

CHANGING WATERS: FROM CAPE TOWN AND SANTA CRUZ'S WATER STRESSES TO ANTARCTICA'S SHIFTING ICE

GINA ZIERVOGEL

ABSTRACT

In 2021, I spent 6 months at University of California Santa Cruz as a Fulbright Scholar. During my time there, I focused on understanding local water governance issues in Santa Cruz county. This related closely to previous work in my home country, South Africa, where I work on climate adaptation and water governance issues. During my time in the US, I was engaged in a women in science leadership program called Homeward Bound. The program was supposed to culminate in a voyage to Antarctica in 2022. Due to Covid-19, the voyage was delayed until November 2023. The program connected me to a number of women in the US and has helped to support my commitment to responding to climate change and development challenges, both in southern Africa and globally.



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The environment and water have always been interests of mine. During my undergraduate studies, I delved into oceanography and environmental science, laying the groundwork for my current research pursuits as an Associate Professor at the University of Cape Town. Presently, my focus centers on investigating climate change adaptation through a water lens.

While my academic journey initially centered on biophysical issues, I transitioned to examining social issues. This shift underscored the critical importance of comprehending people, politics, and governance to support more sustainable practices. Specifically, my research focuses on adapting to climate change in an urban contexts, exploring how actors at different scales interact. I look at how cities and municipalities engage with neighbourhoods and how local individuals and organisations engage with the state to mitigate climate risks effectively.

Conceptually, I am intrigued by the intricate interactions among stakeholders across various scales. I examine how cities and municipalities collaborate with local neighborhoods, and how individuals and grassroots organizations engage with governmental entities to mitigate climate risks effectively. My work in southern Africa has focused on how people adapt to

droughts and floods, with a particular emphasis on the Cape Town “Day Zero” drought. During this time, I was actively involved in the City of Cape Town’s Water Resilience Advisory Committee, producing numerous academic and popular outputs on the drought’s impact and response from low-income households.

When considering where to take a sabbatical, I was interested in visiting California due to similarities between California and the Western Cape, South Africa where I reside. Both regions have a Mediterranean climate and frequent droughts. Santa Cruz was of particular interest because, like Cape Town, it relies on water from surrounding reservoirs. Therefore I was excited to be awarded a Fulbright scholarship to spend time at the University of California Santa Cruz, from July 2021 until January 2022.

CHANGING WATERS ACROSS CONTINENTS

Initially scheduled to start my Fulbright visit in January 2021, the Covid-19 pandemic delayed our plans. However, by July 2021, we arrived at the University of California Santa Cruz, the campus had reopened, allowing our children to attend the local elementary school. Eager to explore water governance issues in California, I embarked on a research project to investigate water governance issues in California over the last decade. Through a series of interviews, I discovered that the focal point of water governance in the county was the Santa Cruz Water Supply Advisory Committee (WSAC), established by the City of Santa Cruz in 2014. This committee epitomized collaborative governance by bringing together citizens and city officials to chart a sustainable path forward for the city’s water availability and usage.

The city of Santa Cruz appointed fourteen individuals, primarily from non-governmental backgrounds, to serve on the Advisory Committee. These appointees represented organizations with interests in environmental and business matters, along with some concerned citizens. The committee received support from the Santa Cruz Water Department, with Rosemary Menard, the department head, serving as an ex-officio non-voting member.

In an unconventional move, the City of Santa Cruz delegated water planning responsibilities to individuals outside the city government who may not have been experts in the field. This approach marked a departure from traditional practices and underscored a commitment to inclusive decision-making. While academic literature extensively discusses the concept of co-production and collaborative governance in managing natural resources, real-world examples are less common.

At the end of the 18-month process, there was unanimous agreement on the recommendations. They agreed to prioritize “excess” surface water from north coast streams and the San Lorenzo river to recharge their aquifers (the Beltz well field) or send it across to adjacent water districts who can either use it in lieu of their groundwater, or actively store it in their aquifers (“water transfers”). If surface water can recharge aquifers when possible, then in drought years, there is more water available. If water is sent to the adjacent water districts, these adjacent districts could then send water back to Santa Cruz when needed (“water exchanges”). This approach means that excess water is not running out to sea, but rather being used instead of draining ground water supplies. This can hopefully help to prevent saltwater intrusion in the aquifers, which is a growing concern. Because the water is stored in the aquifers, there is less evaporation which is important given climate change and rising temperatures. As the groundwater levels rise, the stream base flow levels may rise, which is important for the fish and ecosystem. As one committee member told me, this consensus was impressive, given “You can’t get a group of 10 in Santa Cruz to agree on the color of the sky!”

What is surprising to me is that the City handed over a process of water planning to a group of people outside of the City government who were not experts. They were, however, supported by an independent review panel of four experts and a technical team that included representatives from eight different organizations that provided input on topics from geology to water modelling, to law, and econometrics. Yet, agreements on the final recommendations lay with the committee.

The outcomes of the Santa Cruz Water Supply Advisory Committee aligned with some of the themes emerging in the Homeward Bound leadership program I was involved in during my sabbatical. This included bold leadership (by a woman) that was collaborative. It was also a holistic approach that included innovative thinking about the biophysical system, while considering social dimensions as well.

