Aerosol and Surface Products from PACE Polarimeter HARP2 Observations using GRASP

Anin Puthukkudy[a,b,*], J. Vanderlei Martins[a,b,c], Xiaoguang Xu[a,b,c], Noah Sienkiewicz[a,b,c], Brent McBride[a,b], Pavel Litvinov[d], David Fuertes[d], and Oleg Dubovik[e]

[a]Earth and Space Institute, UMBC, MD, USA
[b]GESTARII, UMBC, MD, USA
[c]Physics Department, UMBC, MD, USA
[d]GRASP SAS, Lezennes, France
[e]Université de Lille, CNRS, UMR 8518 - LOA - Laboratoire d'Optique Atmosphérique, Lille, France

[*]*Presenting author (anin1@umbc.edu)*

The Hyper-angular Rainbow Polarimeter-2 (HARP2), a multi-angular polarimeter (MAP) aboard the NASA PACE platform, began its data collection in March 2024. This research is centered on the validation and detailed analysis of Level 2 aerosol and surface products derived from the I, Q, U observations made by HARP2 at the top of the atmosphere (TOA) across multiple viewing angles (from -54.5° to +54.5°) and spectral bands (440, 550, 670, and 870 nm). A significant aspect of this study is the validation of Aerosol Optical Depth (AOD) using data from AERONET stations worldwide. Additionally, we aim to present our findings during the PACE-PAX field campaign in the fall of 2024. By November 2024, with approximately nine months of HARP2 data, our objective is to conduct a time series analysis of the retrieved products and perform comparative studies with other instruments such as MODIS, VIIRS, and the OCI and SPEXOne instruments on the PACE platform. Overall, this work provides an overview of aerosol and surface products derived from HARP2 observations and the GRASP inversion algorithm. Furthermore, we intend to investigate the potential of synergistic observations from the PACE platform to enhance the information content by integrating data from multiple instruments.

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