Raphael
Attie
NASA-GSFC / GMU
Barbara Thompson, NASA GSFC
Craig Deforest, SwRI
Nicholeen Viall, NASA GSFC
Marcus Hughes, SwRI
Chris Lowder, SwRI
Oral
(Invited Talk)
A cornerstone of PUNCH's scientific output is the regular generation of solar wind radial flow maps. This flow-tracking pipeline, developed and maintained by PUNCH Working Group 1A in collaboration with the PUNCH Science Operations Center (SOC), has been designed to provide critical insights into the evolution of the young solar wind on global scales. Over the past few years, we have focused on addressing key questions about how the solar wind evolves as it transitions from the corona into the heliosphere. Our solar wind flow maps, which extend from 6 R? to 180 R? from the Sun at a cadence of a few hours, will play a pivotal role in exploring these dynamics.

While the primary data product supported by the SOC consists of radial flow maps, we will also present an advanced module developed by our flow tracking focus group. This module, which will be openly accessible to the community, enables the processing of more sophisticated flow maps in both radial and latitudinal directions. It has proven effective in tracking a wide variety of eruptive events, including Coronal Mass Ejections, thereby broadening the scope of applications for our data products.

These solar wind flow maps, in their various forms, not only offer a deeper understanding of the connection between the solar corona and the heliosphere but also enhance space weather forecasting. By improving the accuracy of Sun-to-Earth plasma travel times for both background solar wind flows and transient events, these maps will support more reliable space weather predictions, addressing both fundamental solar physics and applied heliophysics needs.
Presentation file
attie-presentation.pdf
YouTube link
View recording
Meeting homepage
PUNCH 6 Science Meeting
Download to PDF