



Alexandra Tost



Dánnell Quesada Chacón



Anja Katzenberger



Evie Morin

# Meet the future stewards of our planet

## How do Potsdam's researchers deal with the planetary crisis?

By Andrés Ángel, Maria Goldrina, Mona Horn, Eva Lüdke and Carolina Naumann

**I**mmense wildfires in Canada and Greece, unusually large storms in Libya resulting in millions in damages and thousands of casualties, record rainfall in Spain, floods in Brazil and even abnormally strong South Asia monsoon and El Niño events. All of these may be part of the 'new normal' or the 'new abnormal', as many scientists prefer to call it. A new planetary regime in which our influence is unequivocally large, irreversible and sadly, negative. We witness the im-

pacts of the climate crisis everyday but we hardly get to meet the scientists who dedicate their life to understanding, describing and predicting them. Assessing the impacts of green extractivism, downscaling climate and ecological models to ever-more precise scales, understanding the monsoon system dynamics of the tropics and supporting indigenous rights and self-determination in the Arctic are the missions of the researchers we talked to here in Potsdam. These are their stories.

ALEXANDRA TOST

**A**lexandra combines environmental studies and politics to foster change. When Alexandra was in school, her enthusiasm for politics and political education was sparked through a group from the Federal Agency for Civic Education. This eventually led her to study political science and economics at the University of Potsdam. Although she did not learn about climate change in school, she vividly remembers Al Gore's documentary *AN INCONVENIENT TRUTH* as a breaking point, like many. After completing her Master's Degree in International Development Studies, Alexandra pursued her passion for social issues and human rights by working with the German Agency for International Cooperation (GIZ) in Peru. There, she realized how social and environmental topics are increasingly linked. While living in Lima, she experienced a two-week water supply disruption due to floods. "That was a very existential experience", she recalls. Nowadays, Alexandra works in the field of democracy and sustainability at Potsdam's Research Institute for Sustainability (RIFS). She just started her doctoral dissertation on green extractivism, green hydrogen and the positions of the progressive governments in Chile and Colombia. Low-emission technologies and their social and ecological impacts are at the center of her interests. Who benefits and who decides where and when to exploit? Are Global South communities' views truly included in the decision-making?

## "The economy can't continue to grow indefinitely"

These are some of the questions with which she deals on a daily basis.

A sense of purpose drives her to continue researching everyday and the increasing social awareness of the problem gives her hope. She emphasizes that "the economy cannot continue to grow indefinitely, which is also becoming increasingly accepted in the scientific realm" and adds that without concrete and timely actions, we will face even more drastic changes in the coming decades. "A transformation in all sectors and levels is needed", she says. However, she is not pessimistic about the future and states that the urgency makes it difficult to separate science from activism. Alexandra even goes further and tells us that "this combination does not undermine scientific credibility at all".



As a founding member, Alexandra played a key role in establishing speakUP in 2009

DÁNNELL QUESADA-CHACÓN

**W**hen Dánnell Quesada-Chacón studied civil engineering in his native country Costa Rica, he could have never imagined ending up working hand in hand with the best climate scientists at PIK. Dánnell didn't have a head start back then, but his talent, discipline and vision got him a Hydro-science and Engineering scholarship at the TU Dresden. He began questioning his professional practice when he realized that, unsurprisingly, most hydropower companies only concern themselves with sustainability when they were forced to tick the usual pre-formatted checklists of ministries, development banks and multilateral financial institutions for funding.

## "The almost ubiquitous anthropocentric approach is to blame for this crisis"

Like many people, he is affected by the current planetary crisis. Sadness, loss, anxiety and anger are sometimes present. "Looking at the evidence, realizing what it means and the inability of our society to

take structural actions is not easy" he says, and adds "the almost ubiquitous anthropocentric rationale and approach is to blame".

His typical day at work is spent discussing modeling pitfalls, entertaining new ideas and planning collaboration opportunities, accompanied by unhealthy amounts of lines of code.

He now works downscaling climate models because he realized that projections lacked appropriate detail. Coming from a country barely larger than Lower Saxony, but with an estimated proportion of over 10% of the world's biodiversity, he knew he had to act. And so, he combined his interest in ecology with research on downscaling techniques, Bias-Correction and Deep Learning.

Dánnell also tries to assess the trade-offs of modeling our planet with different temporal and spatial resolutions. For his PhD. thesis, he worked with climate projections of rainfall, temperature, radiation, wind-speed, humidity and the distribution of some species in Saxony in different scenarios. He uses those to project the suitability of species and to draw conclusions on land use appropriateness for conservation.

For now, he will keep rushing every morning from Berlin to Telegrafenberg with a big cup of coffee in his hand to improve our understanding of our planet's climate and ecosystems and to, hopefully, spark positive changes in decision-making.

## ANJA KATZENBERGER

Although the trend in scientific circles is increasingly towards inter- and transdisciplinarity, Anja stands out with her unusual academic career. After a bachelor's degree in Mathematics and a master's degree in the field of Environmental Systems, she now finds herself working in Climate Physics.

