

Project information

Project title

Fate, Effect, and Risk Modelling of accidental oil spill in sea ice ecosystem

Year

2012/2013

Project leader

Lionel Camus, ApN

Participants

Leader:

- Lionel Camus, Akvaplan-niva

Participants:

- Rune Storvold, NORUT
- Jon Aars, NPI
- Per Johan Brandvik, SINTEF
- Tove Gabrielsen, UNIS

International partner:

- CEDRE (France) and Brest University (France)
- Training and education: a PhD student (Matthieu Dussauze) financed by CEDRE/Brest University has been associated to the project.

Leader:

Lionel Camus, Akvaplan-niva

Flagship

Hazardous substances, Theme: Petroleum pollution

Funding Source

Fram Centre, NFR, oil industry

Summary of Results

The project is tightly connected and depending on field work in the Arctic that took place in October for data collection, animal sampling. Therefore, most of the work is taking place since October until Christmas. The data will be available in 2013.

NPI and SINTEF:

-Additional polar bear data collection has been carried out

Improvement of the ice drift and oil drift models have been done to later incorporate data on bear population

Analysis of swimming data has given us an idea of how much the adult polar bears spend in the water in spring and autumn, and this data will later be used in the project together with the location data from satellite telemetry and models from simulated oil drop to say something about the risk polar bears will have to be exposed to oil at an accident.

APN/UNIS:

-Individuals of polar cod have been sampled in Svalbard and reared in the research facilities (Barents Sea ecotox lab) at Akvaplan-niva.

-The exposure set up to expose the fish to various oil treatments has been done

-The efficiency and toxicity of different chemical dispersants are being tested from Nov. 16 until Dec. 20th.

-Methodology to measure the cardiac performance of the polar cod has been set up and tested on the fish

-Workshop on guideline making for dispersant use in the Arctic was supposed to take place in December at Klif (coordinated by APN). The meeting has been postponed and scheduled in January 31st.

NORUT: Two sensors have been set up in the APN research facilities above water tanks in which there will be crude oil treated with different means (physically dispersed, chemically dispersed, no dispersion).

Measurements will take place from Nov. 16th until Dec 20th.

Published Results/Planned Publications

APN allocated some funding to Perrine Gerraudie (APN) to write a paper following a study she did at APN with an Yggdrasil NFR grant (2009-2010) to investigate the biological effects of produced water on the polar cod. The work has been presented at the National Ecotox Symposium (Tromsø, October 2012) and the manuscript will be submitted in Nov to a peer reviewed journal.

Communicated Results

Most of the communication will take place in 2013 when data will be available

Interdisciplinary Cooperation

Good inter-disciplinary cooperation between APN and NORUT for testing sensors while doing biological testing with polar cod and crude oil.

Budget in accordance to results

APN/UNIS: The budget is being used for developing a collaboration with CEDRE and Brest University who provided a student and additional funding was provided by and oil industry. The funding has allowed us to accomodate the student and to also contribute scientifically to the PhD program of the student by complementing his research.

NORUT: The money allowed to test and calibrate in the lab the sensors for oil detection so the sensors can later be deployed in remote operated planes for oil tracking.

NPI/SINTEF: The Fram money allowed to get started on the idea to combine oil drift model/ice drift model and bear movement. Until now this proposal had never received any funding to carry the work

If Yes

APN: The study on the polar cod will help the responders, regulators and the oil industry to select the most appropriate chemical dispersant to be used in Arctic waters.

NORUT: When the sensors are calibrated, NORUT will be able to market his technology towards the responders as a tool for oil detection and tracking

NPI/SINTEF: When the oil drift model and bear population data is couple, running the model can be offered to the operators, responders and regulators.

Conclusions

The project is a 2 year project, it is still ongoing and the bulk of the data will be analysed in 2013