

SPD Thomas Metcalf Travel Award Report

Solar Orbiter-IRIS-Aditya Workshop 2026

16 – 19 March 2026, Berlin, Germany



Dr. Evangelia Samara

Evangelia was born and raised in Chios, Greece. In 2022, she earned her PhD in Mathematics from KU Leuven, Belgium and then she moved as a postdoctoral researcher at NASA/Goddard Space Flight Center (GSFC) having been awarded the NASA Postdoctoral Program (NPP) fellowship (2023-2025). She is currently a postdoctoral researcher at The Catholic University of America and NASA/GSFC. Her main research focuses on improving heliospheric predictions, particularly of the solar wind, through semi-empirical and physics-based models, using observations from multiple spacecraft (e.g., Parker Solar Probe, Solar Orbiter). She also studies coronal holes, coronal mass ejections, and develops metrics to assess model performance.

The influence of Solar Orbiter/PHI far-side magnetogram information on coronal holes and solar wind predictions

Evangelia Samara, C. Nick Arge, Samuel Schonfeld, Alison Farrish, Carl Henney, Daniel da Silva

In this work we incorporated Solar Orbiter's Polarimetric and Helioseismic Imager (PHI) Full Disc Telescope (FDT) observations into ADAPT-HMI global solar photospheric maps. We fed these maps into the Wang-Sheeley-Arge (WSA) model to reconstruct the solar corona and perform solar wind simulations for a period of two months in 2024 at multi-spacecraft locations (Solar Orbiter, PSP, ACE, STEREO-A). We assessed the quality of our predictions, and compared our results when no FDT data have been employed in order to understand how the addition of far side information affects the open magnetic field topologies on the Sun, their connectivity with various spacecraft of interest, the shape and structure of the heliospheric current sheet (HCS), as well as the solar wind predictions at different points in the interplanetary space. Our main results are summarized as follows: (1) far side flux emergence **does affect the global solar corona and heliospheric conditions**. We see differences in predictions not only around the area of Solar Orbiter (where far-side magnetogram information are sampled), but even at 165 deg away from it (e.g., ACE's location); (2) **Including FDT data significantly changes the HCS's shape and polarity compared to simulations without it**. This is because of the redistribution of magnetic flux which frequently leads to emergence of new coronal holes or weakening of existing ones, so certain coronal holes may be more influential than others causing their magnetic field lines to dominate neighboring regions, even canoping over the poles.

I would like to express my sincere thanks to the American Astronomical Society and the Solar Physics Division for the Metcalf Travel Award which significantly supported my attendance to the Solar Orbiter – IRIS – Aditya workshop 2026. I am also deeply grateful to the meeting's SOC for this recognition. Attending this meeting offered valuable opportunities for scientific discussions, encouraging meaningful interactions with top scientists of the field and fostering new collaborations within the community.