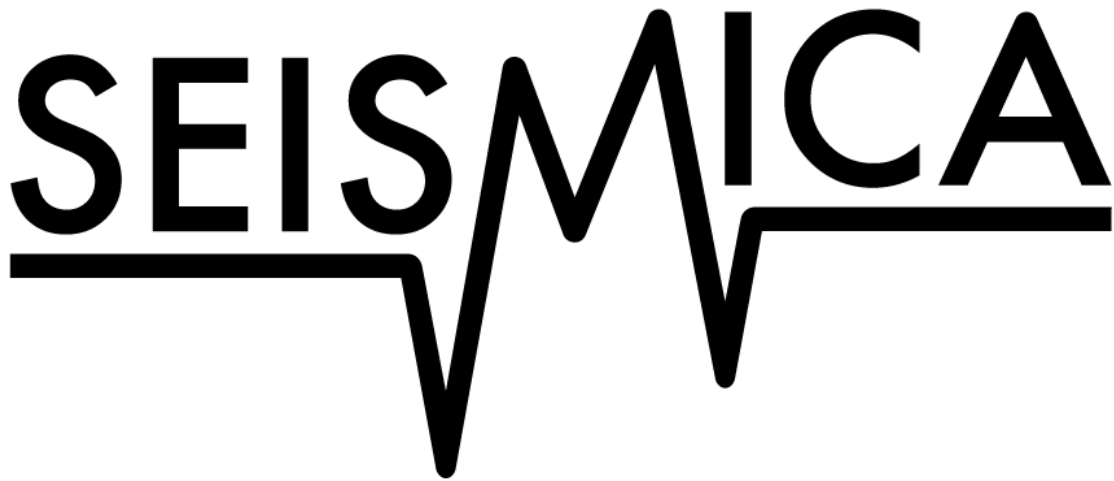

This is a non-peer-reviewed report exclusively submitted to EarthArxiv



The Seismica Initiative

Creating a *Diamond Open Access* community journal for Seismology and
Earthquake Science

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Executive Summary

On 24 November 2020, the Springer Nature publishing group announced the introduction of Open Access (OA) articles in Nature and its sibling journals. The corresponding OA publication fee (charged directly to the authors) was set to €9,500/\$11,390/£8,290, an amount that may be well out of reach for many researchers. This is especially a problem for researchers in developing countries, early-career researchers on small, personal fellowships, and researchers between positions. Employers and funding agencies are increasingly requiring that research be published under an OA license, forcing authors to accept the high publication fees, who are not always financially supported.

The high cost of these and similar OA fees for other Earth Science journals prompted a discussion among the seismological community on Twitter, during which the idea was raised to start a free-to-publish, free-to-read journal for seismological research. The concept of Diamond Open Access was already adopted by *Volcanica* (www.jvolcanica.org) for volcanological research, providing a precedent and motivation for similar initiatives (like *Seismica*, but also *Tektonika* for the structural geology community). Following community discussions on Slack with over 100 participants, a small "task force" was formed to investigate in detail the possibility of starting a Diamond OA seismology journal, adopting *Volcanica* as a model.

Here we detail the results of the exploration performed by the task force, with the aim of synthesizing a set of key requirements and corresponding actions to launch a Diamond OA journal in seismology and earthquake science, including scope definition, community engagement, and partnership with a library or other institutions. This document presents ideas and discussions while starting *Seismica* from November 2020 to July 2021, which may serve as a guideline but might not reflect the final stage of *Seismica*.

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Introduction

The cost of publishing and accessing scientific literature remains a contentious issue amongst scientific researchers, institutions, and funders. Earth Science (including seismology) is not immune to these problems. Across commercial and non-profit publishers, the Open Access publishing model may develop into a monetizing business model instead of aiding the universality of science (cf. the Plan S principles, <https://www.coalition-s.org/why-plan-s/>). As a prime example of this issue, on 24 November 2020, the Nature publishing group announced the introduction of Open Access (OA) articles in *Nature* and its sibling journals¹. *Nature* and its sub-journals are common outlets for "high-impact" seismological research. While OA initiatives are normally welcomed by the scientific community, this particular press release sparked a public outrage on Social Media. The reason? A publication fee of €9,500/\$11,390/£8,290 charged to the authors as a substitute for readers' subscription fees. Grossman and Brembs showed that the actual publishing cost per article is \$200-\$1000 USD, and the representative cost is about \$400 USD², while the average price paid to the publishers of articles (mostly multinational publishing companies) is approaching \$4000-5000 USD when article processing charges (APCs) and library subscription fees are added³. The German DEAL consortium, which negotiates publish & read agreements with some of the largest publishers, pays an average of €2,750 (~\$3110 USD) per article for their deals with Wiley and Nature Springer⁴.

Most of the comments published on Twitter expressed concern or disbelief regarding the magnitude of these publication fees; however, as was pointed out by some, *Nature's* move towards OA only revealed the "true" cost of publishing in this journal, which was previously obscured by opaque library-access agreements and pay-per-view subscriptions. To quote the press release directly:

¹ Else, H. (2020). Nature journals reveal terms of landmark open-access option, *Nature* 588, 19-20 pp., doi:10.1038/d41586-020-03324-y

² Grossmann A and Brembs B. Current market rates for scholarly publishing services [version 1; peer review: awaiting peer review]. *F1000Research* 2021, 10:20 (<https://doi.org/10.12688/f1000research.27468.1>)

³ Ibid.

⁴ <https://www.projekt-deal.de/about-deal/>

“Last month, Springer Nature signed a deal that allowed some German scientists to publish openly in Nature-branded journals for free, with a €9,500-per-article price baked into their institutions’ subscription fees.”

Revealing the true cost of publishing (including profit margins) is one of the intended consequences of the Open Access philosophy, and in this instance the mechanism was clearly effective. The announcement of *Nature’s* move to OA also raised concerns regarding “*financial gatekeeping*”, preventing scientists with little financial means to publish their work in such perceived top-rank journals. While this especially applies to researchers from developing countries, similar challenges may be faced by early-career researchers or researchers affiliated with less affluent institutions. Even though researchers from developing countries may apply for discounts and waivers based on their country or affiliation, these reduced publishing costs still demand a large allocation of research budgets that would otherwise be available for conducting science or training students. It is common for early-career scientists to be funded out of a small, personal fellowship, scholarship, or research grant that only covers salary and first-order research expenses. With no eligibility for publication fee discounts, these researchers rely on institutional support or supplementary grants to cover the publication costs. This problem is pronounced for early career researchers, especially those in underrepresented groups, who are relying on short-term contracts and will likely struggle with publication costs. If sufficient financial support cannot be acquired, these researchers will need to resort to subscription-based publishing formats, or perceived lower-impact journals that charge lower publication fees. Currently *Nature* still plans to offer a hybrid publishing scheme for its journals, allowing the authors to choose between OA and subscription-based publishing, but with the upgoing trend of OA publishing and increasing demand from funders to make publications directly (FAIR⁵ly) available, it is not inconceivable that *Nature* and other publishers will move to exclusively OA publishing formats.

Aside from *Nature’s* initiative, more and more journals from scientific associations or societies, like the American Geophysical Union’s (AGU) journals or the journals of the Seismological Society of America (SSA), are also now offering OA options,

⁵ FAIR = Findable, Accessible, Interoperable, Reusable. <https://www.nature.com/articles/sdata201618>

unfortunately at a high cost for the authors. Regardless of whether the authors can afford the publication fees that typically exceed several thousand €/\$/£, one may wonder whether it is justified to make such budget allocations when applying for public funding, and national funding agencies such as the German Research Foundation (DFG) indeed cap eligible publication costs. Ultimately, geoscientific research is mostly funded by public money, whether through a national research institute, or via national/international funding agencies (ERC, NSF, ANR, etc.), non-profit foundations (e.g., PRF), and others. Following the OA philosophy, publicly-funded research should also be publicly available. But with strained national research and education budgets, spending several thousand €/\$/£ per publication may seem unjustifiable.

In order to meet the demands of public funding agencies, and to prevent financial gatekeeping, a free-to-publish, free-to-read publishing format is necessary. This *Diamond OA* format clearly does not offer an attractive business model for investors, as no direct revenue is generated from either side of the publishing pipeline (the authors nor the readers pay for the publishing services like peer-review and typesetting). As a consequence, launching a Diamond OA journal requires an initial investment in time and effort from the scientific community. In spite of these hurdles, the Diamond OA publishing model is presently growing across a number of fields⁶.

Diamond OA publishing is in its infancy in the field of Earth Sciences, and it is hoped that early examples will prove to be a catalyst for the Diamond OA model to expand into all branches of Earth Sciences. Founded in 2018, *Volcanica* (www.jvolcanica.org) demonstrates the feasibility of the Diamond OA concept in this field of research. While the journal's footprint in the geoscientific landscape is growing (accepting around 10 articles per year), its potential impact is significant. By offering a free-to-publish, free-to-read platform for peer-reviewed work in volcanology, authors are given the opportunity to disseminate their work, and to access the work of colleagues, without financial barriers associated with commoditization of scientific communication. Moreover, since the journal is led by members from the volcanology

⁶ Fuchs C, Sandoval M. The diamond model of open access publishing: Why policy makers, scholars, universities, libraries, labour unions and the publishing world need to take non-commercial, non-profit open access seriously. *TripleC: Communication, capitalism & critique*. 2013;11(2):428-4

community, it exclusively serves the interests of the community rather than other stakeholders.

Because no revenue is generated from the publications or online advertising, *Volcanica* maintains a minimal financial overhead of roughly €500 per year, which is covered by *Presses universitaires de Strasbourg*⁷. This overhead comprises IT services (hosting and backup) and a subscription to CrossRef for minting Digital Object Identifiers (DOIs), and represents the minimum financial requirement for an online-only community-driven journal. Given this relatively small budget for running a journal (as compared to the OA publication fees charged by for-profit journals), there are few financial barriers to overcome for starting a Diamond OA journal in seismology and earthquake science following the example of *Volcanica*.

