



# Allison Schaap

## Research Engineer - Microfluidic Sensors

“I am part of a team that develops sensors to measure ocean chemistry. I do a mix of interdisciplinary engineering and scientific work. On the theoretical side, this includes working with fluid mechanics, CAD software, modelling, writing scripts, performing data analysis, and report writing. In the lab, I build, test, fix, and characterise instruments and run experiments on new designs or methods. I’ve also done some field work using the sensors out in exciting places.”



**Qualifications :** PhD in Mechanical Engineering (from the Eindhoven University of Technology, the Netherlands); Masters in Mech. Eng. and Bachelors in Engineering Physics (both from the University of British Columbia, Canada)

**Career Pathway :** This is my first “real” job after finishing my PhD. However, throughout my undergraduate degree I worked part-time in a lab which specialised in analytical chemistry and instrumentation for environmental applications, which is what got me interested in doing research and in this field in general.

**Number of days at sea :** I haven’t been to sea properly (other than small day trips) but I’ve done some field work since starting at the NOC two years ago. I’ve spent a total of over a month in three different countries deploying the sensors and training other users on them. This has ranged from well-equipped labs to lower-resource environments.

**Best technology you've developed :** Of course the best technology I’ve used is the sensors we develop ourselves! Really though, it’s great to be able to see microfluidic and lab-on-a-chip technology, which is often used in labs but not often brought to commercial fruition, come into its own in environmental fieldwork. In this application it matters dramatically if you can cut down the consumption of power or reagents/chemicals on your sensor by miniaturising it. It means you get more data for a longer time, and on top of that it’s a lot easier to carry around when you’re using it!

**Favourite thing about my work :** I really enjoy the interdisciplinary and mixed nature of my work and the group I’m in. It’s great to be able to see technology go from idea, to testing, to reality, to deployment, and that complete path isn’t something you always have in other research environments. It’s also fantastic to be able to work together closely with such a broad range of experts: you can learn some chemistry from the chemists, some electrical engineering from the electrical engineers, some oceanography from the oceanographers, and pull it all together for your own work.