

Final Author Comments for „Editorial: Introducing a new article type: Limitations, Errors, Surprises, Shortcomings and Opportunities for New Science (LESSONS)”

Answers to comments made by Daniela Brito Melo

Thank you for your review and suggestions for improving our manuscript, which we much appreciate. Your feedback is valuable to us, and we made the recommended revisions accordingly. We provide detailed responses to each of your comments below.

The manuscript presents a new article type (LESSONS), dedicated to scientific errors, limitations and null results - topics frequently absent in classic scientific literature. It refers to several peer-reviewed articles addressing these topics, which showcase the impact of a positively biased publication culture, as well as the scientific value of reporting errors, limitations and null results. The article properly states the need and advantages of this type of article. I warmly congratulate the authors on this initiative.

Thank you!

Before publication, I would recommend considering the following suggestions:

L.117-124: In this part of the text, the authors give examples of discontinued journals dedicated to the same topic. In my view, it would be helpful to reflect on the potential causes and to state what will be done to avoid a similar ending for the LESSONS article type.

Good point. The reasons for discontinuing journals seem to differ: the HESS "Black Swans" manuscript type was quite narrow in scope with a high level of expectation, which likely limited submissions, while the Journal of Negative Results in BioMedicine gave no clear reason. However, a reason may include the small number of papers being insufficient to sustain a separate journal (10 – 25 submissions annually). Larger journals, like the Journal of Trial and Error and PLOS ONE, are still going whereas the latter also includes a large number of other articles. We think LESSONS avoids these pitfalls by design: it isn't a separate journal but a manuscript type across many EGU journals and EGU's preprint server *EGUsphere*, with a shared compilation for visibility — a much wider net and a lower bar to submit. Ultimately, success depends on the community submitting articles, which we can't force, but the broad community-driven setup gives it the best chance. We added a note on why the “Black Swans” were unsuccessful (*“Its narrow scope, high level of expectation due to its focus on unpredictable, high-impact events (the “unknown unknowns”), presence in only a single EGU journal, and limited advertisement likely all contributed to the lack of submissions.”*) and what LESSONS does to avoid this (*“The design of the LESSONS manuscript type is intended to avoid the pitfalls that likely ended earlier efforts: rather than depending on a single journal or a standalone venue,*

LESSONS spans many EGU journals and EGU sphere, casting a wider net and lowering the barrier to submission.”) to section 1.2.

L.222-223: the authors highlight that limitations, errors, etc. (i.e. LESSONS) have been published before in "regular research articles", together with "substantial new results, advances". In my view, the advantage of publishing this type of results in a LESSONS article type in comparison to a "regular" article type is not clearly stated. Are LESSONS articles a temporary need while the publishing culture does not change? If not, this should be clearly stated.

Yes — we see LESSONS as a fix that will be needed until publication bias fades. The advantage over a “regular” article, however, is a real and distinct one rather than merely a matter of format. Limitations, errors and null results can of course already be reported in regular articles — but authors often perceive that that this requires that they are accompanied by some ‘positive’ result or substantial new advance. What the LESSONS article type adds is that we welcome exactly these contributions even when they are not accompanied by positive results; a discussion of how the failure, limitation or error helps us advance science is enough. Beyond this, the short format makes negative results much easier to publish, the clear label removes the stigma and signals that they are welcome, and listing all LESSONS articles in a separate compilation gives them higher visibility — all of which we hope will accelerate uptake within the scientific community. We added a closing paragraph on this in section 2.2 (*“Articles that fall into this scope have been published in EGU journals before, and we encourage authors to keep publishing their non-positive results or surprises in regular research articles. The key difference to LESSONS is that authors often perceive that a regular article can accommodate such results only when they are accompanied by a positive finding or substantial new advance, whereas a LESSONS article welcomes them on their own — a clear discussion of how the limitation, error or surprise helps advance science is enough. Together with the short format, the explicit label that removes the stigma associated with the failure to generate positive results, and the added visibility of the LESSONS compilation, this lowers the barrier for submissions where authors may previously have been hesitant.”*)

Chapter 3: I think it would be worth adding to this section the answer to "When to write a LESSONS article". In my perspective, a researcher will continue investigating a problem until the "substantial new result" is found. At that time, they might prioritize writing a "regular research article" in comparison to a LESSONS article. There are sufficient arguments in the manuscript supporting the writing of a LESSONS article. However, current career incentives might pressure researchers to move on to the next finding instead of documenting the LESSONS from their just published work. I think it would be useful if the authors could acknowledge and elaborate on these challenges and motivate the need to timely document the discovered errors and shortcomings.

Thanks for this suggestion. We agree the question of *when* to write a LESSONS article is worth addressing, and that career pressures can push people to move on rather than

document what went wrong. We added a short paragraph to Section 3 noting that the best moment to write a LESSON is usually while it's still fresh — often when a related result is being written up, or when a line of work is set aside — and that the brief format (and the Post option) is meant to make this easy even when time is short. In response to the editor's comment, we also renamed the section to "When and how to write a LESSONS article".

L.240, 258, 358, 360, 362: capitalize "report(s)" for consistency.

We fixed this.

L.240-241: introduce ACP after "article processing charges" just for clarity.

We changed it.

L. 250, 359, 361: capitalize "post(s)" for consistency.

We fixed it.

Answers to comments made by Melissa Reidy

Thank you for your constructive and valuable advice on how to improve our manuscript. We have incorporated your suggestions into our revision. We respond to each comment individually below.