She first dealt with climate change during an extracurricular afternoon geography lesson on the topic. Back then, climate change was only briefly mentioned, but this has changed a lot over the past few years, she says. Anja's curiosity led her to research and to contribute to the public discussion on climate change. This resulted in a master thesis at the Potsdam Institute for Climate Impact Research (PIK) and a subsequent ongoing PhD.

Currently, she researches monsoon system dynamics in India and West Africa in various greenhouse gas

emission scenarios. She does this by simulating different planetary models -a planet completely covered with water, a planet with a stripe of land in the middle - and assesses how monsoons behave under them. All needs to be taken care of: The presence or absence of continents, mountain ranges, seas, lakes, etc. has profound impacts on her simulated monsoons. Therefore, although the simulations might look like a really fun sandbox game to the untrained eye, the conditions assessment is extremely complex.

**“Bringing science to the people is really important to me”**

But Anja is -luckily- not coding and simulating planets 24/7. She also attends conferences and engages with the general public. She holds numerous talks to make science more accessible, especially at schools.



Anja's research shows how the monsoon systems will develop under climate change

“Bringing science to the people is really important to me”, she tells us. In her efforts, she also communicates with other researchers.

Recently, Anja headed to India and Singapore to discuss her work with several researchers and held a presentation at the AOGS, a prominent geosciences conference.

When asked about the future of our climate, Anja warns us about more frequent and intense weather events. Unpredictable monsoons should alarm policymakers, she states. According to her, carbon neutrality as soon as possible is indispensable. In her view, various sectors can contribute: political movements, activists, businesses and ultimately science.

Important is that these aim towards the same objective and complement each other while maintaining clear boundaries, as blurring the lines could undermine credibility. To her, engaging in scientific work and making one's own conscious choices toward a sustainable personal lifestyle are key actions.

## EVIE MORIN

Evie Morin is from Comox, Canada, the traditional territory of the K'ómoks First Nation. Growing up, she could directly observe the impacts of climate change. Evie remembers the presence of the shrinking Comox Glacier she lived in close proximity to and the stories she heard about how much bigger it used to be in the past.

Her academic journey stands as a testament to the power of adaptability and a commitment to making a difference. It began with Architecture, passing to Natural Resource Management and finishing with a master in Resource and Environmental Management. This unique path eventually led her to help communities and municipalities in land use decision-making. She started working as a Planning Associate at EcoPlan International in Vancouver, where she supports Indigenous self-governance and facilitates dialogues between Indigenous and non-Indigenous authorities.

Nowadays, Evie is a researcher at RIFS Potsdam and the historical harm inflicted upon Indigenous communities, also through research, is a constant concern for her.



Evie wants to encourage ethical climate research together with Arctic Indigenous Peoples

Evie notes how research often results in misrepresentation and lack of recognition. “I hope that this field will become more open and integrated... the ideal

future for me would be that the people who live in the Arctic are effectively involved in the design phase of the projects, right from the start”, she tells us. One of Evie’s primary projects is DÁVGI: Co-Creation for Biocultural Diversity in the Arctic, which serves as a collaboration and knowledge exchange hub among Indigenous rights holders, environmental organizations, local stakeholders, researchers, and policymakers. The project aims to strengthen the conservation and restoration of biocultural diversity in the Arctic by engaging all actors.

In her role as a RIFS researcher, Evie is presented with dynamic challenges. Her role involves extensive literature review, crafting policy briefs on indigenous research funding, and navigating complex administrative processes within a diverse international team. Balancing these aspects requires building networks worldwide and this in turn means occasional travels to strengthen those relationships and alliances as well as many other exciting activities.

**“I believe in a strong connection between science and activism.”**

Back at home, in Canada, Evie communicates flood risks associated with climate change to diverse audiences, including community members without

scientific backgrounds. Her goal is to empower these individuals to make informed decisions in their regions. Despite facing resistance at times, she remains committed to bridging the gap between technical and non-technical communication to foster resilience. In her opinion, science is a very powerful tool to address inquiries and substantiate positions, contributing to a foundation of robust evidence. According to her, the research that she does represents a form of activism in its own right. Through her work, she aspires to catalyze significant climate research advances, thus contributing to fighting the climate crisis.

Evie Morin’s journey exemplifies the importance of adaptability, resilience and a commitment to making positive impacts. Her work at the intersection of science, Indigenous rights and environmental conservation brings hope for a more inclusive and sustainable future in the Arctic and beyond.

**T**hese were just four examples of people doing science for the people and for the planet. There are thousands around the world striving every day to shed light onto our future. Alexandra, Dannell, Anja and Evie belong to a new generation of scientists who, without losing any rigor, are able –and willing to– push for a better planet. Immersing in this anthropic crisis, the perspective may seem grim and dismal. But as long as people like them exist, we can always have hope.