

IMAGING THE INTERSTELLAR NEUTRAL GAS FLOW IN EARTH'S ORBIT WITH IBEX

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The neutral gas of the circum-heliospheric interstellar medium flows through the inner heliosphere due to the motion of the Sun relative to its neighborhood. Observing the recognizable gas distribution and flow pattern under the influence of the Sun's gravity, using UV backscattering, pickup ion, and direct neutral gas techniques for key species, provides diagnostic tools to unravel the physical conditions of the surrounding medium and its interaction with the heliosphere. Among those, imaging of the neutral gas flow directly with energetic neutral atom (ENA) cameras yields the most accurate account of the kinetic parameters of the interstellar gas, but so far this has been carried out only for He using Ulysses GAS. IBEX, which was launched in October 2008, provides the capability for simultaneous flow observations of He and O with its triple-time-of-flight IBEX-Lo sensor. Because O is strongly affected by the heliospheric interface while He is not, a direct comparison between these species enables an independent assessment of slowdown and heating processes in the outer heliosheath. Likewise, IBEX observations promise to constrain models of the heliospheric interaction and will provide a test of the heliospheric asymmetry - recently inferred from Voyager and SOHO SWAN observations - that is seen as an indicator for the interstellar magnetic field direction. With a first set of heliospheric ENA all-sky maps completed in July 2009, we will present an overview of the first interstellar He and O flow scan from a 1 AU vantage point in spring 2009.

Interstellar gas, heliosphere, energetic neutral atoms

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