

TIPS ON RESPONDING TO PEER REVIEWS FOR GEOL 1520

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In addition to writing the papers, you will each be performing reviews of each others work. After you receive your two peer reviews and your comments from me, you will have an opportunity to respond to these comments, and this process will mimic the response to reviewers in an academic journal setting.

Key Words: Ocean Circulation, Climate, Research Papers.

1. Getting Help!

I am usually available by email. You can make an appointment other times. Just check my calendar at <http://fox-kemper.com/contact> and suggest a time that works for you.

If you are having trouble with the writing, there are lots of places to find help! You can make an appointment at the writing center (http://www.brown.edu/Student_Services/Writing_Center/) You also might ask older students for tips. I can show you past student papers from related courses if you'd like. I've put my favorite writing style guides in the bibliography (Turabian 2013; Strunk et al. 2005; Montgomery 2003; Gopen and Swan 1990).

2. Basics

There are a lot of quandaries that arise in peer-reviewing (e.g., one reviewer loves it and one hates it, or a reviewer makes incorrect statements), so you'll get some experience with those issues by practice in a friendly environment.

The important deliverables from responding to peer reviews:

- (a) You will need to upload a revised version of your paper into canvas. (You may choose not to alter it in response to reviews, however.)
- (b) You will need to upload a "response to reviewers" document separately. It should include all substantive comments from the reviewers and how you plan to handle the changes.
- (c) You may also upload a track changes or latexdiff version of your paper, to help note where you have made changes. If there are many, this may help guide my interpretation of your changes.

The important issues to consider when responding:

- Your first paper was *not a draft*, it was a complete version of a *completed scientific work* in your opinion. Thus, if the reviewers (and editor, a.k.a. me) don't point out anything, you don't have to change anything within the paper itself (although this is very rare!).

- You don't have to agree with the reviewer's input; you can do something different in response (e.g., add a caveat instead of generating a new figure, or restrict the scope of your paper instead of following a loose end). You may choose to do nothing to the paper, but you need to justify this action.

- Small changes, e.g., typos, rewording, etc., you should just make and don't need follow-up.

- Big changes, i.e., things that will take you lots of time or involve rewriting big sections of the paper should be taken only with great care. Remember that you spent a lot of time thinking about how to set up your paper, and the reviewer is just spitballing after a few minutes of reading. Do not take on a big change unless you are quite sure it will greatly improve the paper.

- The peer reviewers may catch your mistakes or coding errors, or they may be revealed as you try to respond. Don't worry, this is part of the normal process. Fix the problem if you can, or alter the logic of the paper and note how in the revision and response to reviewers. It is in responding to these changes that you will learn and that the paper will improve.

- In the class context, your reviewers will not see your responses. In the "real" world of academic publishing, they are very likely to when the editor asks them to take another look. So, respond politely.

- The reviewers are not perfect, and they are equally or perhaps more likely to misunderstand what you've done than to point out something you've done incorrectly. Be careful to figure out which before you make any changes. Most often, the changes you make will just be to clarify what you've done rather than change what you've done. On the other hand, good reviewers will catch inconsistencies in your work that are important to understand or fix as you finalize your revision.

- Don't forget that ultimately it is your paper! Over-reacting to a reviewer comment can definitely make the paper worse than it was before the review. The art is to make mostly small changes, but ones that logically address the reviewers' comments.

2.1. Rubric

The AGU GRL rubric we use can help you direct your efforts. If you get an A3, work mostly on improving science. If you get a C1, work mostly on presentation.

This exercise is meant to mimic the process of peer reviewing in a scientific journal, which is one of the key touchpoints of the whole scientific enterprise. Here is an elegant and effective piece written in 2011 for the Guardian by Ben Goldacre that's one of the clearest descriptions of the process (in an editorial about unproven claims made by an Oxford professor informally).

A scientist with enduring concerns about a serious widespread risk would normally set out their concerns clearly, to other scientists, in a scientific paper, and for one simple reason. Science has authority, not because of white coats, or titles, but because of precision and transparency: you explain your theory, set out your evidence, and reference the studies that support your case. Other scientists can then read it, see if you've fairly represented the evidence, and decide whether the methods of the papers you've cited really do produce results that meaningfully support your hypothesis.

Perhaps there are gaps in our knowledge? Great. The phrase "more research is needed" has famously been banned by the British Medical Journal, because it's uninformative: a scientific paper is the place to clearly describe the gaps in our knowledge, and specify new experiments that might resolve these uncertainties.

But the value of a scientific publication goes beyond this simple benefit, of all relevant information appearing, unambiguously, in one place. It's also a way to

communicate your ideas to your scientific peers, and invite them to express an informed view.

In this regard, I don't mean peer review, the "least-worst" system settled on for deciding whether a paper is worth publishing, where other academics decide if it's accurate, novel and so on. This is often represented as some kind of policing system for truth, but in reality, some dreadful nonsense gets published, and mercifully so: shaky material of some small value can be published into the buyer-beware professional literature of academic science; then the academic readers of this literature, who are trained to critically appraise a scientific case, can make their own judgment.

