

Guidance on the implementation of Plan S – Feedback Questions

This is the official response from the Royal Astronomical Society (RAS). The Society represents more than 4,000 astronomers and geophysicists, predominantly in the UK, in occupations in academia, industry, education and public engagement, and journalism, as well as others in the wider economy.

This response was shaped by input from our governing Council, our editorial team who work on the journals we publish, and our publishers Oxford University Press.

1. Is there anything unclear or are there any issues that have not been addressed by the guidance document?

The guidance document sets out routes for compliance for publication, including in peer-reviewed academic journals. There is however a lack of recognition of the diversity of the research landscape. For example, astronomers and space scientists, who routinely publish for free in hybrid journals, also overwhelmingly make their papers available on the arXiv, the subject repository covering these disciplines¹, at which time they are immediately free to view. The proposed outright ban on publishing in hybrid journals makes no sense in this context.

Oxford University Press accommodate this route, for the RAS journals Monthly Notices of the Royal Astronomical Society (MNRAS) and Geophysical Journal International (GJI). Researchers can either elect to publish using the CC-BY licence by paying an Article Processing Charge (APC), or instead publish for free, but with an exception that allows content to be shared in subject repositories or on author websites. In 2018 around 91% of papers in MNRAS were published in arXiv², indicating how this exception is utilised to the full. We have much less data on the relatively new EartharXiv, which is a potential repository for GJI papers, but would expect the use of this to rise sharply in the years ahead.

Some of the guidance appears contradictory, or far too inflexible. Examples include the following:

- In the second paragraph the guidance states: "cOAlition S does not ... advocate any particular route to Open Access given that there should be room for new innovative publishing models." *This is at odds with the explicit ban on publishing in hybrid journals, as set out above.*
- In section 2, the table text states: "Immediately upon publication, authors deposit the final published version ... made available immediately open access (with no embargo)". Papers in RAS journals do allow deposition of the final published papers in repositories. This is compatible with guidance, except for the CC-BY licence, and allows any researcher or member of the public to read the content.

¹ In 2011, more than 70% of astronomy and astrophysics papers in the 'Web of Science' were published in the arXiv. See V. Larivière et al. in <https://arxiv.org/ftp/arxiv/papers/1306/1306.3261.pdf>.

² Analysis by RAS and OUP staff, private communication

- The guidance also states "Scholarly articles are compliant with Plan S if they are published in compliant Open Access journals or on compliant Open Access platforms." *A hybrid journal, such as those from the Royal Astronomical Society, allowing arXiv posting with the required licence meets this definition, but publication in hybrid publications is banned.*
- In Section 2, it states: "Irrespective of the form of publication, cOAlition S recommends that all publications and also other research outputs are deposited in open repositories..." *It is not clear why this goal is incompatible with hybrid journals.*
- Section 4 states clearly that: "cOAlition S explicitly acknowledges the importance of a diversity of models and non-APC based outlets". *Again, the ban on hybrid journals is perplexing in this context.*
- Section 9 comments: "Open Access platforms referred to in this section are publishing platforms for the original publication of research output (for example scholarly articles and conference proceedings). Platforms that merely serve to aggregate or re-publish content that has already been published elsewhere are not included." *This re-publishing is very much what authors do on arXiv: they post papers accepted in journals. Would arXiv and similar platforms be unacceptable because they aggregate papers, despite meeting the other Open Access requirements?*
- Finally, Section 10 yet again changes tack and seems to imply that authors can in fact publish in a non-compliant journal if "A copy of the published work [is] openly available in a compliant repository".

There is also a serious overarching issue for international collaborations, not referred to in the guidance. If a cOAlition S-funded researcher publishes a paper with colleagues in the US, and the American researcher(s) do not have access to funds for APCs, how will this be resolved? To give some context, as far back as 2005, 55% of astronomy papers were published by international teams³.

An analysis of papers in MNRAS indicates that in 2018 64% had authors from different countries. Almost 16% had at least one UK and one US author. For GJI 44% of papers were from authors from multiple countries, and 4% had at least one US and one UK author.⁴

Assuming Plan S goes ahead as proposed, international collaborators from outside the UK may well want to continue to publish in respected journals that remain hybrid, creating a tension with co-author researchers here who are mandated to follow the (Gold) Open Access route.

