

PACE teleconferences report

This report presents a candid record of the teleconferences held by the PACE Science Definition Team. Some salient points are:

- Teleconferences were scheduled for each Thursday at 1200 EST. For logistical reasons the participation was limited to the SDT and engineering team.
- Several times the SDT held separate teleconferences for the Atmospheric and Oceans sub-groups.
- Teleconferences were cancelled when there was no significant work to be reported, when the time was better spent working on the report, or when the teleconference conflicted with meetings or vacation.
- The contents of this report are taken directly from unedited e-mail communications between the SDT chairs and the SDT.
- This report includes the agenda for each teleconference, and for most of them, a summary of the discussions. No summaries were prepared for the first four teleconferences.
- The summaries were sent to the SDT via e-mail for comments and were often the source of further discussion. However, here we only present the unedited original summaries.
- The contents of this report are taken from the e-mail record of the SDT Chair, Carlos E. Del Castillo. He is solely responsible for any inaccuracies, omissions, and errors.

12/12/2012 –First Teleconference

Agenda:

1. Review of first meeting report.
2. Review of status of actions from first meeting
 - A. Formalize menu of options and review by the SDT.-Platnick/Maring
 - B. Formalize mechanism to request studies. Carlos/Platnick
 - C. Request explanation about the assumptions for \$750M budget. Carlos/Platnick
 - D. The SDT will evaluate ocean radiometry requirements for atmospheric corrections. The starting point is the group discussion on 11/17/2011. A group of team members will evaluate and report results at the next SDT meeting. Menghua Wang, Robert Frouin, and Ralph Kahn are already coordinating this activity.
 - E. Work on Science Objectives
 - Introduction
 - Aerosols
 - Clouds
 - Oceans
 - Other
3. Review table of contents – future actions.

Summary:

We did not prepare an official summary for this teleconference. Discussions followed agenda.

1/12/2012

Agenda:

1- Report from Paula Bontempi regarding engineering studies.

Note: On behalf of the SDT, Steve Platnick commissioned several studies with the idea of getting the process started and get some understanding about how it will work.

2- Report from the atmospheric correction sub-group. Robert Frouin is in Korea and not certain that he will be able to call in.

3- Discuss the need to establish a separate cal/val sub-group. We already have a section in the report with Robert Frouin and Jeremy Werdell leading the efforts. Can this group also tackle requests for engineering studies to get a sense of the cost?

4- Oceans discussion about spatial resolution.

5- Report on sections with first draft due by end of January

6- Proposal to hold several independent ocean and atmospheric teleconferences.

Summary:

We did not prepare an official summary for this teleconference. Discussions followed agenda.

1/19/2012

Separate telecons for oceans and atmospheric groups

Agendas:

Atmospheric group:

1. Report: Section II - Science Objectives

Telecon goal: come to agreement on outline and section leads

- 1st Draft due end of January (see Carlos' "PACE SDT time table3_12_15_2011.xls")

Nominal overall leads listed in excel document are Aerosol: Kahn, McNaughton, Massie;
Clouds: Cairns, Marshak, Platnick

- Draft Outline/Summary Tables

Draft aerosol/cloud outline and tables sent out in 11 January email (joint with Jerome Riedi and Brian Cairns). Outline meant to: (1) explicitly acknowledge that PACE is not ACE, (2) restricted to retrieval requirements for cloud aerosol/cloud science; requirements linked to ocean color atmo corrections need to be part of ocean color text.

Don't want to spin our wheels. Outline suggests a pragmatic approach: work back from the instruments currently expected to be available for the cost-capped mission => retrieval space => science). Outline document included draft tables to provide a template for the retrieval requirements summary and serve as a guide for the text.

2. Report: Section V - Cal/Val (line 35)

Telecon goal: Identify lead(s) to work atmosphere discipline text with ocean vicarious cal writing team.

- 1st Draft also due end of January
- Might be our best opportunity to get something useful and unique out of PACE funding (certainly in the pre-launch timeframe)
 - Validation needs for OES + 3MI aerosol and cloud capability
 - Validation needs for OES alone (no 3MI donation)
- Leverage off the separate aerosol and cloud cal/val document white paper that was produced by ACE suborbital working group (Jens Redemann, Kahn, Cairns, et al.)

3. OES Augmentation

Telecon goal: Summarize augmentation input received thus far. Need to settle on other augmentations soon as will impact Section II text (see email attachment from 14 Dec 2011, "OES baseline with Augmentation channels v1.xls").