In response to the discussion that began on Twitter, an open *Seismica* Slack workspace was created on 26 November 2020 to discuss the possibility of starting a community-led Diamond OA journal for peer-reviewed seismological studies. In early December 2020, a task force was formed consisting of the authors listed on the cover page of this report. This group of people was assigned the task of exploring the options and challenges of starting a Diamond OA journal, such as a stable source of funding, an online publication platform, and various legal matters. In this report, the outcomes of these inquiries are summarized. Additionally, concrete recommendations and directives are provided that may guide the initiation of a Diamond OA journal.

⁷ Farquharson, J., Wadsworth, F. (2018), Introducing *Volcanica*: The first diamond open-access journal for volcanology, *Volcanica* 1(1), I-IX pp., doi:10.30909/vol.01.01.i-ix

Scope Definition & Mission Statement

Tagline

Seismica publishes original, novel, peer-reviewed research in the fields of seismology, earthquakes and related disciplines. We are a community-supported journal, promoting diamond open-access - articles are free to publish and free to read, without subscription.

Providing an inclusive scope

Any community-led journal requires support from a broad segment of the scientific community to flourish. In order to engage a wide audience, we propose a scope definition that includes a wide range of topics in seismological and earthquake sciences. Moreover, we aim to create bridges between related Earth science journals, such as *Volcanica* for volcanology, and *Tektonika* for tectonics/structural geology, by encouraging the submission of research articles at the interface of the different journals.

Below we provide a **non-exhaustive** list of topics that fall within the scope of *Seismica*. Additionally, we indicate topics that sit on the interface with other disciplines, and may therefore be more suitable for submission to *Volcanica* (**V**) and *Tektonika* (**T**). Although we recognize that such a discipline-based classification might not be the best way to represent the full breadth of *Seismica's* scientific scope, this broad list does provide an initial framework to help members of the community understand whether *Seismica* might be a suitable venue for publishing their work. In practice, the actual scope of *Seismica* will depend heavily on the expertise of the journal's editorial board. Whether or not the topic of a submitted manuscript falls within the scope of *Seismica* may be left to the discretion of the handling editor. Demand for publishing articles in areas not covered by existing editors may provide impetus to expand the editorial scope to include additional subjects.

Fault-slip and earthquake source phenomena: Studies of earthquake source seismology, transient/aseismic slip phenomena (e.g. slow slip events), rupture dynamics, fault geometry and architecture (**T**), induced and triggered seismicity, earthquake geodesy and remote sensing, fault mechanics, fault zone characterization and friction (**T**), earthquake reports, statistical seismology, earthquake early warning.

Earthquake records: archeo- and paleoseismology, historical and contemporary earthquake accounts, felt reports, fault geomorphology (**T**), seismotectonics (**T**), earthquake source processes from active and exhumed fault studies and laboratory experiments (**T**), geochronologic studies of faults (**T**).

Imaging the Earth: seismic tomography and structure, receiver functions, seismic anisotropy, active/passive source seismology (**T**), seismic noise imaging, urban and shallow subsurface seismology, volcano-seismology (**V**).

Theoretical and computational seismology: advances in seismology driven by numerical modeling including high-performance computing, by forward and inverse theories, uncertainty analysis and machine learning.

Beyond Earth-tectonic applications: cryoseismology, urban and environmental seismology, tsunami nucleation and propagation, ionosphere seismology, planetary and helioseismology, seismo-acoustics, infrasound, forensic seismology, nuclear test ban treaty monitoring, landslide monitoring.

Techniques and instrumentation: seismometry, field deployment reports, seismic networks and arrays, ground motion instrumentation (accelerometers, rotational sensors, GNSS), rotational seismology, fiber-optic technologies (Distributed Acoustic Sensing), seismic signal processing techniques.

Earthquake engineering and engineering seismology: seismic hazard and risk evaluation, strong motion characterization, site response analysis, geotechnical earthquake engineering, ground motion simulation, seismic response of structures and infrastructure, earthquake scenarios, seismic design codes, seismic protection.

Community engagement, communication and outreach: societal awareness and disaster preparedness, seismology education, citizen science, hazard and risk communication, publicly accessible datasets, and data analysis tools.

To remove financial barriers in the way of science

Open Access publications address an increasing need from the scientific community for more universal access to published research. The recent development of online portals, such as Sci-Hub, and of journals with public peer-review and discussion forums, like the EGU journals (<https://www.egu.eu/publications/>), are examples that these services meet a demand, especially for researchers who cannot gain access to paywalled publications⁸.

OA publishing models eliminate the need for external portals like Sci-Hub, as the publications are directly available to the reader with no need for library subscriptions or authentication systems. However, most academic publishers charge substantial publication fees to the authors to make their article available under an OA license, eventually creating more financial barriers for scientists when they want to share their work openly in top international journals.

Seismica's main objective is to remove all financial barriers to scientific publishing, and to provide an ethical and inclusive platform for peer-reviewed seismological research. By charging zero fees to both authors and readers, we ensure access to published work, encourage participation from society ("citizen science"), promote education, eliminate financial gatekeeping, and facilitate that (publicly funded) research budgets be spent on the research itself.

⁸ Bohannon, J. (2016), Who's downloading pirated papers? Everyone, Scientific Community, doi:10.1126/science.aaf5664

Publication Types

Research articles are usually published either as short letters, or as long research papers. Short articles, in journals such as Nature Geoscience, Geology, EPSL, GRL, or SRL are often limited to less than 6000 words, whereas journals that offer long papers, such as GJI, JGR and BSSA, accept any submission length. Very long papers are, however, discouraged by financial penalties, such as excess page charges. While the length difference suggests that a given format should be dedicated to a research scope (i.e. a short research project would fit perfectly in the letter format), the length of the publication is actually often associated with the prestige of the journal. In fact, there is a tendency of publishing thorough, extensive research in letter format, leading to potentially overstated and or overly summarized results in the main text, and extended supplementary material. As a corollary, studies that lack novelty, such as deployment or null-result reports, are often set aside but contain information that is still useful and important for the community to share and are essential for scientific progress in observational sciences like seismology.

Through discussions and based on the results of the Slack contributor survey, the community seems to mainly favor the following publication types:

- Short letters/articles - 92%
- Long research articles - 83%
- Null-results/failed science (a.k.a. negative results, unexpected "disappointing" outcomes) - 80%
- Earthquake and/or instrument deployment reports - 69%
- Seismic/geodetic network and data repository descriptions - 67%

Although these were not included in the voting options above, review papers could also be included since they provide a valuable resource for interdisciplinary and early career researchers, and also often attract a lot of attention.

*Based on the community's input, Seismica will publish three types of manuscripts: 1. **original research articles**, which present advances in scientific knowledge or understanding (without discrimination by length); 2. **reports**, which contribute peer-reviewed useful information to the public sphere but may not represent a*

substantive advance in understanding in themselves; and 3. **editorials**, which are invited guest opinion papers about a scientific idea, controversial topics and/or innovative concepts. Reports may fit into one of the following categories.

- Null-results/failed science reports

While null-results are often ignored in most publications, they are essential to science advancement. Due to the lack of interest and the difficulty in defining the value of negative results, very few journals offer the possibility for such publication. The journal PLOS ONE explored this in one of their collections [“The Missing Pieces: A Collection of Negative, Null and Inconclusive Results”](#). In particular, they considered “negative findings which are valuable to the community in cases where the result is illuminating in the context of previous work.” Publication of negative or incomplete results could follow the same approach in *Seismica*. A paper structure could be proposed to frame the scope of the publication:

1. Background
2. Methods
3. Null/Negative Results
4. Discussion with respect to previous work
5. Insights from these null/negative results

- Rapid reports

Seismica aims at publishing earthquake reports that could be used either as a first report of a recent earthquake, swarm, or other event, or as a consolidated review of a lesser-known past earthquake. However, unanalysed data from earthquake agencies (e.g. USGS, Geoscope, EMSC) or previously published studies will not be accepted. Earthquake reports published in *Seismica* should incorporate multiple analyses of the earthquake of study, examples including:

1. Seismo-tectonic context,
2. Analysis of main event(s) source properties,
3. Surface measurements (e.g. InSAR, GPS, seismograms, PGA, site amplification),
4. Finite-fault inversion,
5. Results from backprojection,

6. Relocation and analysis of main event(s), foreshocks and /or aftershocks.
7. Felt reports and effects on the built environment,
8. Environmental earthquake effects and geological observations,
9. Tsunami analysis if applicable, etc.

Earthquake reports are intended as a starting point for in-depth investigations, or as readily accessible resources for review and data mining studies. Reports from non-traditional earthquake countries are especially welcomed to complement global earthquake records. Earthquake reports are explicitly *not* intended for making an early "claim" on an earthquake in preparation of a more in-depth study. Editors and reviewers will evaluate submissions in this spirit, and submissions will be rejected that offer little more information beyond the summary webpages routinely provided by earthquake agencies.

- Software/Code articles

The structure for a Software paper in *Seismica* could follow the example of the EGU journal, [Geoscientific Model Development](#) which is dedicated to description, development, and evaluation of numerical models. Reproducibility is here the essential criterion. Publications should include a main paper, a user manual and a source code. The main paper should describe the scientific context, the methods employed, and describe test case simulations, model verification and/or evaluation (unit tests, integration tests, event logging, etc), or tutorials, to be included in the code repository. All code repositories must be publicly accessible upon submission, and computer codes are subject to review. Authors are encouraged to follow *Seismica's* best practices for code and software development (to be published on the *Seismica* website).

- Instrument deployment reports

Regarding instrument deployment, the example of [SRL: Data Mine](#) could be followed. Reports are constructed given a specific structure:

1. Scientific background and motivation,
2. Description of the instrument deployment (including technical details of the instruments themselves, such as instrument response, make and model, etc.),

3. Description of obtained data, linked to a repository that must be publicly available at the time of submission,
4. Preliminary observations and interpretations.

