# Open Access Opportunities in the Geosciences: "Green OA"

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# OPEN ACCESS OPPORTUNITIES IN THE GEOSCIENCES: "GREEN OA"

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*Abstract* - Changes in the field of publishing and in scholarly communication have been impacting the distribution of scientific knowledge for years. The economics of publishing continues to have an impact on subscribers' ability to maintain access and therefore the readership of established publications may diminish or look for legitimate alternatives to gain access.

For an audience of both scientists and librarians, this poster session will provide an overview of Green Open Access (OA) in the Geosciences. Green Open Access provides an opportunity to balance a scholar's need to publish in respected journals with the importance of widespread distribution of research. Authors, publishers, and repository managers can work together to ensure widespread access to high quality research. The author will describe "Green OA" vs. "Gold OA", highlighting opportunities that are available to many authors through institutional and in some cases subject repositories, and review publishers and their associated high-impact journals for their support of Green Open Access.

## OPEN ACCESS

Open Access (OA) refers to scholarly literature which is "digital, online, free of charge, and free of most copyright licensing restrictions" (Suber, 2007). The philosophy behind OA is that research should be made free and available to anyone with an interest rather than locked up behind subscriptions at academic and other research institutions. The widespread use of the internet makes OA feasible.

### Gold Open Access

There are two main methods by which research might become freely available. Either journals themselves can be open access or individual publications (articles) can be made freely available.

In order for journals to be considered an OA title, they must make all their content freely available online without requiring the author to pay an additional fee to make their article freely accessible. There are many income models by which a journal can be financially viable as an OA title (see Crow, 2009, for a description of income models). Some well known examples of OA journals are the PLoS publications (http://www.plos.org/) which have a strong biological science focus. In geosciences, the Directory of Open Access Journals (DOAJ, 2010) includes approximately 130 journal titles (de-duplicated) in the categories of earth sciences, geography, geology, and geophysics and geomagnetism.

### Green Open Access

Green open access is achieved when the author posts their work online – typically placed into a subject or institutional repository ("self-archiving"). In order to do this legitimately and without worry of infringing on the publisher's copyright, an author must carefully review (and make necessary changes to) their Copyright Transfer Agreement (CTA) before they sign it. In some instances, the author may find the publisher has a favorable view of self-archiving and allows one or more versions of the work to be posted online. However, some publishers do not allow self-archiving or only allow the un-refereed version ("pre-print") of the article

to be posted by the author. For obvious reasons, it is best for authors and the readers if-- at the very least-- the author's final accepted (peer-reviewed) version of the article is posted (referred to as "post-print" hereafter). In addition, it is relatively rare that publishers will allow the final PDF to be posted online by the author. In order to post the most authoritative version, authors may need to ask the publisher for more rights to their own work than originally offered in the CTA.

"Authors rights" refers to much more than just self-archiving and may include re-use of publications in future works, distribution of the work to students for teaching purposes, and development of derivative works. For the purposes of this article, the focus is on self-archiving – one method of achieving open access.

**Honing negotiation skills**

When a work is accepted for publication in a journal, the author is typically asked to sign the CTA or similarly named form. The main purposes of the form are to assure the publisher that they have permission to publish the work, can protect it from copyright infringement (Gadd, Oppenheim & Probets, 2003), and can protect their own investment of time and resources in the work. Frequently, however publishers will ask for more rights than they need by requesting complete transfer of copyright and/or an exclusive license.

Hence, making an article "green" often requires that authors negotiate for rights they are not offered by the publisher. Often authors do not realize they can amend the agreement with the publisher – or at least attempt to do so through negotiation.

Authors can opt to use an addendum to make changes to the publisher's CTA. There are several available addenda online including those from the Scholarly Publishing and Academic Research Coalition (SPARC, n.d.), Science Commons (n.d.), and the Committee on Institutional Cooperation (CIC, 2008). The addenda from SPARC, the Science Commons, and CIC all include the author's right to "use, reproduce, distribute, and create derivative works" as well as the right to make the final version of the article (publisher's PDF, with typesetting) available to others through an institutional or subject repository or the author's own website. Variations in how soon the final formatted version is made available exist between the addenda (e.g. the CIC requests permission to post the PDF six months after publication).

Once an author sends an addendum to the publisher, the publisher may respond in a variety of ways – from acceptance of the addendum as-is, to acceptance of some variation of the requests, or flat out rejection. At this point the author must weigh the importance of having the article published in the journal in question against his or her desire to retain rights to their works. Only the author(s) can judge effectively and make decisions that will best support his or her professional needs.

**Options for posting works online**

Once an author has ensured they have the right to post their work online, they may choose do so through their own personal, university, or organization website. However, institutional and subject repositories are superior to these webpages for two important reasons. First, many repositories use the Open Archives Initiative (OAI) (Suber, 2007) protocol which allows internet search engines to find the contents contained within. In addition, for many repository managers, the goal is not just to post the work, but rather to preserve the research and therefore ensure long-term access.

