Open Phytolith Publishing Guidelines

Recommendations on open publishing from the *International Committee on Open Phytolith Science* for the special issue on [Phytoliths in Asia](#).

- **Required actions** - must be done to publish an article in this special issue and are criteria that will be held to by the reviewers and editors. This will make your data FAIR (findable, accessible, interoperable and reusable) and open.
- **Encouraged actions** - recommended for greater openness of your research.

Level	Actions	How to achieve this
Required	1. Use of ICPN 2.0	- All data and graphs must use ICPN 2.0 (ICPT 2019) morphotypes. - Any additional morphotypes must be named using the method in ICPN 2.0. - Photographs of all identified morphotypes must be included with the article - best practice is to use an online repository but in supplementary files is also acceptable.
Required	2. Full methods/protocol	- Fully replicable protocol for sampling, sample processing, counting and identification. Included as a supplementary file or in online repository. - One methodological reference can be referred to as long as this method was used without modifications. - General methodological references that include more than one method are not accepted.
Required	3. Open data	- Deposit your raw data as a csv file (counts and processing weights or other raw data from your study before the data has been processed or changed in any way) in an open online repository with a digital object identifier (DOI). - Alternative to include raw data as a spreadsheet in the supplementary file.
Required	4. Analysis steps described	Description of analysis including data preparation steps, what software packages used, version of software and what types of analysis.
Required	5. Data availability statement	'Data on request' is not accepted as your raw data must be attached to the article. - See notes for details and examples.
Encouraged	Open access article	Gold open access or Green open access.
Encouraged	Open code	Deposit analysis code with the data in an online repository - can have the same or separate DOI as the data.
Encouraged	CRediT taxonomy	Use the https://casrai.org/credit/.

Guide of how to meet requirements:

1. Use of ICPN 2.0

    a. ICPN 2.0 can be accessed freely here: International Committee for Phytolith Taxonomy (ICPT), International Code for Phytolith Nomenclature (ICPN) 2.0, *Annals of Botany*, Volume 124, Issue 2, 24 July 2019, Pages 189–199, https://doi.org/10.1093/aob/mcz064.

    b. Please use the morphotypes used in ICPN 2.0 table 1 within your article for all data tables, figures and discussion of phytolith morphotypes in your study.

    c. It is not acceptable to say you use ICPN 2.0 most of the time or when you can. The use of ICPN 2.0 needs to be consistent throughout your paper. There is a way to describe morphotypes that do not fit into the commonly named morphotypes.

    d. Any morphotypes that do not fit into the commonly named morphotypes in ICPN 2.0 need to be named using the principles for naming phytolith morphotypes described on the ICPN 2.0 and photographed to demonstrate the morphotype.

    e. You should provide a photograph of all of the morphotypes found in your phytolith data for purposes of peer review.

2. Full methods/protocol

    a. The methods you use should be fully transparent and by this we mean someone else should be able to replicate your method without your help. Although writing out the whole method of your study in the paper is likely excessive, especially for laboratory methods, you should reference a specific (published) methodology, and explicitly note any differences to the published method used in your study.

    b. You need to provide sampling information, laboratory protocol (e.g., sample extraction method), and counting method. Please, make sure to follow the checklist below in order to comply with this requirement.

    c. Please also state that you have fully complied with ICPN 2.0 for identification and where you have identified your own morphotypes using the naming principles.

    d. To provide a full laboratory protocol, we suggest you reference one methodological article (if you have used that method exactly) or write your exact protocol and add it as a supplementary file, within your open repository files, or directly using protocols.io.

Methods	Important information to be provided
Sampling	☐ Origin and context of samples ☐ How samples were collected and stored
Extraction protocol	☐ Type of equipment/supplies used (e.g., centrifuge, drying oven, centrifuge tubes) ☐ Chemicals and concentrations ☐ Step by step details of method (e.g., including centrifuge times and speed, initial weight/volume of sample, drying temperatures)

	☐ If concentration has been calculated, report steps followed (e.g., weighting steps, counting of fields of view on the slide, area of fields of view)
Counting method	☐ Describe if morphotypes have been systematically excluded from the counting (including non-identifiable morphotypes) ☐ Explain how single morphotypes have been counted - e.g., minimum count size or strategy ☐ Explain if silica skeletons (i.e., articulated cells) have been counted and how (i.e., separately from the total count or not) ☐ Scanning procedure ☐ Morphometrics applied ☐ Type of equipment used (e.g., light microscope, SEM), including magnification

3. Depositing open data

It is best practice to deposit your raw data as a csv file in an open online repository.

Raw data is data that has not been processed in any way. In phytolith research, this is data collected through the processing of sediments, plant material, dung, dental calculus, etc. (i.e., processing weights) and the counting of phytolith morphotypes. It should also include the number and area of fields viewed and other particles counted such as diatoms, unidentified phytoliths, etc. It could also include measurements taken of phytolith morphotypes.

We recommend using Zenodo (can be linked to GitHub and RStudio) or Open Science Framework (can be linked to GitHub and more), as they can be linked with other tools making updating versions of your files easier.

