The peer review process for the Journal of Geoscience Education relies on Associate Editors (AEs), whose role is to manage the peer review process for manuscripts and make recommendations to the Editors. AEs serve a vital role in our community, and we recognize them by listing their names and affiliations in each issue of the journal and on the journal’s website as members of the Editorial Board.

Who becomes an Associate Editor?
New AEs are invited to join the Editorial Board for two primary reasons: they have a record of submitting high-quality reviews in a timely fashion, and their expertise is relevant and needed for submissions to the journal. We also seek AEs who have experience writing, reviewing, and editing for other journals in STEM education research and STEM teaching. Associate Editors are well-versed in providing constructive criticism, and are tactful and respectful in their communications with authors and editors. While most AEs serve for at least one three-year term, guest editors and AEs may be invited to serve for a single theme issue. Individuals may express their interest in serving as AEs to the Editors or Editor-in-Chief if they feel they meet these criteria.

How do AEs fit into the peer review process?
There are several steps in JGE’s peer review process, shown in Figure 1. When a manuscript reaches an AE, it has passed a technical check (step 2 in Fig. 1) by the Editor-in-Chief, who makes sure that the manuscript is within scope of the journal and that all necessary files are included. It has also been screened by an Editor to determine if it is ready for peer review (step 3 in Fig. 1). The role of AEs is to find and invite reviewers for a manuscript, summarize reviews and provide their own insights, and make and explain recommendations about the manuscript to the relevant Editor.

Figure 1. Flowchart of JGE’s peer review process, updated from Petcovic, Stokes, and St. John (2017).
What is expected of an Associate Editor?
AEs serve three-year terms (calendar years) on the Editorial Board, which can be extended by agreement between the AE and the Editors.

In order to facilitate an efficient peer review process during their tenure, AEs are expected to:
- Respond promptly (within three working days) to invitations from the Editors,
- Manage the review process for assigned manuscripts in a timely fashion (4-6 weeks),
- Provide thorough and thoughtful comments for authors and editors,
- Keep contact information and availability up-to-date in the review management system,
- Handle 4–6 papers per calendar year (per volume). (We understand that availability can vary based on the time of year, and we can be flexible.)

If these expectations are not met, or if an AE declines three consecutive invitations and/or is consistently late in submitting recommendations, the AE may be asked to step down from the Editorial Board.

What do I do when I’m invited to serve as AE for a manuscript?
When one of the Editors invites you to serve as AE for a manuscript, your first responsibility is to accept or decline the invitation promptly—within three working days. We recognize that your other responsibilities vary over time and you may not be able to accept every invitation. Please respond honestly whether or not you are able to manage the review process within the given timeline. If you have a conflict of interest with any of the authors of the manuscript, we ask you to decline and indicate your reason for doing so.

Once you accept, you should:
1. **Read the manuscript** and determine the expertise of reviewers needed to review it.
2. **Invite reviewers** with appropriate expertise to review the manuscript. Although two reviews are required, you will likely need to invite more than two reviewers, either because some will decline/not respond or because the manuscript itself suggests a broader review would be helpful. You may link potential reviewers so that someone with a similar expertise is invited if the first potential reviewer declines.
   a. Editorial Manager (EM) automatically sends a reminder if an invited reviewer has not responded after 4 days.
   b. EM automatically uninvites a non-responsive invited reviewer after 7 days and invites the next reviewer on the list or the linked reviewer.
3. **Monitor the review process** to ensure that reviews are completed within the timeline.
   a. EM automatically sends reminders to reviewers 7 days before their review is due, on the deadline, and 7 days after the deadline.
   b. Fourteen days after the deadline, a non-responsive reviewer automatically uninvited and the next potential reviewer on the list (or a linked reviewer) is invited.
   c. You will be cc’ed on the reminders on the deadline and after the deadline; we **strongly encourage** you to follow up with a personal email to reviewers when you receive these indicators.
4. **Read the reviews** and make your own assessment of the manuscript, particularly identifying both common concerns and inconsistencies between the two reviewers, and raising any concerns not already identified by the reviewers.
5. **Write comments** to the author that summarize the concerns raised by the reviewers, clarify which advice to follow in the case of inconsistencies, and add your perspective as AE. **This step is absolutely critical:** the Editors rely on your careful reading of the reviews and the manuscript to guide their decision-making.

