Consequences of loss of ice in Arctic investigated

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Researchers to investigate consequences of rapidly shrinking sea ice cover in Arctic on marine ecosystem

Researchers from the University of Aberdeen are set to investigate what consequences the rapidly shrinking sea ice cover in the Arctic is having on the marine ecosystem.

Sea ice is a unique feature of polar marine ecosystems and the loss of sea

ice in the Arctic, whichis often referred to as amongst the most striking evidence of climate change, makes these ecosystems particularly sensitive to climate change.

For example, ice algae - tiny algae that grow in and under the ice - contain a large amount of "micronutrients", which are essential substances that many marine organisms, from worms and fish to mammals, cannot make themselves.

The retreat of sea ice and subsequent loss of ice algae as a food source is therefore likely to have a significant impact on deep-sea food webs and ecosystems. However, despite much speculation, very little information is available on arctic deep-sea ecosystems, - in particular during the long polar night, when sea ice, darkness and cold temperatures make investigations virtually impossible.

Professor Ursula Witte from the University of Aberdeen, and her team will join the Canadian icebreaker CCGS Amundsen, a research vessel operated by the Canadian Coast Guard, to investigate the consequences of sea ice loss for deep-sea ecosystems through a suite of experiments and biomarker techniques. For example, the team will add ice algae, labelled with a tracer, to sediment cores. This then allows researchers to trace these vital micronutrients through the food chain, revealing which animals depend on them and to what degree.

The work will also include the deployment of a deep-sea lander system, an autonomous research platform built at Oceanlab and equipped with cameras and sensors, that will sit at the seafloor under the ice for nine months throughout the polar winter to observe organisms and collect data and will be retrieved in summer 2016.

Professor Witte said: "This is an extremely exciting project to be involved with as the data we gather will be the first of its kind and is

urgently needed to improve our understanding of a rapidly changing system – and as baseline for future impact assessments to ensure sustainable exploitation of the resources, as the shrinking ice cover also presents new opportunities for resource exploitation (oil and gas, mining) – with potentially further hazardous consequences for arctic ecosystems and the goods and services they provide."

Dr. Solveig Bourgeois, who will take part in the project, added: "I'm very excited to join an international research cruise of this scale which covers a vast territory from east to west across the Canadian Arctic.

"During the six weeks that I will be on board, I will carry out sediment incubation experiments and I will collect animals from the deep seafloor in the Beaufort Sea and Canadian Arctic Archipelago from where there is particularly little information.

"This is also a great opportunity to reinforce the collaboration with our colleagues from ArcticNet in Canada."

Provided by University of Aberdeen