This manuscript introduces an article type titled LESSONS, which is to be included in some EGU publications moving forward. LESSONS are actually two types of articles but both types aim to overcome the bias towards positive-results publishing. The manuscript details the motivation behind this initiative as well as outlining article scope and format and guidelines for writing, editing and reviewing LESSONS articles. In the introduction, the authors provide some compelling reasons as to why this type of article will be valuable to researchers moving forward. It is clear that there is definitely room, and need, for LESSONS articles in the scientific publishing sphere. Well done to the authors for this optimistic initiative and I look forward to reading some of the LESSONS articles in the future.

Thank you!

I've provided some comments below as suggestions for very minor improvements to the finished manuscript.

Section 1.1: Have the authors considered whether certain groups of researchers are more likely to benefit from writing and reading LESSONS articles than others? For example, LESSONS articles might be more adopted by early career stage researchers, or researchers operating within limited resource environments since they are less likely to be able to 'afford' mistakes and errors compared to senior researchers or those with stable funding. And from this, are there certain groups of researchers that will be more likely to submit LESSONS articles compared to others? The authors could speculate on

this using abstracts submitted to the BUGS session later mentioned in the article. I do understand that this information might not be out there to include in this section, but it could offer useful insight if that's possible.

Nice question — and one where the likely direction is genuinely unclear to us. One could argue, as you do, that early-career scientists and researchers in resource-limited settings have the most to gain, since they can least 'afford' unproductive errors. But the opposite case is just as plausible: early-career researchers are under particular pressure to build a publication profile, and because academia still rewards 'positive' results, they may in fact prioritise those over LESSONS contributions. Because we have no data to adjudicate between these competing intuitions, we would prefer not to speculate in the manuscript and can therefore not incorporate this suggestion. What we can say is that the BUGS sessions have drawn a real mix of career stages — from MSc students through postdocs to senior professors — so an appetite for reporting errors does not appear to be confined to any one group.

Line 111 – 113: The inclusion of the BUGS sessions at the General Assembly provides good context for the need for LESSONS articles. The authors could include some basic information such as number of abstracts submitted to BUGS sessions in previous years, or number of posters/presentations etc to strengthen this context.

Thanks for the suggestion — we added the abstract count of 2025 and 2026 to section 1.2 (“... *attracting 21 abstracts at EGU25 and 25 at EGU26.*”).

Line 117-124: I agree with the comment from another reviewer here. As well as offering some reflection on why this topic has not been adopted successfully in previous attempts, it could be useful to include some details as context. For example, if the 'Black Swans' manuscript category received no submissions, how many submissions did other manuscript categories receive in contrast? Is there any information about whether the submission process for this category was different in any way to other categories?

This overlaps with Reviewer 1's comment on these lines — please see our response there. We added this to section 1.2. Generally, the submission process was the same. However, what was different was that the 'Black Swans' were only offered in one of the EGU journals, had high level of expectation due to its focus on unpredictable, high-impact events (the “unknown unknowns”), and their initial advertisement was by far not as broad as it has been so far for LESSONS articles.

Section 4: I'm curious about the review process for the LESSONS articles and it's great that the authors have a specific section on this. One of my concerns about the LESSONS articles is not the articles themselves, but that a positive result bias may also translate to a positive result review bias. Can the authors speculate as to whether it would be more difficult to attract reviewers for LESSONS articles compared to other research articles? Perhaps there is information about this from some of the other publications previously mentioned earlier in the article. Given that one part of peer review may be to suggest to

authors different ways of analyzing data or improving methods, is there a risk with LESSONS articles that during the peer review process, the 'error' that the article is based on is actually solved? And how does that affect the relevance of the article submitted? All of this is just to say that the section on editing and reviewing could be strengthened by the authors having a bit of a discussion about how the peer review process for a LESSONS article may differ and how these differences will be tackled by reviewers.

Both are good points and we're happy to expand Section 4.

On finding reviewers: it's hard to say, and reviewers are scarce in general, but we're cautiously hopeful — LESSONS Reports are screened first and appear in established journals, and the BUGS sessions show real interest in negative results (Relatively few submitted abstracts, but way more participants came to listen to the presentations so maybe this also holds true for review: few people submitting but much more being interested in being part of the publishing bias revolution and thus helping with reviews?).

On an error being solved during the review process: we would see this as a win rather than a problem. In most cases the resolution would form the basis of a separate, regular research article, while the original LESSONS still has value as a documented record of the problem and the route to its solution. It's also an option that the authors themselves found a solution before submitting and want to still publish the fix as a cautionary tale. The documented lesson therefore retains its worth regardless of whether the underlying issue is later resolved.

EGU journals also offer the possibility for its journals to tailor review forms to specific manuscript types. While this has not yet been done for LESSONS Reports specifically, it represents an option for guiding reviewers toward the characteristics most relevant to this format. This is kept open for future discussion, once sufficient experience has been gathered on how to improve reviewer reports for LESSONS Reports. We added the points as new paragraphs in section 4 (*"While attracting reviewers may be a concern since they are a generally a scarce resource, we are cautiously optimistic. LESSONS Reports are screened before review and published in established EGU journals. The sustained interest in BUGS sessions also suggests an active interest in engaging with non-positive results within the community. EGU journals also allow review forms to be tailored to specific manuscript types. While this has not yet been done for LESSONS Reports, it is still possible to guide reviewers towards the characteristics that are most relevant to this format."*

Another consideration is whether the peer review process could resolve the error that forms the basis of a LESSONS article. This is not the aim of the peer review and reviewers are not encouraged to always suggest new routes to try, but they may spot an underlying problem. In most cases, the resolution would be published as a separate research article, while the original LESSONS article would remain a valuable documented record of the problem and its solution.")