Bibhuti Kumar
Jha
Southwest Research Institute
Lisa Upton, Southwest Research Institute, Boulder, CO 80302
Cooper Downs, Predictive Science Inc., San Diego, CA 92121
Emily Mason, Predictive Science Inc., San Diego, CA 92121
Jon A Linker, Predictive Science Inc., San Diego, CA 92121
Poster

The Advective Flux Transport (AFT) models the global solar magnetic field and its evolution. The full Sun magnetic maps produced by AFT can be used as the boundary condition for time-dependent coronal modeling. However, AFT heavily relies on near-side observations of the Sun. This presents a challenge for these studies because the lack of far-side information in the AFT maps can significantly affect the magnetic field topology in the coronal models. To overcome this limitation, we investigate multiple proxies for obtaining information about far-side active region (AR) emergence and growth. This includes data from the 304Å channel of the EUVI instrument aboard the STEREO spacecraft and far-side helioseismic acoustic maps from HMI/SDO and GONG/NSO. We evaluate the strengths and weaknesses of each proxy. Finally, we develop a composite method for incorporating proxy data into AFT. This method relies on far-side proxies for identifying the time and location of far-side emergence. The proxy information is used to provide an initial estimate the magnetic flux, but this is constrained by the HMI/SDO magnetic field observations when the AR returns to the near-side. The HMI/SDO observations are also used to determine far-side ARs' properties, such as tilt. Preliminary results on the inclusion of far-side ARs into AFT using this combined approach will be presented.

Poster category:

Poster category
Solar and Interplanetary Research and Applications
Poster session day
Tuesday, April 16, 2024
Poster location
1
Meeting homepage
[Space Weather Workshop 2024](#)
[Download to PDF](#)