# Improving Discoverability of Your Research: Writing for Impact and Open Access

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Amanda Hendrix and Mia Ricci

jgr-planets@agu.org, publications@agu.org

# Before we begin:

- This event is being recorded; the recording will be made available after the session. Check your spam folder if you can't find it.

- You can download the presentation from the handouts section of the GoToWebinar menu.

- Use the Questions button to submit any questions, which will be addressed during the Q&A. We'd love to hear from you!

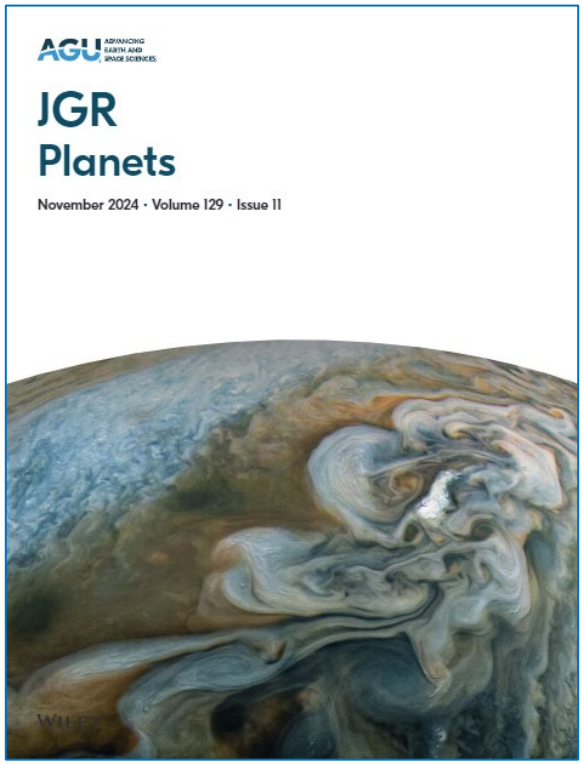
# Today's topics

Writing for success and discoverability: best practices

Open access publishing: what? why? how?

# Our presenters

**Dr. Amanda Hendrix**
Planetary Science Institute
Editor-in-Chief of *JGR: Planets*




**Mia Ricci**
American Geophysical Union
Director of Publications Operations

# AGU Publications

24 Peer Reviewed Journals
12 Fully Open Access Journals
12 Hybrid Journals (subscription with Open Access options)
850+ Editors and Associate Editors
More than 18,000 submissions and around 7,500 published articles per year
Books program, with option for OA
ESS Open Archive
Overseen by AGU Publications Committee


https://www.agu.org/publications

# Writing for success and discoverability: best practices

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# What makes a good paper?

- Every paper should have at least one clear key idea that advances knowledge.

- A good paper needs to have both of the following:
  1) explains your data, methods, and results that leading to the key idea and
  2) shows how the study fits into the larger questions in a field.

To be read, remembered, cited, having an impact in the field!

# Is there a scientific writing style I should follow?

- The writing style depends on the community you are writing for: **understand it better by reading lots of papers in the area**
- The style in most fields is generally rigorous and concise; not colloquial or too philosophical
- Remember your audience and write for them: it's all about the readers, which includes editors and reviewers – they are busy and so the easier your work is to read, the better
- You are allowed to use style of other papers
- Use a spell checker and review for grammar and readability, consider asking a colleague to read and check your work. There are also professional editing services you can consider.

# Common structure and content

- Title
- Abstract
- Plain Language Summary
- Key points
- Keywords

➢ Introduction
➢ Methods
➢ Results
➢ Conclusion and Discussion

✓ Acknowledgements
✓ Open Research/ Open Science/ Data and Software Availability Statement
✓ References
✓ Supporting Information/Supplementary Material

# A good title

This is your opportunity to attract a reader's attention (including citations)

1. **An explicit title** can help **increase discoverability and attract citations** e.g. state a key finding, or frame a question…
2. **Keywords/key terms** up front, and **optimized for search engines**: think of how your paper will be found, once published (i.e. Google, Google Scholar)
3. **Short** – typically up to 15 words
4. **Punctuation** - split into **main message/concept** and qualifier (ex: The Remarkably Strong Arctic Stratospheric Polar Vortex of Winter 2020: Links to Record-Breaking Arctic Oscillation and Ozone Loss)
5. Consider a **subtitle**, if permitted (included in search engine output!)
6. **Try to think of the title before you start writing!** Could help you orient yourself to the main topic
7. **Avoid starting** with Studies on…. / Characterization of….. / Optimization of…. / Investigations on….
8. **Avoid overly cute titles**

