



FS REPORT

Name

Year and term for exchange

Lena Westerlund Xie

Year 3 VT2024

Country for the project

Brazil

Degree programme

Degree program in chemical engineering, Bachelor's degree

## Micropollutant reduction from freshwater in southern Brazil

### Before departure

I applied for the KTH Field Studies travel grant because it has always been my dream to travel abroad for work. My dream is to both help people that have difficulties with something we have better understanding of and in return get to learn new solving methods for things we have problems with in Sweden. It's also a good way for opening doors when it comes to more collaborations between countries for a better sustainable world.

The project I chose in Brazil was the most appealing for me since I had experience in micropollutant reduction from other projects in my degree program. I Both think removal of dangerous substances from water that people drink is important for health and environmental reasons, but I also think it's an interesting subject to pursue.

Brazil is a country that has a lot of problems with how they handle their freshwater resources, so to get the opportunity to work on a collaboration with them feels like an amazing experience.

I was expecting that I would have good resources and materials to make the experiments for my project in Brazil. This since I knew that I was going to do field studie at a big university. I expected to have the same amount of resources as you would have at KTH if you did something similar in their research laboratories.

For the preparation of the trip I had to find accommodations in the city I was staying for the time of my stay. I also needed to take hepatitis A+B and yellow fever vaccinations for my stay in the area of the country I was going to. Because I wanted to be extra cautious for diseases that exist in Brazil I took vaccinations for dengue fever. Since I didn't know any portuguese I used duolingo as a tool to help me learn some portuguese to get by in the country during my stay.

### Upon arrival

I arrived in Florianopolis, Brazil 1 week before my project at UFSC started. This is to settle in at the accommodations in the country, handle jetlag, the new climate and get necessary stuff in order like a sim-card for the phone and bus card so I can get to the university.

I worked in Brazil for 10 weeks at the university for my project before my departure home.

Before the departure home I stayed in Rio de Janeiro for some days where I explored the city as a tourist.

### Financials

The cost of living in Brazil was somewhat cheaper than in Sweden. The rent was a lot cheaper as a monthly cost which was very nice.

If you want to save money in Brazil I would recommend taking the bus instead of a taxi/uber for traveling and since food is cheaper in some local restaurants then to buy and make yourself from the grocery store ask locals where you can get the cheapest and best food. If many locals recommend a restaurant you can be very sure of its good quality and reasonable price on the food being served.

## **Accommodation**

I got the accommodation by finding a room to rent on Airbnb. The contacts at the University only helped by telling the best areas in the city to live and places to avoid. I found the accommodation I picked very nice and the hostess was wonderful.

The cost of the accommodation was around 3 000 kr/ a month and the housing conditions were very good since there was an air conditioner in the bedroom, filtered water to get without buying water at the store and a washer for cleaning clothes. The only thing I can complain about is that the accommodation was a little too far from the laboratory for my taste.

## **Project**

My project is about wastewater cleaning from specifically micropollutants. The technique that will be used to accomplish the cleaning of the water is a membrane distillation process. The purpose of the project is to find new more efficient methods to get rid of the micropollutants from our environment and drinking water. The reason to get rid of the micropollutants from our waters is because they are a high environmental and health issue the whole world struggles with right now.

A day at the laboratory looked like this: I came in around 8-9 a clock in the morning and looked over what things I had to accomplish during the day to keep up with my schedule. After this I would start doing the tasks I had been set up to do for the day. Most of the time some problems would come up that had to be solved. Thankfully most of them got solved by disgusting new ways/ methods for the problems with other students at the laboratory. A lot of my experiments had some waiting time which I either took lunch during or wrote on my report or background searched for my report. When all my tasks were done for the day or I felt I couldn't do more for the day I went home, which was almost always around 5-6 a clock in the afternoon.

I got a lot of support both from the contact persons at the laboratory, but most of the help and support I got was from the other students at the laboratory. The one that helped me the most was of course the person that became my handler and without the support of him I would never have finished everything in time.

At the end of my stay at the laboratory in Brazil I had a presentation for the whole laboratory on what my experiment was about and what result I got.

I'm very interested in the cleaning of micropollutants from the environment since it's a very important issue right now and I can most likely see myself working in a business regarding this type of work in the future.

## **Country**

My experience in Brazil was amazing and a dream come true for me. The country was beautiful, the weather hot and the beaches were amazing. Of course when it comes to a country on the other side of the planet there will be some culture shocks. But surprisingly I adapted and accepted the culture shocks very fast.

## **Leisure and social activities**

In my spare time I mostly went to the beach since I love swimming in the sea. Since I got to Brazil during their summer break and a lot of people in Brazil don't speak English I mostly hang out with a person I grew very close with from the laboratory. Figure 6 shows me and him in the laboratory. Since my new very close friend was Brazilian he showed me a lot of the Brazilian customs and food of Brazil, which is more my speed then partying with the international students. But that's just how I feel. If you like to party and hang out with international students, they are very easy to get in touch with. As I stayed in Brazil the Carnival was happening which was an amazing thing to experience and be a part of.

## **Sustainability**

To live in a sustainable way was actually very hard in Brazil. All the transport and traveling in Brazil is through fossil fueled vehicles and the only way to get somewhere without a field vehicle was either by walking or by electric shooters. The problem with the electric shooters was that you needed to have a Brazilian ID number to use them. The food in Brazil is not sustainable either since they eat a lot of red meat. A way I choose to be more sustainable is to eat as little red meat as I could and take vegetarian options instead. I also had the Ac on as little as possible and did not use a lot of water when showering since Brazil has a lot of problems with drought.

My project is very connected to the Global Sustainable Development Goals since it has to do mostly with wastewater/drinking water cleaning of pollutants that are a very big environmental problem right now.

#### **Other recommendations and observations**

I really recommend doing the KTH field studies if you're interested. I can honestly say it's the biggest adventure I have embarked on in my life and you won't regret it.

Besides the adventure part of doing your thesis project in another country, you get a lot of new experiences and understanding of cultures you don't get if you just travel somewhere. You will probably meet a lot of new people and friends and hopefully like me you will get a best friend you will have for the rest of your life.

If you don't go to Brazil for your KTH field studies but somewhere else I recommend visiting Brazil for a vacation, especially the southern part of Brazil since it is one of the most beautiful places I have ever been.