Rapid Reports will go through an accelerated review process, the other types of reports will follow the same review process as research articles and editorials (further details below).

Because data repositories are now widely used in Earth Sciences, there seems to be no need to establish a new data repository in *Seismica*. However, *Seismica* must enforce that data sets and/or computer codes referenced in the submitted manuscripts be uploaded to a long-term, open repository. GitHub and related git repositories offer a convenient platform for keeping public code up-to-date, but they usually do not guarantee long-term archiving. All data/code contributions are therefore expected to (also) be uploaded to DOI-citable long-term repositories like Zenodo or Figshare. For large datasets, the EPOS repository can provide tailored solutions at no cost to authors.

Publication requirements

In addition to the common standards for scientific publishing, all *Seismica* publications will be subjected to the following requirements:

- Authors should present reproducible results. This may not always be entirely feasible, but editors and reviewers will be asked to keep reproducibility in mind during the review process.
- Where appropriate, data/code/software should be made available to the editors and reviewers at time of submission and publically available at acceptance. If this requirement cannot be met (for instance due to intellectual property restrictions), then this must be explicitly stated in the appropriate sections. If data are embargoed, then the expiry date should be indicated in the data availability statement.
- Authors are strongly recommended to refrain from using colormaps that are not perceptually uniform, such as "jet"/"rainbow". Authors wishing to find out

more about are referred to Crameri et al. (2020)⁹ and Zeller and Rogers (2020)¹⁰.

- As *Seismica* is designed to publish original content, previously published studies and hypothesis papers will not be considered for publication.

⁹ Crameri, F., Shephard, G.E. & Heron, P.J. The misuse of colour in science communication. *Nat Commun* 11, 5444 (2020). <https://doi.org/10.1038/s41467-020-19160-7>

¹⁰ Zeller, S., and D. Rogers (2020), Visualizing science: How color determines what we see, *Eos*, 101, <https://doi.org/10.1029/2020EO144330>.

Editorial Structure

Journal Editors (including Associate Editors and similar roles) provide many functions essential to the journal life cycle. Their efforts are augmented by support from Handling Editors or Managing Editors who are often staff members at publishing companies who own or are contracted to the journals. This leadership is broadly responsible for editorial gatekeeping, according to the mandate of the journal, thus coherency of vision and clear definition of roles are essential for the development of a journal of character and repute. In detail, editorial team functions include:

- Defining the journal strategy and editorial policy;
- Ensuring that editorial roles are filled in line with the editorial strategy and addressing the distribution of expertise required to support its aims & scope;
- Cultivating positive transformation through peer review;
- Building relationship and goodwill with the scientific community;
- Promoting and developing the journal profile and scale (if desired).

At most journals, these roles are appointed and Chief Editors may serve decades-long terms. However, long editorial terms negatively correlate with journal impact¹¹ as they codify the interpretation of the Aims & Scope, and have a predictably negative impact on editorial diversity. It is a core mission of *Seismica* to develop a globally and demographically diverse editorial team. It may be more challenging to maintain a consistent vision and approach across a larger editorial team¹². This challenge will be offset by the advantages gained by sharing the workload across a larger team, rotating roles, and through efficient communication among the team. For example, holding workshops for editorial team members will reinforce consensus over community values and democratically set journal policies.

¹¹ Petersen, Hattke and Fogel (2017) Editorial governance and journal impact: a study of management and business journals. *Scientometrics* 112, 1593-1614

¹² Feldman (2008) Building and maintaining a strong Editorial Board and cadre of *ad hoc* reviewers, in: Baruch, Konrad, Aguinis and Starbuck, eds., *Opening the Black Box of Editorship*, Palgrave MacMillan, 68-74.

The model developed by the founders of *Volcanica*¹³ consists of an Editorial Board (at the time of this writing ~30 members) whose expertise spans the scope of the journal. This is consistent with the traditional role of an editorial board as a ready reviewer pool to complement the role of external reviewers or step in when reviewers cannot be found. In a break from tradition, the “higher functions” of increased responsibility (paper handling, direction-setting, management) are delegated to an “Editorial Committee” elected from the Editorial Board. At present, the journal is young (publishing since 2018) so the Editorial Committee strongly overlaps with the founders of the journal, who have led its successful launch and establishment. This structure appears to have the potential for long-term flexibility and success with smooth and incremental transference of leadership and responsibility. It has the added benefit that the Editorial Board can include emerging scientists who seek to gain more experience, knowledge and responsibility with time, and can serve as an incubator for developing best practices in reviewing and editing according to community values. Like *Volcanica*, *Seismica* will institute a mentoring program for new editors (or a bilateral mentoring program to help experienced editors also shift to a different type of mentoring structure). This program will be supported with interdisciplinary mentorship through relationships with other new Diamond OA journals. We speculate that this model supports journal loyalty and support from not only Editorial Board members but also their individual research networks¹⁴. *Seismica* acknowledges that creating a reliable community is essential for the durability of any independent journal¹⁵.

Meanwhile, a new journal must establish its reputation for scientific rigor, prestige, timeliness, and quality of editorial handling in order to attract submissions and sustain volunteer service¹⁶. Until a journal has made its own name, it must borrow reputational currency from its editorial team. Throughout the life of the journal, recognition of the editorial team will be a significant factor to attract submissions from authors, both in terms of interpreting the fit of their papers to the scope, and

¹³ <https://www.jvolcanica.org/ojs/index.php/volcanica/about/editorialTeam>

¹⁴ Ryan (2008) *How may I help you? Editing as a service*. in: Baruch, Konrad, Aguinis and Starbuck, eds., *Opening the Black Box of Editorship*, Palgrave MacMillan, 27-38.

¹⁵ Clark and Wright (2008) *Sustaining independent journals*. in: Baruch, Konrad, Aguinis and Starbuck, eds., *Opening the Black Box of Editorship*, Palgrave MacMillan, 176-.

¹⁶ DeNisi (2008) *Managing the editorial review process: It's the people that matter*. in: Baruch, Konrad, Aguinis and Starbuck, eds., *Opening the Black Box of Editorship*, Palgrave MacMillan, 75-87.

also in assessing the potential prestige gained by publishing there¹⁷. The journal leadership must also maintain relations with other entities essential to web hosting, indexing, and other key functions.

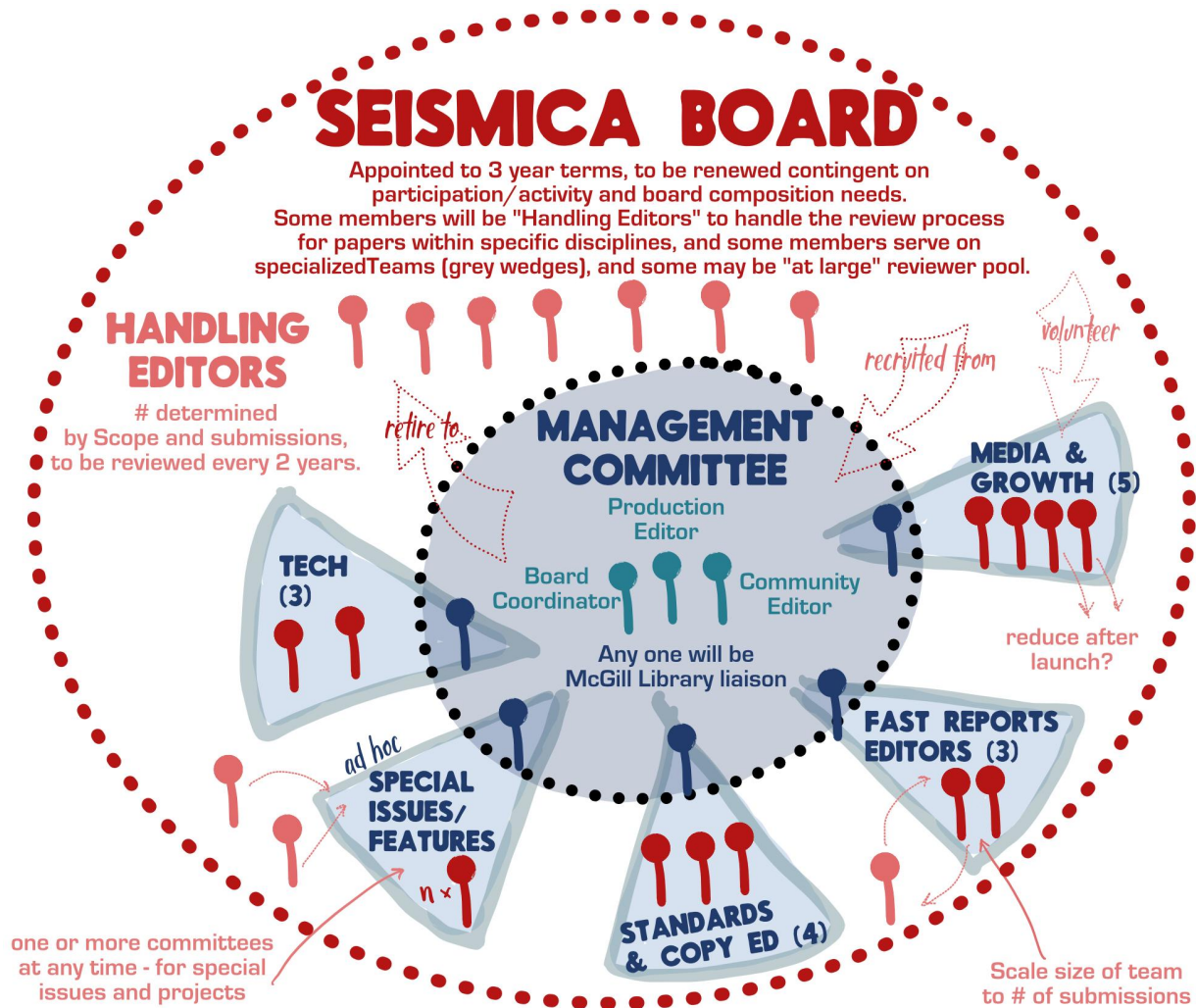


Figure 1: Proposed editorial structures and roles. The Seismica Board of 30 members will be led by the Management Committee of eight (blue and teal figures) of whom five will be assigned to specific committees (grey wedges) where they are joined by other Seismica Board members (red figures). At-large members (pink figures) will fill out temporary committees (e.g. special issues editing) and fill out the disciplinary expertise as paper-handling editors.

