

# Reviews of Geophysics®

## EDITORIAL

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### Key Points:

- 1963–2023: The 60th anniversary of the founding of *Reviews of Geophysics*
- *Reviews of Geophysics* is the top-ranked journal in the field of Geochemistry and Geophysics
- By striving to create high-impact review papers, we can contribute to the development of our fields and help to shape the future of research

### Correspondence to:

F. Florindo,  
fabio.florindo@ingv.it

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### Author Contributions:

**Conceptualization:** Fabio Florindo  
**Writing – original draft:** Fabio Florindo, Valerio Acocella, Ann Marie Carlton, Qingyun Duan, Andrew Gettelman, Jasper Halekas, Ruth Harris, Gesine Mollenhauer, Alan Robock, Claudine Stirling, Yusuke Yokoyama

## 60 Years and Beyond of *Reviews of Geophysics*

Fabio Florindo<sup>1</sup> , Valerio Acocella<sup>2</sup>, Ann Marie Carlton<sup>3</sup> , Paolo D'Odorico<sup>4</sup> , Qingyun Duan<sup>5</sup> , Andrew Gettelman<sup>6</sup> , Jasper Halekas<sup>7</sup> , Ruth Harris<sup>8</sup> , Gesine Mollenhauer<sup>9</sup> , Alan Robock<sup>10</sup> , Claudine Stirling<sup>11</sup>, and Yusuke Yokoyama<sup>12</sup> 

<sup>1</sup>Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy, <sup>2</sup>Department of Science, University of Roma Tre, Rome, Italy, <sup>3</sup>Department of Chemistry, University of California Irvine, Irvine, CA, USA, <sup>4</sup>Department of Environmental Science, Policy, & Management, University of California Berkeley, Berkeley, CA, USA, <sup>5</sup>College of Hydrology and Water Resources, Hohai University, Nanjing, China, <sup>6</sup>Pacific Northwest National Laboratory, Richland, WA, USA, <sup>7</sup>Department of Physics and Astronomy, University of Iowa, Iowa City, IA, USA, <sup>8</sup>U.S. Geological Survey, Moffett Field, CA, USA, <sup>9</sup>Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, Germany, <sup>10</sup>Department of Environmental Sciences, Rutgers University, New Brunswick, NJ, USA, <sup>11</sup>Department of Geology, University of Otago, Dunedin, New Zealand, <sup>12</sup>Atmosphere and Ocean Research Institute, The University of Tokyo, Tokyo, Japan

**Abstract** *Reviews of Geophysics* is an AGU journal, first established in February 1963. It is a hybrid open access invitation-only journal that publishes comprehensive review articles across various disciplines within the Earth and Space Sciences. The selection criteria are rigorous and many submissions are declined without review. The journal is the highest ranked in the fields of Geochemistry and Geophysics, with a high Journal Impact Factor (JIF<sub>2021</sub> = 24.9), which is indicative of its high visibility and influence within the scientific community. The journal's published review papers, beyond a mere summary of literature, provide crucial context for current work, and establish the framework for comprehensive understanding of research progress, challenges, and interconnections between different communities, so that research may be appreciated by a broad audience. We emphasize the importance of publishing studies that provide a comprehensive overview and synthesis of the current state of knowledge in a field, especially in the case of geophysics, where knowledge is rapidly developing, increasing and becoming more specialized.

**Plain Language Summary** On the 60th anniversary of its founding, we describe the main characteristics of *Reviews of Geophysics*, a leading journal in Earth and Space Sciences.