There are many repositories in existence. A search of *Open*DOAR (Directory of Open Access Repositories, 2010) reveals that there are 262 institutional repositories in the United States, many of which are affiliated with academic institutions, this number increases substantially to 1284 when searching for institutional repositories worldwide. Likewise there are 77 subject based or disciplinary repositories listed for the United States and 207 worldwide. There are few repositories listed as specializing in earth and planetary sciences (12 in the U.S., and 28 worldwide). However, since institutional repositories focus on the research of the institution, geoscientists at universities, colleges, and other organizations with repositories would likely find their work is welcome there.

**How 'Green' are Geoscience Publishers?**

Some of the major publishers of geoscience titles are supportive of self-archiving and some less so. Although generalizations can be made about a publisher's support of self-archiving, authors should always refer to the CTA they receive from the publisher.

Caveats aside, the SHERPA/RoMEO database of "Publisher copyright policies & self-archiving" (2010) provides a breakdown of the nuances of the different self- archiving conditions and restrictions and often a link to an example CTA from the publisher. The SHERPA/RoMEO database also presents an expanded color-coding for journals that describes the self-archiving rights allowed. In addition to 'green' publishers (post-print and pre-print can be archived), 'blue' publishers allow archiving of the post-print only, 'yellow' publishers only allow archiving of the pre-print, and 'white' publishers do not allow any type of archiving.

Examples of the level of support for self-archiving are below in Table 1. This table compiles publishers and their highly ranked titles from *JCR*'s "Geosciences, Multidisciplinary" category (top ten titles), with data from the SHERPA/RoMEO database. When looking at these titles one can see that several of the well-known publishers of geosciences titles do support self-archiving (without the author having to act further).

Table 1: *Journal Citation Reports* category "Geosciences, Multidisciplinary" (2008) journals arranged by publisher, with level of self-archiving

| **Publisher** | **Titles** (***with impact factor from*** **JCR**) | **Self-archiving level allowed** (**from SHERPA/RoMEO database**) |
|---|---|---|
| American Geophysical Union (AGU) | • *Global Biogeochemical Cycles* (4.09)<br>• *Paleoceanography* (3.626) | can archive pre-print and post-print, subject to some restrictions, publisher's PDF can be used (Green) |
| Annual Reviews | • *Annual Review of Earth & Planetary Sciences* (6.364) | can archive pre-print and post-print, not publisher's PDF (Green) |
| Elsevier | • *Earth-Science Reviews* (6.558)<br>• *Geotextiles & Geomembranes* (3.701)<br>• *Gondwana Research* (3.728)<br>• *Precambrian Research* (3.736)<br>• *Quaternary Science Reviews* (3.693) | can archive pre-print and post-print, not publisher's PDF (Green) |
| Wiley Blackwell | • *Geobiology* (3.596) | can archive pre-print only (Yellow) |
| Copernicus Publications | • *Biogeosciences* (3.445) | can archive pre-print and post-print, check with publisher regarding use of PDF (Green) note: This an Open Access journal |

## Why Go "Green"

Readers may be asking themselves why authors would want to go to all of this trouble. There are a couple of reasons to explore briefly. One relates to an author's likely desire to have an impact in their field and therefore demonstrate the relevance and importance of their work through the number of their peers that cite the work. The second reason is that going "green" promotes improved access to journal articles, which supports the greater good of research, researchers, and the public.

Many studies have addressed the aspects of how OA affects citations. This brief synopsis highlights just two such studies. Norris, Oppenheim, and Rowland (2008) looked at the literature of several subject areas (ecology, economics, applied mathematics, and sociology) in order to determine if there was "an OA citation advantage from articles published in a range of high-impact journals" (pg. 1965). They found that the OA citation advantage ranged as high as 88 percent for sociology to a low of 44 percent for Ecology. Overall they found that there was "a statistically significant difference in the mean number of citations that OA articles received when compared to [toll access] articles" (pg. 1969).

In another study, which also reviewed four subject areas (philosophy, political science, electrical and electronic engineering, and mathematics), Antelman (2004) found that OA articles from the four disciplines studied "have a greater research impact" (pg. 374) than those that are not. Increases in citations rates ranged from 45 percent for philosophy to 91 percent for mathematics.

Authors may be motivated by a sense of obligation to make their works available as well. For example, in a survey of faculty at 17 research institutions, Kim (2008) found that some authors who had been positively influenced by the "ease of access to OA materials in return wanted to self-archive their research" and others "felt obligated to make their research publicly accessible on the Internet because their research was funded by taxpayer money, or they worked in public universities" (pg. 219). Other authors may be motivated by the messages they have been hearing for years from librarians about the "serials crisis" and reductions in the journal subscriptions available from the libraries at their own institutions.

## CONCLUSION

Authors can work to make research published in traditional, respected (high impact) journals freely available via the model of green open access and many publishers are supportive of authors doing so. However, authors should always carefully read the copyright transfer agreements they sign and make requests for changes to the rights offered as needed. There is support for making these changes and posting works online including a variety of author addenda and the availability of institutional repositories. Authors may be encouraged to take on the work required to retain their rights for reasons of both self-interest and making the research available to a wider audience.

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