



4/16/2021

Re. February 2021 RSTAC

Dear Ken,

The RSTAC thanks you and your team for the virtual RSTAC meeting on February 11 and 12, 2021. We heard updates on the Roman Science Operations Center (SOC, Roeland van der Marel), SOC Data Management System (Harry Ferguson), and approaches to Community Engagement with Roman (Karoline Gilbert). We also heard Roman-related updates from STScI's Data Science Mission Office (DSMO, Josh Peek) and from NASA Goddard (Julie McEnery, Roman Project Scientist).

Our primary takeaway from this meeting was that huge strides have been taken since our first meeting in February 2020. We congratulate the SOC for their incredible progress, especially in light of the pandemic. We are also pleased to see increased coordination with NASA Goddard. The increased investment in community engagement was especially notable and came through clearly in all presentations. We thank Julie McEnery (Goddard) and Dominic Benford (NASA) for their open discussion of opportunities for community engagement through, e.g., the Roman Science Interest Group discussions and upcoming ROSES-2021 solicitation for Roman.

Notable areas of progress included:

- Evolution in the plans for the operational high-level processing software that had been planned to come from the Science Investigation Teams (SITs). The SOC will provide calibrated catalogs, with Gaia-calibrated astrometry, and will characterize completeness and systematics via simulations. The SOC is also considering approaches to time-domain data products.
- Development of an initial vision for engaging the community in designing Roman's three Core Community Surveys.
- Development of a new Campaign Scheduling model that allows for interleaving core survey campaigns and GO Observations.
- Updated language for the Core Community Surveys that is now used consistently by Roman team members at STScI, Goddard, and NASA HQ. We support the suggestion that the General Observer (GO) nomenclature could be updated to General Investigator (GI) for Roman, inclusive of proposals for new observations and for archival analysis, to amplify the Roman mission's emphasis on archival science with community surveys.

The RSTAC also identified several opportunities to increase community science with Roman, in line with recommendations from our past meetings:

- **Community Perception.** We discussed the perception that Roman science is going to be owned by an elite group of insiders who are getting baked into place now. We identified the use of inclusive language in calls for proposals, engagement of an expanded Roman user community, and improved access to information as approaches to mitigating this perception. For example, SOC-specific suggestions include:

noirlab.edu
info@noirlab.edu

NOIRLab Headquarters
950 North Cherry Avenue
Tucson, Arizona 85719, USA
+1 520 318 8000

NOIRLab Chile Base
Recinto de AURA
Avda. Juan Cisternas 1500
La Serena, Chile
+56 51 205200

NOIRLab Hawai'i Base
670 N. A'ohoku Place
Hilo, Hawai'i 96720, USA
+1 808 974 2500

NOIRLab, the US center for ground-based optical-infrared astronomy, operates the international Gemini Observatory (a facility of NSF, NRC-Canada, ANID-Chile, MCTIC-Brazil, MINCYT-Argentina, and KASI-Republic of Korea), Kitt Peak National Observatory (KPNO), Cerro Tololo Inter-American Observatory (CTIO), the Community Science and Data Center (CSDC), and the Vera C. Rubin Observatory. It is managed by the Association of Universities for Research in Astronomy (AURA) under a cooperative agreement with NSF and is headquartered in Tucson, Arizona.



- Given limited resources, the current SOC plans allow for up to 30 GO programs. This limit will require all GO programs to be large by design and is in tension with what the community perceives its needs to be (as expressed in the SOC's Spring 2020 community survey). This tension can be partially addressed through expanded community messaging to educate scientists about how they might use data from the three Core Community Surveys to pursue general astrophysics investigations, and the funding opportunities expected to come with those archival studies.
- Roman's user community will be broader than STScI's current user community. It is expected to include physicists and data scientists and should include scientists at institutions currently underrepresented among STScI's users. We recommend the SOC develop a plan to engage this broader community.
- Some RSTAC members noted the opportunity for the SOC to review STScI's Roman-related web pages to ensure consistent language is used for the Core Community Surveys, and to improve discoverability of key resources, such as talk slides and survey results.
- **Deep Field Selection.** We recognize the broad scientific merit of Roman deep field observations and advocate such observations as a fundamental part of the Roman program. We therefore continue to encourage an early selection of deep fields, with an eye on JWST's imminent launch.
 - Roman's observing time will be spent on a combination of the three Core Community Surveys and General Astrophysics (General Observer) surveys; We see Deep Fields as a type of General Astrophysics program. A process to allow some part of the General Astrophysics program to be identified early would be appropriate to seize the unique opportunity provided by the early selection of deep fields.
 - The SOC should play a key role in encouraging community engagement in deep field selection, and in recommending the process for the early identification of deep fields. The Roman Deep Field Working Group has laid an excellent foundation, as presented by Anton Koekemoer in June 2020. A Deep Fields workshop, following up on the 2018 Princeton workshop and timed with the opportunity to give input to deep field selection, is one pathway to encourage community engagement.
- **Cross-Mission Coordination.** We recommend that STScI takes a more active role in identifying coordination opportunities with other flagship missions, such as Rubin and Euclid, that extend beyond the dark energy focus of other efforts to date. This could include a community study to assess cross-mission scientific synergies (e.g. joint data use, joint data products and processing, coordinated observing campaigns).

The RSTAC hopes that these recommendations are helpful to you and your team as you continue preparing for Roman's science operations.

Sincerely,



Beth Willman
 Chair, Roman Science and Technology Advisory Committee
 Deputy Director, NSF's NOIRLab

On behalf of RSTAC members:

Zachory Berta-Thompson, University of Colorado
 Enzo Branchini, Universita Roma Tre
 Wendy Freedman, University of Chicago
 Joshua Frieman, Fermi National Laboratory
 Zeljko Ivezic, University of Washington
 Lori Lubin, University of California, Davis
 Raffaella Margutti, Northwestern University
 John Mather, GSFC
 Kristen McQuinn, Rutgers University/University of Texas at Austin
 Matthew Penny, Louisiana State University
 Adam Riess, Johns Hopkins University/STScI