Unique heliophysics science opportunities along the Interstellar Probe journey up to 1000 AU from the Sun

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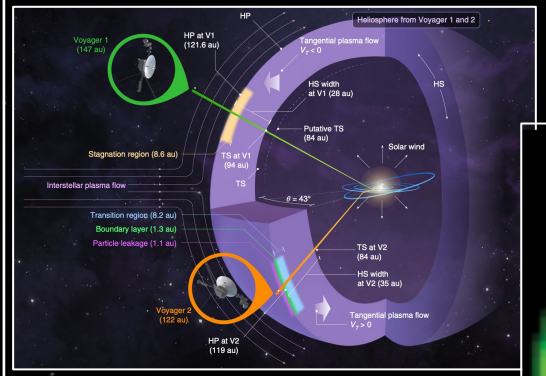
Primary Goal for the Interstellar Probe : Understand Our Habitable Astrosphere and its Home in the Galaxy

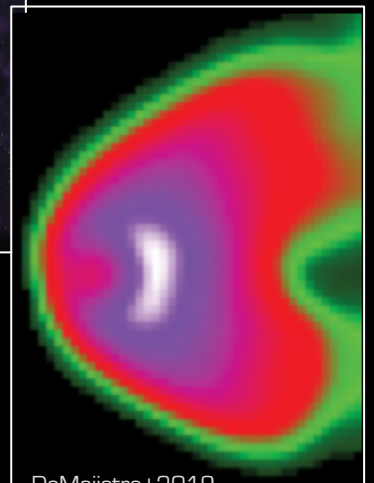
Objective 1: Determine the physical processes that shape the heliosphere

Fundamental physics in unique plasma regime at the heliosphere edge



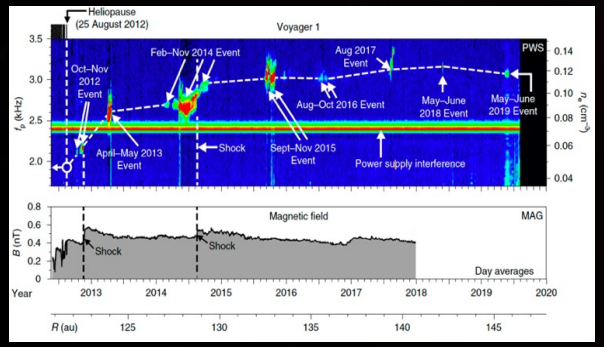
Krimigis et al. (2019)

Imaging heliosphere from 250 AU



DeMajistre+2019
Galli+2019

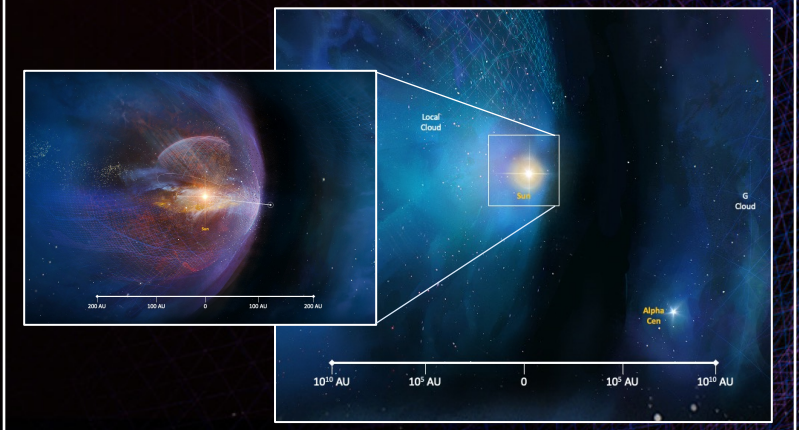
Objective 2: Determine how the Sun's activity and the interstellar medium influence the dynamics and evolution of the heliosphere



Gurnett & Kurth (2019)

- Dynamic heliosphere driven by Sun`s activity
- Changing heliosphere in inhomogeneous interstellar medium (ISM)
- Extent of Sun`s influence in the ISM

Objective 3: Discover and quantify directly the properties of the unexplored Very Local Interstellar Medium



- Sample for the first time ionization, plasma and neutral gas, magnetic field, composition, dust
- Scales of possible inhomogeneities
- Hydrogen Wall, Bow Shock
- Origin and evolution of GCRs below 1 GeV