And it is this second stage of review by your peers – after publication – that is so important in science. If there are flaws in your case, responses can be written, as letters, or even whole new papers. If there is merit in your work, then new ideas and research will be triggered. That is the real process of science.

If a scientist sidesteps their scientific peers, and chooses to take an apparently changeable, frightening and technical scientific case directly to the public, then that is a deliberate decision, and one that can't realistically go unnoticed. The lay public might find your case superficially appealing, but they may not be fully able to judge the merits of all your technical evidence.

So, as scientists, we all need to become good peer reviewers *and* critical readers and thinkers. Do not expect your peer reviewers to analyze in detail every step you made, but neither ignore what they have to say. Their fresh take on what you've done almost always reveals things to you, and responding effectively to them almost always improves the paper. You can still be wrong even after peer review, but the process catches the worst offenses and improves the argument if not the result.

3. You will submit your review in plain text if possible.

If the reviews came to you in plain text, they are easy to cut and paste into your response document.

4. Example Response to Reviews

Here is a good example of a response to review expanded on one from a former student, now in grad school in a related field. It was accompanied by a somewhat revised version of the paper.

****A Student****

Response

Marginalia:

-I've changed the wording regarding the ECCO data. I don't see how what I have infers a "median-ness" though (I think that just saying "average" would infer what an average state is, not what the average state is as a function of time throughout a year).

-The theory section is approximately 1.5 pages. I know this is on the long side but I don't think I need to change it.

-I've integrated the figures into the text and changed their order

-I don't think coefficients are necessary for these correlations because of how clear it is that the geostrophic transport is dominant

-I made all of the changes that I thought would make the paper better without making it cumbersome.

Response to individual reviews:

Summary: You examine the Indian Ocean WBC--the Agulhas and its wind-driven and ITF sources.

Overall: Nice work, using the HW figures & theory effectively and clearly. Bringing in the ITF source makes for nice interest. A1

Strengths:

- Really fun place to examine.
- Nice connection to the Sprintall paper
- Excellent intro and use of literature.
- Good that you report the Agulhas transport as a primary result.
- Excellent theory section--lots covered accurately. Probably more than you need for the paper(!), but nice to see. It is clear you have worked hard on getting these concepts.

Thanks to Baylor for the summary and complimentary comments. I have made sure not to diminish these aspects while revising.

Baylor Review:

**You should mention in abstract that you use ECC0v4r2 and you should cite Forget et al as the source of ECC04r2.

-I've added ECC0 to the abstract and cited Forget et al.

**The transport variability of the ITF is super complex and argued over (and probably has never been measured accurately). Indeed, measuring the Agulhas & believing the theory might mean that the best measurements of the ITF are actually measurements of the Agulhas!

-I've added a bit at line 33 about the ITF calculations

**Making a map of surface current velocity to see if there is an uninterrupted flow from the ITF to join the Agulhas might be cool to try.

-I tried making a map of the surface current velocity but it was too difficult for this paper

Reviewer 1:

Study on the Agulhas Current that evaluated all the things that were in the homework.

strengths:

- really well written theory and methods
- very clean abstract
- interesting region
- brought in other literature well
- brought in other images well

Thanks to the reviewer for these compliments.

**my major complain is that the graphs would be more persuasive if integrated into the text

-The graphs have been integrated into the text

**additionally, this paper does not go far past the homework, and it could be interesting to examine seasonal or latitudinal variability of some kind (temperature, salinity, other nutrients)

-I don't think that looking at other variables would add much to the paper

**maybe there is too much dependence on the original paper it's piggyback offing

-Maybe there is too much dependence on the paper I'm piggybacking off of, but I don't see any changes I could make without significantly changing the paper

**some graphs are difficult to read due to scaling issues.

--revisited these and improved some.

Reviewer 2:

'The Impact of the Agulhas Current on the Mass Balance of the Indian Ocean' by Stephen Bourguet

The Author explores the processes that sustain the Agulhas current, and quantifies the transport imbalance of the Indian Ocean gyre in order to qualify the importance of the ITF's mass contribution. It is decided that the ITF dominates the mass rebalancing, and that the geostrophic balance dominates the gyre's transport. There is also some consideration of thermal wind. Your theory section is just wonderful. Great attention to detail, great choices of equations to make explicit.

-Thanks for these comments.

**Line 28: What is the flow from the Pacific Ocean averaged over?

-I've added more information about this average

**Line 32: It seems strange to me that $15 \text{ Sv} + x_{\text{mozambique}} \text{ Sv} = 11 \text{ Sv}$. Does the Mozambique take water from the Indian ocean, or have I misunderstood the units?

-I've briefly addressed this inconsistency

**Line 79: Does the paragraph that begins here imply that the only way for poleward flow to be created is by strong poleward flow? Or is the stretching necessitated by the high sea surface at the WBC?

