

FASTER, CHEAPER, AND MORE NIMBLE

Improvements and Innovations in Publishing AMS Journals

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A primary—and prominent—responsibility of the American Meteorological Society (AMS) has always been to disseminate scholarly research through enduring, high-quality, peer-reviewed publications. The process by which this responsibility has been fulfilled, however, has changed remarkably, and no more so than in recent years. By keeping pace with the rapid technological changes in publishing, AMS has, in a very short period of time, significantly increased speed and efficiency, reduced cost, and improved access to research results. These improvements include eliminating color figure charges for most authors, nearly halving the time it takes editors to render initial decisions on submissions, and more than halving the time from accepting to publishing a paper.

The rapid advancements AMS has made in its publication process have been motivated by, and in turn have fostered, sustained growth and prestige. With a record 3,022 articles submitted in 2013, AMS journals experienced a sixth consecutive year of growth in submissions (Fig. 1). This represents a 26% increase over 2007 and a 48% increase over 2002. Submissions increased across the suite of journals, with the greatest growth in the *Journal of Climate* (*JCLI*). In terms of Thompson Reuters Institute for Scientific Information (ISI) Impact Factor ranking (based on

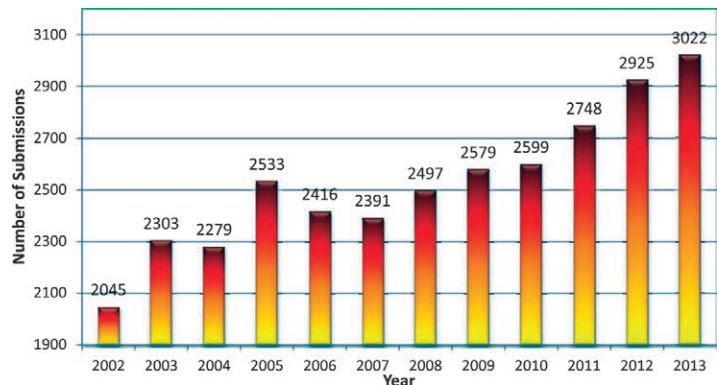


FIG. 1. Growth in article submissions to AMS scholarly journals (excluding *Earth Interactions*, a joint online publication with the American Geophysical Union and the Association of American Geographers).

citation counts), *BAMS* has been the top AMS journal for the past 5 years and the top journal in the entire atmospheric sciences category for 3 of the 5 years between 2008 and 2012. Several AMS journals consistently ranked in the top 20 of atmospheric science journals during the 5-year period, with 3 in the top 10. AMS journals are also consistently ranked highly in Immediacy Index and Influence Score and have a long history of publishing seminal research results that are cited for decades (half the citations in a given year are to articles at least 10 years old).

IMPROVEMENTS TO THE PEER-REVIEW PROCESS. Starting in the early 2000s, the AMS Publications Commission put considerable emphasis on educating new editors about the importance of making timely first editorial decisions. Surveys of authors at that time showed that the long time to first editorial decision was the most important cause of author dissatisfaction with AMS journals. This education campaign succeeded in reducing the average time to first decision to around 75 days in 2010, from a high of more than 110 days in 2002 (Fig. 2).

This average dropped further to 65 days with the adoption of the Aries Systems Editorial Manager (EM) in 2010. AMS peer review prior to that time was supported by an internally designed editorial

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management system that had limited functionality and was difficult to update. By contrast, Aries supports workflow management for more than 200 scholarly societies and 5,000 journals. EM allows editors to access reviewer and author databases, more effectively communicate with authors and reviewers, and provide instant notifications of actions associated with the review process. Authors can now easily track the progress of their paper with a single tracking number from submission to final disposition (i.e., rejection or publication). Through EM, reviewers upload their reviews via an easy-to-use web-based platform that is consistent across all AMS journals. The AMS staff has worked closely with Aries and within the EM to develop an efficient system for managing peer review.

A second major change has been the consolidation and centralization of peer-review support. In the past, each chief editor or editor was supported by a salaried part-time editorial assistant, typically located at the editor's home institution. The cost of editorial assistant support was directly tied to the number of editors and thus limited the number of editors the AMS could budget for any specific journal. The AMS had to train and manage more than 30 individuals scattered across 20 states and multiple countries. With each appointment of a new editor, a new assistant had to be trained.

Beginning in 2006, some editorial assistants were assigned to support multiple editors. This consolidation accelerated in 2011, and as of 2013 all peer-review support staff were full-time AMS employees. The streamlined staff now consists of a peer-review support manager and coordinator and eight peer-review support assistants (PRSAs) and associates.