6. On the basis of the reviews and your own assessment, **make and explain a recommendation** to the Editor to take one of the following actions:
   a. **Accept**: Should be published as written.
   b. **Revise – minor revisions**: The manuscript should be published, but there are minor revisions that should be made to improve the presentation. The revisions are not substantial enough to require additional peer review, though they are likely to come back to you as the AE.
   c. **Revise – major revisions**: The manuscript contains one or more significant flaws in design, analysis, or other important criteria that the reviewer believes can be repaired without additional materials development or data collection. The manuscript may also need revision to clarify or reorganize the concepts being presented. The resubmission will involve additional peer review prior to publication, and you will be asked to serve as AE again on the resubmitted manuscript.
   d. **Reject**: The manuscript contains one or more significant flaws in design, analysis, or other important criteria which cannot be repaired without additional materials development or data collection, or the manuscript is not in the appropriate category or is not appropriate for the journal. A resubmission without additional data collection or materials development or in a different category will not be considered.

Occasionally, we receive submissions that the Editor(s) determine are not yet ready for external review, but would benefit from a more restricted review by an AE with expertise in that area. In such a case, the Editor would ask you to read the manuscript and provide constructive advice to the authors, without sending it out for external review, and your comments would be the only ones returned to the author. The highest recommendation you could make for such a paper would be **Revise – major revisions**.

If you serve as AE on a manuscript for which you have recommended major or minor revisions, you can anticipate being asked to serve as AE on the resubmission of that manuscript. You may choose whether or not to send it out to the same reviewers (who can indicate whether or not they are willing to review a resubmission) or to different reviewers, but we recommend maintaining consistency wherever possible and appropriate.

If a second revision on a manuscript comes back to you and it is still requires **major revisions**, our general policy is to reject it at that point so as to avoid wasting reviewers’ and editors’ time. If you think a manuscript that you are handling is in this situation, you should discuss it with the Editor who assigned the manuscript to you. Major revisions would include substantial reorganization of the paper, pervasive grammar and language problems, and unaddressed flaws or concerns from previous reviews.

**What is the timeline for managing the review process for a manuscript?**
The desired timeline from manuscript submission to decision is 7-10 weeks, shown in Table 1. The numbers in parentheses refer to the steps shown in Figure 1.
Table 1. Idealized timeline for JGE’s peer review process.

<table>
<thead>
<tr>
<th>Steps in the Peer-Review Process</th>
<th>Time</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1, 2) Manuscript undergoes technical check and is assigned to an Editor.</td>
<td>1–2   days</td>
<td>Editor-in-Chief</td>
</tr>
<tr>
<td>(3, 4) Editor invites an Associate Editor to handle the peer-review process for the manuscript. The AE accepts or declines the invitation within three working days. If needed, the Editor invites another AE.</td>
<td>5–7 days</td>
<td>Editor</td>
</tr>
<tr>
<td>(5) AE invites potential reviewers and alternates. Potential reviewers accept or decline the invitation within four working days. Within two weeks, AEs have secured a minimum of two reviewers.</td>
<td>7–14 days</td>
<td>Associate Editor</td>
</tr>
<tr>
<td>(6) Reviewers review the manuscript within three weeks (or request an extension of an additional week) and submit their comments to the AE.</td>
<td>21–28 days</td>
<td>Reviewers</td>
</tr>
<tr>
<td>(7) AE assesses the reviews, and makes a recommendation and justification to the Editor.</td>
<td>7–10 days</td>
<td>Associate Editor</td>
</tr>
<tr>
<td>(8) The Editor makes a decision regarding publication of the manuscript, and explains that decision to the author(s).</td>
<td>5–7 days</td>
<td>Editor</td>
</tr>
<tr>
<td>(9) The Editor-in-Chief reviews the decision letter, and adds additional comments and suggestions. The Author is contacted with the decision.</td>
<td>1–2 days</td>
<td>Editor-in-Chief</td>
</tr>
<tr>
<td>TOTAL</td>
<td>47–70 days (7–10 weeks)</td>
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How do I identify reviewers?
Identifying reviewers that are appropriate for a manuscript is the critical component of serving as an AE. Conducting a thorough and thoughtful review takes time, and potential reviewers are most likely to agree to review when the manuscript is well-matched with their expertise, and they feel they have something significant to offer in the review. Taking time upfront to invite the best-matched reviewers is likely to save you time in the long run.

The first step is to skim the entire manuscript to gain a sense for the expertise needed in reviewers to provide meaningful feedback to the authors about both content and methods. In order to identify specific individuals to serve as reviewers, you can:

1. Read the cover letter, in which authors may have suggested potential reviewers.
2. Search the people database in the peer review system for well-matched expertise (either in content or in methodology).
3. Review the manuscript reference list and consider whether any of the frequently-cited authors would make good reviewers.
4. Search key words on the web, in a database such as Google Scholar, and/or in recent GSA or AGU abstracts.

