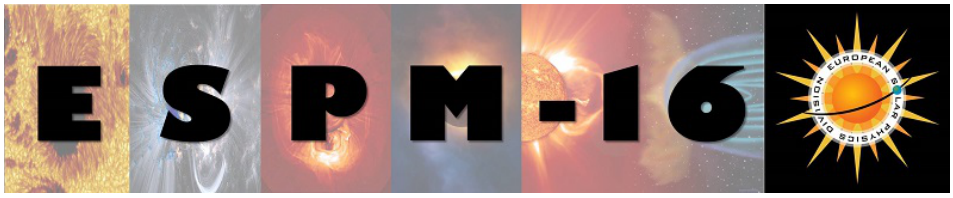

Contribution ID: **472** Type: **Poster**

On developing a physics-based heliospheric modeling system: Background Solar Wind

Wednesday, 8 September 2021 14:00 (13 minutes)

Solar Wind streams, acting as a background, govern the propagation of coronal mass ejections in the heliosphere and drive geomagnetic storm activities. Therefore, predictions of the solar wind parameters are the core of space weather forecasts. Also, structure and dynamics of the heliospheric magnetic field (HMF) are key to understanding the solar wind flow. Typically, line-of-sight observations of a magnetogram is used to derive the HMF structure and then a solar wind model is used for forecasting solar wind parameters. Here, we present an implementation of our physics-based solar wind model aiming to compliment the in-situ measurements at 1 AU, in particular we will discuss our recent extension of the pilot study (Kumar et al., 2020) of data driven solar wind prediction at L1. We will demonstrate a detailed overview of our algorithm that incorporates coronal magnetic field modeling and the MHD approach adopted for inner heliosphere using PLUTO code. We will validate our results by comparing essential thermal and dynamical properties of solar wind at L1 and also discuss how these parameters are affected based on the choice of input magnetograms. Finally, we will associate the output of our 3-D physics-based approach to the observations from in-situ instruments at L1.

Student poster?

Primary author: MAYANK, Prateek (Indian Institute of Technology, Indore)

Presenter: MAYANK, Prateek (Indian Institute of Technology, Indore)

Session Classification: Poster Session 7.6

Track Classification: Session 5 - Solar-Terrestrial Relations, Solar Wind, Space Weather and Space Climate