

White paper on the value of Participating Scientist programs to NASA: Final report

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Motivation

- OPAG instigated a white paper about the value of Participating Scientist programs to NASA and to the Planetary Science community
- The effort subsequently included the other Analysis Groups and CAPTEM; authorship includes several AG Chairs and Steering Committee members
- The white paper team produced a survey in two parts:
 - Phase 1 contained questions for existing/past Participating Scientists and/or anyone in the planetary community who has an interest in, or opinion about, these programs
 - Phase 2 contained questions for PIs or Project Scientists regarding their experiences of including Participating Scientists on their missions

Methodology

- We received 211 responses to the community survey, of which 102 were current or former Participating Scientists or Guest Investigators
- We received inputs from the leadership of 12 flight missions, six of which were completed
- Our results were analyzed by social scientist Janet Vertesi's group at Princeton, who have experience in analyzing qualitative interview data
 - A number of major themes were identified throughout the responses
 - Comparisons were made between themes identified by the community and by mission leadership

What is the value of PS programs?

Community responses

Benefit to NASA

- Intellectual and demographic diversity
- Expertise throughout the mission timeline
- Increased science return
- Workforce development

“I was a fully integrated [mission instrument] science team member, with data access and the chance to collaborate with colleagues from around the country. It has shaped my research career.”

Personal value:

- Collaboration
- Data access
- Unique experience of mission team involvement
- Personal career development
- Development of skills for future mission leadership

“PS programs are a way to provide early career scientists with an avenue for entry into active NASA missions. This provides critical experience that is, for all practical purposes, required for someone to be invited to join or lead a proposal effort for future mission opportunities.”

What is the value of PS programs? Mission Leadership responses

- **Increased science return**
- **Intellectual diversity**
- **Expertise throughout the mission timeline**

“The [highest] value of a PS program comes when the selected PSs can fill a void in the existing team and add depth in expertise in the areas that the mission is most strongly addressing.”

“[PSs] fundamentally enabled the mission.”

“The [mission] PSs made important contributions; the team couldn't have done the work without them. They definitely increased the science return from the mission.”

“Key to success seems to be the selection of scientists who could indeed “participate” in the mission and instrument teams, as opposed to simply analyze data... when PS's can add value by targeting or creating new data products their value is recognized and [they] quickly become full-fledged team members.”

Recommendations

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1. PS programs should be included on every planetary mission, whether competed or directed.
2. Expectations for the timing, duration, and scope of a PS program should be agreed between NASA HQ and mission leadership as early as possible within the mission, ideally during Phase A. These discussions should also be publicized to the planetary community through, e.g., NSPIRES, the PSS, relevant assessment groups, the Planetary Science Newsletter, LPI, PEN, etc.

Recommendations

3. Sources of funding for PS programs should be identified early, and ideally included in the release of a competitive mission AO or in the announcement of a directed mission.

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4. Once allocated, PS program funds should be held as inviolable, unless significant changes occur to the mission that would warrant a reduction in the program (e.g., failure of a portion of the mission or instrument).

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4. Once allocated, PS program funds should be held as inviolable, unless significant changes occur to the mission that would warrant a reduction in the program (e.g., failure of a portion of the mission or instrument).
5. The amount of funding for a PS program and expectations for its duration should be clearly stated to PSs when they are selected.

Recommendations

6. PSs should be brought onto a mission as early as feasible, bearing in mind the trade between cost and integration issues. For most missions, the first PSs should be brought onto a project at least 1-year before operations at a major target.

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7. Full integration of PSs onto a project should be given high emphasis by mission leadership and the mission team. Expectations for the PSs' scope of work should be made clear when they join the team (e.g., operations, data analysis only, etc.) and they should be treated as equivalent to any other Co-Investigator on the team. This is especially important for PSs who are selected later in a mission (e.g., missions with a long cruise phase).

Next steps

The authors are revising a white paper draft. We plan to release the final version to the community before LPSC, via all available channels.

We would like to thank everyone in the planetary community who took the time to help with this effort.