

Cool Chemistry

Dr Eric Wolff learns about past climate by studying ice cores from Antarctica. He is a senior scientist at the British Antarctic Survey (BAS) in Cambridge. BAS is the organisation that organises and carries out most of the UK's scientific studies in Antarctica. Here he tells us about his life in science.

In 1978, I was completing my degree in Natural Sciences (specialising in chemistry) at Cambridge University. I had enjoyed my degree, and thought I would probably take a job in an analytical laboratory, perhaps for a pharmaceutical company. One day I read an advert for a chemist to work at the British Antarctic Survey (BAS). At first I just nodded and ignored it. Unlike some of my future colleagues, it had not been my lifelong ambition to go to Antarctica. I liked mountains but I wasn't a tough guy, or an "outdoors" type. It sounded exciting, and it was about the environment, which I was interested in when green issues were not so well-known. But surely this job was not for someone like me? However, in the following days, it dawned on me that I met all the qualifications for the job, and maybe they just wanted someone who would be a good scientist. So I applied.



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Of course, once I started reading about the Antarctic, I was hooked, and would have been very disappointed if I had not got the job. However, luckily I did and the pharmaceutical industry lost me for ever! My role was to analyse lead in Antarctic snow in order to find out how levels of pollution had changed with time. After a year of preparation and method development, I started a 7 month stint away, travelling from Southampton all the way to Antarctica by ship, and spending 2 months in a tent with one other colleague in the middle of nowhere (but what a beautiful nowhere it was).



When I came back, I started doing the painstaking analyses and further developing the analytical methods. I had been employed on a fixed term contract, and after a couple of short extensions, I had to look for another job. I worked briefly at the Water Research Centre at Medmenham, studying the effects of European legislation on water quality (well, after all, ice really is just frozen water). But then an open-ended job came up at BAS, and I was back like a shot.

And here I have been ever since. For the kind of academic research that I do, a PhD opens doors, and I was able to obtain my doctorate while working for BAS. And the science I do has moved from studying pollution; now I am working on that most topical area of all, climate change (using ice cores from Antarctica to understand past climate). I also study the atmospheric chemistry of Antarctica, with an emphasis on the interesting chemical reactions that occur on snow surfaces.

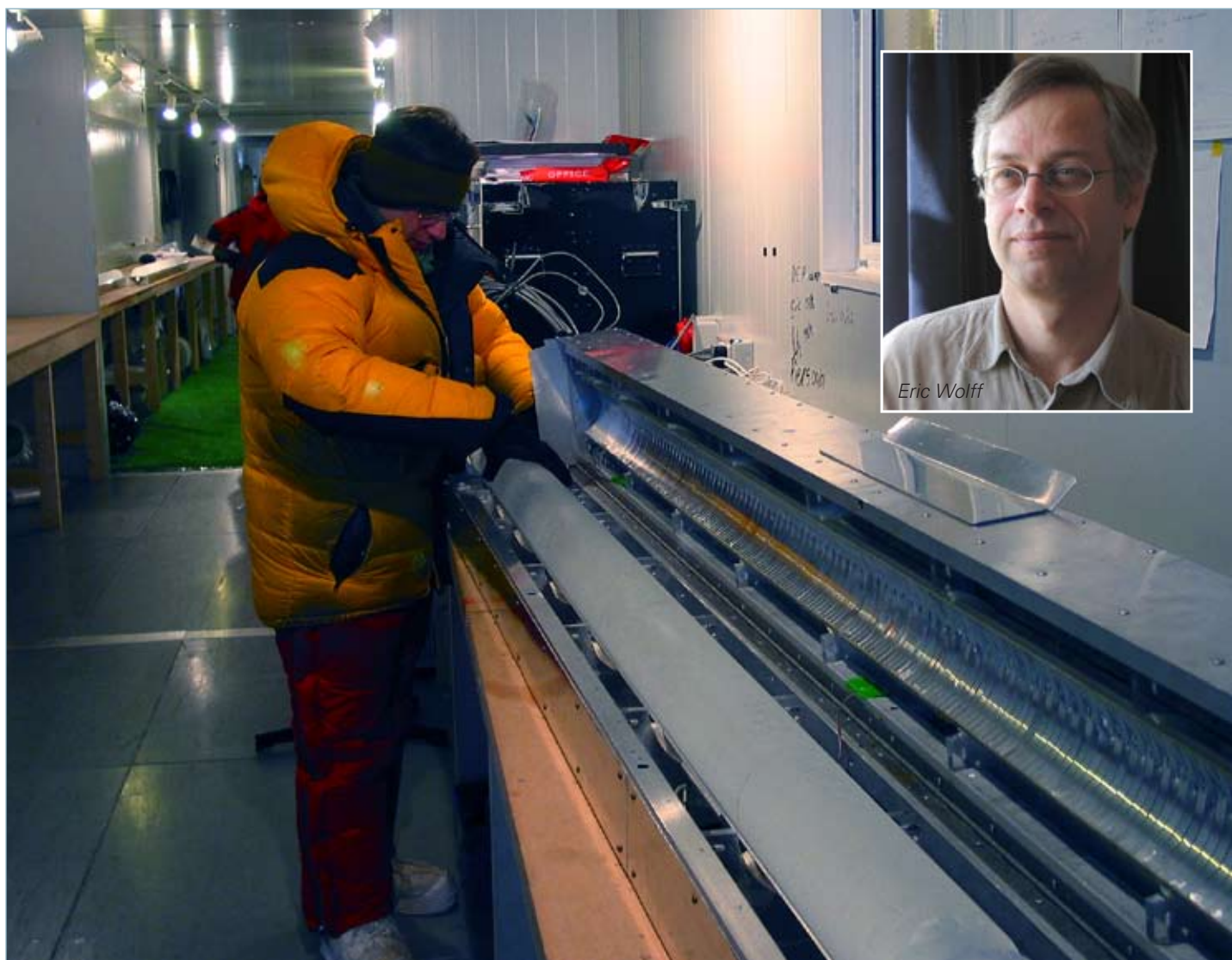
I often joke that I am stuck in a rut, but what a glorious rut it is. I have been to Antarctica 6 times now and to Greenland twice. Only the first trip involved the long sea journey; mostly I go away for about 10 weeks at a time. On my last trip, I led

a party of 15 scientists from 7 different countries drilling the oldest ice core ever retrieved, containing 800 000 years of climate record. But the fieldwork is just a bonus: most of the time I am doing research in Cambridge, trying to work out how climate worked in the past, and therefore help us to understand how it will change in the future. And I get to discuss the “hottest” (forgive the phrase) topic of the century with the world’s experts, who all want to know what the ice cores are telling us.

One of the subjects I have studied recently is whether it is possible to learn how much sea ice there was around Antarctica in the past by measuring how much sea salt is in ice cores. Understanding how such an indicator might work involves seawater chemistry, microchemistry and microscopy to understand where salt is located on sea ice surfaces, aerosol chemistry and meteorology.

I have been to the “ends of the Earth”, and I have been asked to give lectures at meetings on glaciology (the study of ice), geology and climate. However, I am still based in Cambridge and I still consider myself a chemist. It seems that I have travelled a long way without moving at all!

Read Eric Wolff’s article on pages 9-12 to find out more about Antarctic science.



Eric Wolff analyses an ice core during a trip to Antarctica