HOMEWARD BOUND: LEADERSHIP PROGRAM FOR WOMEN IN STEM

In 2020 I was selected to be part of the sixth cohort of the Homeward Bound programme, an Australian leadership program for women in science. One of the reasons I signed up for the online leadership program was because it culminated in a voyage to Antarctica with the other 100 women in the program. Going to Antarctica had been one of my dreams since I studied oceanography as an undergraduate. Although I was excited to be admitted to the program, I was disappointed when, due to Covid-19, it became clear the voyage could not go ahead as planned. However, I really enjoyed the online leadership program, half of which I did while I was in Santa Cruz, which helped me to reflect on my own leadership and understanding leadership

within the Santa Cruz Water Supply Advisory Committee. The timing of the online program meant that I was meeting online with others in the cohort, some of whom lived in California. It was therefore exciting to meet up in person with three others from the programme during my Fulbright visit.

VOYAGING TO ANTARCTICA

In November 2023, I set off to Antarctica with 99 other women and non-binary people in science from around the world. It was a 19-day voyage on a ship from Argentina that travelled down to the Falklands and then to the Antarctic peninsula and surrounding areas. We were due to go to South Georgia in the south Atlantic ocean, but an outbreak of bird flu meant we had to revise our itinerary. Landing was not allowed and it made sense not to stress the animals or potentially bring any pathogens with us. This kind of adaptive decision making was core to the type of thinking that guided the group.

Although we took a number of modules about leadership and personal development as part of the online program, the time on the ship gave us an opportunity to explore a number of topics more deeply. Some of the sessions included thinking about leading in complexity and developing skills for adaptive leadership. We were also supported in thinking through our personal strategies. We often worked in groups to share insights on different themes and worked alone to think and plan our way forward.

The work sessions were interspersed with chatting, laughing, walking around the deck, yoga sessions and a lot of food. There were two dining areas, with the one on the top deck offering fabulous views, though it was at times closed if too windy. But what a treat to be eating dinner with an iceberg drifting past. One of the things I was most looking forward to were the icebergs. They did not disappoint. In fact, they were much more than I could've imagined. I absolutely loved how the ship glided past them. Sometimes there were huge icebergs not far from the ship and other times there were small pieces that you could see melting as we sailed past.

According to the captain, the Gerlache Strait around the Antarctic peninsula had much more ice when we were there than usual for that time of year. The one night he tried to get through, he was concerned because there were more "choke points" than usual at the straight which was harder for our ship, because it was not an icebreaker.

We were able to see some of the changes the captain referred to in our many landings. One landing that was a highlight for me was Cuverville Island. Coming ashore in the small black Zodiac boats was particularly special, through many pieces of smaller broken up ice and crystal-clear water beneath through which we could see penguins swimming and then porpoising, which is when they dive in and out the water. As we disembarked from the Zodiac, a small glacier calved off so we had to do a rapid emergency disembarkation,

but all was well. The place was filled with Gentoo penguins, shuffling along their “penguin highways” to their breeding ground or up the slope. They weren’t able to nest yet as there was still too much snow on the ground. With climate change, there has been an increase in snowfall, as there is more evaporation due to higher temperatures. This is contributing to changes in Antarctica, known as the “driest continent,” because it is so cold. Walking up the hill through the snow and looking down over the penguins, their colony and the icy bay beyond was spectacular.

As mentioned earlier, there were three women on the voyage that I had met up with in person during my Fulbright visit to California and had met many others online. I was intrigued to see how the relationships and group dynamics would play out. I have to say I was blown away by the inspirational and fun women. There were geologists, astrophysicists, geographers, mathematicians, engineers, doctors, innovators, explorers and more. We had many conversations about life, the environment, work, personal issues and went from discussing formal work into informal spaces. We each had to do a “Symposium at sea,” where we had three minutes to talk about ourselves. This was a fantastic way to get insight into the 99 other women and non-binary people, some of whom shared more personal stories and others who shared more about their work. With some people I had one-on-one conversations about challenges at work, where I have recently stepped into a leadership role as the Director of the ACDI (African Climate and Development Initiative) at UCT. There were also opportunities to work in groups on issues we might want to take forward. I was part of a group that started working together on the ship and are continuing afterwards to write a piece about our personal stories working on environment issues from a social science perspective.

BRINGING IT HOME

Both my Fulbright trip to Santa Cruz and my trip to Antarctica highlighted the importance of collaboration and connecting different parts of the system for supporting change. As I saw in Santa Cruz, engaging citizens in environmental governance contributed significantly to urban resilience. It helped to build trust between citizens and local government as well as provide the opportunity to hear multiple perspectives and co-develop robust responses. On the Homeward Bound Antarctica voyage, the personal connections we built were deep. We are continuing to collaborate and feel part of a group of women that support courageous leadership for people and planet.

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Both Fulbright and the Homeward Bound programs centered engagement with the whole self and system. Our behaviour and emissions around the world are impacting the precious Antarctic wilderness. We are all connected, and we need to remember and factor it in more into what we choose to do as we go into the future. I have come back to my role at UCT with renewed enthusiasm to undertake research that contributes to a more sustainable and just world. We can make different decisions, that consider others and the planet more carefully and compassionately.

BIOGRAPHY

Gina Ziervogel is Director of the African Climate and Development Initiative (ACDI) and Associate Professor in the Department of Environmental and Geographical Science at University of Cape Town. Her research on climate change adaptation and governance across scales from the household to municipal level draws on transdisciplinary methods to support just climate action. She was a Visiting Fulbright Scholar at University of California Santa Cruz from July 2021 until January 2022. Gina.Ziervogel@uct.ac.za