Oceans Group

1. New version of the outline with proper section numbers instead of excel row numbers.
goal: FYI and comments
2. Science Objectives – Ocean Ecology and Biogeochemistry. Now section 2.2. Mike Behrenfeld. Reference document: Pace Scientific Objectives_V5.pdf
goal: Review scope of the section. Are we covering all needed subjects? Please, leave minor technical details to the writing. We want a high level discussion about the areas covered by this section.
- 3- Vicarious calibration system requirements, cal-val program. Now section 5.4 (previously, line 35). Jeremy Werdell. Reference document: pace_viccal_35_outline.docx .
goals: Review scope of discussion document on vicarious calibration system. We will like to focus on the subjects that need to be covered. Please, for the moment let the writing team worry about the technical details and submit comments directly to them.

This should be enough!

4- Next teleconference

- a) What items should we cover in the next teleconference?

b) Do we need another independent teleconference before we merge again with the atmospheric scientists?

Summary:

We did not prepare an official summary for this teleconference. Discussions followed agenda.

1/26/2012

Separate telecons for oceans and atmospheric groups

Agenda:

Ocean discipline agenda:

We are picking up where we left last time.

1- Report on side telecon to discuss oceans requirements for atmospheric corrections.- Carlos Del Castillo, Menghua Wang, and Robert Frouin

2- Science Objectives – Ocean Ecology and Biogeochemistry. Now section 2.2. Mike Behrenfeld. Reference document: Pace Scientific Objectives_V5.pdf
goal: Review scope of the section. Are we covering all needed subjects? Please, leave minor technical details to the writing. We want a high level discussion about the areas covered by this section. We are probably ready to close all major issues in this section.

3- Vicarious calibration system requirements, cal-val program. Now section 5.4 (previously, line 35). Jeremy Werdell. Reference document: pace_viccal_35_outline.docx .
goals: Review scope of discussion document on vicarious calibration system. We will like to focus on the subjects that need to be covered. Please, for the moment let the writing team worry about the technical details and submit comments directly to them.

4- Issues for next teleconference

Atmosphere Discipline Agenda

1. SDT Report

Telecon goal: updates on documents and progress, clarify issues/concerns, etc.

A. Science Objectives (Sections 2.3 and 2.4)

Since last telecon: Both aerosol and cloud drafts/outlines placed into Google docs.

Document “sharing” with team members communicated (you should have received an email with link, or can be accessed through your Google account).

Resolved since last telecon: Carlos is holding a slot for atmospheric correction text in the ocean section.

B. Cal/Val (Section 5.4)

Leads: McNaughton w/assistance from Kahn, Diner, Riedi (3MI cal/val plans)

Since last telecon: ACE documents (2) and Nov 2010 suborbital group presentation sent to team.

2. OES Augmentation [=> Sections 3.3 and 3.4]

Telecon goal: Discuss input received thus far. Need to settle on augmentations soon as will impact Section 2 text.

Since last telecom: Question came up about OES hyperspectral coverage into NIR.

Clarified with Mike Behrenfeld. Will assume baseline instrument coverage nominally extends to ~800 nm.

OES A-band cloud-top capabilities: Marshak, Riedi, et al. Additional utility in 940 nm and/or 1.38 μm water vapor?

Spatial resolution?

3. Other topics

Summary:

We did not prepare an official summary for this teleconference. Discussions followed agenda.

2/2/2012

Separate telecons for oceans and atmospheric groups

Agenda Oceans:

1- Continue discussion about cal/val program.

Agenda Atmosphere:

Goal: updates on documents and progress, clarify issues/concerns, etc.

1. SDT Report

A. Section 2 (Sci Objectives)

Aerosols: Update on Sect 2.3 and open issues regarding text, outstanding input required, etc. (Ralph).

Clouds: Update on Sect 2.4, etc. (Steve). Status on A-band studies (Sasha, Jerome).

B. Section 5.4 (cal/val)

Update (Cam)

2. OES Augmentation [=> Sections 3.3 and 3.4]

Goal: Discuss as needed. No input has been received beyond initial input on spatial resolution.

3. Other

- Status of engineering studies (Betsy)

- Other items?

Summary:

We did not prepare an official summary for this teleconference. Discussions followed agenda.

