Weather in my life

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When and how did you first become interested in climate science?

I have always loved nature – you would have struggled to get me down from a tree or out of the water as a kid. I also loved geography – there's something about understanding the hows and whys of the environment that got me hooked from day one. So, when I learned about climate change in a geography class aged about 13 or 14, I was totally enraged and convinced that if I shouted loudly enough about it, people would wake up and take action to stop it (ah, the assuredness of youth!).

That was the beginning of a lifelong passion and commitment to tackling climate change that has morphed a lot in the intervening years. I went to university initially to study environmental geography, but became more interested in the physical processes of weather and climate. I discovered meteorology, and ended up going down a polar rabbit-hole, chasing knowledge about our fascinating frozen regions. And that's how I wound up as a polar climate scientist!

What have you most enjoyed about your career so far? What has been most challenging?

That's a tough question! I haven't necessarily enjoyed it all, because if I've learned one thing, it's that science is *hard*, but I love learning about how our beautiful planet works and knowing that I'm contributing in some small way to tackling the climate crisis. I suppose it started in Norwich at the University of East Anglia (UEA). I loved the freedom to learn about such a wide range of topics at university, and the cutting-edge climate research at UEA was particularly inspiring. I discovered meteorology during my undergrad and clearly couldn't get enough of it, so I did an MSc in climate change immediately afterwards. It was then that I developed a taste for Antarctic weather and climate. After taking some time off from academia to run a music venue (naturally), I jumped at the opportunity to do a PhD at the British Antarctic Survey (BAS). I spent about 3.5 years there modelling the atmospheric causes of Antarctic ice-shelf melt, including a life-changing trip to Antarctica in 2017. I handed in my PhD thesis in the same week as the first national lockdown – not the best timing!

I then held an assortment of research-adjacent jobs during the pandemic, before I landed at the University of Reading working on the climate impacts of aviation. However, I missed polar science, so in my spare time I co-authored a short course for the Open University about polar climate change. I really loved being on the other side of learning, helping to create top-quality teaching materials about the polar regions and sharing my passion for the poles with others. I'm now back at BAS modelling how the polar regions might change into the future, and trying to build a name for myself in mainstream media so I can enthuse more people about polar climate.

Have specific extreme weather events or things you've seen served to increase your drive and interest?

The things that really got me going as a young teenager were stories about how climate change was affecting real people across the world, and how climate impacts compounded existing inequalities to hurt those who were least responsible the most. That felt deeply unfair. Of course, impacts then were less visible than they are today. Now, almost 20 years later, we are all affected by extreme weather events or climate impacts – although it's still the people with least responsibility for the climate crisis who are bearing the brunt of its effects.

Later, visiting Antarctica solidified my passion and desire to work on polar climate change. I got into research and climate science because I saw it as a way to use my strengths to contribute to solving the problem. But until I went and got my boots on the ice, the polar regions had been a pretty abstract concept. It might sound strange, but everything sort of 'fell into place' in my mind once I had seen Antarctica with my own eyes, especially the Larsen C ice shelf which I spent my PhD thinking about.

You're an active YouTuber and often interviewed in the media. What motivates these aspects of your work?

Climate change impacts us all, so I feel very strongly that everyone should be able to understand how and why it is changing our planet. Climate science can sometimes appear to be pretty dense and complex when it need not be. I see myself as a translator between scientists and, well … everybody else. TV is a direct connection to peoples' living rooms, barber shops and waiting rooms, which makes it a powerful tool to relate to people who might not often think about science or climate. It's a leveller and cuts across divides of class, race, ability, age, and gender. Creating online content means I can speak to, and learn from, people across the world. I've learned so much from other YouTube creators; you can build an amazing community there (although there's plenty of *less-than-pleasant* comments too). In fact, my audience is mostly outside the UK – people I could never reach via domestic media. I love making long-format content – even more so in the era of 90-s vertical videos that dominate TikTok and Instagram. I'm told that my videos are being used in teaching all over the world, which makes it all worth it!

How did you become involved with the Royal Meteorological Society?

I got involved with RMetS during my PhD – I think the 2017 Student Conference was the first academic event I ever presented at (a terribly designed poster, since you're asking). Since then, my involvement has slowly increased: first as a member, then attending a few meetings, and then giving talks at events like the polar meteorology meeting in 2021, and more recently helping with the Society's online training course for weather presenters and giving a keynote at the 2022 Atmospheric Science Conference.

Figure 1. Looking southwest over South Cove from Rothera research station, Antarctica. Altocumulus lenticularis forms a 'cap cloud' over the mountaintop.

I joined the Editorial Board of *Weather* in early 2022, and I now also sit on the society's Youth and Early Career Special Interest Group. I was also recently involved in a fun project developing and delivering a series of climate change training sessions for community leaders.

What advice would you give those seeking to become involved in climate science today?

Play to your strengths! There are so many ways to contribute to climate science. In some ways, I've followed a pretty traditional academic route so far, but there are many different versions of working in climate science beyond the academy. If you love climate research and want to work in an academic setting, great – but if that's not you, that's fine too.

Finally: what's your favourite cloud, and why?

That's easy: *Altocumulus lenticularis*. I was lucky enough to see some great ones in Antarctica perched over the mountains just over the bay from Rothera research station (Figure 1). There's something about them that's just so otherworldly – maybe it's their resemblance to UFOs.

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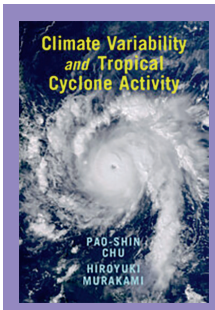
Book review



Climate Variability and Tropical Cyclone Activity

Pao-Shin Chu and Hiroyuki Murakami

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Every year, tropical cyclones (TCs) affect millions of people, especially those in the coastal regions. The genesis locations, tracks and structure (intensity, size and rainfall distribution) of TCs are largely controlled by the atmospheric and oceanic environments in which they are embedded. Variations of these environments on different timescales will therefore lead to different impacts of the TCs. While many studies have been carried out on how such variations on timescales beyond the synoptic may affect the TC characteristics, very few summaries or reviews of these results have been made (e.g. Chan and Kepert, 2010). The book *Climate Variability and Tropical Cyclone Activity* (Chu and Murakami, 2022, hereafter CM) therefore provides a timely reference on how TC activities in different ocean basins have changed over the past few decades and how such activities might change in the future.

Before discussing the climate variations of TCs, CM provide a review of the climate variabilities in the tropics that relate to those in TC activity. These include the Madden-Julian Oscillation (MJO) and the Quasi-Biweekly Oscillation (QBWO) on intraseasonal timescales, and the El Niño-Southern Oscillation (ENSO) as well as other oscillations on interannual to multi-decadal timescales. Although previous review articles on the MJO exist (e.g. Li *et al*., 2020 and the references therein), the discussion of the MJO in Chapter 2 is very comprehensive. It presents a detailed description of both the observational and theoretical aspects of the MJO. In addition to the usual concept of an eastward propagation of the MJO, CM also include a discussion of its northward propagation, which is particularly relevant for the variability of TC genesis especially in the western North Pacific. On the contrary, the discussion on the QBWO is mostly on the phenomenon itself without going much into the theory of its origin and development.

McPhaden *et al*. (2021) recently published a monograph on the ENSO phenomenon and its impacts, about two-thirds of which was on the phenomenon itself (including observations, theory and forecasts). CM's Chapter 3 on ENSO can be considered as