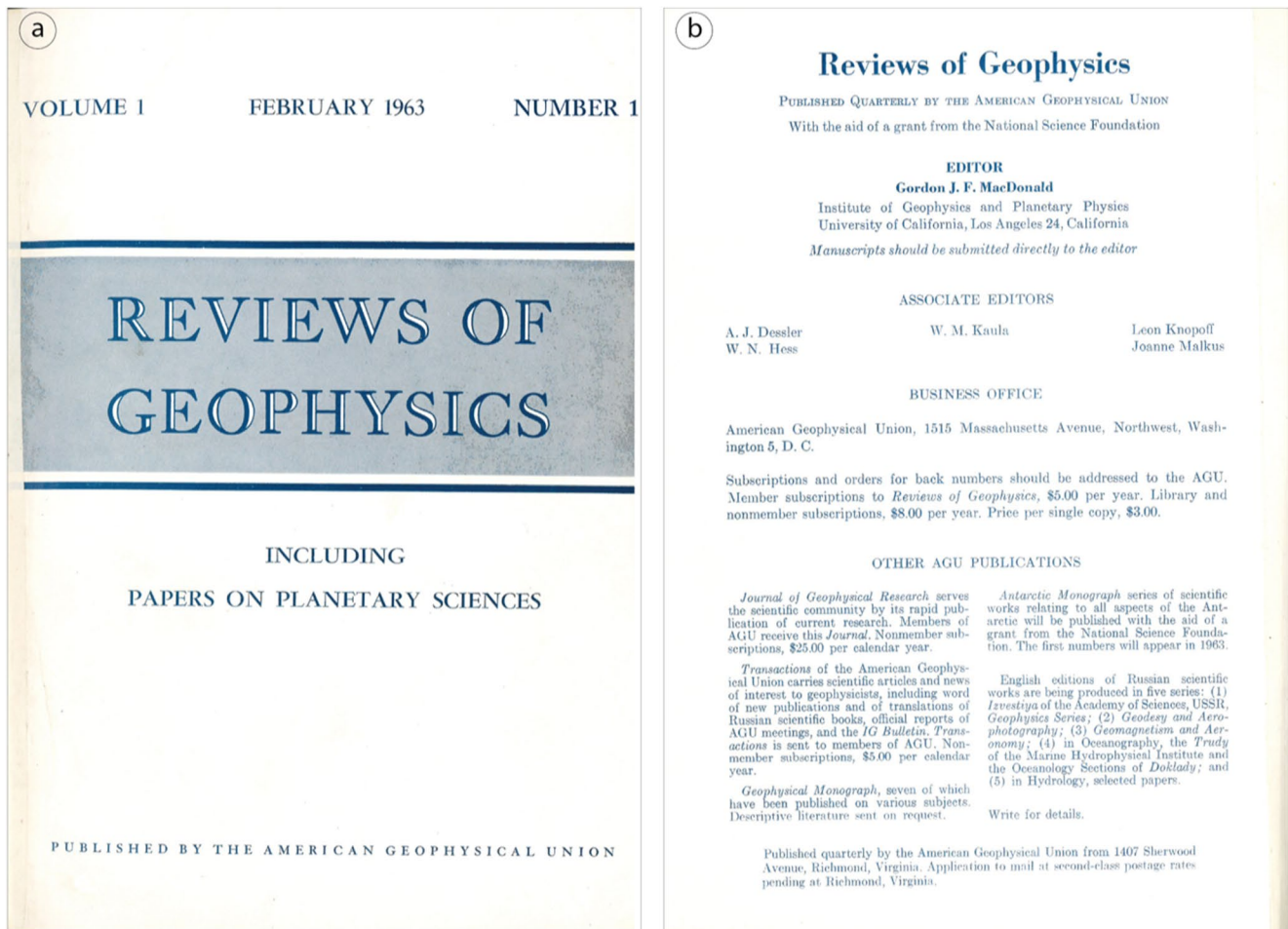
### 1. Brief History

The American Geophysical Union (AGU) journal *Reviews of Geophysics* was first established in February 1963 (Figure 1). *The growth of our knowledge of the Earth's outer radiation belt* by T. A. Farley was the first paper published in *Reviews of Geophysics* and it appeared in volume 1, issue 1, in 1963 (Farley, 1963). Between February 1970 and November 1984, the journal was named *Reviews of Geophysics and Space Physics*, reflecting its original focus on the study of space physics alongside traditional geophysics (Figure 2). In those early years, many articles focused on topics such as solar-terrestrial physics, ionospheric physics, and magnetospheric physics, reflecting the growing interest in these fields following the launch in 1957 of Sputnik, the first artificial satellite to orbit Earth, and the subsequent space race. Over time, the journal's scope expanded to include a broader range of geophysical topics and, in 1985, the journal was renamed *Reviews of Geophysics* to reflect this broader focus (Figure 3).

