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Open Science: challenges for a forest science journal

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Highlights: The concept of open science gains momentum as some important agencies funding research require compliance to open science guidelines. This challenges editors of science journals, who have to adapt to these requirements that imply not only open access to journal content, but also many other innovations. This is particularly true for journals devoted to forest science, given the specificities of this multidisciplinary field, and the situation of these journal in severe competition with more specialised journals that publish a growing fraction of the results in forest science. On the other hand, open science offers also a beautiful opportunity for the development of our journals, and we should not miss this opportunity.

Keywords: open data, open access, data papers, forest and wood science, multidisciplinary journal, journal metrics

The trend towards open science is increasing. Several funding agencies like the National Science Foundation in the US, or the European Commission are pushing strongly towards publishing most of the results of the research they fund under an open access scheme. The aim clearly is to have research results made available to the broadest possible audience as soon as possible and with minimum restrictions to access. Interestingly, this trend is not restricted to research papers, but also to the associated data for which open access means also potential re-use. Open publication is now a well known process, and most journals had to specify their policy in this respect. Current models for publishing scientific papers include green open access, gold open access and/or a number of mixed models combining publication of open access material with material restricted to subscribers. During this talk, we will provide some personal views on how our journals could deal with this trend in order to develop to major actors in the dissemination of scientific results. We argue that this is a major issue for the development of our journals in the long term. Open science offers wonderful opportunities to forest and wood science editors. The current context of science publishing is also marked by a fierce competition among publishers, by the rapid development of new journals based in most cases on a gold open access model, by new publication processes through publication platforms. If we editors miss the opportunities offered by open science, there is a risk that our good old journals (Annals of Forest Science for instance is over 50 now and is not the oldest one) slowly lose their audience and their appeal for publishing the best science in the field.

In forest and wood science, the strategies developed by journal editors differ markedly. In the "traditional" journals often published by commercial publishers or by not-for-profit organisations, journal editors usually follow the publication scheme suggested by the publisher, and usually remain under a restricted access model with subscriptions remaining the main source of funding for publishing activity. In some cases, the editorial rules allow authors to deposit pre-print versions of the papers in institutional repositories after an embargo of several months to a few years. Actually, fully open-access journals in forest and wood science are mostly new journals, usually published independently of the bigger companies. And indeed, their number and audience is increasing over the years. This leads to the question: why are we editors of "older" journals so shy and reluctant to switch to full open access? Should we do that? At what cost?

Open science is not restricted to open access publishing. Access to data is an even more important issue, and is the object of large scale discussions in the scientific community. Forest and wood sciences have long been aware of the need of data covering large areas (basically 1/3 of the area of the European Union, and this share is still growing) and spanning long time series (several centuries at least). National Forest Inventories, among others, are producing large and extensive data sets about long term trends in forest extension, productivity and health. There are many similar examples about carbon storage in forests, green house gas emissions, pathogen and pests spread, biodiversity, air borne pollution, genomics of trees and associated micro-organisms, etc... Producing these data sets is a huge effort and cost to the scientific community. Making them available (under rules agreed in common) to a broader scientific community is therefore an extremely important issue. Moreover, it is also of utmost importance to better recognise the important contribution of the scientists that devote large efforts to produce such data sets. Our journals may help promote this trend by publishing "data papers", i.e. short papers describing data sets of all dimensions

and importance. The data-set needs be provided with a Digital Object Identifier (DOI) or any other reliable identifier and will therefore exist on the web as a clearly identified object. Central to the data paper and the re-use of the data is the associated metadata file describing explicitly the data set, the different variables it contains, the procedure used for data collection, etc...

Finally, a last aspect we would like to address here is the need for our journals to be present on the social networks. Scientists in general are quite reluctant to use social networks and pretend they are tools for teenagers, or electronic gossiping at the best. But more and more scientists as well as journal editors believe that we should use these media to disseminate information about the journal's content, about hot topics in the field, and as such contribute to the public debate, which is part of the duty of science and scientists. The use of social media by our journals is still in the infancy.

Open science means that research results should be disseminated by all possible means offered by the huge development of the web of science. It frequently bases on the cooperation of many scientists, as can be seen also by the numerous papers with large number of authors. Journals producing the traditional peer-reviewed research paper, have been during the centuries of the "Gutenberg area", the backbone of science dissemination. The new facilities offered by the world-wide-web include many additional means for disseminating science: videos, images, data sets, comments, cooperative writing, network research and many other tools. Research communities in computer science, nuclear physics or mathematics, are much more efficient than the forest and wood science community at using such tools. Pushing the concept even further, we might ask what could be, in this "science2.0" framework, the future of the traditional science journal and even of the scientific paper as we currently know it. The scientific paper and therefore science journals still have many years ahead, but they definitely will be challenged by new ways of dissemination we have to take into account.

As a conclusion, we believe that open science is a wonderful opportunity for editors of forest and wood science journals and that we should definitely not miss it!