2/9/2012

Agenda:

- 1- Report on status of engineering teams.
- 2- Report on status of sub-groups
- Engineering team has been invited to the teleconference -Re-visit mechanisms to request engineering studies
- 3- Status of draft report
- 4- Future issues

Summary:

- 1- Report on status of engineering teams.

a)The engineering team has been officially formed. The members are:

Angela Mason

Chi Wu

Richard (“Rick”) Wesenberg

James (“Jay”) Smith

b) Previous to the telecon, Steve Platnick and Jay Smith meet to discuss how to proceed with engineering studies. Sasha Marshak accompanied Steve to discuss A-Band measurements. J. Smith provided a table to be filled with instrument measurements and orbital parameters to guide the initial work of the engineering team. Steve Platnick provided Jay with a table of ocean measuring requirements based on the November SDT meeting presentation given by Mike Beherenfeld, as well as draft OES augmentations for atmospheric capabilities (clouds) that included spectral additions and higher spatial resolution in several bands An ocean subgroup is having a telecom tomorrow to discuss ocean requirements. The action is for Carlos and Steve to fill out the table and provide pertinent reference documents.

c) My understanding is that once a baseline instrument (my terminology)is developed, we can start requesting IDL studies.

- 2- Report on status of sub-groups

Goal: Discuss status of efforts per discipline.

Note: Disciplines and sub-groups within disciplines are encouraged to hold separate teleconferences as needed. Just let Steve and Carlos know so they can provide telecon facilities.

a. Ocean

Jeremy Werdell discussed the status of the cal/val section 5.4. Jeremy has received comments from the oceanographers based on the working draft that has been circulating for at least two weeks. Jeremy is finishing the first draft. will share current version with

Cameron McNaughton who is working with the cal/val requirements for the atmospheric group.

The oceanographers are also making progress with the scientific objectives – section 2.2 (final draft is finished), and with the measurement requirements (section 3.2). There is a working draft for section 3.2 circulating among the sub-group. There will be a teleconference (2/10/2012) to discuss this section. This section will provide input to complete the requirements table requested by the engineering team.

b. Atmosphere

The atmospheric group is working on sections 2.3, 2.4, and 5.4. Documentation is primarily being handled through Google docs. Steve will distribute the cloud section updates to Carlos in the form of a Word document in the next few days after some more revisions are made. Ralph is leading the aerosol text and has already sent Carlos that text. Cam is leading the atmo cal/val section and still needs to work on airborne/suborbital text. The team has not started Section 3 text.

There was a question about 3MI's status and whether it met the atmosphere team's science requirements. Platnick responded that the pertinent question has been what science can be done with a contributed 3MI, not what polarimeter can we ask for that meets next generation science needs such as those ACE. Though 3MI will part of the EPS-SG payload, the team will continue to discuss 3MI retrieval capabilities as a "goal" in the report.

c. Atmospheric correction

Robert Frouin reported on the work from the joint ocean atmospheric group on atmospheric corrections for ocean measurements (Note: this group had a separate telecon to discuss ocean color requirements). Robert discussed that studies that have been done and reported that the section is progressing. Still working on providing the atmospheric group with values for radiance accuracies for the ocean color bands.

3-Status of draft report

Goal: Go briefly over the document outline to understand where we are.

We are on time for all sections. The SDT made the following suggestions:

a-sections 1.4 and 1.5 overlap with introductory sections 2.1 and perhaps 3.1. Consider eliminating. The comment is noted. We will decide if we need sections 1.4 and 1.5 after all the other introductory sections are completed.

b- Programmatic background section 1.3 overlaps with section 6. the overlap is not perfect, but it is worth it to see if these sections can be merged. This is an action for Carlos and Frank. Carlos will send Frank his outline of section 1.3 and will discuss.

c- Need to re-evaluate sections 4.1 and 4.2 because contents will overlap with other sections. It was suggested to use this section to summarize those requirements based on content of sections 3.

4- Future issues

Next teleconference (2/16/2012) will be separated by disciplines.

Bryan Franz just created a mailing list for the PACE SDT. You should have received the e-mail.

2/16/2012

Agenda (no agenda was circulated before the call). The following topics were discussed:

1- C.E. Del Castillo et al. received e-mail from Jerome Riedi about the status of SMI. A decision is imminent, and CNES will inform NASA (via Mike Freilich) some time next week. This is all we know.

2- PACE SDT meeting March 14-16, Washington DC area.

We discussed:

a) What are the goals of the meeting?

a1. Review the drafts of the SDT report to ensure that we are covering all topics.

a2. Ensure that we have science traceability for all technical requirements. Balance between being prescriptive vs. general in our technical requirements.

a3. Report on actions from first meeting.