You can apply the same ideas to sub-titles and section titles throughout the paper

# A good abstract

**A good abstract is important! It is used to contact reviewers. After publication it helps readers discover your paper. It should…**

- State the scientific problem being addressed
- Briefly describe the analysis and data
- State the key results and caveats

**Don’t just say what you did.  State what are your results and explain how your study is important or contributes.**

# A good abstract – tips!

Use active voice and state the results.  Do not say “the impacts or data are discussed…”
Say “The data/analyses indicate that…”

Avoid:
hype or claims that go beyond the data
acronyms in title, abstract, key points (unless they are common search terms like DNA)

- **Motivation, the problem**
- **What was done**
- **What was found**
- **Key Conclusion**

# A good introduction

Place your work in context.

What are the larger problems or questions

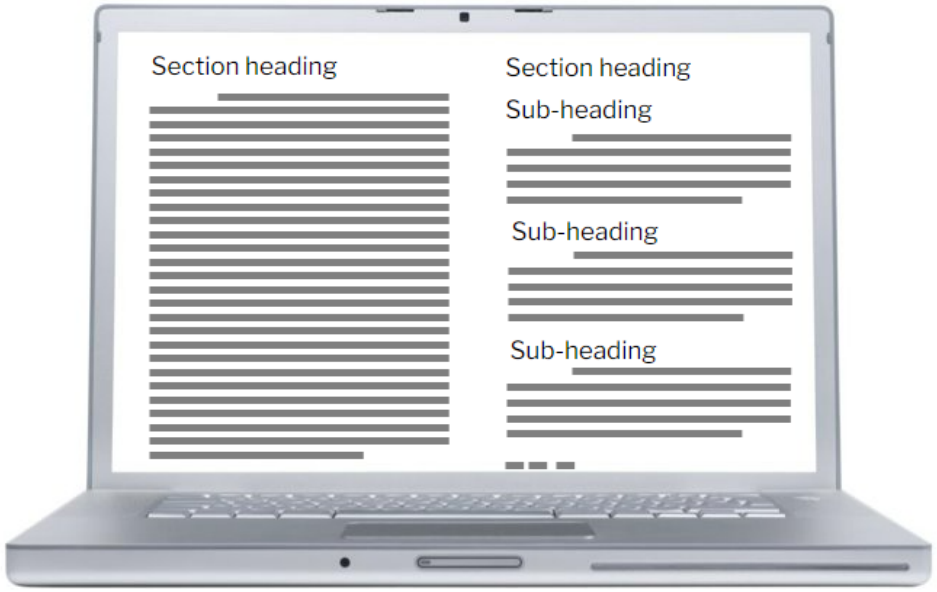
How does your data help address these or fit in to that context.

How does you work contribute to a larger understanding.

**Introduction is NOT just a review or list of prior work**—it helps frame how your work contributes to that larger understanding or question.

# Main body – principle of “chunking”…

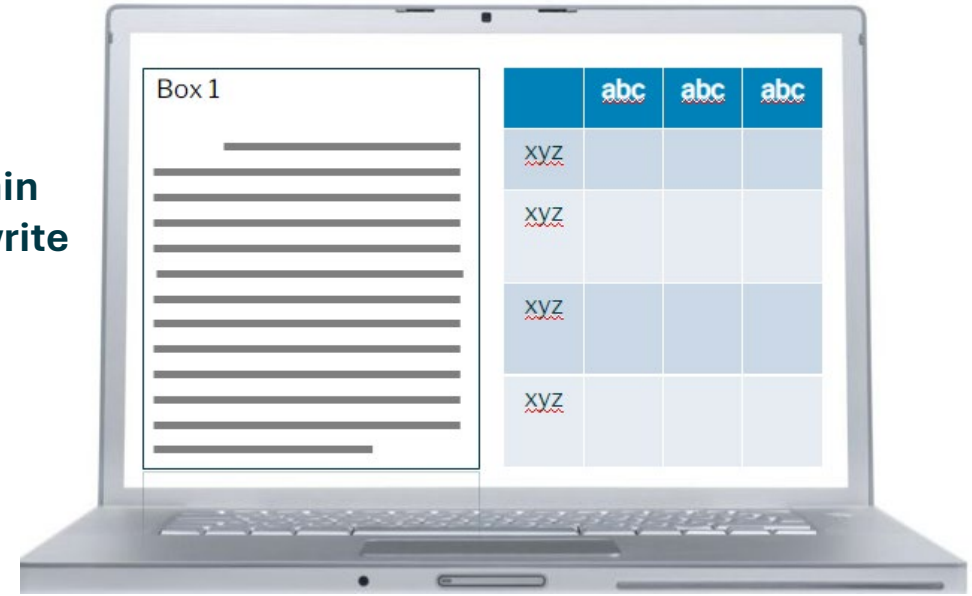
Keep your lowest level sections below 600 words; better 300, if possible




