FORUM

More on Anonymous Reviews

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Reading the ongoing correspondence in *Eos*, I would propose that the difficulty lies in the dual nature of the reviewing process. The first stage asks, is the work worth publishing? The second asks, is the paper as submitted worthy of the work done? The dilemma is that the requirements for anonymity are different for the two functions.

Like most of the correspondents in *Eos*, I feel that the evaluation of the merit of the work must remain anonymous. Personally, I prefer it to be "double blind," in which the author of the paper is not revealed, although it is often not hard to guess. That way I can give the material the fairest possible treatment.

However, the detailed review of the presentation and the material could be a more two-way process, between author and reviewer, with the editor acting as judge. Here, the external reviewer can make a real contribution that should then be acknowledged at the publication stage. In some instances, the process becomes so interactive that the reviewer becomes an additional author of the paper. The danger of this stage is, of course, that authors can become sloppy, leaving work to the external reviewer. It must remain the privilege of the reviewer to decline to work on a paper that, no matter how good the work, is just plain poorly presented.

It would be possible, but cumbersome, for this process to be carried out anonymously through the editor, with the names revealed when the review process is over. The authors should then acknowledge the contribution of the reviewers and editors. It would make much of the process more transparent, and help the development of the science, if the published document were to routinely name the reviewers.

The two phases of reviewing, the initial evaluation and the detailed discussion of content and presentation, thus have different requirements for anonymity, and the root of the current debate is the confusion of the two roles in the current system of single-stage reviewing. The initial evaluation is particularly important, but should not be enormously onerous, and it should remain within the current anonymity conventions. The second stage should be much more of a dialogue than a confrontation, and requires a lot of effort on behalf of both reviewer and the editor. Attributing this process to those who put in the effort would do much to make the effort visible and, in these bean-counting days, carry some element of reward for those who put in the time.

Lastly, the overall guiding principle must be that of personal integrity. The duty of all authors, editors, and reviewers is to advance their science; this requires constant vigilance, hard work, and the highest personal standards of integrity. Those who have done so in the past deserve our thanks and perhaps more credit than they have received in the past. Those who continue to do so in the future should receive more immediate personal credit, which can be given only if the cloak of anonymity is lifted.

—ADRIAN ARMSTRONG, Entec U.K., Bristol, U.K.

A Code of Ethics for Referees?

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I have read with interest the many letters commenting on the pros and cons of anonymity for referees. While I sympathize with writers who have suffered from referees who are incompetent or uncivil, I also sympathize with those who argue that one would simply exchange one set of problems for another if journals were to require that all referees waive anonymity.

Perhaps there is a more direct way to address the issue. It may help if guidelines for referees were to include a code of ethics. Personally, I would like to see each referee subscribe to the following:

- I will treat each article with the same care and respect that I would wish to have accorded to my own articles.
- I will withdraw from reviewing an article if I find that I do not have the necessary background and interest.
- I will identify what there is in each article that would be interesting and useful to readers, and then—if necessary—try to help the author present that material more effectively.
- If I have valid criticisms to make, I will be specific, clear, and polite.
- If I believe that some result has already been published, I will give at least one relevant citation.

Editor's Note: see AGU's Guidelines to Publication of Geophysical Research: www.agu.org/pubs/pubs_guidelines.html.

—PETER A. STURROCK, Stanford University, Calif.

Young Solid Earth Researchers of the World Unite!

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In early January 2004, one of us attended a workshop on "science priorities and educational opportunities that can be addressed using ocean observatories." The attendees constituted a broad group—men and women, scientists, engineers, educators, representatives from the private and public sector—but lacked diversity in at least one important aspect: age.

A well-known marine geophysicist (with a published record stretching over 30 years) came to me at the ice-breaker party and said (and I paraphrase): "I'm glad you're here: you're young, you might actually see this project flourish before you retire. There're not enough young people here." At some point or another, every young scientist may have a similar experience.

However many hours one spends in solitary confinement in the lab or behind a desk, science is fundamentally a social activity. Community-building needs to happen early on in the career of a young researcher. Meetings like the popular AGU Fall Meeting are often too massive to get to know many new colleagues. More focused meetings like the Gordon Conferences tend to attract senior scientists first, not only in attendance, but in meeting-room dominance as well. Young oceanographers and atmospheric chemists are the lucky ones; with the Physical Oceanography Dissertation Symposium (PODS) and Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESS), they have a forum focused on recent Ph.D.s.

However, the Meeting of Young Researchers in the Earth Sciences initiative (MYRES) attempts to provide a similar framework in the solid Earth sections of AGU.

Here's how the recently funded proposed activity works, and how you—young solid Earth geoscientist—can benefit from it. The MYRES "manifesto" lists its aim as "to further science by accelerating the growth of an interdisciplinary, international, open, and unbiased community of colleagues who interact regularly to informally exchange ideas, data, and tools, and formulate new collaborative research projects." A biennial conference series for junior scientists in geochemistry, geodynamics, mineral physics, seismology, and related solid Earth fields is the first step. The first MYRES conference will be held 12–15 August 2004 in La Jolla, Calif., and will focus on the topic, "Heat, Helium and Whole Mantle Convection." The meeting will be small, with fewer than 100 attendees selected on the basis of a brief statement. Almost all travel and lodging costs will be provided by the U.S. National Science Foundation.

