

Wageningen scientists involved in major Arctic expedition

DRIFTING WITH THE SEA ICE

This autumn, researchers on board the ship *Polarstern* will let sea ice trap them and spend the next year drifting towards the North Pole in the name of science. Researchers from Wageningen will also be involved in this major expedition.

MOSAIC (Multidisciplinary drifting Observatory for the Study of Arctic Climate) will be one of the biggest polar expeditions to date. On 20 September, the German research ship *Polarstern* will depart from Tromsø in Norway. In the Arctic Ocean, ice will freeze around the ship, which will then drift with the ice towards the North Pole for 12 months.

The vessel will serve as a lab and a hotel for scientists from 17 different countries who will be studying the effects of climate change. Russian, Swedish and Chinese ice-breakers will bring supplies to the ship and let researchers and crew — a total of 600 people over the course of the year — relieve one another. The expedition will cost over 120 million euros; preparations started back in 2011. Three Dutch projects will be included thanks to a financial contribution by Dutch science funding organization NWO: two WUR projects and one for the University of Groningen.

YOUNG COD

Fokje Schaafsma of Wageningen Marine Research will be studying the Arctic cod (*Boreogadus saida*). ‘We found young cod under the sea ice during an earlier expedition.’ It seems as if they use the sea ice as a means of transport to take them from the Russian and Canadian coasts, where they are born, to the middle of the Arctic Ocean. Schaafsma will investigate what the cod eat in the different seasons. This information will be combined the results of other researchers, for example on the spread of cod.

Schaafsma will be on board the trapped ship from late January to early April 2020. It will not be her first polar expedition. ‘But so far I’ve only been in the summer. Now it will be permanently dark for the first few weeks. I’m interested to see what that’s like.’

As most of the scientists will only spend two months on board, they will help one another to carry out measurements for a full year. Schaafsma: ‘We’ll have to see how the logistics work out. Work and consultations have been going on for a long time to get all



▲ Research ship *Polarstern* during an expedition to the Antarctic in 2013.

the people and necessary equipment on board so that everyone can both do their own job and help others.’

MELTING SEA ICE

Researcher Laurens Ganzeveld of Meteorology and Air Quality studies the exchange of climate-active gases between the ice, the ocean and the atmosphere. These are gases such as carbon dioxide, methane, ozone and dimethyl sulphide that influence the climate, for example as greenhouse gases. ‘The Arctic is predicted to be ice-free in the summer months by 2050,’ says Ganzeveld. ‘This will have a huge effect on the climate because the sea ice influences the exchange of energy and climate-active gases between the atmosphere and the ocean. But very little is known about these processes in the Arctic Ocean, especially outside the summer months as little research has been done in that period.’

Ganzeveld won’t be going on the ship himself; he will be performing model analyses in the Netherlands together with his colleagues. Fellow scientists from Boulder, Colorado, will carry out the measurements on board. Ganzeveld: ‘This data will let us improve our climate models and make predictions for the Arctic and global climate.’ **TL**



▲ Fokje Schaafsma



▲ Laurens Ganzeveld

Sailing ship in the ice

The last time someone did a drifting experiment was in 1895 when the Norwegian explorer Fridtjof Nansen deliberately got his ship *Fram* stuck in an ice pack in an attempt to reach the North Pole. He never actually got there but a lot of scientific research was conducted during the journey.