How do I invite reviewers?
The peer review process is managed through Editorial Manager, and that is how you invite reviewers. You can search the entire database (not just reviewers) by keywords and classifications to select reviewers, and/or you can add reviewers. Instructions for how to do so are available within Editorial Manager, or you can contact your Editor or the Editor-in-Chief if you are not sure how to proceed. If someone is new to the peer review process, you might share the editorial describing how and why to review for JGE, published in 2018 (Egger, 2018).
When inviting reviewers, we strongly suggest that you identify linked alternate reviewers. This function allows you to link reviewers with similar expertise, so that if one person declines, the linked person (with a similar expertise) will be asked automatically.

**What do I do if the person I invite doesn’t respond?**
The email that goes out to potential reviewers asks them to accept or decline the review invitation. Many reviewers promptly make this decision, and the AE will be notified in an email that the reviewer has accepted or declined. If a reviewer declines, you should extend another invitation as soon as possible—you can anticipate this by creating a list of potential reviewers and automatically promoting alternates as soon as one declines.

Unfortunately, some potential reviewers simply don’t respond. They may be on vacation or in the field (or they may be ignoring the invitation). They will receive an automatic prompt (and you will be cc’ed) if they have not responded in four days. After 7 days with no response, they will be automatically uninvited and the next reviewer on your list will be invited.

**What do I do if a reviewer who accepted doesn’t submit their review?**
We expect reviewers to submit their comments within three weeks of accepting the assignment (see timeline in Table 1), though they may request an extension for an additional week. Editorial Manager sends out an automatic reminder 7 days before the deadline, on the deadline, and 7 days after the deadline, but sometimes a reviewer does not respond to the reminders. At that point, you should contact the reviewer directly and inquire about the status of the review. An extension of an additional week is appropriate if it appears likely to be met. If the reviewer does not submit their review within two weeks after the deadline, they will be automatically uninvited and the next alternate on your list will be invited (if you have additional reviewers listed).

At that point, given that waiting for an additional review will add several weeks to the review process, you have two options:

- If the existing external review is thorough and thoughtful, then you can provide a detailed review as part of your AE comments and make a recommendation on the basis of one external review plus your review;
- If the other external review is weak or incomplete, then you should work to secure a second reviewer who you feel can provide a thorough review in no more than three weeks.

It is also appropriate to contact the Editor who assigned the manuscript to you to indicate why there has been a delay, and to ask for advice in how to move forward.

**What do I do once I have at least two reviews?**
Once both reviews are in, you should read them thoroughly and re-read the manuscript. Rate the quality of the reviews in Editorial Manager (this is on a scale of 1 to 5, where 5 is excellent; most reviews will fall in the 3-4 range)—this helps us select high-quality reviewers in the future.

Your next step is to integrate the two reviews with your own assessment of the paper and write comments to the author. Your comments to authors should help them interpret the reviewers’ comments and put them into context, and they should use a positive and respectful tone. Initially, summarize the major strengths and weaknesses of the manuscript as highlighted by the reviewers and your own assessment. Depending on the nature of the reviews, your comments should also:
• Highlight specific comments that are critical to address, or priorities for revision;
• Resolve conflicting suggestions from reviewers and indicate which advice should be followed more closely and why;
• Provide additional suggestions for references, figures, or supplemental materials to include to meet the reviewers’ suggestions;
• Temper any extreme comments from reviewers.

As you prepare your comments, remember that you are serving as an AE because you have given thorough reviews in the past. Writing a good AE recommendation builds on your work as a reviewer. In addition to critically thinking about the manuscript, you are now also asked to critically think about the reviews. Draw on and refer to the reviewers’ comments directly, synthesize comments from different reviewers, and add your own considered comments.

As AE, you also want to consider larger-scale aspects of the manuscript, such as:

• Does the organization of the manuscript make sense? Are the components appropriately positioned in their respective categories (e.g. the discussion section does not include results)?
• Do the sections (for example, the introduction, goals/research questions, discussion) build on each other and make sense together?
• Do the interpretations and implications make sense given the results?

Note that you can also write comments to the Editor that will not be seen by the author. These can be useful to explain any challenges you faced in securing reviewers or anything else that will help the Editor understand your recommendation.

As for reviewers, the identity of the AE who managed a manuscript is not revealed to the author(s). We expect that AEs will not abuse their anonymity by making inappropriate comments.

What happens after I submit my recommendation?
After you submit your comments and recommendation, the Editor will examine all of the reviews, comments, and the manuscript, and will make a decision to accept, request minor or major revisions, or reject the manuscript. The Editor-in-Chief receives the decision from the Editor and notifies the author, who receives all of the reviews.

For especially strong reviews, we also encourage you to send a personal thank you email to the reviewers, which can go a long way towards encouraging them to review again.

If revisions are requested and received, you can expect to hear from the Editor again to review the revised manuscript.

References
