

Advisory Committee Summary of the Second Round of Reviews

Note: The AC summarized the second round of reviews because the Panel of Experts was not available.

After the first round of review, the 3-member Panel concluded that, though the reviewers were in agreement about potential scientific contributions for some of the research questions, they were not convinced about the feasibility of SCoPEX achieving its scientific goals. The main issues raised related to the inclusion of the last of three main scientific questions (evaluation of process-level chemical models) and the inadequate description of the engineering design elements that would ensure the balloon, gondola, and associated elements would perform as expected and successfully deliver the desired measurements.

The Research Team had the opportunity to respond to the first round of reviews, which included individual responses to each reviewer comment and summarized in their Response to the 1st Round of Review. They provided substantially more detail about their scientific plan. They also proposed to separate the detailed engineering evaluation from the scientific merit review. In addition, they elected not to focus on the third scientific question about chemical evolution as it is likely to be a long-term research topic.

The Research Team's response was redistributed to the original 5 reviewers for a second round of review. In the second round of the reviews, most reviewers were more positive in their assessments, primarily because the Research Team provided substantially more detailed information about the flight experiments, including details of locational identification of plumes, measurements of turbulence and aerosol size distributions. Reviewers also welcomed the discussion of the plume sampling, the improved explanation of the use of the lidar, and the decision to separate detailed engineering considerations from the scientific merit review document, while still providing some essential, though limited, information on the engineering design. However several reviewers still had questions about whether the engineering design would deliver the desired scientific results. While most reviewers found the proposed experiment has scientific merit, two reviewers did not agree and argued it did not have sufficient scientific merit to move forward. The Advisory Committee judged that this result is sufficient to conduct public engagement and that any public engagement should be apprised of this range of reviewers' judgements.

Outstanding issues

Key outstanding issues raised by the reviewers are summarized below. The Advisory Committee has requested responses to these items as well as a revised research plan from the Research Team. The Research Team has been advised to thoroughly update their research plan by incorporating their responses to both rounds of comments in the scientific merit review. Completing these tasks and addressing these issues is necessary before proceeding with any public engagement.

1. Rationale needed for using calcite, as opposed to sulfate aerosol in the experiment

2. Clarification needed of methodology proposed for evaluating the influence of turbulence on particle coagulation
3. The Research Team must demonstrate that they can maneuver the balloon (gondola) as detailed in the scientific plan
4. A description of funding and resources for accomplishing the experiment's scientific goals
5. An explanation is needed of specifications for the injector as the initial condition for aerosol evolution
6. A detailed possible timeline for the proposed SCoPEX test flights and decision points is needed

As noted above, the Advisory Committee has asked that the Research Team respond to these outstanding questions and update the experiment plan to reflect all the updates made throughout the review process. In this updated plan, the Advisory Committee has requested that the Research Team acknowledge the important linkage between the engineering design and scientific process and identify milestones, decision points, and potential off ramps if equipment does not perform as expected or other experiment performance issues arise.