**On the left: this is hard to digest and remember**

**On the right: this is easier to digest and remember**

**In your main body text, write in short sentences**




**Use well-labeled boxes and tables. If reviewers can’t read them, your paper will be rejected**

# Keys for a good paper

- Focus on one strong compelling message and lead with it.
- Follow a scientific style.
- Frame the issue in the introduction.
- Describe the data, model, and methods sufficiently to reproduce the results.
- Pursue improved understanding in your analysis with powerful graphics.
- Establish the foundation for your conclusion.
- Conclude only what your analysis supports.
- Be concise and clear.
- Submit your manuscript free of typos, bad grammar, and poor graphics.
- **Remember: you can increase discoverability of your article with a strong title and abstract!**

# Plain language summary

- Required for most AGU journals
- Summary of your scientific study, its results, and their broader relevance without using jargon so it's understandable by scientists from outside of your discipline, as well as science journalists and science educators.
- AGU articles with a PLS score better in performance metrics (higher average downloads, citations and Altmetric scores)

PLS language tips:

- Describe what was studied, what was learned, and why it matters
- Write for an undergraduate level of scientific understanding
- Define any terms specific to your scientific field
- Avoid technical jargon
- Be cautions of words that may have different meanings to non-scientists (e.g. skill, regime, signal, uncertainty, mean, etc.)
- Explain all acronyms you use – and don't use too many of them

# Plain language summary – structure

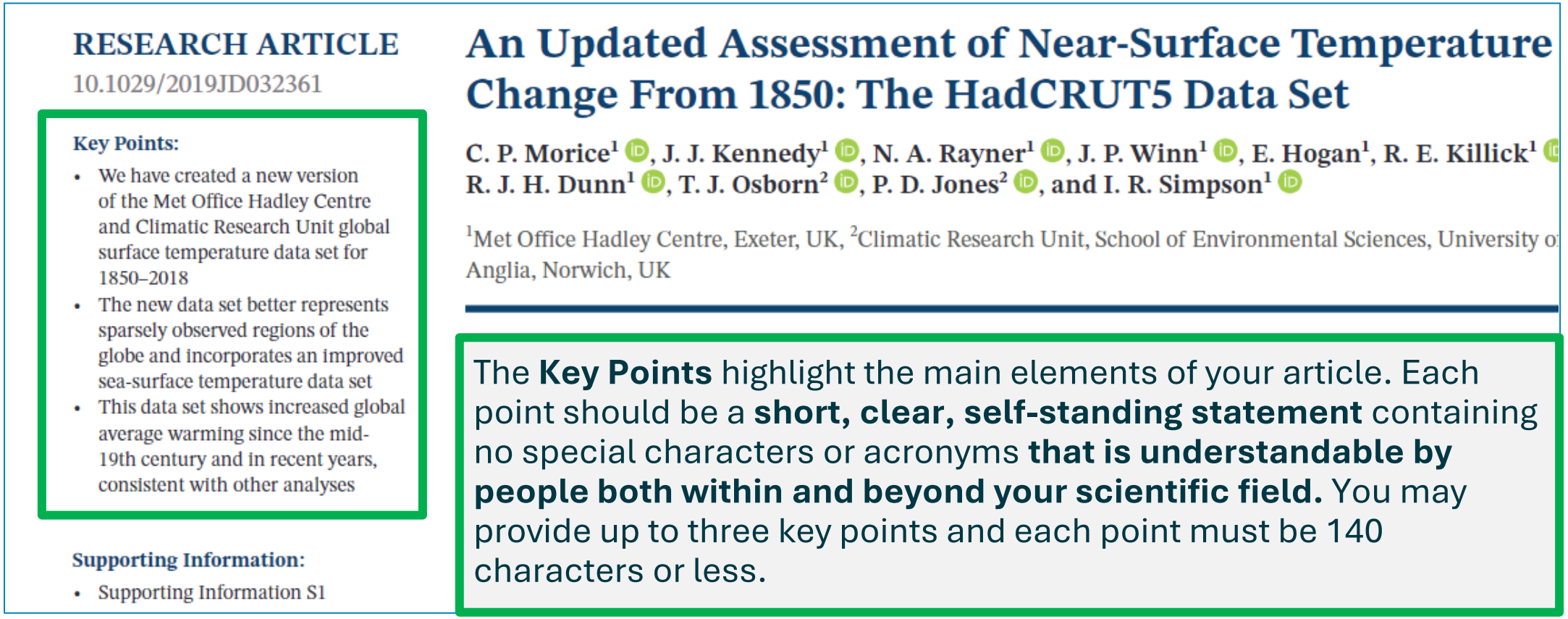
We recommend you structure with 4 key elements:

- **Topic Overview** (1-3 sentences) – What does a non-specialist reader need to know about the topic to understand your paper? Explain the broad scientific topic to provide context for your study.
- **Paper Overview** (1-3 sentences) – What did you set out to investigate? Give a brief overview of what you set out to do in the research and how you went about it.
- **Findings Summary** (1-3 sentences) – What was the most significant result or conclusion in your paper? Describe your overall findings but don't get caught up in explaining technical details.
- **Key Takeaways** (1-2 sentences) – Why should a reader care about your findings? Explain the scientific importance or societal relevance of your study.

Other resources and annotated examples:

https://www.agu.org/Publish-with-AGU/Publish/Author-Resources/Plain-Language-Summary

# Key points



RESEARCH ARTICLE

10.1029/2019JD032361

**Key Points:**

- We have created a new version of the Met Office Hadley Centre and Climatic Research Unit global surface temperature data set for 1850–2018
- The new data set better represents sparsely observed regions of the globe and incorporates an improved sea-surface temperature data set
- This data set shows increased global average warming since the mid-19th century and in recent years, consistent with other analyses

**Supporting Information:**

- Supporting Information S1

## An Updated Assessment of Near-Surface Temperature Change From 1850: The HadCRUT5 Data Set

C. P. Morice[1], J. J. Kennedy[1], N. A. Rayner[1], J. P. Winn[1], E. Hogan[1], R. E. Killick[1], R. J. H. Dunn[1], T. J. Osborn[2], P. D. Jones[2], and I. R. Simpson[1]

[1]Met Office Hadley Centre, Exeter, UK, [2]Climatic Research Unit, School of Environmental Sciences, University of Anglia, Norwich, UK

The **Key Points** highlight the main elements of your article. Each point should be a **short, clear, self-standing statement** containing no special characters or acronyms **that is understandable by people both within and beyond your scientific field.** You may provide up to three key points and each point must be 140 characters or less.

https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019JD032361

# Open access publishing

# Open science: why and what

We are facing **big** challenges (climate change, hazards, limited resources…). We need ***more*** people – more hands, more eyes, more brains – with diverse experiences to participate so that we ask the best question and find the best solutions.

- Accelerates the **pace** of science
- Increases the **impact** of science
- Expands **applications** of data and science
- Shares **hidden** knowledge & expands **participation** in science

**Open Science:**

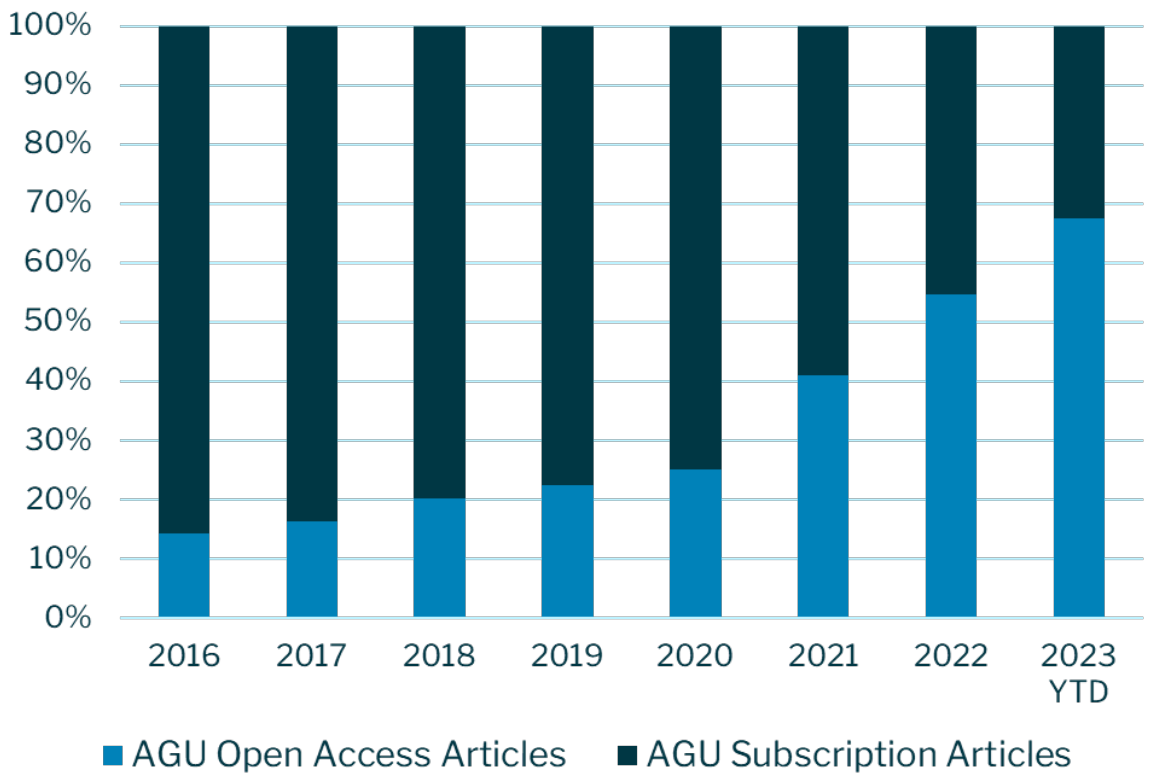
- **Accessible:** open data, open software, open information
- **Reproducible:** Make sharing and collaborating more efficient by supporting open software tools, frameworks, libraries, and open infrastructures
- **Inclusive:** innovative pathways to participating and expand public/private partnerships