Each new editor is assigned a PRSA who provides support throughout the editor's term, enabling the PRSA to accommodate the working styles of the individual editors. Each PRSA can support eight or more editors.

These changes have helped expedite the review process in several ways: First, as there is no longer a financial limitation on the number of editors, more editors covering specific disciplines have been added, and the workload of these volunteer editors has been reduced. Second, as PRSAs work full time, they can efficiently keep up with changes in procedures and technologies and apply this knowledge for the benefit of their editors. Third, now that PRSA staff does not turn over when chief editors and editors retire, the training and experience each PRSA acquires is maintained for incoming chiefs and editors. Fourth, the PRSA staff workload can now be adjusted so that manuscript workflow can be more easily managed in high-volume periods, such as the arrival of articles associated with special collections, or article submission deadlines associated with reports such as the Intergovernmental Panel on Climate Change (IPCC). Finally, as part of a team dedicated to the careful and expeditious processing of manuscripts, PRSAs continuously share information and collaborate, helping ensure consistency in author and reviewer experiences from editor to editor and journal to journal.

A third major change in the peer-review process was implemented in 2010 with the introduction of a new article category called expedited contributions (ECs). The twin goals of ECs were to reduce the time from submission to publication of shorter contributions and to encourage authors to develop shorter and more concise papers. The ECs are limited to 2,500 words and a combined total of 6 figures and tables. For ECs, the editor expedites the review process and the AMS Publications Department accelerates production so that the publication appears more quickly in final form. To remain an EC, papers must be recommended for no more than minor revisions and authors are expected to complete revisions within 4 weeks. The AMS goal is to publish expedited contributions 10–12 weeks after final acceptance. In 2013, approximately 7% of all submissions started as ECs. Of these, about 35% remained as ECs, 24% were converted to regular articles, and 42% were rejected. The rejection rate of ECs

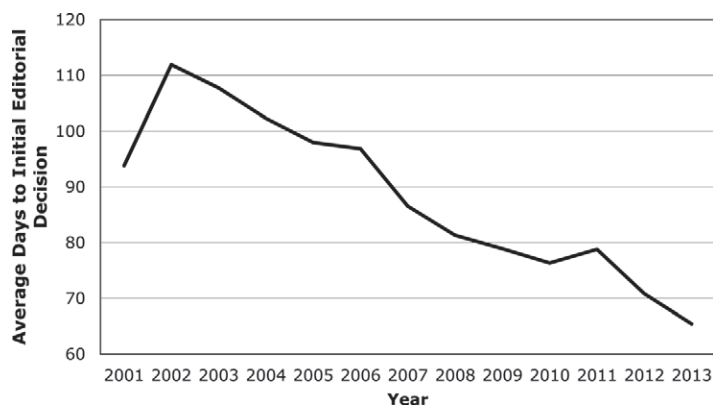


FIG. 2. AMS-wide trend in time (days) to first decision on all articles.

is slightly higher than that of all AMS submissions (33%). The average time to initial decision for ECs was 40 days, and the average time to final decision was 63 days. This contrasts with an average time to initial decision for all articles of ~67 days and an average time to final decision of ~159 days at that time. Thus, overall, the expedited contribution concept has been working well. (More specific information about ECs can be found on individual journal websites, such as www2.ametsoc.org/ams/index.cfm/publications/journals/journal-of-climate/.)

A fourth major change was the establishment of a team of specialists in the Publications Department responsible for checking the completeness of each submitted and revised manuscript—ensuring, for example, that all coauthors verify their inclusion on the paper, that all required manuscript elements are included, and that the format conforms to AMS requirements and is standardized for ease of review. Prior to the centralization of manuscript qualification at AMS headquarters, the journal chief editor offices performed this function, often with uneven performance between journals. The current, standardized application of formatting requirements set forth by the Publications Commission, such as line numbering, spacing, figure captions, and font size specifications, has significantly streamlined the review process.

A final major change to the peer-review process has been the introduction of CrossCheck/iThenticate, which performs an online comparison that shows how similar a manuscript is to existing publications. Integrated into AMS's EM tracking system, CrossCheck helps to streamline the peer-review process by assisting chief editors and editors in determining whether there are potential issues with self-similarity to an author's past work, or outright plagiarism of others' work, before the paper is sent out for review. CrossCheck will be fully implemented across all AMS journals in 2014.

AN IMPROVED PRODUCTION PROCESS.