¹⁷ Zedeck (2008) *Editing a top academic journal*. in: Baruch, Konrad, Aguinis and Starbuck, eds., *Opening the Black Box of Editorship*, Palgrave MacMillan, 145-156.

These defined needs lead us to propose an editorial structure which will best serve the global communities of authors and readers for *Seismica*. Inspired by the structure of *Volcanica*, we propose a **Seismica Board** of ~30 members representative of the diversity of the journal's intended audience in demographics, disciplines, and global distribution (Figure 1). *Seismica* Board members support the journal through providing reviews if required, engaging in mentoring programs, promoting the profile and aims of the journal to the wider scientific community.

The *Seismica* Board will rotate through elected terms on the **Management Committee**, a body of 8 charged with day-to-day management of the journal as well as specific leadership positions aimed at specific journal functions and development. Members of the Management Committee may lead working groups or subcommittees composed of *Seismica* Board members to address their responsibilities.

Anticipated workloads for each role will be defined, and the number of Management Committee or *Seismica* Board members may change with time to reflect disciplinary distribution of submissions, demand, and workload balance. *Seismica* Board members will be renewed on shingled 5-year terms and the Management Committee shall meet annually to review the Committee composition, size, and fit with disciplinary and regional audiences.

Management Committee members will stand for election every 3-4 years. The Management Committee will consist of three members whose primary task is journal management, and five members who lead Teams which oversee core functions of the journal: Tech, Media & Growth, Fast Reports, Standards & Copy Editing, and Special Features. One of the eight Management Committee members will be the liaison to McGill Library or other hosting entity.

Further discussions surrounding the exact Editorial Board structure for *Seismica* are ongoing.

Responsibilities of Authors, Reviewers and Paper-Handling Editors

General Responsibilities of all parties

- All parties must ensure scientific integrity, as per the The Singapore Statement on Research Integrity¹⁸.
- All parties must ensure respectful communications between authors, editors, and reviewers. Any personal or abusive attacks are unacceptable, and will be escalated to an independent appeals committee. Also any implicitly biasing and racially/gender specific coded language must be avoided. Specifically, reviews that do not comply with *Seismica's* Code of Conduct will be rejected by the Handling Editor.
- All parties agree to the journal's Code of Conduct.
- All parties must declare conflicts of interest and recuse themselves in cases of significant conflict.
- Authors should suggest recommended reviewers in the relevant subject area. Where a submission is focussed on a specific geographical area, we recommend that the authors suggest at least one reviewer based in that region. This ensures a wider diversity of reviewers, as well as increasing the impact of the scientific work. Editors should also try to ensure this themselves, where possible.
- All parties should use inclusive language in their communications:
 - Avoid gendered language (e.g. manpower → workforce/personnel)
 - Be sensitive to people's pronouns and write in a passive, gender-neutral style (e.g. "the authors say ..." rather than "he/she says") if pronouns are not provided.

Responsibilities of Authors

- Scientific results should be reproducible. Authors are required to fully document theory, methods and procedures used, and to provide an

¹⁸ <https://www.wcrif.org/statement>

explanation and source for data and codes used to generate the results (see guidelines for best practices and requirements).

- Authors must run a full spelling and grammatical check prior to submission (e.g., using (free) online tools such as Grammarly).

Responsibilities of Editors

- Once a decision on a manuscript has been taken, the reports from all reviewers should be shared amongst reviewers and the editorial decision should be communicated back to reviewers (via the OJS system) to ensure an ongoing learning process for everyone dedicating their time.
- Eliminate, whenever possible, implicit bias and foster equal representation, specifically when inviting reviewers.
- Editors should treat any manuscripts they are dealing with, and the related process, as confidential.
- To ensure that all unpublished data, information, interpretation and discussion in a submitted article (which hasn't been published in a preprint repository) remain confidential and not to use reported work in unpublished, submitted articles for their own research.
- Not to use information obtained during the peer review process for their own or any other person's or organisation's advantage, or to disadvantage or discredit others.
- Recruit diverse reviewers.
- Editors should ensure that reviews are suitable before passing them onto the authors. This includes inappropriate language, or anything that violates anything listed under "Responsibilities of Reviewers" below. Any inappropriate content should be reported to the senior editorial team, who will then issue feedback and a warning to the reviewer.

Responsibilities of Reviewers

Reviewers of submitted manuscripts will be expected to:

- Inform the Editor if there is a conflict of interest: Specifically, reviewers should not review manuscripts authored or co-authored by a person with whom the

reviewer has a close personal or professional relationship, if this relationship could be reasonably thought to bias the review. The *Seismica* board will provide guidance and resources for providing constructive reviews.

- Explain and support their judgements so that editors and authors may understand the basis of their comments, and to provide reference to published work, where appropriate.
- Inform the Editor of any similarity between the submitted manuscript and another either published or under consideration by another journal.
- Ensure that all unpublished data, information, interpretation and discussion in a submitted article (which hasn't been published in a preprint repository) remain confidential and not to use reported work in unpublished, submitted articles for their own research.
- Alert the Editor if a manuscript contains or appears to contain plagiarized material, falsified or manipulated data.
- Only suggest that authors include citations to the reviewer's (or their associates') own work where this adds value to the scientific aspects of the paper.
- Treat any manuscripts they are dealing with, and the related process, as confidential.
- Not to retain or copy the submitted manuscript in any form; to comply with data protection regulations, as appropriate.
- Not to use information obtained during the peer review process for their own or any other person's or organisation's advantage, or to disadvantage or discredit others.
- Scientific results should be reproducible. Authors are recommended to provide an explanation of data sources and codes used to generate the results. Reviewers and Editors should check this.
- Since *Seismica* will not initially be using full-time copyeditors and mainly relying on volunteers from the community, any typos or grammatical issues that the reviewers can flag will be greatly appreciated. However, these issues shouldn't form the main objectives of the peer review reporting.
- It is not compulsory, but we recommend that peer reviewers sign their reports to ensure open and constructive reviews, and acknowledging the community-based philosophy of *Seismica*.
- Reviewer recommendations and editorial decisions:

- Accept
- Minor revisions
- Major revisions
- Technical revisions after initial submission (by Editor only) e.g. figures illegible
- Reject with an opportunity of resubmission
- Reject
- Reject and recommend submission to a related Diamond OA journal (especially if the remit of the paper better falls within the editorial expertise of one of the other Diamond OA journals).
- Rejections can occur primarily due to reasons of:
 - Plagiarized material.
 - Significant flaws in the reasoning, data processing, methods, interpretation and/or discussion.
 - Novelty: submissions using the same method, analysis, theory and data, and giving the same results and conclusions from existing published results without quantitative comparison will be rejected.
 - Not being able to read the general methods and results of the manuscript due to poor Scientific English, without any unnecessary language-based gatekeeping. Guidance will be provided to Editors and Reviewers on how to address this. The Editorial Team can also provide constructive advice on this for a later resubmission.
 - Unsubstantiated pseudoscience or other work that can be either: (1) readily disproven (2) unreproducible. For example, accurately predicting future earthquakes in space and time.
 - Out of the (broad) *Seismica* scope.
 -

Journal Building Timeline and Roadmap

The Gantt chart below represents the anticipated tasks and timeline for building and launching *Seismica* by January 2022.

Completed	Assigned & Scheduled	Needs to be assigned	Further consultation required

2021	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Logo finalized									
Website front-end ready									
Aims & scope									
Contracts/agreements with journal host signed									
Editorial policies: decision on review structure(s), basis for rejection, decision letter templates, article types									
Author, reviewer/editor instructions									
Recruitment: criteria, potential candidates, advertisement									
Tex/Word templates ready (+ on website). Copyediting policies.									
Launch plan									
Manuscript platform ready									
Journal development: formalisation of growth strategy, reputation development									
Journal staffing: workload estimates, time tracking, set-up of mentoring programme									
Start recruitment editorial board									
Coordination with other Diamond OA journals, set up mentoring program and reviewer training									

Community Engagement

From the outset, *Seismica* has been a community-led endeavor. Since the *Seismica* Task Force was established, we have sought to grow the community of interested volunteers willing to share their thoughts and expertise. In this section we document some of our efforts and plans in that regard.

Presence on social media

We have moved quickly to establish social media accounts for *Seismica* on key platforms. *Seismica* now has a Twitter account ([@WeAreSeismica](#)), Instagram account ([@weareseismica](#)), and Facebook account ([@WeAreSeismica](#)). We have aimed for consistent branding across the platforms, using the same account handles and avatar.

At present, the majority of engagement has come through the Twitter account, with over 1000 followers since it was established in December 2020. We have used posts on Twitter and Facebook as a means of reaching out to the community and soliciting volunteers to join our Slack discussion group. Volunteers are asked to email *Seismica* via a dedicated address (info@seismica.org).

Soliciting community feedback

We are currently collecting community feedback via several methods – through open discussions on our Slack channel, and via a Google Forms survey of which the results are summarized in the Appendix. The survey is intended to gauge the interests, expertise, skills and potential future effort levels of contributing volunteers, along with soliciting advice on where else to publicize our efforts. At present, we have shared the survey only with the contributors to our Slack channel, but we recognize that we will need to disseminate it more widely in future, as only a fraction of the potential volunteer, author and readership pools for *Seismica* are active on social media and will have seen or heard about it thus far. To this purpose we

established regular Email newsletters and published a guest post at the EGU Seismology blog¹⁹.

In recognition of this 'Twitter bias' in community participation in *Seismica* at present, we are planning one or more additional waves of publicity in which we target mailing lists for seismology and related disciplines. We hope that the initial round of survey responses will help to identify some additional, less-obvious targets for our communications.

