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What led you to open science, and how did your relationship with open science develop?

My PhD research topic brought me to open science. I do pollen analyses from peat and lake cores, which involves counting pollen grains, and this is a very slow and tedious activity. I decided together with one colleague to create a Czech Quaternary Pollen database with all accessible records , so that I could devote myself to interpretation and overall synthesis. I was mainly interested in how our vegetation developed during the Holocene. When our database was sufficiently developed, we began to cooperate with colleagues from abroad who collected data for the European Pollen Database . However, the methods of making data available to the general public were difficult to maintain. In addition, all of the infrastructure already existed for the global palaeoecological database Neotoma . We became its stewards and imported all European data into it. Neotoma offers access to data through a web interface and the statistical package neotoma2 , directly from the R environment. Another advantage is that Neotoma can accommodate very diverse environmental records from the past (plant seeds, animal bones and shells, diatoms, biomarkers, charcoals). Thanks to this, we can analyse the environmental history from all archives at once.

What do you get out of open science on a daily basis?

Data management, searching for and verifying data in publications and on maps, but I certainly don't do it every day.

Why is openness in science important to you (what are the benefits)?

Openness with respect to data and software accelerates scientific knowledge. When we have the opportunity to repeat an analysis, it makes us much more involved in the problem than just a text in an article. We can try slightly different settings, new data, and come up with something new, or perhaps find an author's mistake.

Open publications are first and foremost essential for the society that finances all science. Scientific articles have moved away from ordinary publications. It's not something you buy in a newsstand, and thus all our articles belong to society, and no one should have to pay for them again. Secondly, open access also works in a positive way within the academic community, since poorer institutions may not have the means to pay for expensive subscriptions.

What would you recommend to colleagues who want to use open science principles for their work?

Not to be afraid and to abide by the ethical rules for data/software re-use.

In your opinion, what obstacles must one overcome so that open science can become common practice?

Introducing new open access journals is problematic. The decision to assign an impact factor is not completely transparent and democratic, and if the journal does not succeed in getting one, it remains out of the game. Predatory magazines do get them, but their quality often doesn't match up. Established journals owned by large publishers are of good quality and offer open access, but again at prices several times higher than real costs. Fees for open science should certainly not be for profit-seeking businesses that exploit public funds.

In order to remove these obstacles, the method of evaluating science will probably need to be adjusted. One possibility would be to stop pursuing an indicator that is in the hands of a private company, and rather take into account other indicators. It will certainly be necessary to push the prices of publication fees down. This alone will make open science accessible to all potential creators. As we have seen in neighbouring Germany and elsewhere, negotiations will require unifying strategies across research institutions, persistence, and perhaps even radical change.

What does open science mean to you in one sentence.

Open science has doors open in both directions, in and out.