You could also use your institutional repository if you have one and you can often get help from staff in your library or a data steward within your institution.

All data and code should be given a licence so that other researchers understand how your data can be reused in the future. The two most common licences for open data are CC0 and CC-BY 4.0. Both these licences allow other researchers to distribute, remix, adapt, and build upon your work, even commercially. The main difference between these two licences is that CC0 does not legally require other researchers to credit you for your data and the CC-BY 4.0 licence does.

More detail about creative commons licences can be found here:
https://creativecommons.org/licenses/

Here are examples of repositories that you could use:

Free open repositories	Considerations
Dataverse	- Dataset and file level DOIs. - Choice of licenses - Up to 1TB storage, each item up to 250GB. - options for sharing de-identified and sensitive data.
Figshare	- All publicly available outputs get a DOI. - Choice of licenses - 5GB per item, 20GB of free private space but unlimited public space. - Can link to Github, Gitlab and Bitbucket. - Can use embargos and create private sharing links.
Open Science Framework	- DOIs on projects and each component of public projects. - Choice of licenses. - 5GB for each file, 50GB per public projects, 5GB for private projects. - Can use add ons to create more space. - Lots of add ons and features for open outputs throughout the lifecycle of a project.
Zenodo	- Every upload has a DOI. - Choice of licenses - 500GB per item - Github integration - Outputs can be closed for sharing sensitive data with certain individuals via restricted access mode.

More help with using repositories:

● Please see this **blog post**: Getting started with open repositories - Part 2 - What you need to know

● **Guide to uploading data on Zenodo:** - see this link

● Another **guide to uploading data in Zenodo**:
https://fairplus.github.io/the-fair-cookbook/content/recipes/findability/zenodo-deposition.html#

4. Analysis steps described
    a. Description of analysis including data preparation steps, what software packages used, version of software and what types of analysis.
    b. We strongly encourage the use of open software such as R and then the code for analysis can be provided with the article or shared along with your open data on an online repository.

5. Data availability statement
    a. Data must be made open to meet the requirements of this special issue.
    b. Therefore, stating 'Data available upon request' is not acceptable as a data availability statement. If data is being restricted in some way, you must provide clear access procedures but it is not recommended to do this.
    c. Below are some examples of acceptable data availability statements that you are welcome to copy and fill in with your exact details.

For open data:
- The data that support the findings of this study are openly available in [repository name e.g "figshare", "Zenodo", "Open Science Framework"] at http://doi.org/[doi].

For data within the article or supplementary files:
- The authors confirm that the data supporting the findings of this study are available within the article [and/or] its supplementary materials.

Embargo on data due to commercial restrictions:
- The data that support the findings will be available in [repository name] at [URL / DOI link] following a [6 month] embargo from the date of publication to allow for commercialization of research findings.

Data restricted due to privacy/ethical restrictions:
- The data that support the findings of this study are available on request from the corresponding author, [initials]. The data are not publicly available due to [restrictions e.g. their containing information that could compromise the privacy of research participants].

In this case, you need to be very careful with who the corresponding author is so that they have a long term email address. It would be better practice to deposit the data with your institutional repository privately with clear access criteria and then give an access process or person responsible for data access in the data availability statement.

More examples of data availability statements can be found here:
https://authorservices.taylorandfrancis.com/data-sharing/share-your-data/data-availability-statements/#

Encouraged

Open access article:

A. Gold open access - Article Processing Charge is USD 3080.
     i. Look to see if this is covered by your funder.
     ii. Your institution may have a deal with this publisher for a discount or free open access.
     iii. See this link for more information on the publisher's deals with funders.
     iv. You could also ask for a fee waiver.

B. Green open access (*embargo period = 24 months*)
     v. Pre-print = is a version of a scholarly or scientific paper that precedes formal peer review and publication in a peer-reviewed scholarly or scientific journal. The preprint may be available, often as a non-typeset version available free, before or after a paper is published in a journal (as long as it is the version of the paper submitted *before* peer-review).

vi. Post-print (also called accepted manuscript) = is a digital draft of a research journal article *after* it has been peer reviewed and accepted for publication, but *before* it has been typeset and formatted by the journal.

vii. You can deposit these versions of your article in any open online repository (such as Zenodo, Open Science Framework, Figshare or your institutional repository) and you will get a digital object identifier (DOI). This can then be shared with other researchers to give them access to your paper. Please be aware that post-prints published in institutional repositories are subjected to the embargo period. More details can be found here: https://www.elsevier.com/about/policies/sharing

viii. Do not share the *published version of the article* as this is not allowed.

Depositing open code

This could be done at the same time and in the same place as your open data.

If you have your data and code in a GitHub repository, the whole repository can be archived on Zenodo or Open Science Framework rather than depositing them as separate research outputs.

It is also good practice to provide a README file that explains the data analysis including the version of software used and fully commented code for replication purposes and a LICENCE (see above for the most common types of licences available).

CRediT taxonomy

Please record the contributions of your research team using the categories in the CRediT taxonomy. Here is a link to the taxonomy: https://casrai.org/credit/.