Contribution ID: **11** Type: **not specified**

IBEX remote sensing of the heliospheric interface and beyond and multi-technique remote-sensing observations of solar wind

In the first portion of the talk, given on behalf of the IBEX Science Team, we will present observations of Energetic Neutral Atoms from the heliospheric interface region and beyond performed by the Interstellar Boundary Explorer (IBEX) spacecraft. In addition to the expected signal from the heliospheric interface, IBEX discovered an arc-like, persistent Ribbon of enhanced ENA emissiona in all energy bands of the IBEX Hi and overlapping bands of the IBEX-Lo detectors. This discovery was followed by a handful of hypotheses on the origin of the Ribbon, none of which has finally been widely accepted.

IBEX observations of the remote regions of the heliosphere can only be interpreted and understood when modifications of the ENA signal underway from the origin to the detector that must be occurring within the supersonic solar wind are undertstood and taken into account. To that end, we used remote sensing observations of the heliospheric Lyman-alpha glow from SWAN/SOHO, remote-sensing IPS observations of solar wind speed from STELAB, and in-situ observations of solar wind from Wind, ACE, and Ulysses as well as 1 AU observations of solar EUV radiation to reproduce the evolution of solar wind density and velocity in time and heliolatitude for the 2 past solar cycles. This will be presented in the second portion of the talk.

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