# Not just open access

- **Open access** – helping researches share their work and publications with the world
- **Open data/software** – enabling reproducibility and verification of researcher data and software, methodology, reporting standards, and reuse for future studies
- **Open practices** – focusing on equity and transparency in research communication and peer review
- **Open collaboration** – helping researchers work together
- **Open recognition & reward** – making sure researchers get credit for their publishing work

# Open access

- Articles are made freely available online immediately upon publication, making it more publicly accessible and discoverable
- Published under a Creative Commons License (authors own copyright) allowing reuse and sharing
- Typically there is a cost (APC: Article Processing Charge), paid by authors or their funders
- AGU seeing growth over the years and predicting to have over 78% open access articles by the end of this year.



# Gold vs Green (there are others…)

| | Gold Open Access | Green Open Access |
|---|---|---|
| **Definition** | The article is immediately, freely available online for all to read, download, reuse and share | The author self-archives a version of the subscription article in an online repository or website |
| **Access** | Free public access to the final published article<br>Access is immediate and permanent | Free public access to a version of the article<br>Embargo period (delay) may apply |
| **Fee** | An Article Publication Charge (APC) is typically applied | No fee is payable by the author (some journals might charge Base Publication Fees – not related to Open Access) |
| **Licensing and rights** | Published under a Creative Commons (CC) license<br>Author retains copyright | Authors retain the right to use their articles for certain purposes |
| **Options** | Publish in an Open Access journal<br>Publish in a hybrid journal (subscription journal that supports open access)<br>Automatic export to PubMedCentral when appropriate | Link to the published version<br>Self-archive the article |

**Funders and institutions have also introduced open access policies for their researchers.**

# Types of Creative Commons Licenses

With Creative Commons licenses, the **author retains copyright** and the **public is allowed to reuse the content.** The author grants Wiley a license to publish the article and to identify as the original publisher. AGU Open Access journals offer all three license types.


**Creative Commons Attribution**

This is the most accommodating of licenses offered

Recommended for maximum dissemination and use of licensed materials

Places umbrella stipulation on all CC licenses requiring credit to original author(s)


**Creative Commons Attribution-Noncommercial**

Let others remix, tweak, and build upon your work non-commercially, in any format

Derivative works must also provide proper attribution, a link to the license and the document indicate if any changes were made


**Creative Commons Attribution-No Derivative Works**

Allows for redistribution, commercial and non-commercial, in any format, as long as proper attribution is given, a link to the license is provided, and the document indicate if any changes were made

# How do publishers and journals support OA policies?

OA policies are introduced by funders and institutions to maximize the impact of publicly funded research and increase transparency

Authors need to comply with OA policies and publish their research to progress in their careers and receive funding

Publishers and journals play a role in facilitating these requirements by providing routes to compliance and tools and resources to help authors understand their options

# Progress in open access at AGU

**AGU continues to invest in open science, to make scientific research more accessible to all.**

We are increasing access to published content via Open Access and other means.