From 1975 to 2022, the top three most widely cited papers in *Reviews of Geophysics* and in *Reviews of Geophysics and Space Physics* were:

1. Mellor and Yamada (1982) (5419 citations; 129.02 average per year).
2. Farr et al. (2007) (4490 citations; 264.12 average per year).
3. Taylor and McLennan (1995) (3800 citations; 131.03 average per year).

Unfortunately, citation records before 1975 are not available in Web of Science.

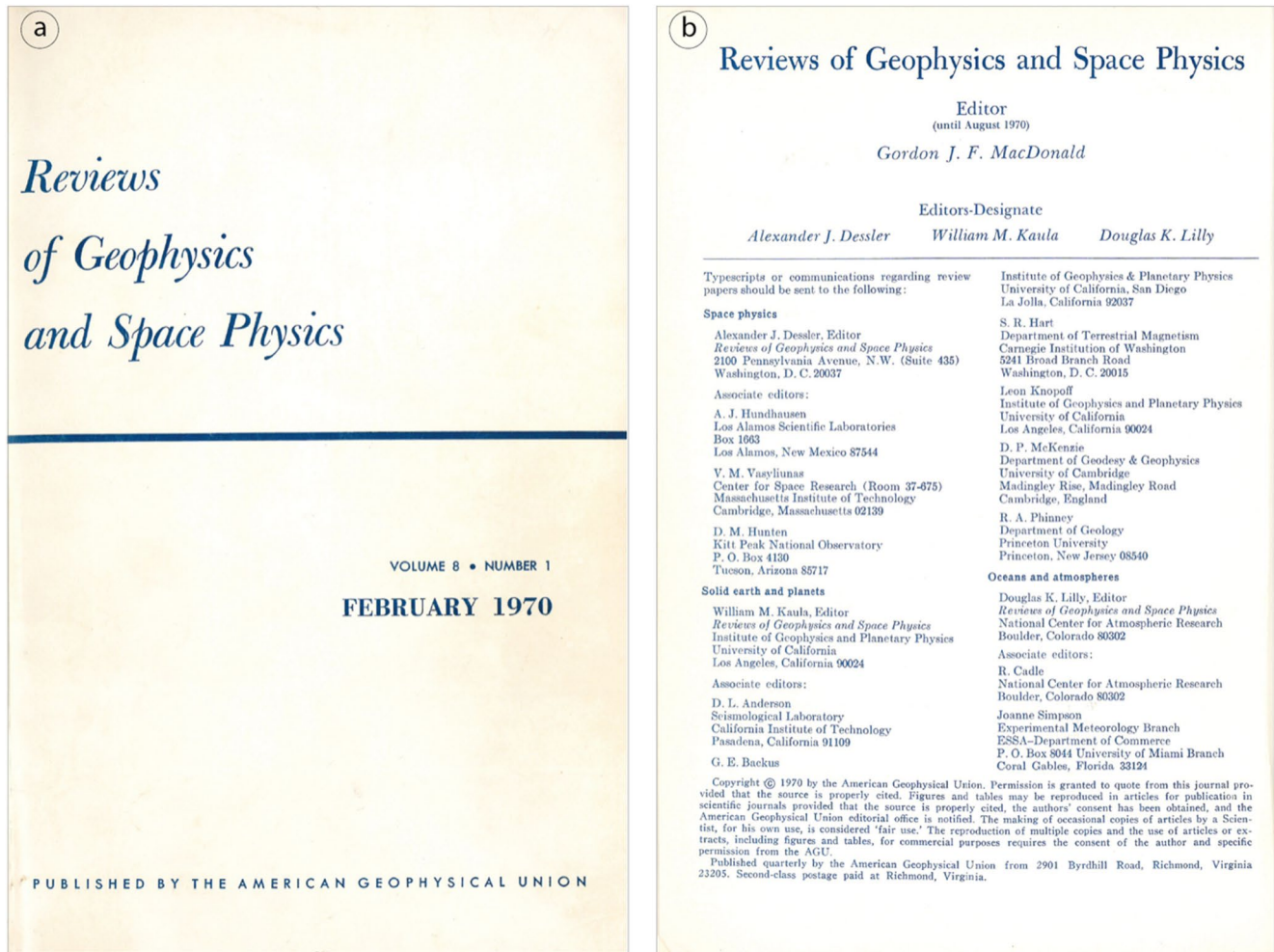


**Figure 1.** Front cover (a) and the inside front cover (b) of the first issue of *Reviews of Geophysics* published in February 1963.