-I've addressed the relationship between poleward flow and stretching here

**Line 117: There may be a better way to phrase 'upper 10s of meters'

-I've rephrased 'upper 10s of meters'

**I think you may need to address the places that geostrophic transport expresses southwards flow in the interior of the gyre.

-I've addressed the southward flow in the gyres interior at line 142

**Line 145: Could it be simpler to just say that there is a net imbalance of 15.8 Sv flowing southwards?

-Yes, it is easier to say that there is 15.8 Sv flowing southwards

**I don't see how the consideration of velocity shear and thermal wind really fits in with the rest of your paper. It feels kind of extraneous.

-I've considered velocity shear because it shows the impact of Ekman transport in the upper layer and because it is part of the assignment. It may not be entirely relevant but I think it would be better to keep it.

**Is it the mass balance or the ITF that may be affected by climate change? How?

--Both the mass balance and the ITF could be affected by climate change. This is now addressed in the conclusion.

5. Canvas Tips

We will be using Canvas to aid in the peer reviewing process. After assignments are turned in, you will be able to access those to which you are assigned to review. You can click to see the uploaded pdf. You can add text, upload files, etc., on the right hand side of the window. PLEASE DO NOT ATTACH .doc or .pdf FILES FILLED WITH PLAIN TEXT. *Cut and paste plain text into the comment boxes instead.* You can also add comments to markup particular locations in the text you are reviewing. With a little experimentation, you will see how this works. When you are done with your review, you can submit it. Once you submit, I don't think you can go back and see it again. See the example figure below for the layout of some typical reviews. See how the plain text is displayed on the right and the markups are displayed within the document.

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Submission Details

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2 of 21

Comment Draw Highlight Text Strikeout

of the error of Sverdrup transport estimates of WBC transport at different latitudes and their components (given) actually doesn't indicate a greater amount of error when applied across Madagascar. Both errors are still substantial at 10 to 40 Sv, depending on the season. Still, reduction of the island circulation might improve Sverdrup estimates at that latitude. One piece of evidence supporting this claim is the reliability of thermal wind in predicting vertical shear in meridional velocity, which is also based on the geostrophic approximation. The correlation of vertical shear and thermal wind is used for tracks drawn across Madagascar as seen in figure 4. Godfrey (1989) [1] introduced simple approximations consistent with the Bjornell model which will be used to estimate island circulation in this work, hopefully improving estimates of WBC transport.

II. THEORY AND METHODS

For oceanic flows away from the equator, Sverdrup transport, the combination of geostrophic and Ekman flows, is often a good approximation of basin circulation away from the western boundary currents (WBC). The meridional Sverdrup transport is given by:

$$V_s = \frac{g}{\rho_0 f} \frac{\partial \bar{\sigma}_\theta}{\partial y} \quad (1)$$

The thermal wind in the meridional direction can be written:

$$\frac{\partial \bar{v}}{\partial z} = \frac{g}{f \rho_0} \frac{\partial \bar{\sigma}_\theta}{\partial y} \quad (2)$$

where \bar{v} is the meridional velocity, $\bar{\sigma}_\theta$ is the buoyancy, g is the acceleration of gravity at Earth's surface, ρ_0 is density, and f is the Coriolis parameter. The density was computed from salinity and temperature data using the CDBV oceanic toolbox [2]. pressure variations were assumed to be hydrostatic.

An approximate measure of the circulation around islands was introduced by Godfrey (1989)

FIG. 2. Monthly variability in re-surface height (Sv) across the Indian Ocean at 25°S.

Grade: [] [] []

out of 10

Title: Sverdrup Transport in the Southern Indian Ocean

Author: [redacted]

Review: B2

Summary: Using data from the ECCOv4 simulation of MITgcm, the author estimated Sverdrup transport in the Southern Indian ocean, specifically the circulation around Madagascar. The monthly Sverdrup transport calculated by integration across a zonal transect was compared with the "Island Rule" calculation established in preexisting literature. The author found that the model calculation deviated significantly from the Island Rule prediction. It is unclear what caused this strong disagreement, but the author suggests it may result from model resolution or incorrect integration bounds.

Strengths:

- Nice plots
- Good description of the Island Rule equation. Also, a cool idea to compare model data to the Island Rule calculation.

Major Problems:

- I found it very difficult to follow some parts of the paper simply from having no diagram to reference for where currents are and how they relate to each other.
- The correlation coefficient seems out of place in the paper. You talk about the results of the analysis briefly in the introduction, before the equation has been defined, and then it isn't mentioned again. I think the paper would be stronger either without the correlation coefficient, or with a more detailed description/analysis of the findings (placed after the theory section).

Minor Problems:

- Some typos, including an incorrect equation

Overall: You asked some interesting questions related to your findings, but

FIGURE 1. Example Peer Reviews in Canvas