Telecon participants agreed on these goals.

Action for Carlos- will review with Steve Platnick and the atmospheric group.

b) How are we organizing the meeting to reach our goals?

The telecon participants discussed and proposed a general format for the meeting. The following format is Carlos' interpretation of the discussion and is open to review.

Action for Carlos- Review with Steve Platnick and circulate for review by the SDT.

Day 1

1-Joint session (Oceans Atmosphere) to discuss the status of the SDT report, report status of actions from first meeting, and discuss the objectives for the week (~1 hour).

Objectives = exchange of information, organization

2- Joint session for open discussions with the PACE Engineering Team (~2 hours).

Objective = Exchange of information

3-Break up into oceans and atmosphere groups. Each discipline group to break up into workshop-style subgroups by report section (chapter). (~ 3 hours).

Objective = Review status of the chapter in terms of topics and science traceability.

4- Sub-groups from each discipline convene and to brief their disciplines on the status each chapter. Oceans and Atmosphere disciplines remain separate.

Objective = exchange of information and discussion of issues.

Day 2

1- Joint session to report on the status of the SDT report (~1 hour).

2- Brake up by disciplines

2.1 Each sub group (chapter lead) briefs their respective disciplines on the status of their sections. (~6 hours)

Objective = Review for completeness of topics, science traceability

Day 3.

1- Too early to decide. Suggested to leave open for the moment.

Issues etc:

1- Sub groups have the opportunity to arrive earlier to the meeting to have a pre-meeting meeting.

2- Need to let contractor know about the format that we are proposing so they can make adjustments with the facilities at the hotel. THIS IS A CRITICAL ISSUE

3- Engineering Studies

Useful discussion with the engineers about instrument specs.

Discussed alternatives for the studies that will include options for improved spatial resolution.

From Carlos after the telecon: I want to bring two points for further discussion:

1-I feel that either we have not defined well why do we want the engineering studies, or that we lost track of it today. So please allow me to submit the following:

We are requesting engineering studies to understand the cost of various instrument options, not to design an instrument for us. There is a difference. Therefore, I propose that the first engineering study should be based on a baseline instrument (to be defined soon). Using as an example our most contentious issue – spatial resolution, I propose that we settle for 1 km at nadir and get a cost estimate. Once we have this information we can decide how to proceed.

2-The engineering team seems to be gearing up for a bottom-up cost analysis, when for our purpose a parametric analysis could be more appropriate. Or perhaps we want both to see if we get convergence (this creates other complications). We need to discuss this with the engineering team

Action for Carlos: Send to the Engineering team sections 2.2 and 3.2. Other sections will be sent next week pending discussions with lead authors. Discuss with the engineering team the type of study and report back.

2/23/2012

No teleconference – Use the time to work on the report.

3/1/2012

Agenda:

1. Engineering studies
 - a. Clarification of strategy being pursued by engineering team (grass-roots vs. parametric)
 - b. Inputs from the SDT - Do we need to provide more information?
2. Atmospheric correction status (both of following items should be clear before the March meeting)
 - a. Finalization of water leaving radiance spectral accuracy requirements (e.g., 5% across the UV/VNIR spectrum)
 - b. Summary of studies/calculations being pursued, who's doing what, status, etc. We are not clear about how the studies are being organized and managed.
3. SDT report updates
4. SDT Meeting Agenda
 - a-Status of facilities - Do we have two rooms?

Summary: (not released to SDT after telecon- From Carlos' notes.)

- 1- Not clear about what cost models will be used by the ET to do cost studies.
- 2- Continue discussions about atmospheric correction issues. In my view, even with current atmospheric correction schemes, PACE will make significant advancements. Note: I think we are talking across. Different jargons, different interests. Oceanographers interests in aerosols is mainly on how to correct for them. Not really interested in what they are. At loggerheads with the instincts from the Atmospheric group. This will be difficult to manage.
- 3- Update of the report - We are on schedule.
- 4- OK with facilities. Will have 2 rooms. All is organized to allow for breakup sessions.

3/8/2012

Agenda:

- 1) 2nd PACE meeting
 - a- Meeting agenda
 - b- Facilities
- 2) Engineering studies
 - a- What studies have been requested, and what is pending
 - b- Discussion
- 3) Other issues?