- As of January 2022, all AGU members have free access to journal articles

- Green Open Access: authors can self-archive final version after 6 months, and all subscription papers are opened after 24 months
- Preprints – Earth and Space Science Open Archive (ESS Open Archive)

- All AGU journals support Gold Open Access options
- Transitioning more journals to Fully Open Access (currently 12 fully OA, 12 hybrid)
- Ensuring funding is not a barrier to publishing (funder, institutional, country discounts and waivers)

# Advantages of publishing open access

In addition to complying with funder policies and mandates, and making science more **open, accessible, efficient, democratic, and transparent**, recent research from Wiley shows that publishing OA generates:

- **3.4x Downloads.** On average, OA articles were downloaded more than three times as much as subscription articles
- **1.7x Citations.** OA articles were cited nearly twice as much compared to subscription articles
- **4x Altmetric Score.** OA articles received nearly 3 times as much as attention as subscription articles

Source: https://www.wiley.com/network/researchers/licensing-and-open-access/demonstrating-the-advantage-of-publishing-open-access-with-wiley

# APC funding options for AGU authors

AGU is committed to inclusive and equitable scientific publishing. **All accepted papers will be published** regardless of the author's ability to pay publication fees.
There are various funding options to help authors cover their Article Processing Charge (APC) fees at AGU, and this depends on the type of journal you're publishing in.

| Institution/ Funder Waiver/Discounts | Low-and Middle-Income Country Waivers/ Discounts | Author Pays | AGU Waivers/Discounts |
|---|---|---|---|

https://www.agu.org/Publish-with-AGU/Publish/Open-Access

# Current funding agreements

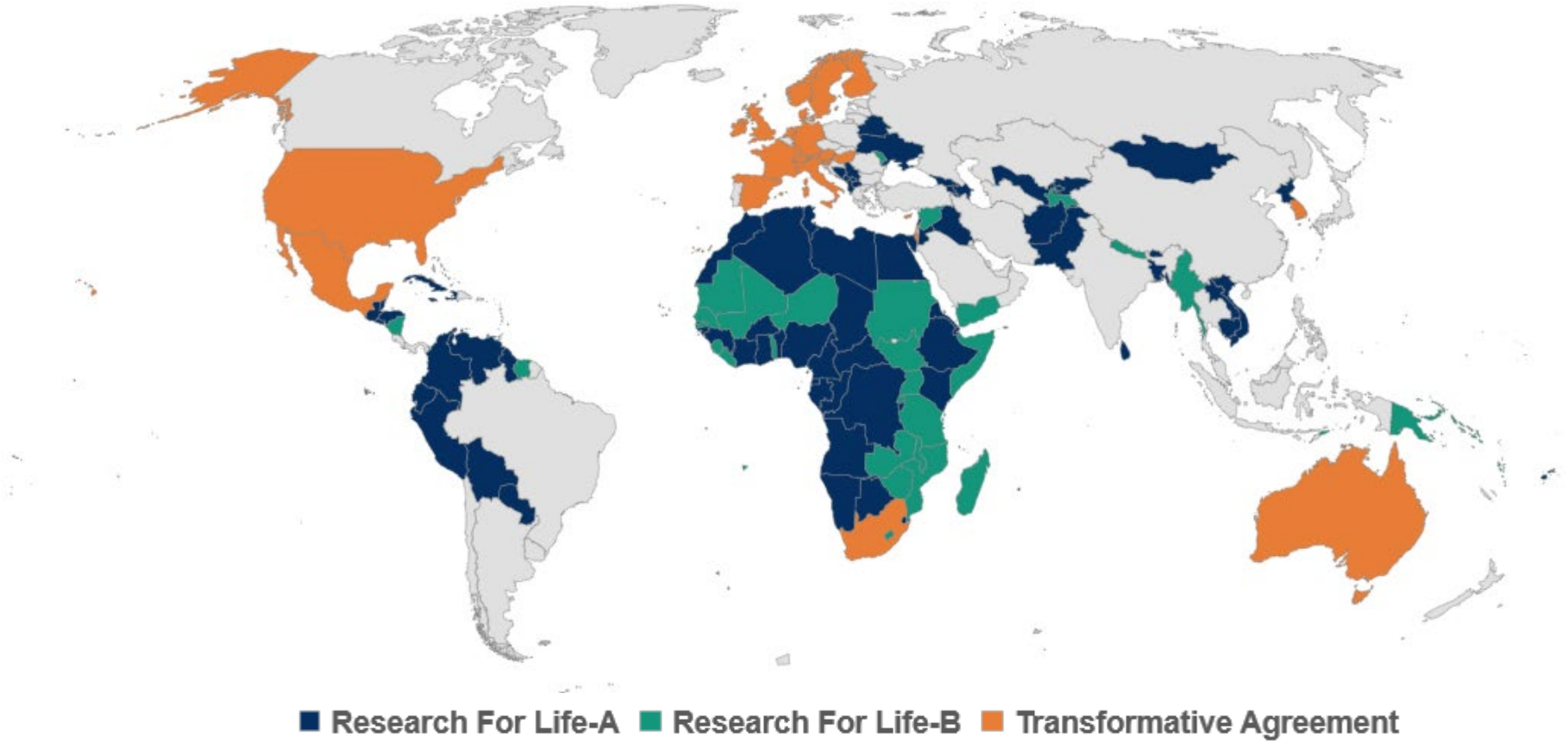
**As of November 2024, through Wiley, there are 102 open access agreements in place, to help AGU authors from over 2800 institutions around the world:**

