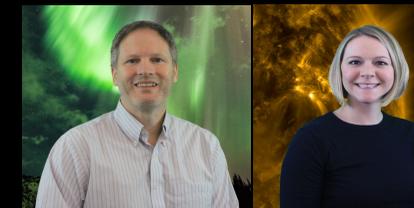


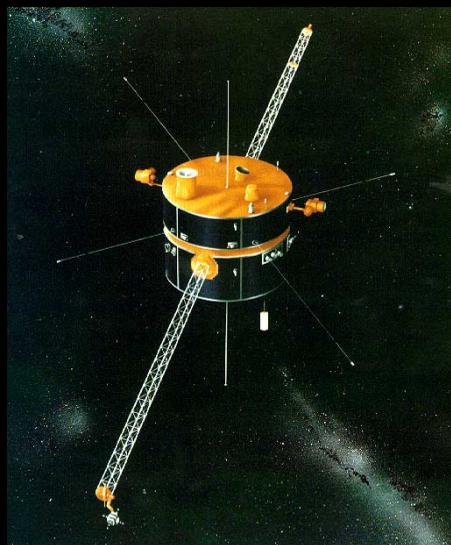


25 Years of Data Provides More Insight Into Solar Wind Formation



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Hot gas (plasma) flows away from the sun's atmosphere, carrying the magnetic field of the sun with it, filling interplanetary space. This plasma is called the solar wind, and it constantly bombards all of the planets in the solar system.



Wind was placed in a halo orbit around the L1 Lagrange point — upstream of Earth — since early 2004 to observe the unperturbed solar wind that is about to impact the magnetosphere of Earth.

The solar wind contains structures in the hot gas which are equal to or larger than Earth's magnetosphere, but smaller than Coronal Mass Ejections, or CMEs. These structures are often quasi-periodic increases in density, and are an important driver of dynamics in Earth's space environment.

Using nearly 25 years of data from the Wind spacecraft, scientists examined the sizes of these structures over two 11-year solar cycles, looking for patterns. They confirmed earlier work showing that the sizes of these structure are roughly periodic, and found a possible relation of the length of these periods to the end of the solar magnetic cycle, when the sun increases in activity. These periodic structures in the solar wind affect the magnetospheres of all the planets, and are also a way to study the formation of the solar wind. Their lengths scales and evolution with the solar cycle are an important constraint of solar wind formation.