

The PACE Postlaunch Airborne eXperiment (PACE-PAX)

Kirk Knobelspiesse^{a*}, Brian Cairns^b, Ivona Cetinić^{a,c}, Antonio Mannino^a, and P. Jeremy Werdell^a

^a NASA Goddard Space Flight Center, Greenbelt, MD, USA

^b NASA Goddard Institute for Space Studies, New York, NY, USA

^c GESTAR II, Morgan State University, Baltimore, MD, USA

*Corresponding author e-mail: kirk.knobelspiesse@nsasa.gov

The forthcoming Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) Mission, slated for launch in January, 2024, will place a UV-VIS-SWIR spectrometer and two multi-angle polarimeters in polar orbit [1]. As its name suggests, PACE will serve the needs of multiple disciplines, and it will make key advances in Earth observing capability. The PACE Science Data Product Validation Plan [2] describes the multi-faceted approach the mission is taking to quantify data quality. This includes support for an airborne field campaign devoted to the validation of new and advanced data products, PACE-PAX [3]. This campaign is designed using a Validation Traceability Matrix (VTM) with about 30 measurement objectives of variable importance. Based on the VTM, we have planned a dual aircraft field campaign to be carried out in September, 2024 in central and southern California. One aircraft will fly at high altitudes and carry a complement of instruments that make measurements similar to PACE itself, plus a High Spectral Resolution Lidar (HSRL) and reference multi-angle polarimeter. The other will fly at lower altitudes and carry a suite of aerosol and cloud in situ sampling instruments. Both aircraft will make coordinated measurements with each other, satellite overpasses, and coincident land and ocean surface assets. Data will be made publicly available within six months of the conclusion of the campaign.

Keywords: validation, field measurements, aerosol, cloud, ocean color

References

[1] Werdell, P. J., Behrenfeld, M. J., Bontempi, P. S., Boss, E., Cairns, B., Davis, G. T., Franz, B. A., Gliese, U. B., Gorman, E. T., Hasekamp, O., Knobelspiesse, K. D., Mannino, A., Martins, J. V., McClain, C. R., Meister, G., and Remer, L. A.: The Plankton, Aerosol, Cloud, Ocean Ecosystem Mission: Status, Science, Advances, B. Am. Meteorol. Soc., 100(9), 1775-1794, <https://doi.org/10.1175/BAMS-D-18-0056.1>, 2019.

[2] https://pace.oceansciences.org/docs/PACE_Validation_Plan_14July2020.pdf

[3] <https://pace.oceansciences.org/campaigns.htm>