

The paper trail

What happens to manuscripts after they are submitted to our online manuscript tracking system is a source of much speculation. To learn how we decide what is published in *Nature Geoscience*, read on.

In 2013, we received more than two thousand submissions. How we whittled that number down to the 177 papers that we published that year is of much interest to our readers, according to what we hear on our travels. We share here some of the considerations that go into this decision-making process, in the interest of transparency.

As scientific editors, our perspective on the suitability of a piece of research for our journal falls somewhere between that of a journalist and that of a scientist. As is the case for journalists, our first obligation is to our readers: our decisions are guided by the aim to make every *Nature Geoscience* paper worth our readers' time. And as trained scientists — who spend a significant amount of time at conferences every year — we hope to have a good idea of what will sustain the immediate interest of geoscientists as well as making a true and lasting contribution to the fields of the Earth and planetary sciences.

In a nutshell, we aim to pick manuscripts that will make the most profound change to scientific understanding. Such a change in perception can be achieved in a wide variety of ways. For example, a Letter on page 95 reported a new discovery, of a liquid-water aquifer stored within the Greenland Ice Sheet, with implications for the ice sheet's water cycle and, potentially, its stability. A different type of study, published online on 26 January (Darby, D. A. *Nature Geosci.* <http://dx.doi.org/10.1038/ngeo2068>; 2014), presented an elegant and unusual method to constrain when the Arctic Ocean first supported sea ice all year round, millions

of years ago.
The author

demonstrated that the geochemical characteristics of grains from a sediment core in the central Arctic Ocean reveal where on the Arctic shelf the grains came from. A reconstruction of transport pathways suggests that the first grains that needed more than a year to drift to their final resting point (implying sea ice carried them through the summer) appeared in the core about 26 million years earlier than previously suspected. Yet another type of advance was reported in a study published online on the same date (Karlstrom, K. E. *et al. Nature Geosci.* <http://dx.doi.org/10.1038/ngeo2065>; 2014), reconciling two sides of the long-standing debate over the age of the Grand Canyon. Dating of four out of the five sections of the modern Grand Canyon revealed that two of the three middle sections are indeed more than 15 million years old, as proponents of the 'old canyon model' have suggested, but that both ends of the canyon were carved much later, around 5 or 6 million years ago, suggesting that the Colorado River linked existing canyons to form the overall Grand Canyon at that time.

In addition to the types of advances discussed above, successful papers may provide compelling support for something that had been a mere suspicion, or they may present an entirely novel interpretation of existing data — or something that falls between those two, in terms of novelty and robustness. The essence, for us, is that the paper makes a difference to the way our readers think about Earth or planetary systems.

In practice, we read the submitted papers (not just the abstracts!) and the cover letters. In making our initial decision to send a paper out for review or not, we do not pay attention to the author list — except to establish the advance of the present study over the authors' earlier work. We do not care whether a paper was transferred from another journal at Nature Publishing Group, or what the authors' English-language skills are like, as long as it is clear what has been done.

When we are comfortable that we have a good grasp of the unique contribution of a study, usually based on reading some of the background literature, we write up a short summary and evaluation, and

make a decision — either to obtain advice from referees or to decline publication on editorial grounds. Only about a fifth of initial submissions are selected for peer review. The fraction is low because we do not want to waste the time of authors who are keen to have their work published quickly, or of our referees when a paper is unlikely to succeed on editorial grounds.

Finding the right referees is crucial, as is reading and evaluating reports in light of our editorial threshold as outlined above. We are always pleased to learn from referees about additional insights or implications that were not clear from our first read of the paper, and we ask for specific references when referees suggest the findings are not novel. If we think that a revised paper is likely to make our editorial threshold, we try to spell out as clearly as possible what the authors have to achieve. We are happy to accept in principle straight away, if no crucial concerns are raised (but in practice this happens very rarely).

After a paper has been approved for publication, we work on maximizing its impact. We advise on titles that will spike the interest of the right group of people, by reflecting the findings of the paper; we extensively edit the first paragraph, to ensure the new results can be appreciated by a broad range of our readers in the context of existing knowledge; and our production team pay attention to language, readability of figures, layout and overall style. For many of our papers, we commission a related News and Views article, and we write press releases and tweets to bring our authors' work to the attention of the public. We have to be selective in what we publish because with our team of five editors, we would not be able to devote this level of attention to a much larger volume of papers than dictated by our page budget.

Even in an age of online publication, the concept of a journal's page budget is therefore not obsolete, as has been suggested. At journals such as *Nature Geoscience*, with extensive editorial input before and after acceptance, published pages simply serve as a rough proxy for editors' time. So that our readers are presented with the most relevant work, we put much effort into selecting the most interesting studies, and so that it is no effort to read them, we try to make accepted papers as powerful and accessible as possible. □

