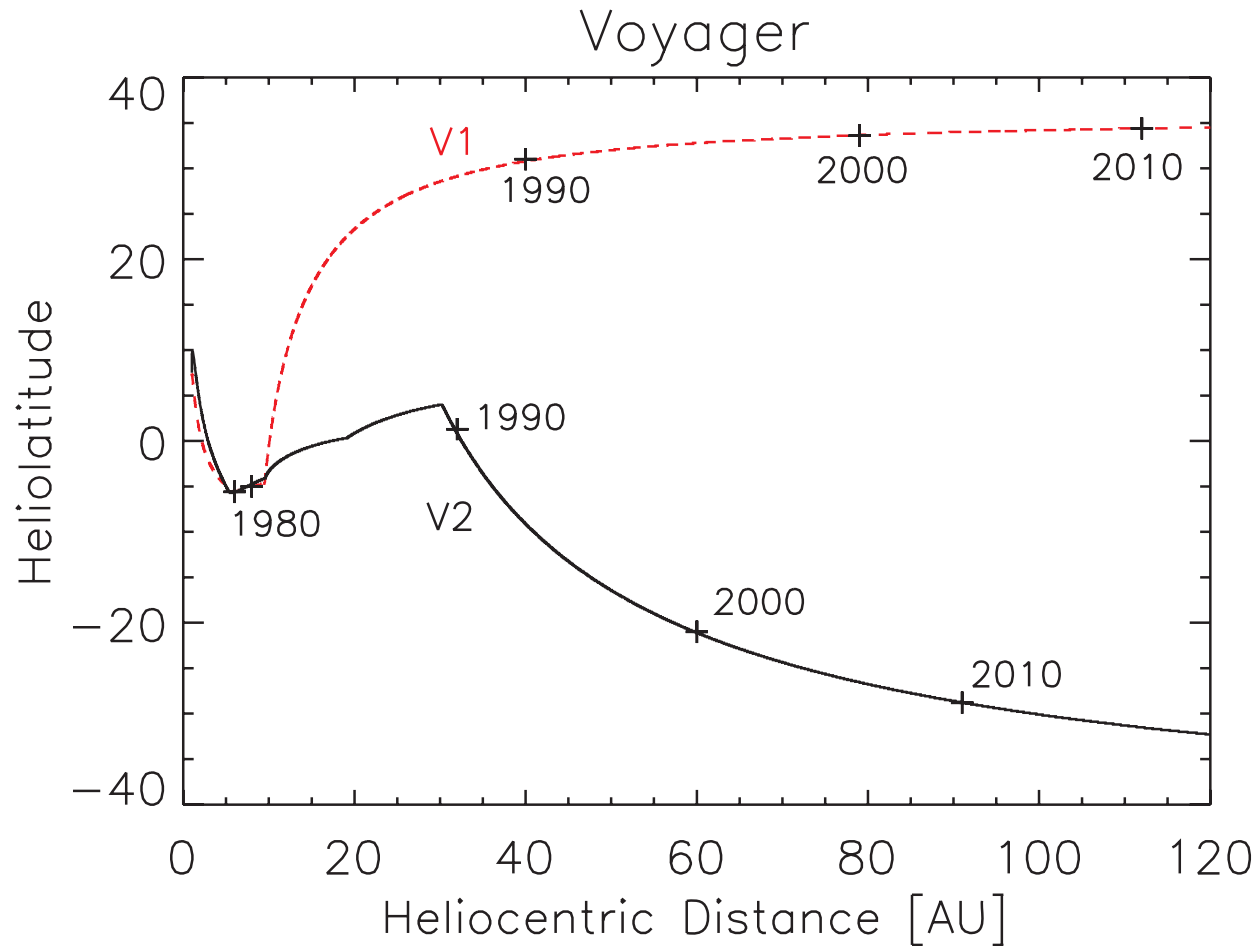


Fig. 2. The heliospheric distances from the Sun and the heliographic latitudes during each year of the Voyager mission. Voyager 1 and 2 spacecraft are located above and below the solar equatorial plane, respectively.

Epilogue

We continue to hope that scientific analysis will to a certain extent enable us to predict the behavior of the solar wind, which exerts an important impact on phenomena occurring in the Earth's environment and even on its surface.

Thank you!