Diversifying representation within Seismica

A goal of the *Seismica* initiative is to broaden access to seismological literature. We anticipate that researchers in developing and emerging countries will be among the groups that will benefit from the ability to both read and publish articles without the burden of paying for subscriptions or APCs. To ensure that we can cater to the needs of our diverse readership, we realize that we need to have diverse representation within our organisation, including representatives from developing and emerging countries. To ensure this, we plan to advertise widely and recruit intentionally, and to remain conscious of the ethnic, national and gender diversity among our contributors and volunteers.

A strong, unbiased peer-review process ensures scientific integrity but requires diverse reviewers and editors²⁰. *Seismica* is fully aware of Geosciences having a 'Whiteness problem'²¹ and that diversity and inclusion cannot exist without a sense of belonging²². Thus, *Seismica* will encourage and monitor JEDI (justice, equity, diversity, inclusion) aspects in all steps of the publishing process, from the editorial board to reviewers to authors. We will also invite editorial spotlights that regularly address JEDI issues in seismology - and within *Seismica*²³.

¹⁹

<https://blogs.egu.eu/divisions/sm/2021/04/27/the-seismica-initiative-towards-a-community-driven-diamond-open-access-journal-for-seismological-research/>

²⁰ e.g., [Gender and international diversity improves equity in peer review](#), [The gender gap in science: How long until women are equally represented?](#)

²¹ <https://www.nytimes.com/2019/12/23/science/earth-science-diversity-education.html>

²² <https://www.nature.com/articles/s41561-019-0519-z>

²³ <https://www.nature.com/articles/d41586-018-05465-7>

Seismology is an incredibly diverse discipline with applications ranging from natural hazard research to exploration prospecting. Engaging a diverse *Seismica* community is not only promoting JEDI as exemplary in seismology for all geosciences but also brings a richer range of perspectives to our enterprise. JEDI can also be improved by having a more diverse and global engagement on these issues.

Interaction with other Diamond Open Access geoscience journals

We (the group developing the *Seismica* initiative) are not the only disciplinary group in the geosciences inspired by the example of *Volcanica* (and galvanized by the prohibitive costs of commercial open access publishing) to explore forming their own Diamond OA journal. Of these nascent sibling efforts, currently *Tektonika* and *Sedimentologica* are the most advanced. These four journals are currently joined in an informal collaboration to exchange information, ideas, experience, and concrete products such as manuscript templates and processing scripts. The existing Diamond OA journal [The Sedimentary Record](#), published by the [Society for Sedimentary Geology](#) has also joined this collaboration.

As all of these efforts have broadly similar goals, it is clear that there are benefits to informal collaboration and coordination as we move towards launch. We can also all learn from the experiences of the editorial team of *Volcanica*, and so far have held three joint meetings to facilitate information exchange between the various groups. We anticipate establishing a committee (working name “The Guild of Diamonds” committee) to provide a more formalized mechanism for such coordination in the future. Some possible areas of coordination include: reviewer guidance and training, mentoring for editorial roles, benchmarking and planning toward launch, promotion, and journal development and growth, reviewer pools, manuscript transfer system, alignment of philosophies.

Logo competition

One means of engaging our community members is through the selection of a logo for the masthead of our journal. In March 2021, a logo competition was held to find a logo design (see title page) that was broadly supported by the participants of the

Slack channel. This competition was won by Adam Pascale, and his logo design was subsequently retouched by a professional designer (Lucia Perez-Diaz).

Technical Requirements

Open Journal System (OJS)

Minimum requirements: To run the latest release of OJS 3.x, the web server will need:

- PHP 7.3 or later with MySQL, MariaDB, or PostgreSQL support
- A database server: MySQL/MariaDB 4.1 or later OR PostgreSQL 9.1.5 or later
- UNIX-like OS recommended (such as Linux, FreeBSD, Solaris, Mac OS X, etc.)

The OJS is relatively lightweight (50 MB zip install).

The total size of the journal will depend on hosted files (templates, examples) and:

- the number of submitted/published articles
- the quality of the graphical content (minimum: 300 dpi; recommended: 600 dpi)
- the supplementary material (databases, tables, figures, videos)

Long-term backups are an essential element of the journal, as uptime & persistence are essential to ensure long term accessibility of the published material.

Domain names & emails

Currently supported by AskTom SCS, configured at OVH

- seismica.org domain costs 11€ vat incl / year
- 5 emails (5GB each) cost 5€/year - info@seismica.org is the only configured email address to date

Current hosting is located on T. Lecocq's web host OVH. The domain is transferable if needed, or only the DNS can be changed to point to another host if needed.

Themes and Plugins

OJS allows themes and plugins to be added to enhance the user experience. Themes and plugins are written in PHP. OJS comes with a bunch of available themes:

- Default
- Bootstrap3
- Classic
- Health Sciences
- Immersion
- Manuscript

These can be installed directly from the web interface on which *child themes* can be built easily.

Content Customisation

The content, e.g. authors/reviewers guidelines, etc. are editable from within the OJS web interface, and require no coding knowledge.

Legal matters

If based in Europe or not, the website should conform with Data Protection/Privacy rules (GDPR, Data Protection Act, etc). Most of them are easy to implement (Cookies/Data/Privacy policies online, and offline documents with procedures to handle requests).

Library hosting options

Several hosting options were investigated by the *Seismica* task force. Self-running Diamond OA journals (using OJS on a server provided by some institution) often do not have any legal identity or ability to handle money, essentially remaining an informal consortium rather than a business or charitable entity. Other journals link with a professional society to take advantage of any legal or financial structures already in place.

McGill University Library hosting has been identified by the task force and approved by the community on Slack as the best option amongst those investigated, due to the cost (\$0), broad range of provided services (hosting, technical support and expert advice) and easy, expedient setup.

McGill University Libraries

The Library at McGill University (Montréal, Canada) currently hosts several Diamond OA Journals which are running in Open Journal Systems (OJS) on library-hosted servers. McGill maintains and updates OJS and runs free training workshops to support journals in using it, including plugins for archiving systems (such as LOCKSS). The library also acquires ISSN, registers DOIs for each paper via CrossRef, and provides expert advice on copyright, licensing, and indexing for journal editorial teams. It is required that a new journal launch includes one member of the Editorial leadership who is a McGill professor, but as editorial responsibilities shift, Editors from any institution may take up the McGill library liaison role. The run-up time to launch a new journal is 2-3 months, and the journal must give 6 months notice before leaving the library, at which point McGill will facilitate migration of all resources and documents. Once the journal has established a track record (minimum 2 years of publication), McGill Library will support our application for indexing in Scopus and establishment of an Impact Factor on Web of Science, and in line with DORA. Our point of contact is Scholarly Communications Librarian Jessica Lange, who supports the operations of McGill hosted journals, has served previously as Editor-in-Chief of a Diamond OA journal, and supports the university community

with workshops on author rights, copyright agreements, and scholarly communication. Her recent work studies the distribution of volunteer labor at independent Diamond OA journals. Further details on the library policies for journal hosting are found here: <https://libraryguides.mcgill.ca/c.php?g=452153>

Centre Mersenne

The Centre Mersenne is a CNRS-based initiative (*Centre National de la Recherche Scientifique*), French Minister of Research) aiming to support and publish diamond open access journals such as *Seismica*. The initiative was developed by the French mathematics community over the last 10 years. Funded by the *Plan National pour la Science Ouverte* (national open science plan), it operates out of Université Grenoble Alpes and CNRS. Currently, the Centre Mersenne hosts ~10 journals, including the proceedings of the *Académie des sciences* (academy of sciences). They host an Open Journal System on their own servers, providing technical support and all referencing and database maintenance for free after initial installation costs (~2 k€). In addition to that, they propose a few services, including technical upgrades, assistance to the editorial process and typesetting for fees. The prices are in general not excessive (i.e. on the order of a few k€ per year, less than 10k€, for a journal like *Seismica*) as the centre is fully subsidized by the minister of research. Our point of contact is Célia Vaudaine, operational manager of the centre, who provided us with a list of costs, actions and answered our questions. At the time of writing, the centre Mersenne is being pushed by CNRS to organize its funding scheme trying to turn it into a service provider (i.e. at a cost) and we cannot foresee the evolution of costs for hosting a journal like *Seismica*. Further details can be found here: <https://www.centre-mersenne.org/>

Concluding Remarks

While many aspects associated with the creation of a Diamond Open Access journal remain untouched by this report, the hope is that this document provides a foundation for further discussion and planning of the launch of *Seismica*. Since *Seismica* is a community effort, the task of further working out the details of e.g. the Code of Conduct, editorial policies, and the editorial recruitment process can be distributed across volunteers from the community. At this time of writing, this distribution of the workload is already in progress in the Slack workspace and beyond.