## 2. Aims and Scope

*Reviews of Geophysics* is a hybrid open access invitation-only journal, which publishes comprehensive review articles spanning a broad range of disciplines within the Earth and Space Sciences, including emerging areas of research such as machine learning and big data. “Hybrid open access” means that all *Reviews of Geophysics* articles are available to subscribers, and for a fee which an article’s authors pay before publication, their specific article is made freely available to the public. *Reviews of Geophysics* has a wide readership, and while reviews may be technical, they must be fundamentally accessible to geoscientists from all major disciplines. Our review papers go beyond a mere summary of existing literature; they offer a contextual understanding of current research, highlight significant open research questions and future directions, while establishing a framework that promotes an inclusive comprehension of the advancements, challenges, and interconnections across various communities, observations, models, and methodologies.

The selection criteria (please also see the Main Features section) are rigorous and about 70% of submissions are declined without being sent for review. The judgment about which papers will interest a broad readership is made by the Editorial Board. We have adopted a new approach for evaluating the contributions we receive (Figure 4). First, we have instituted a formalized proposal format to enable our Editorial Board to make more informed decisions and reduce the number of questions sent back to the authors. A proposal from the authors to publish an article in the journal should include the possible paper title, a list of potential authors, an abstract, an outline, an analysis of recent similar review articles on the subject, and an explanation of how the journal’s target audience might benefit from the article. Prospective author teams should prepare and submit a proposal to [reviewsgeophysics@agu.org](mailto:reviewsgeophysics@agu.org)



**Figure 2.** Front cover (a) and the inside front cover (b) of the first issue of *Reviews of Geophysics and Space Physics* published in February 1970.

Once a proposal from the authors is received, the Editor-in-Chief evaluates it to determine whether it is suitable for the journal. If the proposal is not suitable, it is declined upon receipt. Proposals that are considered of interest are forwarded to the Editorial Board for further discussion. If there are minor to moderate concerns, the Editor-in-Chief communicates with the authors so that they can address these issues. The Editorial Board may also request to see an updated proposal. Once a proposal is deemed suitable for the journal, the Editor-in-Chief extends a formal invitation via the GEMS platform to submit the manuscript.

Instructions for the prospective author teams to prepare and submit a proposal to our Journal can be found at <https://agupubs.onlinelibrary.wiley.com/hub/journal/19449208/journal-menu/submit-an-article>.

### 3. Journal Quality Metrics

Over the past 11 years (2012–2022), we have published an average of 22 comprehensive review papers per year (with a minimum of 16 and a maximum of 32), covering a broad range of disciplines within the Earth and Space Sciences, and most of the 25 AGU sections (<https://www.agu.org/Learn-About-AGU/About-AGU/Governance/Sections>).

In this time interval we published 270 papers whose three top cited papers are:

1. Wang and Dickinson (2012) (918 citations; 76.5 average per year).
2. Ginoux et al. (2012) (841 citations; 70.08 average per year).
3. Sun et al. (2018) (806 citations; 134.33 average per year).

