PACE AC telecom summary

11 May 2017

Identified in attendance: Lorraine, Bryan Franz, Zia, Pengwang, Bo-Cai, Amir, Antonio, Robert, Bastiaanen, Brian, Anthony, Zhibo, Olga.

Antonio presented the Project overview. Despite the President’s “skinny budget” the PACE Project has been directed to proceed as planned. The FY17 budget, allotted by Congress is for $90M, which is $50M above request. This is not extra money above the $805M, but money that can be re-phased into the next fiscal year, still within the cost cap. This is a welcoming sign that PACE is valued at the Congressional level.

Key Decision Point B (KDP-B) is now scheduled for July. Despite that, the Project is proceeding as already in Phase B, undergoing peer reviews and preparing for reviews in the future. Chuck McClain is leading a review on the OCI error budget.

Polarimeter. The hope is that ISRO will donate a polarimeter, but right now ISRO is nonresponsive. The Project does not know why. The RFP was cancelled for two reasons. 1) Cost projections have the Project exceeding the $805M cost cap with the polarimeter. 2) With the skinny budget, there is hesitation about committing to a procurement.

Spacecraft. The decision on spacecraft will be made by 1st October. Still holding out for a 2-instrument spacecraft, but if no polarimeter plan by 1st October, may choose a smaller spacecraft.

Launches. Looking into less costly launches. Sharing with AirForce, for example.

Antonio will make a PACE Project presenation at IOCS next week.

Brian Cairns described OCI band change discussion. There has been discussion to add a 1040 nm band to the OCI SWIR suite. The proposal is as follows.

Current, 940, 1240 (standard gain), 1240 (high gain), 1378 (standard gain), 1615 nm (standard gain), 1615 nm (high gain), 2130 nm (standard gain), 2260 nm (standard gain)

Proposed, 940, 1040 nm (standard gain), 1240 (standard gain), 1240 (high gain), 1378 (standard gain), 1615 nm (high gain), 2130 nm (standard gain), 2260 nm (standard gain)

This would mean that the 1615 nm wavelength would saturate for reflectances greater than about 0.50, which affects most water cloud retrievals and heavy dust aerosol. On the other hand 1040 nm is highly desirable for ocean retrievals in coastal zones and for atmospheric correction. The discussion continues.

Final report discussion. Water vapor and cloud sections are almost done. Aerosol section recently made good progress. Atmospheric Correction is lagging. Changes in Robert’s outline below are indicated in red.

2 Approach (Robert)

Extend/adapt what has been done in the past (classic and other techniques), taking into account additional features (e.g., information in UV and shortwave infrared), new possibilities that exploit multi-angular polarimetry, strategy that ensures continuity with previous missions but allows full exploitation of new capabilities.

3.Algorithms using only spectral information

*3.1 Heritage/continuity algorithm* (Bryan, Bo-Cai, Zia, Heidi)

Description, including treatment of gaseous absorption, whitecaps, Case 2 waters, absorbing aerosols, with emphasis on  improvements using the new features of the PACE ocean color instrument. Quantification/illustration of performance on simulated data.  Discussion of limitations (e.g., correction of aerosol absorption, whitecaps, glint).

*3.2 Deterministic and statistical algorithms* (Brian Cairns, Jacek, Pengwang, Robert)

Description of optimization schemes, Bayesian schemes, and illustration on theoretical data if possible. Emphasis is on showing that these approaches are adapted to PACE, and that they have the potential to improve retrievals in difficult situations, e.g., absorbing aerosols.

4. Enhancements using multi-angular and/or polarimetric information (Kirk, Olga, Jacek, Robert)

Study about information content (Kirk's study), inversion using AirMISR (Olga) , use of directionality to estimate aerosol absorption effects (Robert), use of polarization to reduce contribution of atmosphere and glint effects (Robert), use of all information (spectral, directional, polarimetric) in inversion schemes (Jacek), use of multi-angle polarimetry to improve aerosol model selection in standard atmospheric correction scheme.  Some of Olga’s contribution to the Aerosol Section can be moved here.

5. Enhancements using hyper-spectral information in selected spectral intervals (Robert)

Determination of ocean Raman scattering, phytoplankton fluorescence.  Aerosol section will be referenced for aerosol scale height, but mentioned here.

6. Dealing with adjacency effects and other bright things (Heidi)

Impact of adjacency effects on retrievals of water reflectance and ways to correct for it.  Bright things. Surface correction.

7. Conclusions (Robert, all)

We agreed to have significant writing done in three weeks, which is **2 June**. This is a Friday. We will schedule a telecon for that Friday.

All documents will be kept in a common location, which is Lorraine’s dropbox:

<https://www.dropbox.com/home/PACE%20AC>

Currently clouds is missing. I’m going to wait until the weekend, to give Steve to give me a more final version. In the meantime you can access clouds from Steve’s dropbox.

<https://www.dropbox.com/s/b9af9amvnye6rjv/Cloud_Section_PACE_final_report_v4.docx?dl=0>