

# Best Practices for a Future Open Code Policy for NASA Space Science

## Call for White Papers

Dear Colleagues,

NASA has requested the National Academies of Sciences, Engineering, and Medicine to investigate and recommend best practices for NASA as the Science Mission Directorate considers whether to establish an open code policy, complementary to its current open data policy. The committee appointed by the Academies to carry out this study is now soliciting community input in the form of white papers. Full details of the committee's membership and schedule of activities, as well as the statement of task for this study, are available at [http://sites.nationalacademies.org/SSB/CurrentProjects/SSB\\_178892](http://sites.nationalacademies.org/SSB/CurrentProjects/SSB_178892).

The specific goal of this call for white papers is to hear broadly from the community on any issues, situations, or points of view relevant to the topic, to ensure consideration of the full set of possible consequences of any new NASA open source policy. For the purpose of this call, "open code" and "open source" are synonymous and refer to computer program source codes released publicly under an open source license, as defined by the Open Source Initiative <https://opensource.org/licenses>.

To be considered at the committee's next meeting, white paper submissions are due no later than January 12, 2018. The committee strongly encourages authors to submit white papers by this deadline, but papers will continue to be received until January 31, 2018.

As a guide, the committee suggests the following topics for consideration:

1. What positive and negative impacts would arise for you, your workplace, your NASA-funded research, science in general, education, commerce, society, and so on, if all future NASA-funded science code were required to be open source? For example, what maintenance and support issues might arise from open source policies that would not otherwise arise? What relevant experiences have you had with science codes owing to sharing or access constraints? How might negative impacts be mitigated?
2. What would be the consequences, positive or negative, if NASA exercised any rights it may have to require that existing codes previously developed under NASA funding be made open source?
3. If a future policy is in place which would require all NASA-funded science codes to be made available under an open source license, what exceptions, if any, might be made to this policy? What principles might be applied in granting and then overseeing such exceptions, and what parallel measures could be taken to mitigate any detrimental effects an exception might have on code availability and re-use?
4. What lessons can be drawn from your experience with open data policies that might help inform future open source policies?
5. What policy differences, if any, might be considered for NASA-funded science codes produced as part of a research grant versus those produced under other NASA funding

mechanisms, such as contracts, interagency transfers, or cooperative agreements? Might there be different policy requirements for various types of code (such as models, libraries, modules, etc.) or codes produced by various types of research groups (for example, individuals or modeling centers)?

6. What special (non-obvious) considerations might exist for codes with multiple funding sources or codes that incorporate proprietary libraries or other restricted information, such as International Traffic in Arms Regulations (ITAR)-regulated code?
7. What non-policy approaches could NASA take to encourage open source licenses for NASA-funded codes (for example, bounties for opening closed codes or for creating new open codes that do the same tasks as closed codes; badges on published papers indicating open source, open data, and reproducible-research; mechanisms for giving career credit for compliant research products like these)? How might these approaches be implemented and what potential issues could be envisioned regarding enforcement of these kinds of practices?
8. Over the long run, what would be the impact on the quality and reproducibility of research if NASA required all NASA-funded, peer-reviewed science papers to include an electronic compendium of (or pointers to) the source codes, inputs, and outputs that produced each scientific claim in the paper?
9. Other issues you would like the committee to consider.

Please note that the suggested topics and questions, as well as the manner in which they are framed above, should not be seen as a preview of any findings or recommendations the committee may make.

#### Guidelines for White Paper Format and Submission

If you have an opinion on any relevant matter, please submit a white paper, following these guidelines:

1. The suggested topics are broad areas intended to initiate thought. A paper need not (and generally should not) address all questions in a given list item, above.
2. White papers may not exceed 5 pages in length. This includes all figures, tables, references, and appendices. Web links to other documents may be included in the references.
3. Documents should be single spaced, use 12-pt font, and have 1-inch margins on all sides.
4. Only papers submitted through the online submission process will be accepted. Required entries are title (max. 150 characters), short summary (max 350 characters), authors, corresponding author email address and telephone number.
5. Only papers in Microsoft Word (.doc, .docx) and Adobe Acrobat (.pdf) formats will be accepted.
6. A cover page may be included and will not count toward the 5-page limit. It should state the title of the white paper, the primary author's name, phone number, institution, and email address. All authors who contributed significantly to the text must be named on the cover page, including: full name, position, affiliation, and how they are a stakeholder. The permission of each co-author must be explicitly given prior to submission
7. Appendices may contain license or policy examples or other supporting, pre-existing documents, but not further text or other material created for the paper.
8. Contributions are public and fully attributed (i.e., not anonymous). If not already in the public domain, copyright release is required at time of submission.

9. Group submissions are strongly encouraged. We encourage community discussion to consolidate similar papers. A numbered list of supporters who did not contribute significantly to the text may be attached as the first appendix. Supporters listed must include the same information as for authors on the cover page.

Please respect that the committee is not large and has a short time to evaluate a potentially large number of white papers. A well argued, concise paper will make the strongest impression. Use specific examples from your own experience, cite specific policies that impact you, use numbers, etc., wherever possible. *When it is not obvious*, relate the argument to NASA Science Mission Directorate's goals.

Questions on the process can be submitted to Abigail Sheffer at [asheffer@nas.edu](mailto:asheffer@nas.edu). Any white papers submitted to that email address will be returned with directions to the website.