Heliopause

- The heliopause is the boundary layer between the influence of the solar wind and the influence of galactic radiation and marks the end of the heliosphere.
- Before the heliopause, the influence of the solar wind predominates; after the heliopause, the influence of galactic radiation predominates.
- The Voyager 1 and Voyager 2 probes reached the heliopause after around 35 and 41 years of flight respectively.
- Distance to the sun approx. 18 billion km, here: 18 km

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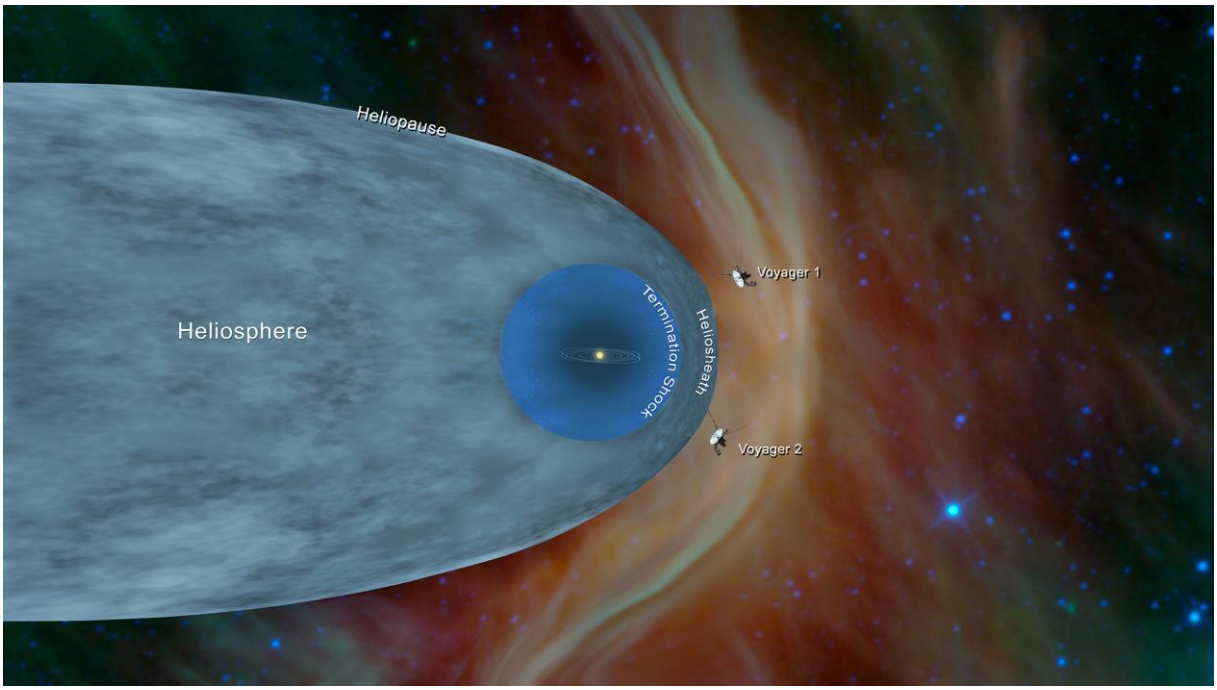
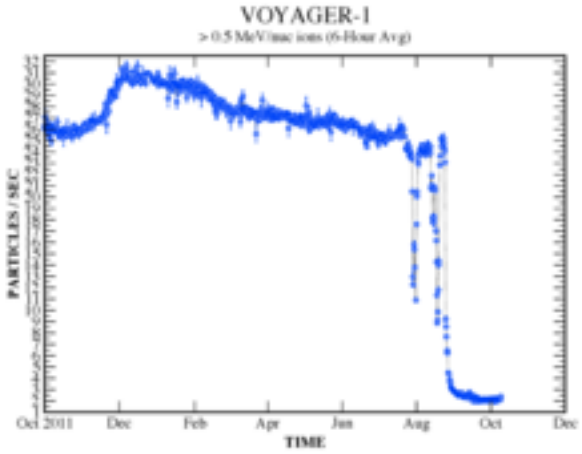
Heliopause



Picture: Diagram of the heliosphere as it travels through the interstellar medium:
Author: NASA/JPL-Caltech
https://de.wikipedia.org/wiki/Heliosph%C3%A4re#/media/Datei:Ibexheliosphererevised.jpg

The heliopause denotes the end of the heliosphere. Within the heliosphere, the solar wind dominates over the radiation of interstellar space. Between the edge shock wave and the heliopause lies the heliosheath, where the transition from solar-determined space to interstellar space is completed. Outwardly, the heliosheath is bounded by the heliopause. In the heliosheath a mixture of solar wind and interstellar gases takes place. The helio envelope is largely a kind of "foam" consisting of magnetic bubbles 1AE (about 150 million km) in size. Ionized particles of the solar wind are trapped in the bubbles. According to the first measurements, the helio envelope has a spherical shape.



Picture: Plot showing a dramatic decrease in the rate of solar wind particle detection by Voyager 1.
Autor: NASA
https://en.wikipedia.org/wiki/Solar_wind#/media/File:Solar_wind_at_Voyager_1.png

The heliopause is the boundary for the influence exerted by the solar wind. Behind the heliopause the interstellar medium becomes more and more the main component of the

activities. The solar wind mixes with the interstellar medium and is lost in it as an independent component. The distance of the heliopause from the Sun is estimated to be about 120 AU (18 billion km) based on the measurements of the Voyager probes. However, the heliopause has also no fixed distance limit, but this shifts according to the solar activities or the size of the interplanetary medium in certain limits. In the heliopause the magnetic lines of the heliosphere are connected with those of the interstellar space. In addition, a magnetic barrier is formed which protects the solar system from the very energetic cosmic rays, similar to the Van Allen belt which protects the Earth from the solar wind.
However, the heliopause is not an absolute boundary of the solar system. Recent observations have shown that outside the heliopause there are other objects orbiting the Sun, e.g. Sedna - a dwarf planet candidate. The gravitational influence of the Sun extends far beyond the heliopause and is limited only by the gravitational forces of other stars. The gravitational force of our sun outweighs that of other stars up to a distance of at least one light year (more than 10 trillion kilometres).

Link: **https://de.wikipedia.org/wiki/Heliosph%C3%A4re**
Link: **https://de.wikipedia.org/wiki/Van-Allen-G%C3%BCrtel**