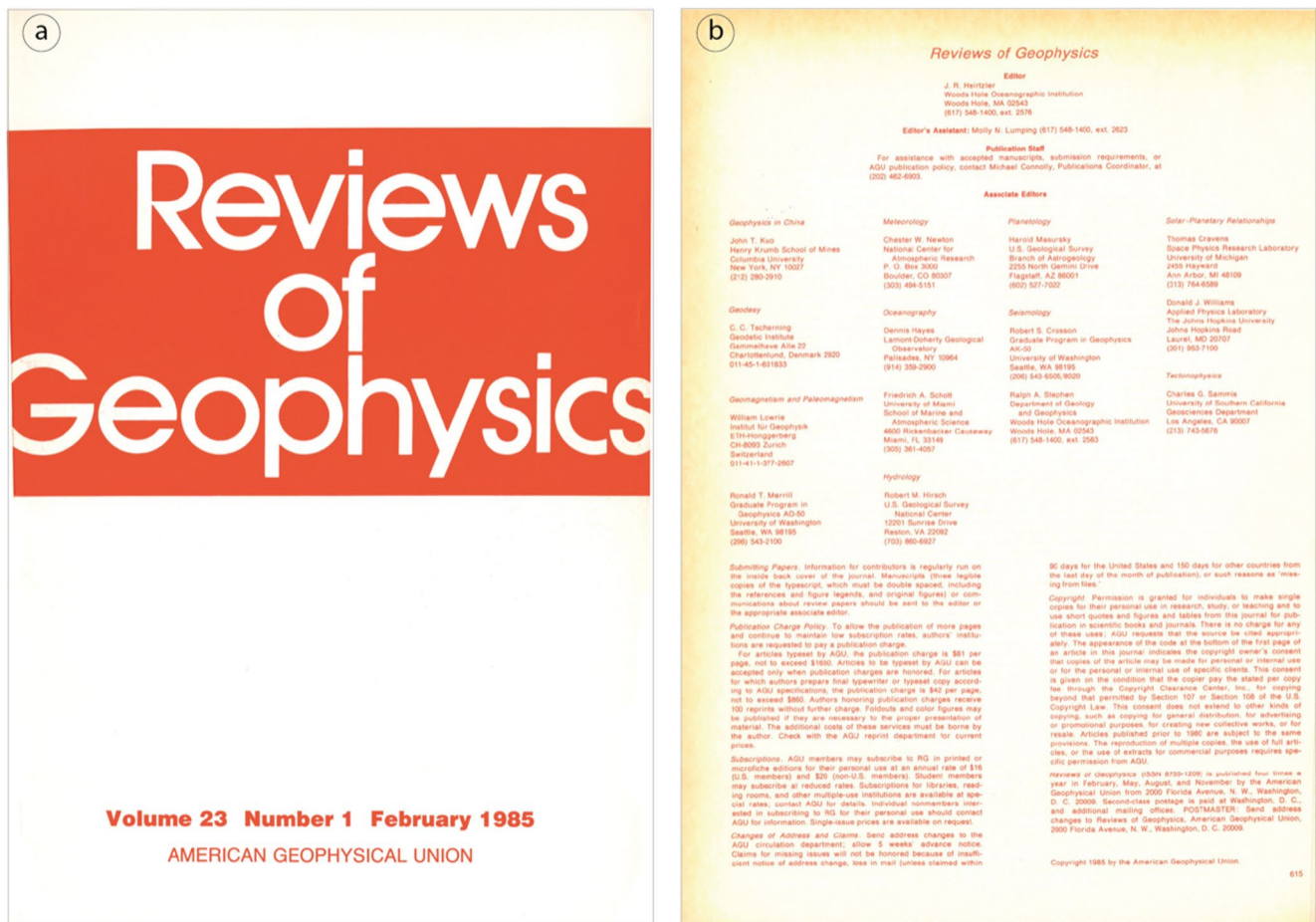


Figure 3. Front cover (a) and the inside front cover (b) of the first issue of the new *Reviews of Geophysics* published in February 1985.

The number of citations reported above is up-to-date as of the writing date of this editorial.

*Reviews of Geophysics* is currently the highest-ranked journal in the fields of Geochemistry and Geophysics, as determined from a pool of 87 or 100 journals, depending on whether we refer to the Journal Impact Factor (JIF) or the Journal Citation Indicator (both are Clarivate-Web of Science metrics; <https://jcr.clarivate.com>). The JIF<sub>2021</sub> (2022 release; the last one at the time of writing) for *Reviews of Geophysics* increased by 13% compared to 2020, with a score of 24.9 (Figure 5). This score is based on the number of citations in 2021 to articles published in 2019 and 2020, divided by the number of citable items from those years. As shown in Figure 5, starting from 2015, the JIF has more than doubled, from a value of 11.4 to 24.9, with a percentage increase of 118%. This trend does not have a clear correlation with the number of published articles. The high JIF score indicates that articles published in *Reviews of Geophysics* are frequently cited by other researchers in the field.

While writing this Editorial, we projected the JIF<sub>2022</sub> for the journal. This score is based on the number of citations in 2022 to articles published in 2020 and 2021, divided by the number of citable items from those years. The projected JIF<sub>2022</sub> (the next Journal Citation Report release is expected in June 2023) confirms this trend, further demonstrating the significant impact and constant influence of the journal within the scientific community.