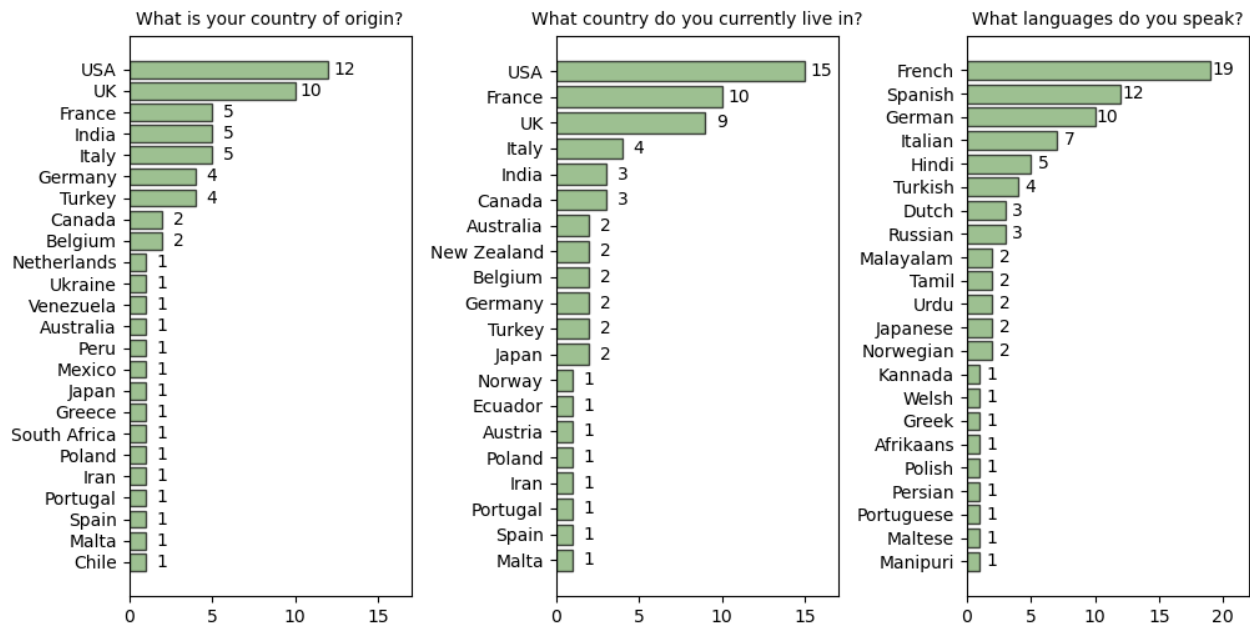
As with any long-term project, unforeseen challenges will undoubtedly present themselves before or after the launch of this journal, but the community will provide the support to face these challenges. For this reason it is important to remain closely connected and to organize community engagement activities, such as graphical/video abstracts and advertising of recently published works, symposia hosted by *Seismica*, "meet the editors" and panel discussions, and other initiatives. By positioning the journal closely to its intended audience, *Seismica* will be more successful in recruiting editors and reviewers, expanding the visibility of the publications, and earning a credible reputation.

Lastly, the success of *Seismica* will not be measurable in terms of the number of submissions, citations, or reader counts, since these metrics are not representative metrics for the journal's mission: to provide an equitable platform for peer-reviewed seismological research, without financially burdening the authors or readers. The success of *Seismica* will be visible in the number of people that were able to access peer-reviewed research to further their own, and that were able to disseminate their work without allocating budgets which would otherwise have been available for research, education, or development. In the end, that is the kind of impact that matters more than just citations.

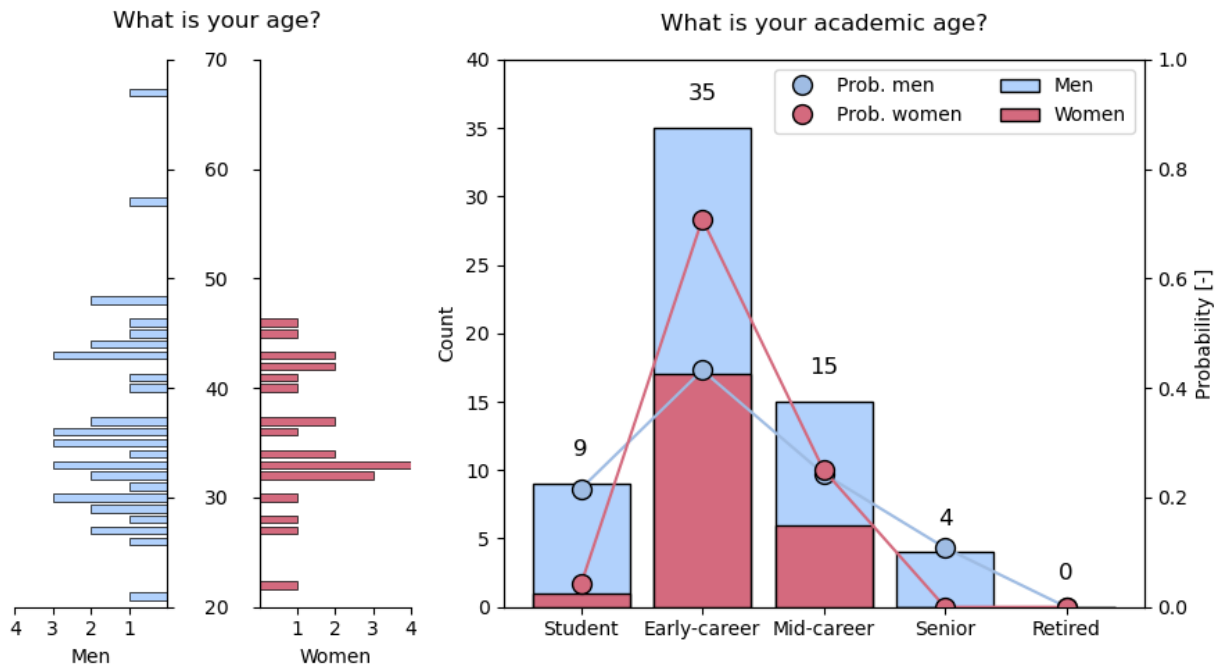
Appendix: Contributor survey results

In February 2021, a survey was held among the participants of the *Seismica* Slack space to get a measure of the demographic and geographic distribution of the participants, their academic profile, and their opinion on various matters pertaining to the future of *Seismica*. The results of this survey are summarized below,

Nationality, residence, and language

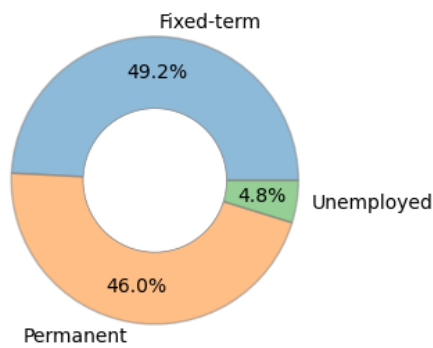


Gender, age, and "academic age" (defined as the number of years since obtaining a degree)

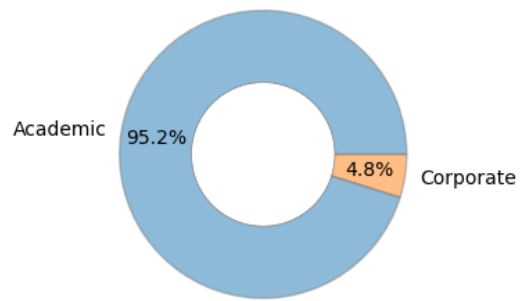


Employment status and employment sector (if applicable). Academic and public sector (government and national research institutes) are taken together.

What is your employment status?

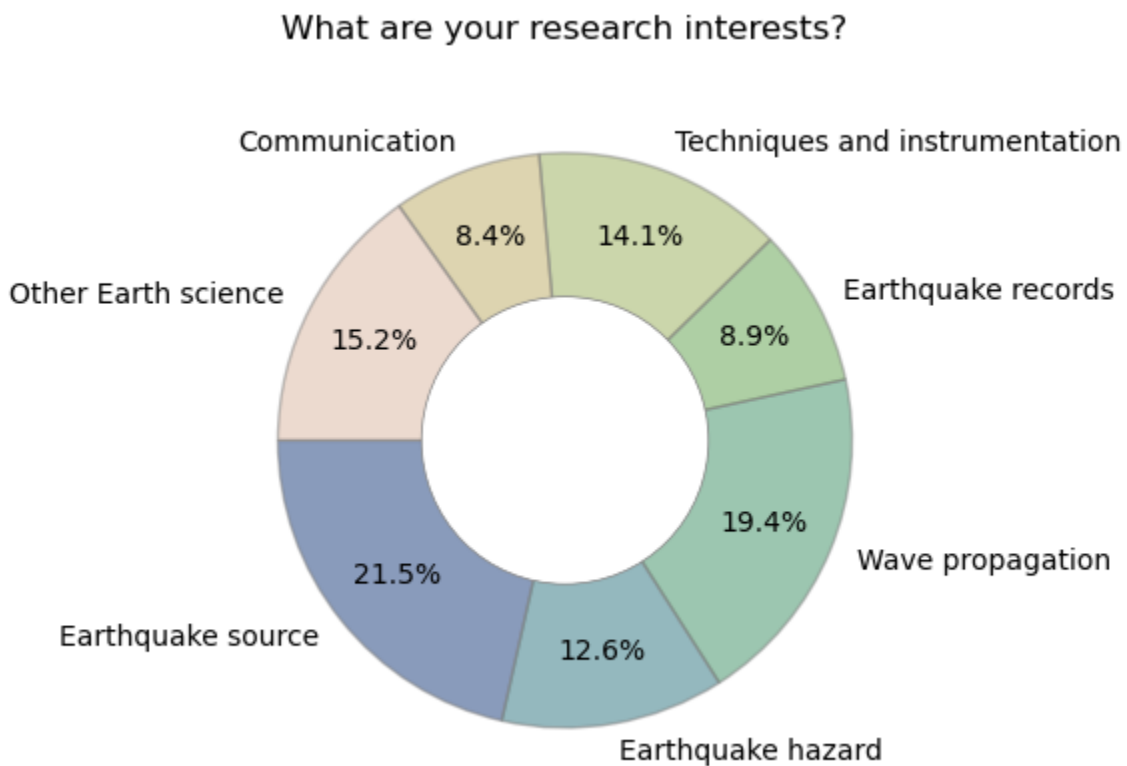


How would you characterise your employer?