Summary: (not released to team after telecon – in Carlos notes)

- 1-Discussed and refined items for the agenda. Discussed needs for separate rooms for break out sessions.
- 2-Lengthly discussion about engineering studies. The SDT questions how useful will the study be if it cannot use known engineering solutions. All work done by the ET has to be public. Carlos thinks that the engineering team is in a pickle. May have to create a new solution that will be difficult to cost.

3/15/2012

No Teleconference -PACE meeting March 14-16

3/22/2012

No teleconference

3/29/2012

Agenda:

Agenda:

1-Discuss the status of the engineering studies.

2-Discuss status of the report. Of particular interest is an update on the issue of Threshold vs Goal measurement requirements for SWIR channels.

Summary:

Next meeting is on June 25-27.

What will we like to achieve during the meeting? Review the report to check for accuracy, completeness, self consistency. We agreed to have a deadline of June 11 to have all chapters in final draft.

1- Engineering studies:

-Engineering studies are on schedule and should be ready before the June 11 deadline for final drafts.

-Del Castillo working on the requirements table for the higher resolution option. Have received comments from 4 people. Behind schedule for about 5 days. Should have table ready by Friday March 30th. Del Castillo and Platnick to review requirements with the ET before starting new engineering study.

2- Status of the report.

-Eliminate sections: 4.1, 4.2, 5.1, 5.5,

-Need to discuss the benefits of having sections 5.2, 5.3

-Discussed status of most sections. We have different states of readiness, but all should be ready by June 11.

3. The atmospheric correction issue.

-The conclusion of various analyses is that it will be impossible to perform atmospheric correction in the UV bands to achieve the ocean requirements as stated. The group discussed the possibility of eliminating these bands. The consensus is that the bands will be useful in spite of the atmospheric correction problems. The proposed solution is to modify the report to reduce the science expectations for those bands.

-SWIR bands are now a threshold.

Actions-

1-Continue working on all sections - SDT

2- Platnick and Del Castillo to finish requirements table for the high spatial resolution requirements table and submit to the engineering Team.

3-Frank, Carlos, and Mike to insert science justification for high spatial resolution into section 2.2.

4- We need to make certain that we are consistent across disciplines with respect to the SWIR bands issue. So, lets re-visit after Mike modifies the text to reflect the upgrade of SWIR from Goal to Threshold.

4/5/2012

No teleconference-Spring brake and proposals due.

4/12/2012

Agenda:

- 1-Report on Atmospheric correction studies
- 2-Engineering Team Report

Summary:

- 1-Report on atmospheric correction studies

Emmanuel et al. - Analysis by Jacek suggests that TOA radiances in the UV are adequate at most viewing angles and for bright and dark oceans. Simulations using CDOM suggest that useful information can be extracted using the UV bands. Robert mentioned issue of pixel-to-pixel variability. There are both atmospheric and instrumental components to this problem. The SDT will the issue under advisement.

- 2- Engineering Team Report

Jay et al. reported difficulty complying with some of the science requirements. The issue seems to be one of interpretation of requirements. Gerhard and Jay will meet tomorrow at GSFC to clarify. Gerhard will report to the SDT.

Other issues

Mission endurance

Frank- We have not specified a threshold and goal for mission endurance. The norm seems to be 3-5 years. However, PACE is promoted as a climate mission. Therefore, a longer threshold endurance is appropriate. The SDT understands that this is a cost driver. This is more a spacecraft issue than an instrument issue. The SDT requested that two cases be analyzed during the MDL: a typical threshold-goal of 3-5 years, and a climate research driven threshold-goal of 5-10 years. The SDT will take advice from the MDL results.

4/19/2012

Agenda:

- 1-Discuss IDL scheduled for next week.

Summary:

- 1- IDL will take place next week. In attendance from the SDT will be:

Jeff Puschell, Chuck McClain, Gerhard Meister, Steve Platnick, and

Sasha Marshak We will report to the team results as soon as they are available.

- 2- The engineering team had questions about pointing accuracy requirements and mission longevity. Mission longevity will be addressed for the most part during the MDL.

Nevertheless, the science team needs to visit the issue of longevity with respect to the climate research justification of the PACE mission. There seems to be consensus in

requesting a threshold - goal of 5-10. The SDT report can be tempered after the results of the MDL.

3-The engineering team requested an estimated launch date and a notional schedule for mission development. The launch is scheduled for 2019, and Betsy Edwards will provide the mission development schedule.

4- CNES will not provide a 3MI. There is still a possibility of getting 3MI from ESA. We have no information about possible negotiations. Paula Bontempi and Betsy Edwards will keep us informed.