- 52 agreements in North America
- 21 agreements in Europe
- 18 agreements in Asia and Australasia
- 4 agreements in South America
- 7 agreements in Middle East and Africa

- All 102 agreements cover publishing in hybrid subscription journals
- 71 agreements cover publishing in fully gold open access journals

- Check **https://tinyurl.com/WileyFunding** to see if your institution is listed

# Publication funding agreements via Wiley



# AGU's position statement on data affirms that

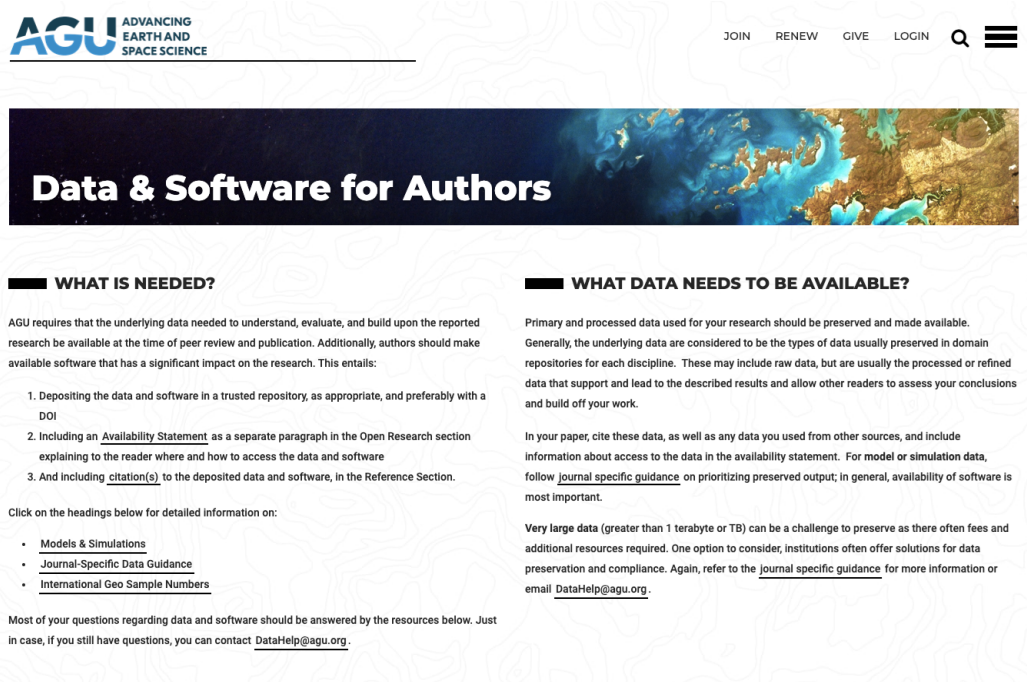
"Earth and space science data are a **world heritage,** and an essential part of the science ecosystem. All players in the science ecosystem—researchers, repositories, publishers, funders, institutions, etc.—should work to **ensure that relevant scientific evidence is processed, shared, and used ethically, and is available, preserved, documented, and fairly credited**."

https://www.agu.org/Share-and-Advocate/Share/Policymakers/Position-Statements/Position_Data

# AGU Data & Software Sharing Guidance

What is covered:

- What data needs to be available?
- Repository Selection
- Availability Statement
- Data & Software Citation
- Citation Formatter
- Models & Simulations
- Journal Specific Guidance
- International Geo Sample Numbers
- Data Help Desk



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## Data & Software for Authors

### WHAT IS NEEDED?

AGU requires that the underlying data needed to understand, evaluate, and build upon the reported research be available at the time of peer review and publication. Additionally, authors should make available software that has a significant impact on the research. This entails:

1. Depositing the data and software in a trusted repository, as appropriate, and preferably with a DOI
2. Including an Availability Statement as a separate paragraph in the Open Research section explaining to the reader where and how to access the data and software
3. And including citation(s) to the deposited data and software, in the Reference Section.