At a MYRES meeting, young specialists will educate each other about the issues each of their disciplines can address in the format of a summer school. What you should hope to gain from this is a broader understanding,

new ideas for your own specialized research, and new multidisciplinary research initiatives. The workshops are targeted specifically, but not exclusively, to the "younger" members of the community, whatever their age, from senior graduate students to junior faculty. Hence, an environment will be created in which fundamental problems such as mantle plumes or the cause of the K/T mass extinction, assumptions, and paradigms can be openly discussed without submitting to entrenched views. Peer-reviewed keynote lectures by junior faculty or senior post-docs will provide an overview of the current state of a sub-discipline, the key assumptions inherent therein, and the degree to which constraints should be considered "hard" or "soft."

The special environment that MYRES will provide and its grass-roots approach will relax some of the limitations and obstacles to cross-departmental interaction of junior scholars that may exist; not least, by supporting conference fees and travel support for all students. Beyond the individual meetings, the MYRES Web site will provide free access to all instructional material and serve as a community resource year-round.

After its first meeting, the focus of each subsequent MYRES conference (if it continues to be funded) will be to review and discuss another major outstanding problem in Earth science. Each MYRES will be organized by two chairs having a two-meeting tenure; they will decide on the meeting's theme and topics, and will—and this is important—be in charge of promoting MYRES' spirit and adhering to the ideas set forth in the MYRES proposal. Meeting chairs will not convene sessions, but will pick discussion leaders from different disciplines for each day. With their specialist knowledge, these conveners can then either select keynote speakers or give the review lectures themselves.

The first MYRES meeting will have a deep Earth theme, as outlined above, but the scientific focus for each conference will be chosen anew from within the range of issues arising in the solid Earth sciences. Although the topic of each MYRES meeting will have to be sufficiently interdisciplinary and be of general importance to draw a wide range of attendees, it should also be sufficiently focused so that a comprehensive exploration of the constraints and issues at stake can be achieved in just a few days. A fully democratic process with unrestricted submission of conference proposals and a voting scheme after the initial two MYRES meetings will be established. Following the initial deep Earth meeting, the second MYRES—funding permitting—will focus on a crustal dynamics/plate boundary theme, to make sure that the initial two conferences reach as wide a cross-section of the solid Earth community as possible.

MYRES is not intended to replace "traditional" or "professional" conferences; all of us recognize the need for young researchers to defend their ideas before a senior audience. We believe, however, that there is significant scientific, educational, and cultural value in a self-organized gathering of young scientists sharing ideas and challenging dogma.

Solid Earth science won't be what it used to be once MYRES gains momentum through your participation. Go to www.myres.org for more information or to www.myres.org/myres1 to sign up.

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Error Made in Reports of Main Field Decay

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A special session, "Decay of the Main Field," was held at the AGU Fall Meeting in San Francisco, California, 11 December 2003. Two of the presentation topics were the recent main dipole field decay indicated by the International Geomagnetic Field (IGRF) representation and the unique properties of the second and third field harmonics obtained from the IGRF. The Earth's dipole field is certainly decaying, but neither at the strength nor rate announced at the AGU meeting. And the higher harmonics of the IGRF are especially important for any calculation of the expected magnetic field at a location on the Earth's surface, but only for that purpose. The large second and third field harmonics mainly arise because of the offset of the Earth's main dipole field from the geographical center.

The IGRF (and similar field representations such as the World Magnetic Model) arises from a spherical harmonic analysis (SHA) that is Earth-centered for computational convenience, producing values for the dipole and higher multi-pole harmonics (Gauss coefficients). The selection of an analysis center for the SHA is unimportant for full representation of the field only when all of the computed coefficients are employed in a field computation. Each IGRF spherical polynomial set does not have a special, isolated importance. A different, and equally valid, collection of coefficients can be obtained for each analysis center point that can be chosen.

That the Earth-centered selection is an arbitrary artifact introduced by the analyzer should be realized from the fact that the IGRF dipole components provide a geographically symmetric location for the north and south magnetic pole positions when, in fact, they are truly considerably asymmetrically located on the Earth's surface. Only one SHA provides the correct dipole coefficients for determining the "Decay of the Main Field"—the one centered on the eccentric dipole location that is determined by a computational process of choosing the best analysis center that minimizes the higher-than-dipole coefficients.

The true Earth's field dipole center is located far from the Earth's geographical center. This dipole is tilted to the Earth's spin axis [*Cole*, 1963; *Fraser-Smith*, 1987] and produces the asymmetric geographic locations of the north and south geomagnetic poles. If this eccentric dipole were the only internal Earth field, then an SHA analysis carried out about its eccentric axis center would produce only dipole coefficients and no higher multi-pole harmonics. When this singular eccentric dipole is analyzed by a SHA that is Earth-centered (such as the IGRF), the SHA necessarily requires the production of higher harmonics, particularly the second and third, in order to adequately represent the field from this unfavorable analysis position.

The values of the Earth's dipole moment decay over time, which were reported at the AGU meeting, are contaminated by the gradual change of the size and location of the eccentric axis dipole. It is the decay of this eccentric axis dipole moment that should have been reported. Also, the assignment of special isolated source locations for the IGRF second and third multi-pole harmonics that was presented at the AGU meeting is in error. These coefficient values are large mainly because of the physical offset of the eccentrically located Earth's dipole field.

AGU scientists have an obligation to report to the public their best representations of our environment, not values distorted by arbitrary selections in the analyzing technique. The problem is discussed in most elementary textbooks on the Earth's magnetic field and the spherical harmonic analysis technique [e.g., *Campbell*, 2003].

References

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