Some Thoughts on SHINE - by Vic Pizzo

I have comments in two main areas:

1) the form of SHINE meetings in the future
2) a new direction for SHINE - being more proactive about the kinds of observations needed to advance SHINE-oriented science in the future

As for the former, there is a sense that SHINE has gotten too big, that it has strayed too far from its original concept of fairly tightly organized and directed meetings that changed specific topics frequently enough to cover the range of SHINE science from meeting to meeting. AGU, for example, has blundered into the trap that monster meetings (as evidenced by the last, pre-Covid meeting in New Orleans) have become totally unwieldy, such that science interactions, even small group sub-meetings, are difficult to arrange, and sessions are hard to find and attend expeditiously. And good luck finding a given poster! It has become (barely) controlled chaos that inhibits, rather than promotes interactions.

I really hope that SHINE will not follow suit, even if on a lesser scale. I wish I had some good ideas as to how to balance size with inclusiveness, but maybe the recently evolved concept of hybrid meetings offers some clues. Could it be possible to have speakers attend in person at one meeting, with web attendance for most others, then in the next meeting change places between web and on-site attendees from the last meeting? It is a difficult problem, but one that must be addressed in some way. (Unless you want to have 2 or 3 meetings a year, ugh!)

In terms of proactive observational approach, keep in mind that SHINE has had only minor influence upon what missions NASA runs, so spacecraft missions of interest to SHINE may or may not be addressed, it is just chance. On the other hand, NSF has a long tradition of supporting universities in cubesat programs, with many of them active in all kinds of near-Earth observational missions.

SHINE should consider how it may use this university connection to promote missions of interest probing deeper into the solar system by building upon cubesat capabilities already in hand. The main bugaboo has been the inability to effectively communicate with cubesats except near Earth; designing functioning instruments that measure the usual plasma parameters is not a problem, it is just finding a way to return the data to Earth from a great distance from a tiny spacecraft that is the holdup. While there are clear, well-known technical reasons why this is so (antenna size and pointing in a cubesat package, for example), I believe clever ways could be found around the issue if enough need were to be demonstrated.

So, while SHINE is not an instrument shop like NASA, that does not mean we cannot lobby strongly for finding a way to communicate with cubesats at great distances, if a good need can be demonstrated. I think that with enough pressure, interest, and purpose a solution (or solutions) can be found. Launching a swarm of cubesats into the deep
magnetosphere and out into 1 AU space would open up all kinds of great new science, such as making it possible to take data in a dense pattern all across MCs, for example. It comes down to the fact that if you want certain kinds of observations, you should actively lobby for them, rather than hope that <someday> Santa Claus will deliver the goods for you. SHINE should make this a priority.