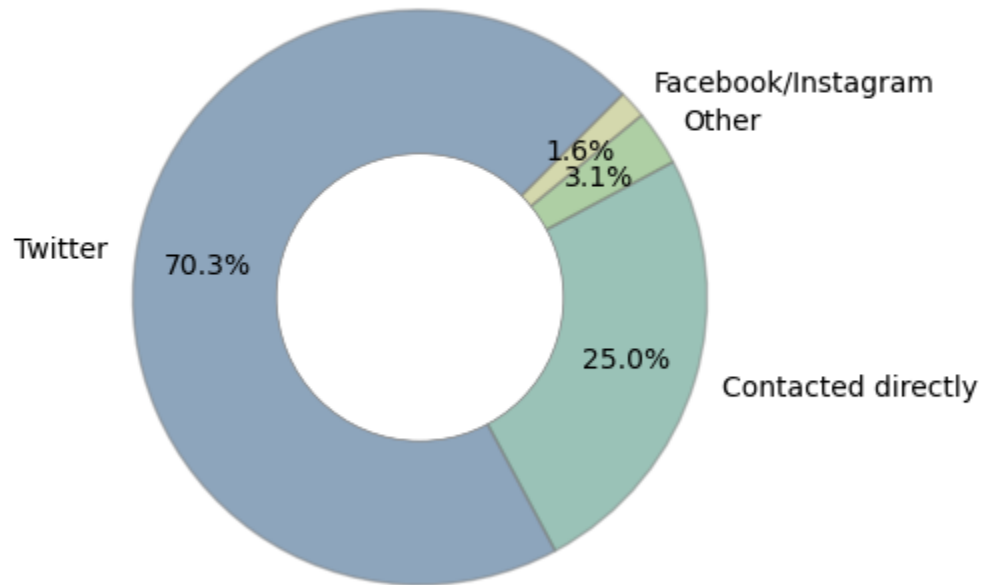
Research interests. Multiple of the following answers could be selected:

- Earthquake source (observational seismology, statistical seismology, earthquake rupture models and inversion, slow slip and tremor, earthquake geology)
- Earthquake hazard (earthquake engineering, early warning, tsunamis, site effects)
- Wave propagation (computational seismology, tomography, interferometry, seismo-acoustics)
- Earthquake records (palaeoseismology, historical/contemporary accounts, felt reports, geochronology)
- Techniques and instrumentation (deployments, rotational seismology, DAS, data mining)
- Communication (disaster preparedness, education, citizen science)
- Other Earth science disciplines (e.g. tectonics, volcanology)



"Provenance"

How did you hear from Seismica?

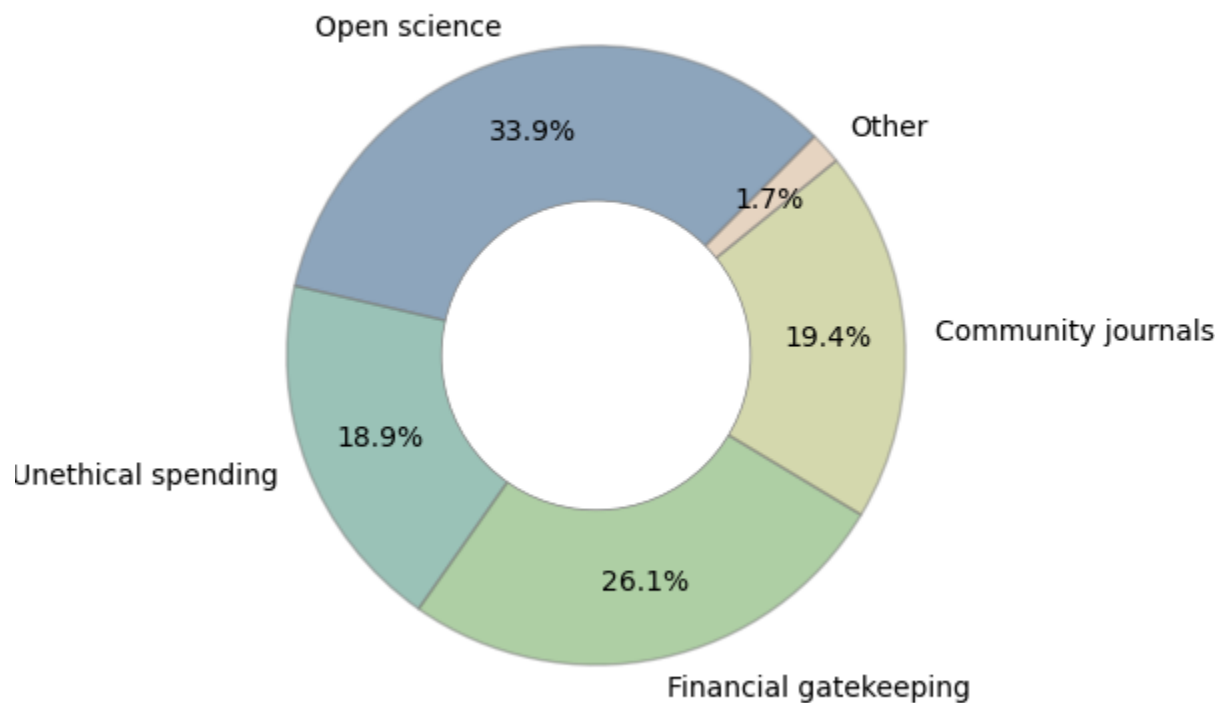


Motivation for supporting *Seismica*

For this question several of the following answers could be selected:

- Science should be open for everybody
- It is unethical to spend public (tax) money on publication and subscription fees
- I am concerned about financial gatekeeping (only institutes with large budgets being able to afford publication/subscription fees)
- Scientific journals should be run by scientific communities
- I don't support *Seismica*/Diamond OA
- Other

What is your main motivation for supporting *Seismica*?

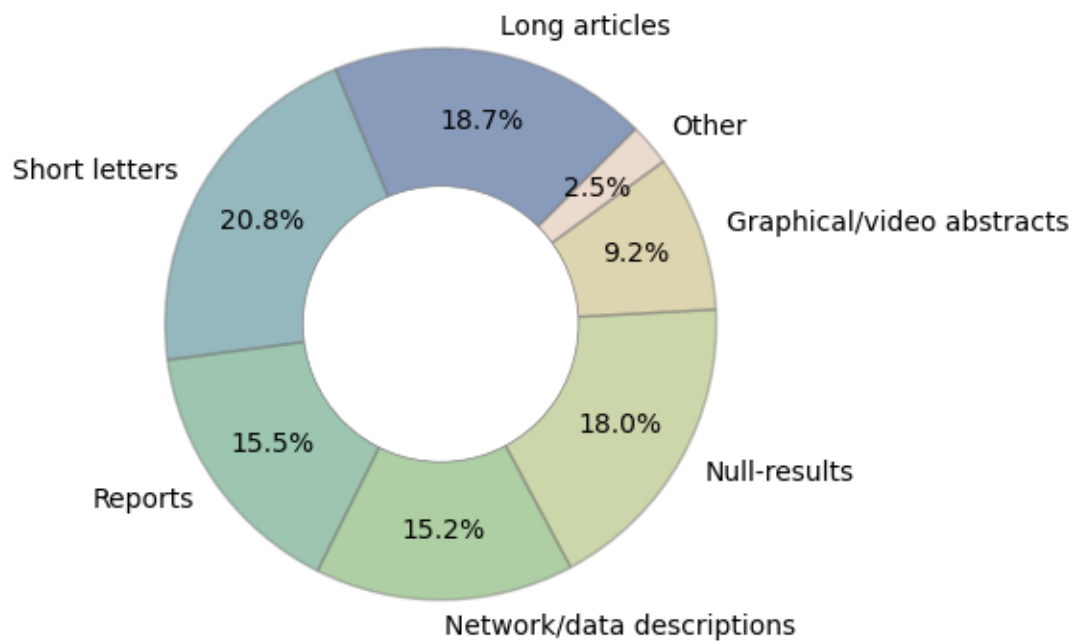


Journal features

For this question the following answers could be selected:

- Long articles
- Short letters
- Earthquake and/or instrument deployment reports
- Seismic/geodetic network and data repository descriptions
- Null-results (a.k.a. negative results, unexpected "disappointing" outcomes)
- Graphical/video abstracts
- Other

Which journal features would you like to see?

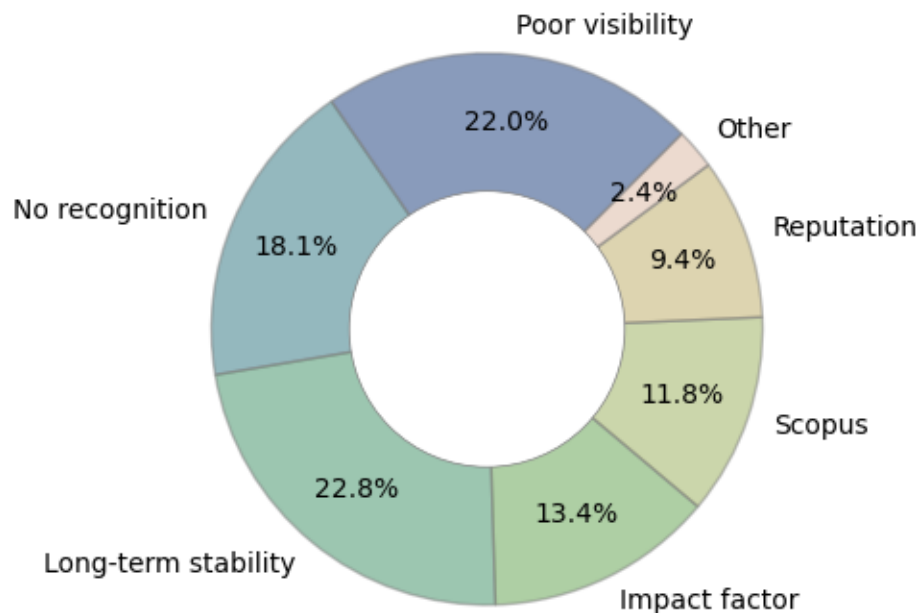


Reasons not to submit to *Seismica*

For this question the following answers could be selected:

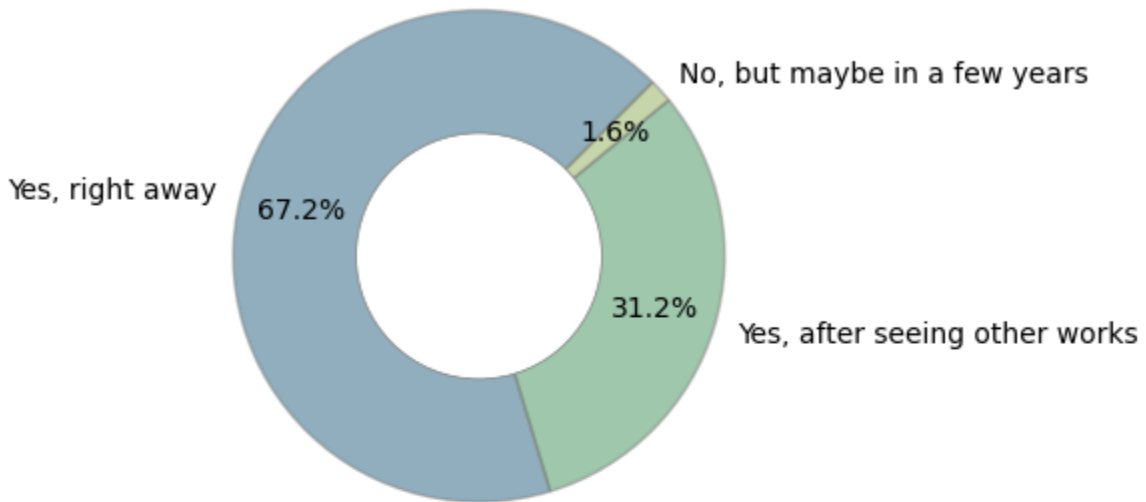
- Impact factor (or lack thereof)
- No indexation by Scopus
- Reputation of the journal and/or its editors
- Poor visibility (others not being able to find your work)
- No recognition from departments and/or funding institutes (*Seismica* is not a "real" journal)
- Long-term stability/existence
- Other

What could be a reason for you not to submit your work to *Seismica*?

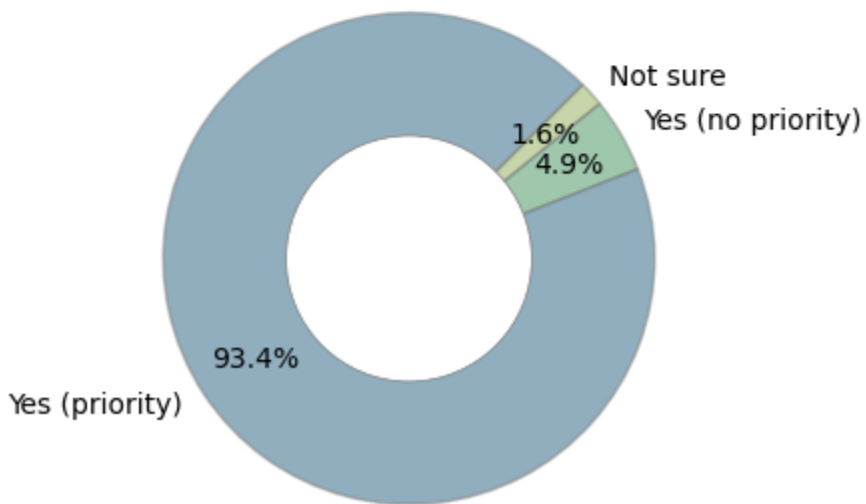


Submitting work to and reviewing for *Seismica*

Would you consider submitting your work to Seismica?



Would you consider reviewing for Seismica?

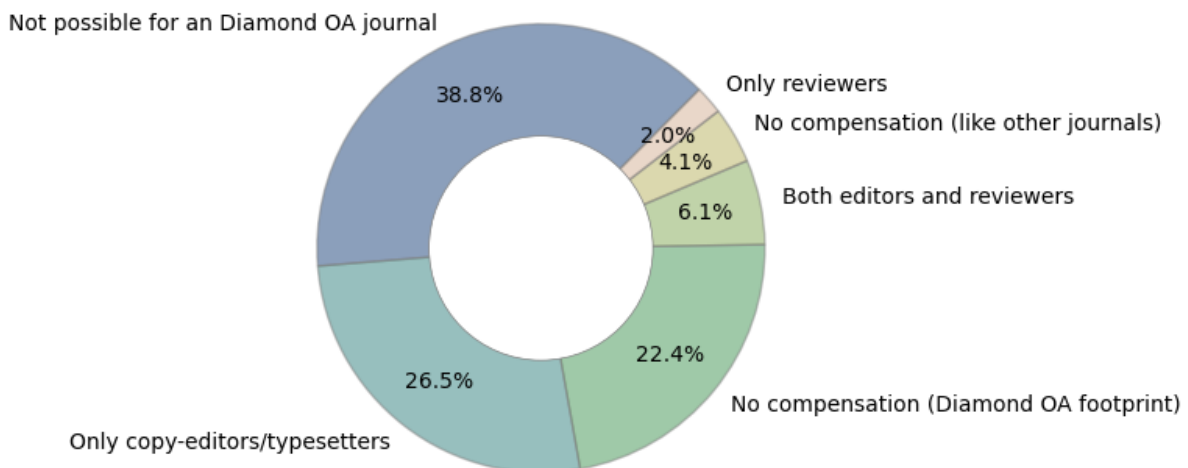


Compensation (1)

For this question, one of the following answers could be selected:

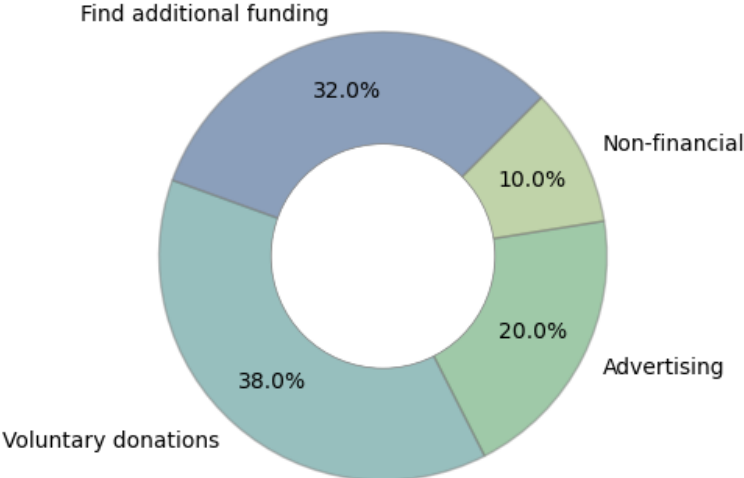
- Editors/reviewers should not be compensated; *Seismica* needs to maintain a small financial footprint to exist as a Diamond OA journal
- Editors/reviewers should not be compensated; other journals don't offer compensation either
- Editors/reviewers should not be compensated; it is ethically questionable to insert financial incentives into the publication system
- Only editors should be compensated; reviewing is part of the job
- Only reviewers should be compensated; editors get indirect compensation through recognition (e.g. on their CV)
- Both editors and reviewers should be compensated
- I feel that (ideally) editors/reviewers should be compensated, but that this is not possible for a Diamond OA journal
- Only copy-editors/typesetters should be compensated; these are traditionally compensated by publishers

How do you feel about compensating editors/reviewers?



Compensation (2)

How should this be accomplished?

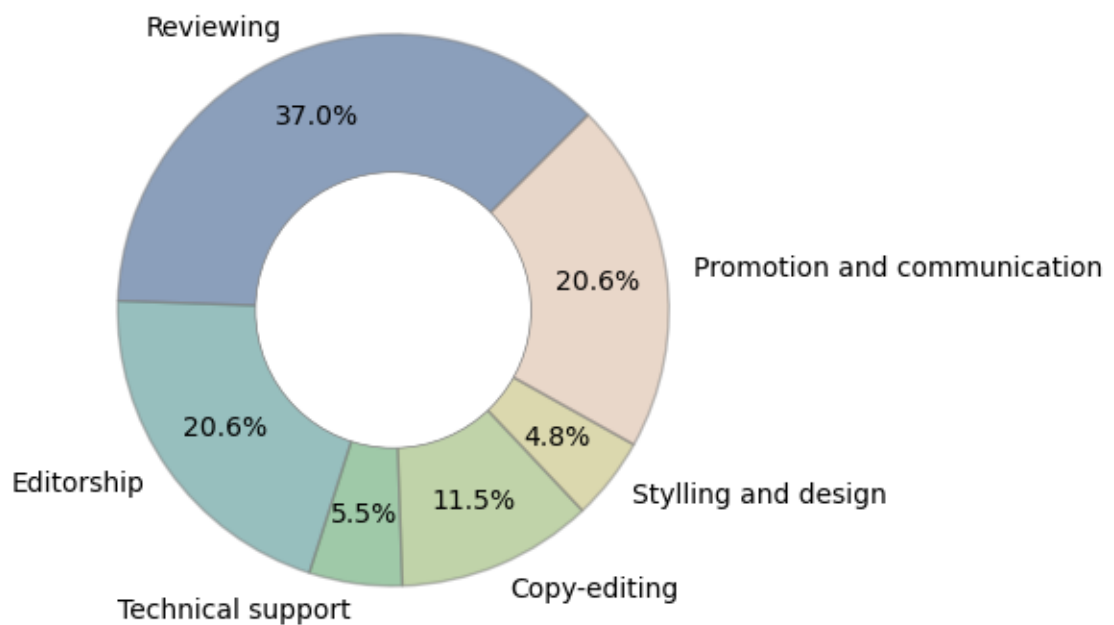


Contributing to *Seismica* (1)

For this question the following answers could be selected:

- Reviewing
- (Associate) editorship
- Technical support (website, LaTeX templates)
- Copy-editing and typesetting (proofreading, final manuscript formatting)
- Styling and design (website, logo, templates)
- Promotion and communication (social media, conferences, recruitment)
- I do not want to contribute
- Other

How would you like to contribute to *Seismica*?



Contributing to *Seismica* (2)

For this question, one the following answers could be selected:

- Full-time or half-time (i.e. 3-5 days per week)
- A few hours per week
- A few hours per month
- Less than an hour per month (on average)
- Other

How much time would you be willing to spend?

