

TESS Users Committee Meeting Report #1

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TUC Members:

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Agenda:

The TESS Users Committee met for a full day on November 8 2023 at NASA Goddard Space Flight Center, following the TESS Mission Partners Meeting. Based on feedback from the community, the meeting focused on the following agenda items:

- Extended Mission Planning: How can the community get involved, provide suggestions, and help with future TESS observing strategies and senior review proposals?
- General Investigator Program: Which existing GI opportunities provide the best support for the community? Which future GI opportunities would the community like to see?
- TESS Software & Databases: Which software and databases are needed to best support the TESS community? How can the TESS community contribute?
- Diversity, equity, inclusion, and accessibility (DEIA): What are the current DEIA efforts within the TESS project and how can they be improved?
- Science Working Groups (TFOP, ACWG, TASC, etc): Which working groups exist and how can they best be supported? Which changes would the community would like to see within these working groups?

Specific recommendations are listed below. Recommendations are divided into high, medium and low priority.

High-priority recommendations:

1. The TUC recommends that the TESS project performs feasibility studies of non-standard observing modes that can be implemented in the third extended mission (EM3). In particular, the technical feasibility of relaxing the 15 degree anti-solar viewing angle constraint needs to be explored in order to determine whether campaigns longer than 27 days can be performed. Furthermore, limits on the spacecraft roll angle and the possibility of implementing user-specified onboard time-binning for individual targets should be investigated, which may allow more flexible ecliptic plane pointings and general investigator programs. Such campaigns could open important new science goals in EM3. The results of these feasibility studies should be communicated to the TESS community through venues that allow community participation in the EM3 planning process (see next point).

2. The TUC recommends that the TESS project organizes opportunities for community participation in the EM planning process. The committee strongly endorses increased community participation in the upcoming EM3 planning process. Community engagement on this topic could come in the form of a call for white papers for EM3 observing concepts, a form asking for the submission of brief “science pitches” for EM3 concepts (akin to the process used for core community survey science pitches by the Roman Mission), a dedicated discussion at special sessions during the 2024 AAS meetings, or an extra day at the 2024 TESS Science Meeting. Communication of the technical feasibility of possible observing scenarios (see recommendation 1) to the community is an important prerequisite for this process, and should be prioritized.

3. The TUC recommends that the TESS project re-evaluates the 70% new data eligibility effort threshold for the General Investigator (GI) program. Many powerful scientific investigations in future extended missions will be enabled by combining archival and new TESS data. However, given the survey strategy of TESS, such investigations become increasingly difficult to propose with a fixed new data eligibility threshold. The TUC recommends that this re-evaluation should be made with the goal of preserving eligibility to apply to the Astrophysics Data Analysis Program (ADAP), which allows large archival data analysis projects that cannot be performed as part of the GI program.

4. The TUC recommends that the default period of performance of small and large General Investigator programs be extended from one to two years. Submitting no-cost extensions, which are often required for small programs and always required for large programs, incurs significant administrative time commitment at universities and would be alleviated with longer performance periods. The TUC recommends that the TESS Project should aim to implement this change as soon as possible (commencing as early as Cycle 7).

Medium-priority recommendations:

5. The TUC recommends that the TESS Science Support Center prioritizes the maintenance of GI-funded software from large and key projects and improvements to the TESS Science Center website that will facilitate community engagement in TESS working groups. The TESS GI program provides funding for software development, but continued maintenance of software tools developed by the community (including, but not limited to, *lightkurve*) is critical for their continued use. Further, access to TESS Working Groups (such as TFOP, TASC and others) is heterogeneous and not easily visible for community members. The latter could be addressed through changes to the TESS Science Support Center website (e.g., a “We want you to do TESS science” button) that directs to a page with various ways to engage in the TESS science working groups. The TUC feels that a re-prioritization of resources within the TESS Science Support Center (e.g., through existing support scientists or the hire of a software engineer) may be required to achieve these goals.

6. The TUC recommends that the TESS project re-evaluates the TESS mission publication policy. In particular, the default inclusion of TESS Mission architects and other contributing authors from the TESS project on planet confirmation papers, which was established after launch, should be revisited given the mature stage of the mission. A possible process for this would be for TFOP to develop an author contribution form and statements.

7. The TUC recommends that MAST should standardize the format of TESS light curves provided by supported High Level Science Products (HLSPs). This will ease compatibility issues across *lightkurve*, the MAST portal, and other software tools.

8. The TUC recommends that all TESS Working Groups develop a Code of Conduct, including mechanisms to report breaches of the Code of Conduct. Being listed as an official TESS working group on the TESS Science Center website (see point 5 above) should be tied to a requirement of having a code of conduct in place.

Low-priority recommendations:

9. The TUC recommends that MAST prioritize the maintenance and stability of an in-browser light curve viewer. Such tools significantly improve the accessibility of TESS data products.

10. The TUC recommends that key and large GI programs with software components should be encouraged to produce thorough documentation and video tutorials on how to use their products. Producing such videos in addition to traditional online documentation will lower the barrier of entry for community members and increase the impact of these products. Examples for such videos include the [TESScut tutorial on YouTube](#) and how to search for [observations on MAST](#).

11. The TUC recommends that the TESS project increase their visibility at scientific conferences aimed to increase the participation of underrepresented minorities in science. Examples include the annual meetings of the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) and the National Society of Black Physicists (NSBP).

Addendum:

The following additional recommendations are based on TUC discussions at the November 2023 meeting and an evaluation of a TESS community survey conducted between December 2023 - January 2024.

12. [High Priority] The TUC recommends that the TESS project increases the production and archival of mission-generated SPOC FFI light curves. The lack of homogeneous, high-quality FFI light curves is currently one of the largest bottlenecks that exists for TESS community science. The main benefit in the current existence of the 2-minute light curve

data product is that it is produced by the SPOC. This suggests that future work by the SPOC should have increased focus on either a) producing analogous light curve products from the FFIs and/or b) providing a transparent mechanism for the community to request FFI light curves produced by the SPOC for specific targets. GI-funded programs are not adequately scoped to address this issue. The TUC acknowledges that implementing this recommendation may require shifting resources away from processing and analyzing 2-minute cadence data.

13. [Medium Priority] The TUC recommends the implementation of GI funding categories that support collaborative travel for under-resourced TESS community members. Under-resourced members include scientists and students from primarily undergraduate institutions and non-R1 institutions primarily serving underrepresented minorities. An example includes optional extra funding for GI programs that supports travel for proposal Co-I's and their students from such institutions to visit collaborators from larger institutions, or dedicated smaller travel grants that scientists from such institutions can directly apply for through the GI program.

14. [Low Priority] The TUC recommends for the GI program to consider extending collaborative programs with other observing resources. While several resources are already supported (e.g., Swift, NICER), additional resources that could benefit from coordination are JWST, NRAO and NOIRLab.