AMS journals accept about 2,000 articles per year for publication. Amid this high volume, each article must undergo a rigorous, complex process, which involves an automated preediting step (language and formatting standardization), copy editing, technical editing, typesetting, author review of proofs, AMS review of corrected proofs, assignment to an issue, and transfer of content to the printer and online host. Unlike many scientific publishers, the AMS has in-house copy and

THE AMS PUBLICATIONS ENTERPRISE

The AMS Publications enterprise consists of professional staff (copy editors, technical editors, production specialists, and peer-review support associates) and a large team of volunteers: the chair of the BAMS Editorial Board and 22 BAMS subject-matter editors; the 11 chief editors, 66 editors, and 210 associate editors of the 10 technical scientific journals; the chief editor of the *Glossary of Meteorology*; and two monograph editors. At any given time, well over 1,000 volunteers from the research community are reviewing papers submitted to the AMS journals and BAMS.

technical editors. Copy editors correct grammar and syntax, edit for clarity and consistency, enforce house style, and check the accuracy and format of references. Technical editors—most of whom hold doctoral degrees in the atmospheric/oceanic sciences or related fields—ensure figure quality, check equations for accuracy, and preserve the authors' meaning throughout the editing process. The technical editors are also responsible for the assignment and arrangement of articles in the issues.

Upholding this thoroughness while reducing production time—the number of days from editor acceptance following peer review to the appearance of the final article online—continues to be of paramount importance. Average production time has decreased from of a high of 269 days in January of 2008 to 119 days in January of 2014, a reduction of 55% despite a 27% increase in the number of published pages during the same period (Fig. 3). Production time for expedited contributions has varied, but is currently 35 days shorter than for regular contributions. These dramatic production improvements reflect ongoing workflow optimization, which will continue to decrease production time in the foreseeable future.

Workflow optimization has been enabled in large part by the transformation of publishing over the past 20 years from a heavily paper-based process to the current, entirely electronic process. AMS taps new technologies and ideas to streamline production. For example, employing the Aries Systems ProduXion Manager (PM) software (a companion to the Aries EM software used by editors and reviewers) has reduced the steps involved in the copy- and technical-editing process. The use of EM/PM in an all-electronic process allows authors to more easily submit manuscripts and

follow the progress of their paper in peer review and production. Reviewers similarly benefit from electronic dissemination of manuscripts and reviews.

Recent enhancements for authors include electronic proofs and significantly improved handling of various file formats, particularly LaTeX. Approximately 40% of submissions arrive in LaTeX format. AMS provides authors with a LaTeX template (www.ametsoc.org/PUBSLaTeX) that follows formatting requirements for submitting the manuscript, entering biographical information, and producing a two-column, journal-style layout for authors' personal use. In early 2014, the AMS made an important improvement to the template, providing increased ease of use for authors.

The AMS also now has a support team devoted to aiding LaTeX authors. Authors can contact the support team at latex@ametsoc.org. Issues are typically resolved within 24 hours. The EM/PM system fully supports LaTeX submission, building a PDF directly from LaTeX source files the author uploads.

One of the most significant benefits of improved production technology has been the improved efficiency of color processing. The elimination of color charges has long been a high priority of the Publications Commission, and, as announced in April 2013, supplemental charges for color illustrations were eliminated for authors paying page charges in full. This new policy enables all authors to convey their scientific results in a visually compelling manner. Color charges were eliminated in part by raising prices for print subscriptions (The AMS Council continues to require that the print

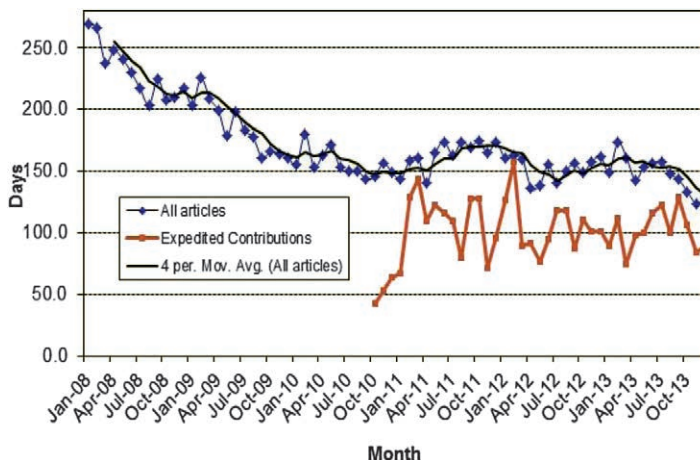


FIG. 3. Trend in production time for AMS technical journals.

and online versions of AMS journals not diverge in quality or content.)