#### 4. Main Features of Our Published Review Papers

In a previous editorial (Moldwin et al., 2017) the editorial board expressed a vision for what a comprehensive review article should look like, and since then we have worked with authors to advance this vision.

Review papers should not be limited to a mere summary of the literature and they should not present new data that have not been published elsewhere. A high-impact review paper should provide crucial context for current work,

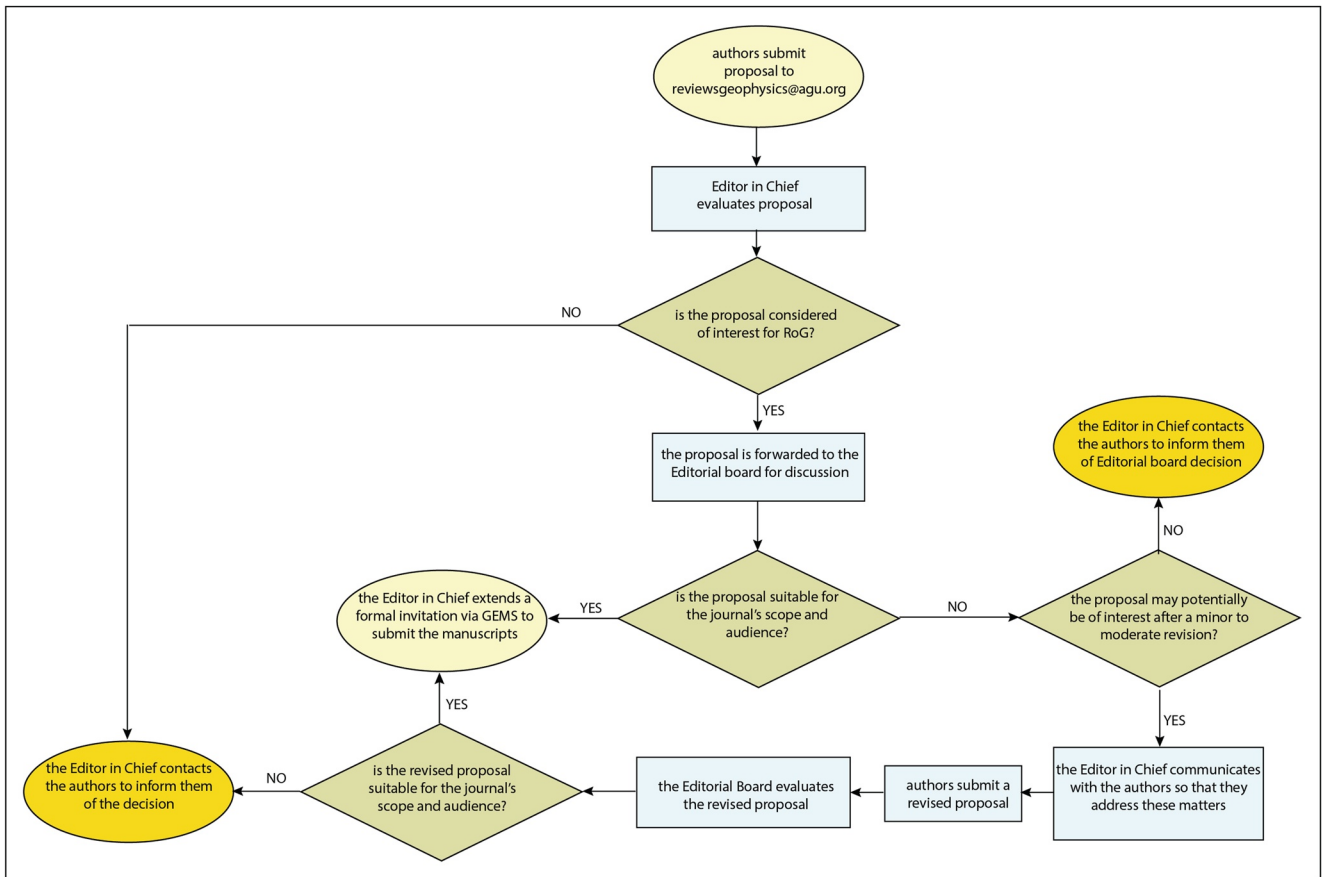


Figure 4. Editorial process flowchart.