5- Carlos and Steve will revisit the issue of requirements for a polarimeter based on today's discussion with HQ.

6- It is clear that the SDT document may mention lack of science consensus amongst the team on any subject, and may also emphasize the need for more research.

7- The ocean sub-discipline will set-up a poll to assign priorities to mission goals so we are ready to respond to the IDL and MDL results. This is consistent with the philosophy that the SDT has been following - that we will request the best science possible under known budgetary constraints. However, during today's discussion HQ suggested that we should not be as concerned with budgetary constraints (Carlos' interpretation). Steve and Carlos will discuss with HQ and report back to the SDT as soon as we get more clarity.

8- We need to get most of the writing ready within the next two-three weeks to have a working document by the next (last) meeting.

4/26/2012

No teleconference – Del Castillo and various SDT members attending Ocean Color Research Team Meeting in Seattle. Also, Del Castillo has an NRC panel the same week.

5/3/2012

No teleconference. Del Castillo submitted the following progress report to the SDT. A progress report about PACE – 5/3/2012.

1-IDL study - By all accounts the study went well. We only have some preliminary results, but the ET is not ready to report today. We will submit the findings to the team as soon as the report is completed and will schedule time in a telecon for a debriefing. A second IDL is being planned as well as the MDL. More on that as soon as information becomes available.

All we can say now is that the instrument is:

200 Kg

450 W

640 Gb/day data

The costing information should be ready in about two weeks.

2-Report - I started assembling the report using the latest versions of each chapter that I have. This could be premature, but for my peace of mind, I need to see how the report is shaping up, so I can start drafting an executive summary. As soon as I am done, Lena - our editor - will take charge of the document and will start working on a general, flexible format. However, the version control of each chapter will remain with the chapter leads

until they consider that they have a final product. All Lena will be doing is updating chapters as they evolve.

3- Schedule- We are still on schedule. However, we may be hitting a snag in May as many of us are completely swamped with proposals, field work, end-of-semester work, and other maladies. So, I hope that we can make a final push to wrap up writing. We may have to make adjustments based on the engineering studies, but we have to have all major writing done at least the week before our last meeting. Please, plan accordingly,

4- Teleconference - Given that there are no more salient issues to report, and that I have a conflict with a seminar, I decided to cancel the teleconference this week and ask you to use the time to work on your writing assignments. We will definitely have a telecon next week to discuss the IDL results.

5/10/2012

Agenda:

1- report on status of IDL and MDL

2- status of report

Summary:

1-IDL-1 is going well. We should expect a report within next week.

2-IDL -2 is planned by June 11.

Issues:

A) unlikely to have a full report by our last meeting, but likely to have useful information. We will have to react to the full report via telecons.

3-MDL will be on Monday 14 at GSFC. It will incorporate a 3MI.

Issues:

A) ET did not get all the info they requested from EU. We will try again to get the information. If not available, the ET will proceed with their best guesses.

B) Need a rep from the atmospheric group. Carlos will contact steve to arrange this.

4- Report- Carlos is working on the master documents. Will continue contacting contributors to request updated versions.

Issues:

A) Please, do not send Carlos *.pdf documents. Any *.doc format is good.

B) Carlos will scrub and send the latest version of the outline. We will keep current numbering schema until all sections are ready.

5/17/2012

Agenda:

1- Status report on IDL and MDL

2- Status of the final report

Summary:

1- Report on IDL and MDL.

a) NASA HQ will have the IDL briefing on Monday May 21st. TBD if SDT co-chairs will participate via web. The SDT will receive report as soon as feasible.

b) MDL- Taking place this week. First briefing will be on Friday May 18. During the telecon Jay presented a very good overview of the instrument as well as some mission

characteristics. PACE MDL pre-work document was distributed to the SDT, and will be posted in the PACE website. The team will review the document and post any questions to the ET via the SDT e-mail list.

Final report will be posted and briefed to the SDT.

2- Status of the report

- a) Carlos distributed a new version of the table of contents.
- b) The team concurred in the elimination of sections 1.4 and 1.5. Carlos will contact section leaders to discuss elimination of other sections. Candidates for elimination are in red font. The team will review and comment about this. If no objections, all the other red sections will be eliminated.
- c) Sections 3.3 and 3.4 are merged
- d) Atmospheric correction sections will be merged. The team recognizes that there are several issues that cannot be resolved without further research. The report will reflect these conclusions.
- e) The issue of the polarimeter. The team is working under the constrain of having 3MI as the only possible polarimeter. However, we should provide HQ information about science requirements for a NASA polarimeter in case funds become available. The science definition team does not have the time or authority to scope a new polarimeter mission, so we will reference the ACE white papers. The status of those white papers is not clear as they could be in draft form. However, it was concluded that we can reference them even if they are drafts. The white papers will be posted in the ACE website.