Research collaboration and publishing that takes no account of national borders is demonstrably entirely normal. It thus seems inconceivable that different national policies

³ "The frequencies of multinational papers in various sciences", H. Abt, Scientometrics, 2005.
<https://akademai.com/doi/abs/10.1007/s11192-007-1686-z>

⁴ RAS data on papers in MNRAS and GJI, private communication

for open access publishing – particularly between European countries and the US - will not quickly become an issue if Plan S is driven through in its present form. It may then hinder international collaboration between researchers in Plan S compliant countries and those elsewhere, undermining a fundamental tenet of science.

A key additional point we wish to emphasise relates to the costs of (implied) Gold Open Access publishing for researchers with little or no grant funding. The proposed policy of APC fee waivers and discounts for authors in low- and middle-income countries is reasonable, though this would need to be borne by authors in richer nations.

What is missing is provision for authors not in receipt of large grants. The UK, for example, is a beneficiary of substantial European Research Council (ERC) funding, and the typical size of these grants (of the order of €1 million) should cover APCs. Plan S agencies will though be aware that UK participation in the ERC is now highly uncertain as a result of the UK's imminent exit from the European Union.

Only a proportion of researchers in astronomy and geophysics in the UK receive funding from UKRI and the UK Space Agency. Applications to e.g. the Science and Technology Facilities Council (STFC), part of UKRI, are 2-3 times oversubscribed for astronomy projects. The grant awards made vary in size, with some of the order of £100k or less, so paying multiple APCs from these would have an impact on for example hiring staff and purchasing equipment.

At present STFC (for example) offers no direct funding for APCs, but instead institutions receive a block grant that presumably covers different disciplines. One member of our Council describes how their university library, with little clarity, considers requests to access this grant to publish via the Gold Open Access route. If Plan S is implemented as proposed, there are thus serious questions to answer on who acts as institutional 'gatekeepers' for the decision to submit to a journal and pay the relevant APC.

Early career scientists (postdocs and PhD students) in research groups may also find it difficult to submit first author papers if APC funds are limited, and they are competing for those funds with more established colleagues.

There is also a significant population of researchers in the UK without grants, and little financial support beyond the QR funding paid into universities. Researchers in this position, who may still make important contributions to the field, could struggle to pay APC costs in the new system.

From an RAS perspective, two further cohorts need consideration: amateur astronomers, who make real contributions to research, but would be unlikely to have the resources to pay APCs for Gold Open Access, and geophysicists in small companies who may find it difficult to justify the expense associated with publishing through this route.

Plan S needs to consider how these different groups of researchers can continue to disseminate their work and see it go through the peer review process. MNRAS alone

received 4700 submissions in 2018. If a lack of funds means these are restricted in future, then Plan S will prevent rather than improve the dissemination of research.

A final point to note is how resources from scientific publishing are used. In the UK at least, many scientific learned societies also publish peer-reviewed journals. The models for these vary, but in the case of the RAS this is done on a not-for-profit basis, where the surplus from journal subscription income is used to benefit the fields of astronomy and geophysics in general. For example, the Society runs scientific meetings, gives travel grants to researchers, offers seed funding for projects, cares for internationally significant historic books and artefacts, and delivers and supports a substantial programme of public engagement with our sciences.

If Plan S is driven through as proposed, particularly on such a short timescale, many learned societies will struggle to switch to a new model that delivers the income we need to function. The proponents of the Plan should be aware that it may put the very existence of some of these organisations at risk.

2. Are there other mechanisms or requirements funders should consider to foster full and immediate Open Access of research outputs?

The RAS has serious concerns about Plan S for the reasons set out above. We ask that the instigators of the Plan revoke the proposed ban on publishing in hybrid journals, and are less prescriptive about the licence for published papers.

A recognition of the behaviour of researchers in different disciplines would be helpful, as would understanding that papers published in hybrid journals that are made available through subject repositories are de facto open access, at least for the purposes of further research. This route already allows researchers to share their work with each other, and with the wider public, at no cost to readers, thus meeting the central goal of Plan S without the need for a top-down intervention with so many detrimental consequences for authors (and therefore readers), as well as publishers.