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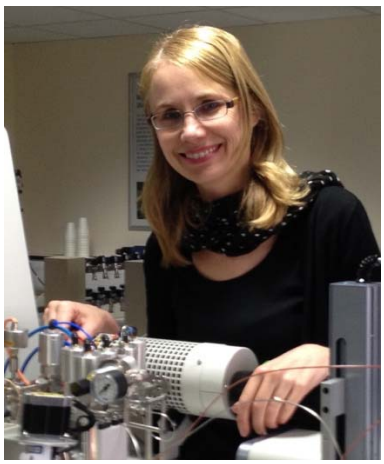
My top tip is to start writing early and often.



Your first major written work will likely be a literature review and an annual report or transfer report (to transfer from MPhil to PhD for example). These should form the basis of a thesis structure, which you should plan from the start (including what data will go into what chapters, though this may change) and review regularly with your supervisor. Many universities now encourage a thesis composed of papers. Remember that papers are different to chapters, requiring a tighter writing style and having less room for descriptions and discussion. You'll also need all co-authors to consent on the content.

When and how to publish?

When writing papers, I usually suggest you agree in advance what data you will include and who you need to co-author with. This can be tricky especially in the geosciences for example as you may be part of a large multi-(inter)national project where data are owned by different people and may be ready for publication at different times. I usually suggest making it clear from the start about who will do what and when in the development of the paper.

Remember to discuss journals with your co-authors. Journals have different audiences and while impact factors are commonly looked at, by themselves they are not a measure of the quality of a journal or the papers they contain. You may wish to make your paper open access (OA), so that anyone can read your research, not just those who have access to personal or institutional subscriptions. Many subscription journals offer to make individual papers OA for a fee (article processing charge, or APC). Alternatively, there are a growing number of OA-only journals, where costs for article production and publication are borne only by people paying an APC ('gold' open access). These can be very expensive, but such fees are usually dealt with by institutions, who reach agreements with funders to cover the costs of publishing (for example, for NERC-funded PhD studentships, where the gold route maybe stipulated).

Alternatively, green OA allows you to deposit, for free, the final manuscript (after peer-review but before journal formatting) into an electronic repository (e.g. most institutions and many funding bodies have their own repositories). But copyright and embargo conditions may exist, and will depend on what contract you signed with the publisher of the journal. A few journals, such as *Volcanica*, are now appearing that offer diamond OA. Here papers are free to publish and to read, and the costs are covered by external investment. Finally, most journals now allow you to upload your draft manuscripts into a preprint repository such as EarthArXiv, where earlier versions of your work are free to down load and be commented upon. Be aware that the field of publishing is rapidly changing, and you should keep informed about recent developments in Open Science.

I recommend, and your funding body may insist, that data be submitted to a data repository such as Pangaea, or NOAA in the geosciences. Make sure that as you collect and organise your data, metadata are considered carefully too.

Online tools to support your writing

Once you start publishing (including conference abstracts with ISBN numbers), set up Google Scholar and ORCID accounts (which will update automatically) for maximum outreach. Once a paper is out, consider blogging about it (for the non-specialist) or recording a video introduction (and link these activities to your social media). Many academics have their own social network profiles, such as ResearchGate or Academia. These networks can be really useful to connect with other scientists, but restrictions still exist on what papers can be uploaded.

To write a traditional thesis, or a "thesis-by-papers"?

If you are aiming for an academic position (a post-doc, fellowship, teaching fellow or lecturing position), you might want to undertake a thesis "by papers" (depending on the discipline) and to therefore organise your research around a series of projects or experiments that can be published independently. Some universities however require a traditional thesis, so you may have to write your papers and then convert them into monograph-style chapters. I think it's much easier to convert papers into chapters than vice versa, plus you will get more input and advice from co-authors on a paper than you would for your singled-authored thesis chapter.

If your institution allows a thesis by papers, the pros are: publications that greatly enhance your CV and greater input from co-authors in writing the papers. The down sides are: papers can be much harder to write than thesis chapters and will require more time; there is less room for speculation; negative results often do not make into a journal paper, whereas in a thesis chapter you can explore experiments that did and didn't work; you are at the whim of co-authors and their timetables; the more co-authors the more complex the writing (you have to satisfy them all). In the geosciences, multi-authored papers are the norm.

Writing for social media.

Finally, social media is a great way to practise writing, from 280 character tweets to longer blog posts. Join in! From day one start to build your online presence (there will be one anyway, so create your own). If using Facebook decide whether it's private (family and friends), work, or a mix. If a mix, bear in mind that posts can be shared, and people (including the likes of me if I ever interview you!) may be checking you out. Microblogging and photo/video-sharing platforms, such as Twitter and Instagram, are popular with geoscientists for sharing moments in the field or lab and seeing what other geoscientists are doing. Twitter especially is great for finding out about the latest developments in your field, from a professional, scientific level, to more personal issues related to workloads and stress. Searchable hashtags (#) are a great way of getting involved with many different communities, ideas and campaigns (e.g. #phdchat). Twitter and Instagram are open for all to access unless you lock down your account. If your university personal profile pages are brief then consider using freeware such as WordPress or About.me to create your own personal profile. Remember though to keep it up to date with conferences, papers, blogs, social media, contact information, and plenty of action photos.

I use blogs to write short (400-800 words) "stories" on things I have been up to, or just fancy writing about, sometimes it's a particularly important paper, a conference or an exotic fieldtrip. I love for students to blog regularly as it gets them used to writing in a less formal way which is important for outreach. Most universities have blog sites for staff and students to contribute to, or you could create your own using freeware or your website. Video is increasingly popular, short (1-2-minute) clips shot on a smart phone can be effective for showing others what you do (check out Lucy Kissick's youtube account).

Social media can help build your CV by improving your network outside of your institution and internationally as well; if done well, it will help you stand out from the crowd. But social media has downsides, too, and it is good to recognise these early on to limit the detrimental impacts. Read up on tips for getting the most out of a platform, as well as codes of conduct (held by universities) you should follow.