Final note:

I think we need a way to exchange large documents. I propose drop box or something similar. Any suggestions?

5/24/2012

Agenda:

- 1- IDL-MDL reports
- 2- Status of report - Pick up where we left last time.

Summary:

1- Report on IDL study - Released short briefing with cost estimate. A more complete version will be available soon via web link, and also posted in the PACE official website.

Notes:

- a) The budget is for the instrument only so it is an underestimate. Suggested to add ~50% to cost. Estimate also discounted inflation. MDL may address this issue based on a notional schedule.
- b) The IDL will review the full report. Jay et al. will be available during our next telecon to answer technical questions.

2- SDT report status.

Notes:

- a) Section 5.2 eliminated - the problems-to-benefits ratio was considered to be high. We are still considering some form of section 5.5.
- b) Sections 3.5 and 3.6 are likely to be merged into sections 3.2-3.3.

- b) The team discussed and further clarified the intent of sections 5.6 and 5.7. Section 4.3 was renamed "onboard calibration requirements".
- c) Section 6.2 - the team reiterated usefulness. Team members will compare notes on synergies.

5/31/2012

Agenda:

- 1- IDL and MDL reports
- 2- State of the SDT report

Summary:

- 1- The SDT report - Is in good shape and getting better. Off-line communications with several authors. Missing sections are being drafted. Carlos wanted to circulate a master document today but just changed his mind because he is beginning to receive a edits to several sections. Will postpone release until next week.
- 2- IDL 1 - Is posted in the PACE website.
- 3- IDL 2 - will start June 11, 2012. this IDL will consider a hyperspectral 250m resolution sensor. Table with specs was circulated during the telecon.
- 4- MDL report is underway. Spacecraft mass is ~950 kg (all included). Still vaporous if we will be able to have an MDL 2 following IDL2. Note: the issue of pointing accuracy for the 250m resolution option is going to be evaluated.
- 5- Next and last SDT meeting June 25th-27th.
 - a) Please, register.
 - b) Please, submit suggestions for topics. Carlos and Steve will discuss agenda next week and circulate a draft next week.

6/7/2012

No teleconference – Del Castillo and Platnick working on the report.

6/14/2012

Agenda:

- 1- report on document sections
- 2- agenda for the meeting

Del Castillo working on a draft agenda for our last meeting to be circulated by COB today.

Summary:

- 1-Document formatting and version control
 - a-Lena Braatz has compiled the master document for the report. She will e-mail a link so everyone can get a copy. The document has been formatted.

b-Version control remains with the authors. Just make any changes to the doc Lena sent, use track changes, and e-mail back to Lena. She will incorporate any new section versions into the master document. All changes need to be coordinated through the author of the section. Lena is about to send an e-mail with instructions. Follow those.

c-We will be using the NASA drop box. More on that when we need it.

2-Summary of Science vs. instrument options to be included in the introduction and the executive summary.

a) Carlos is going to work on a draft on Monday and start circulating ASAP. This section will be fine-tuned during our meeting in DC.

b) Working on this will likely help clarify Robert's concerns about clarity.

3-Agenda

a) Draft agenda will be distributed next Monday and posted on Tuesday.

b) Need input from ET to know how much time they need.

4-Question from the IDL: Do we want the high spatial resolution data at full spectral resolution?

answer: Yes.

5-Concerns from Ralph about overoptimistic assessment about applications.

a) Need to be tempered in view of lack of 3MI. The authors of this sections will review.

6/21/2012

Agenda:

1-Plans for the meeting next week.

a) Discuss the agenda and propose changes (I am already getting feedback and request for minor changes).

b)What are we missing?

Summary:

1-Lena stated that the method adopted to assemble the document is working well. Please send her any new versions by COB today so a new draft can be ready by the start of the workshop.

2- Group reviewed the agenda and made minor comments. Salient points are:

a)The brave Oceanographers will continue working after 5:00 on day one to address various outstanding issues. The atmospheric group is welcomed to stay, particularly those interested in the atmospheric corrections.

b)The meeting will be well attended by non SDT members. Paula Bontempi will comment about openness to comments from the public vis-à-vis a very busy agenda. She will also mention that there will be a period of comments from the community before the final release of the report.