Click on the headings below for detailed information on:

- Models & Simulations
- Journal-Specific Data Guidance
- International Geo Sample Numbers

Most of your questions regarding data and software should be answered by the resources below. Just in case, if you still have questions, you can contact DataHelp@agu.org.

### WHAT DATA NEEDS TO BE AVAILABLE?

Primary and processed data used for your research should be preserved and made available. Generally, the underlying data are considered to be the types of data usually preserved in domain repositories for each discipline. These may include raw data, but are usually the processed or refined data that support and lead to the described results and allow other readers to assess your conclusions and build off your work.

In your paper, cite these data, as well as any data you used from other sources, and include information about access to the data in the availability statement. For **model or simulation data**, follow journal specific guidance on prioritizing preserved output; in general, availability of software is most important.

**Very large data** (greater than 1 terabyte or TB) can be a challenge to preserve as there often fees and additional resources required. One option to consider, institutions often offer solutions for data preservation and compliance. Again, refer to the journal specific guidance for more information or email DataHelp@agu.org.

https://tinyurl.com/AGUDataGuidance

Questions: **datahelp@agu.org**

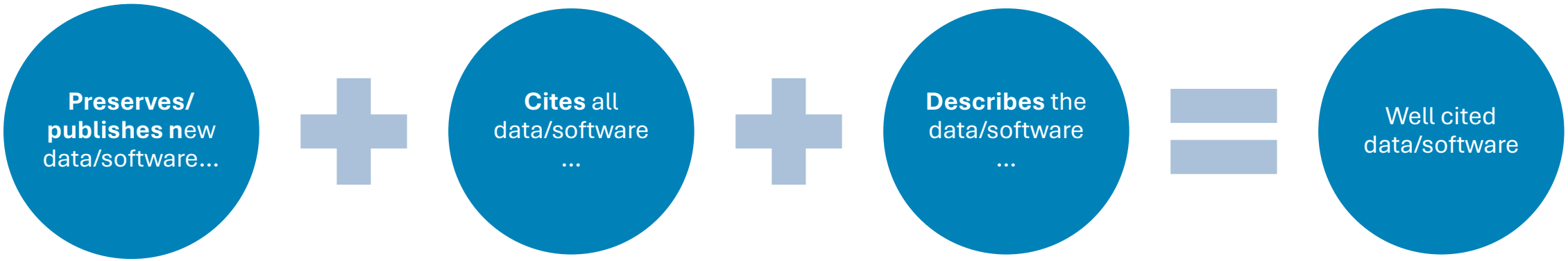
# What's required for authors?

The **underlying data** needed to understand, evaluate, and build upon the reported research is required to be **available at the time of peer review and publication**.

Additionally, authors should make available the **software that as a significant impact on the research**.

# The “Formula”

**The author…**




…in a community-accepted trusted repository

…used for the research in the Reference Section; use bracketed descriptions

…in the Open Research Section – even when a citation is not possible

# But why (cite your data/software)?

- Research data and software are **important scientific contributions** and stand on their own as a research output.
- You (and other researchers) can **cite the data/software you produced, and you get credit**.
- Institutions and societies are adjusting Promotion and Tenure, Honors and Awards to **recognize the value** of well-preserved and usable data and software.
- Funders include data management **costs** as an allowable expense and value research data as an output
- Your research is **easier to evaluate** by others (including peer reviewers).
- Your work can be **discovered in different ways** than just through your paper.
- Your data will be **preserved** as part of the scientific record and **linked** to both you and your publication.  (not true for supplemental information)

# Key takeaways

## Writing for success and discoverability: best practices

| | | | |
|---|---|---|---|
| An **explicit title**, e.g., state a key finding, or frame a question, **with keywords first**, typically no more than 15 words | Consider a **subtitle**, if permitted (included in search engine output!) | A **good abstract is critical to discoverability**: don't just say what you did, state the results and why your work is important or contributes to the research. | Put effort into **the plain language summary and key points:** they help discoverability and make your research more accessible! |

## Open Access Publishing

| | | | |
|---|---|---|---|
| Open Science aims to make research more accessible and discoverable. | Open access articles have 3.4x downloads, 1.7x citations, and 4x Altmetric scores than subscription articles. | Sharing and citing your data will increase the discoverability of your research. | Institutions, societies, and funders increasingly recognize the importance of well-preserved and usable data and software. |

# Questions & Answers

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# Thank you!

publications@agu.org