

Working Group 2 Summary

Vic Pizzo:

- A major uncertainty of heliospheric MHD models is introduced by the inputs assumed (i.e., inner boundary conditions).
 - This issue must be examined further with the inputs improved and their sensitivity explored.
- It is important to understand the limitations of a given model and its realm of applicability.
- We need to understand better the impacts of magnetic topology on characteristics of solar wind at 1 AU.
 - Specifically, why does the PFSS model do so well?
- Discussion of magnetic field lines requires MHD models, including the interactions of different magnetofluid elements, which tend to smooth variable inputs.

Jackson:

- SMEI successfully launched on January 6, 2003!
- A brief overview of SMEI presented.
- The Solar Mass Ejection Imager (SMEI) is now recording whole sky data on each 100-minute orbit.
- Recent UCSD results from the center SMEI camera of an orbit from orbit subtraction image reaches the SMEI photoelectric limit (approximately 0.2 S10 units at 90 degrees elongation). Subtraction images from sequences separated by 24 hours show enhancements/depletions at ~5 times this limit (i.e., 1 S10 level).
- Team working hard to process...calibrate...understand ...etc. SMEI data.
- SMEI will show CMEs and other heliospheric features such as corotating structures and the density changes behind shock waves moving outward from the Sun.

Arge:

- Ambient solar wind speed and IMF polarity can be predicted at 1AU rather well, (4 days in advance and over nearly an entire solar cycle) with the use of a couple PFSS+current sheet model and a new empirical velocity relationship that is a function of magnetic field *expansion factor* (f_s) and the *angular distance* between an open field footpoint and its nearest coronal hole boundary (θ_b).
- Why is there such a good inverse correlation between f_s and V_{sw} ?
 - Causal link?
 - Topology? => Proxy?
- Modelers/theorists need to confront this *directly* and *explain*.
- Does θ_b => different heating mechanisms for fast and slow wind or is it a fudge factor for the PFSS model?
- Statistical results for model performance presented but provide only a *lower limit* to the actual agreement between the predictions and "true" ambient parameters, since transients were *not* taken into account.
- *Quality control* of the input magnetic the input magnetic data is *essential* for improving the predictive success of models.