To keep authors, editors, and reviewers current with such rapid changes, a newly designed publications section of the AMS website (www2.ametsoc.org/ams/index.cfm/publications/) debuted in 2013. The site enhanced navigation and continually expands and updates information. Now, a one-stop page with an improved interface describes all of the steps involved in publishing articles with the AMS (www2.ametsoc.org/ams/index.cfm/publications/authors/journal-and-bams-authors).

FASTER, WIDER DISSEMINATION. The move to all-electronic production processing yielded a major improvement in that accepted manuscripts were made available to readers more rapidly. The AMS began Early Online Release (EOR) in 2010. With permission of authors, EOR makes the final accepted PDF of the manuscript available online with a final digital object identifier (DOI) within 7–10 days of acceptance. Upon publication, the manuscript PDF is replaced by the final article.

In the late 1990s, AMS was one of the first publishers to provide access to published articles online, and a significant majority of readers favor receiving content this way. The advent of mobile devices further transforms publishing. The BAMS Digital Edition allows AMS members access on desktops and via iPhone/iPad apps (with a current priority to launch apps for other devices). A recent update of the Digital Edition allows page design to conform to the reader's device and the orientation at which it is

PAGE-CHARGE WAIVER PROGRAM

The vast majority of AMS authors consistently pay full page charges to publish their work. The current charge for AMS technical journals is \$145 per page. AMS established a formal page-waiver process in 2009 to assist authors with severely constrained budgets. Partial or full-cost waivers are considered on a case-by-case basis at submission time. The waiver program is consistent with the AMS mission to publish worthy scientific research results, even from authors with limited financial resources.

TABLE 1. The reduction in production time and author charges associated with a 16-page paper with 4 color figures (i.e., the “average paper”).

	2008	2014	Change
Production time (days)	269	99	–63%
Cost to author(s)	\$3,620	\$2,320	–36%

held. The *BAMS* Digital Edition also allows authors to enhance their articles with animated content. The recently launched mobile version of AMS Journals Online (<http://journals.ametsoc.org/>) optimizes access to AMS technical journals on iPhone, Android, or Blackberry smartphones. Tablet users may also prefer the mobile site, which has unique features that enhance the reading experience (see the user guide for more information at http://journals.ametsoc.org/userimages/ContentEditor/1347551282959/AMS_Mobile_User_Guide.pdf).

Improved handling of special issues is another benefit of online publishing (as well as the new production process). Previously, when articles about a common theme were grouped for the same issue of a journal, some articles had to be delayed until the last (slowest) paper in the special issue was accepted and cleared production. Now the articles in a themed group are published individually as soon as they are ready but are gathered online as a special collection. This allows more production flexibility, and articles from any AMS journal can be included in the special collection. Furthermore, articles can be added to special collections over the years. Research does not have to be rushed to publication and organizers can include papers published even before the special collection was conceived. Each special collection web page describes the project or theme, lists the organizers, includes a logo if one exists, and links to all of the articles in the collection. Organizers also may fund a special print run of the collection if they want a hard copy.

Online technology has also significantly changed the *Glossary of Meteorology*, which now uses a “wiki-like” paradigm (http://glossary.ametsoc.org/wiki/Main_Page) where readers can provide suggestions for improvements and new terms, which are subsequently peer reviewed.

To keep pace with expanding online features and usage, the AMS Journals Online site (<http://journals.ametsoc.org>) is scheduled to launch a redesign in

late 2014. Although the site has continually improved over the years, the redesign will significantly enhance navigation and article presentation, plus add content and new features such as quantitative measures of reader interest in individual articles.

ARTICLE-BASED PUBLISHING. AMS is moving toward another significant reduction in production time and enhancement in reader access by adopting a true publish-ahead-of-print model. Articles will be published online as production is completed, rather than waiting for the rest of the articles in an issue to be processed. The articles thus will be sequentially added to a “virtual issue” online. The print version of the issue, which takes more time, will be generated after all articles in the issue have been posted online. The AMS is working closely with our production tracking, compositor, and online hosting vendors to implement this new workflow by the end of 2014.

Article-based publishing is yet another way in which AMS is continually improving how authors and readers experience the timely publication of high-quality scholarly research results. In the process, AMS publications will continue to implement new and emerging technologies as we pay particular attention to controlling costs. We look forward to serving current authors and welcoming new authors to the growing AMS publishing community.

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