creating a framework that allows for a greater understanding of the process, progress, problems, and connections between different communities, observations, models, and approaches. By providing this broader perspective,

review papers can not only serve as a valuable resource for researchers, but also inspire new ideas and avenues for future investigations. Rather than simply rehashing existing research, review papers should challenge readers to think critically and push the boundaries of current knowledge. We particularly welcome review papers that, in addition to providing a comprehensive overview of general processes, are able to propose a new paradigm or create a new synthesis that may convey an advancement in knowledge. Of course, crafting such a review paper is no easy task. It requires a deep understanding of the field and a willingness to engage with a wide range of ideas and perspectives. Yet, we believe that the effort is worth it. By striving to create high-impact review papers, we can contribute to the ongoing development of our fields and help to shape the future of research.

*Reviews of Geophysics* differs from other AGU journals in having no page charges or article length restrictions (no page or figure limits), making it particularly appropriate for in-depth reviews.

### 5. Promotion of Your Paper

Once a paper is published online in *Reviews of Geophysics*, we make efforts to ensure that it gains maximum visibility and reaches a broad audience, therefore increasing the potential impact of the work. We do this for every

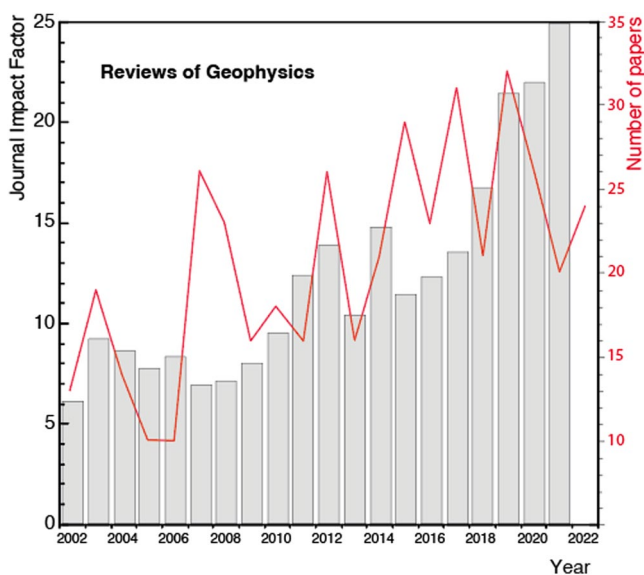


Figure 5. The Journal Impact Factor and the number of papers published each year (2002–2022) for *Reviews of Geophysics*.

published review paper. We use social media platforms to promote each paper and also highlight it through Editors' Vox (<https://eos.org/ed-vox>), a blog from AGU's Publications Department, which could potentially lead to more people discovering and reading the published research, ultimately leading to a wider impact.

## 6. The Role of *Reviews of Geophysics* in the 21st Century

When *Reviews of Geophysics* was first established, there were only a few journals and publications' options available. Nowadays we are witnessing an exponential increase of journals and publications, and journals like *Reviews of Geophysics* can play a key role in the science of the coming decades. With knowledge increasing at an unprecedented rate and becoming more fragmented, it is crucial to have access to studies that convey an up-to-date and a broad overview, providing a useful tool for young researchers who are beginning to tackle a subject, as well as for senior researchers who need to keep up with the major advances in geophysics in recent years.

Therefore, the key ingredients of *Reviews of Geophysics* are broad and outstanding topics easily accessible through high-quality synthesis, preferably including a vision for future research. The articles are expected to add significant value to our rapidly changing scientific world.

## Data Availability Statement

Data were not used, nor created for this research.

## Acknowledgments

On behalf of the *Reviews of Geophysics* Editorial Board members, we would like to express our sincere gratitude to our authors, reviewers, previous editors, and all those who have contributed to making our journal a success and a respected publication. Thank you to Tom Parsons and Andrea Llenos for thoughtful USGS reviews of the manuscript. This article describes the role, publication process, and promotion of articles in the journal *Reviews of Geophysics* and does not imply endorsement by the U.S. Government.

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