3- The Executive Summary - The group concurs on the importance of the executive summary. Carlos considers that a key section in the executive summary will be a summary of mission options vs. science and benefits. Salient points:

a) The section on instrument options vs. science will be discussed twice during the workshop.

- b) Carlos is enclosing in this e-mail a strawman of the executive summary for comments from the SDT on content and format. Carlos needs help from the atmospheric group to complete various sections.
- c) The Executive Summary should not exceed 10 pages.
- d) The Executive Summary should be accompanied by an Executive Quad Chart Powerpoint presentation (two charts max). Several SDT members noted that this could be the most important product of the SDT. One suggestion from Cam is: Chart 1 = The Science of PACE; Chart 2 mission requirements to address science. Carlos will ask HQ if there is a format for these quad charts.

6/28/2012

No teleconference- PACE SDT meeting in Washington DC.

7/5/2012

No teleconference. Several in the SDT without power due to Derecho storm. Del Castillo is working with the executive summary.

7/12/2012

No teleconference – Steve Platnick and Carlos Del Castillo are working with the report.

7/19/2012

No teleconference – C.E. Del Castillo on travel. Working on executive summary for release to SDT.

7/26/2012

Agenda:

1- Procedures for final internal review of the report:

- a)When do we call for "pencils down" so Lena can do the final formatting?
- b)For how long do we leave it open for internal review?
- c)How do we handle the review?

2-Procedure for external review

- a) Publish SDT report using the PACE Web-site (I suggest that we post the report with numbered lines to ease the review process).
- b)How do we advertise?
- c)For how long should we leave it out for review?
- d)How are we handling the reviews?

3-Outstanding issues

Summary

1- The science definition team agreed to the following review schedule and procedures:

-July 30 - Pencils down. All final edits back to Lena by COB. At this point she will have version control.

-August 1-2 - Final scrub by Carlos and Steve. Document back to Lena by noon August 2nd.

-August 3 - 10. Review period by SDT. Lena will distribute a PDF file with numbered lines. All comments from the SDT will be keyed to line number. Typos, language usage, and formatting issues will be resolved by Lena. Technical issues will be consulted with section authors. Major issues will be presented to the SDT for disposition. Comments will be addressed as we receive them.

-August 13-17- Final review by Carlos, Steve, and Lena.

-August 20- September 10 - Release to community at large for review. Will follow the same procedure proposed for the final internal review.

Notes:

a-The report will be posted in the PACE website.

b-The community will be notified via various e-mail listings. Will include international groups.

c-The community will be advised about the review procedure. Comments are to be made keyed to line number. The SDT will take comments under advisement, but will not respond directly to comments from the community.

d-During this period, Carlos and Steve (Chair and co-Chairs of the SDT) will be available to brief agencies. Carlos will not be available after September 15.

-September 10 - September 14 - final review by Carlos, Steve and Lena.

-September 15 - SDT report will be released to NASA, and the SDT team will be disbanded.

2- Engineering Team reported on the results of the MDL.

The SDT offered the following recommendation:

a- The SDT believes that the costs estimates from the IDL and MDL may be flawed and should be removed from the SDT record. The IDL and MDL served their purpose. They showed that it is possible to design an ocean color instrument capable of delivering threshold and goal requirements and gave the SDT a good idea about the complications of various mission options. The SDT recognized that the ET provided the best possible cost estimates under the circumstances.

Further comments from Carlos:

a) The MDL used information from 3MI to calculate costs related to integration, mass, power requirements etc... However, it used the cost of a polarimeter (\$170M) that clearly has to be heavier and likely to require more power than the \$40M 3MI. Therefore, all the cost estimates associated with the polarimeter are suspect.

b) Independent analysis by two SDT members suggested that the IDL cost estimate for the OCI is very low. It is considerable lower than the cost of other satellite systems with higher TRL levels, but with similar mass and power requirements.

c) PACE is an ocean color mission with the possibility of a polarimeter - originally to be provided by CNES. Therefore, it will be very difficult to explain how the secondary instrument (the mystery polarimeter) could be more expensive than the primary instrument.

d) I found the IDL and MDL exercises to be extremely useful. However, the ET worked under rules and time constraints that prevented them from presenting reasonable cost estimates. Therefore, it will be imprudent to publish flawed cost estimates. It serves no purpose and risks creating confusion in the community.