

PACE SAT Polarimetry sub-group meeting notes, 2020/10/05

Hi everybody

It has been a quiet summer, but it's time to get started again with our PACE SAT polarimetry group meetings.

*I'd like to have our next meeting **Monday, October 5th at 2pm Eastern**. I'm going to try and use MS Teams this time. If you're not within the NASA IT ecosystem, you should be able to connect to teams as a guest through the free app. If this doesn't work for you please let me know in advance and we can try webex instead. Unfortunately, zoom is not allowed for NASA at the moment.*

I'll start the meeting with a moment for quick updates or comments from the various groups, then cover the following:

- 1. The PACE science data product selection plan. How you will submit your algorithms to the PACE project office, provide code and documentation, and get this integrated into the processing system. More details here: https://pace.oceansciences.org/docs/PACE-SCI-PLAN-0143-DPSP_20190314.pdf*
- 2. Bastiaan van Diedenhoven and Brian Cairns will describe the ACCP mission study. ACCP is slated to have a multi-angle polarimeter. More details here: <https://science.nasa.gov/earth-science/decadal-accp> and here: <https://earth.gsfc.nasa.gov/missions/accp>*

*Thank you
Kirk*

Updates from the group

Otto Hasekamp (SPEXone)

Construction of SPEXone has largely continued. The instrument recently passed thermal and vibration tests, and is close to starting calibration tests. He is happy with progress so far.

Vanderlei Martins (HARP2)

There have been COVID related delays for HARP2, both because of limited access to UMBC facilities and delays from vendors. But they are still making progress and the latter is largely under control. Recent focus has been on fabrication and testing of prisms.

Pengwang Zhai

He is building a radiative transfer simulator for PACE. This solves the RT for a coupled atmosphere (Rayleigh, Aerosol, trace gases) and ocean (phyto, CDOM, sediment, etc) for the

full PACE UV-SWIR spectral range. This will be a synthetic dataset at L1 that can be used for algorithm testing. He is also adapting his own retrieval algorithm (MAPOL) for use with PACE.

Bastiaan van Diedenhoven

His primary focus is cloud remote sensing with multi-angle polarimeters. Current efforts are the adaptation of NASA GISS RSP (airborne polarimeter) data to the PACE L1C format. Priority will be field campaigns (ACEPOL, ORACLES, PODEX) where that instrument was deployed on the high altitude ER-2 aircraft.

He also has another effort to make a synthetic dataset, in L1C format, for testing of cloud algorithms.

Mike Twardowski

Working on algorithms to derive IOP sub components from multi-angle data. Has a publication related to BRDF will be available soon.

Snorre Stamnes

His objective is aerosol over ocean retrievals with the MAPP algorithm. Currently working on improving the vector RT behind MAPP. Goal (which balances computational needs) is to have operational retrievals for the center-swath track.

Matteo Ottaviani

His goal is retrieval of ocean surface refractive index. He is currently working on taking code from his 2019 paper and adapting to the different wavelength requirements of PACE. He is also porting to github, and assessing retrieval sensitivity depending on aerosol load.

Jacek Chowdhary

Focus is on aerosol retrievals using the UV. Currently investigating brown carbon aerosol models. The literature on optical properties is not always consistent. Considering a 2 parameter MAA spectral model

Xiaodong Zhang

Focus is backwards scattering in the ocean. Planned postdoc couldn't join the project for visa/COVID reasons. Working on a manuscript regarding natural variability of BRDF.

PACE data product selection plan

Kirk gave an overview of the data product selection process, as described in:

https://pace.oceansciences.org/docs/PACE-SCI-PLAN-0143-DPSP_20190314.pdf

This process is required for all algorithms to be implemented by the project science office.

Contact Kirk for questions/details.

ACCP overview

Bastiaan van Dierendonck and Brian Cairns gave an overview of the ACCP mission study. More information can be found here: <https://science.nasa.gov/earth-science/decadal-accp> and here: <https://earth.gsfc.nasa.gov/missions/accp>