

Project information

Project title

Anthropogenic and natural radionuclides in sediment cores in the Porsanger Fjord

Year

2013/2014

Project leader

Hilde Elise Heldal, IMR

Participants

- Project leader(s)/institutions: Hilde Elise Heldal (Institute of Marine Research, IMR)
- Project participants/institutions: Louise Kiel Jensen, Justin Gwynn (Norwegian Radiation Protection Authority, NRPA), JoLynn Carroll (Akvaplan Niva)

The project will support the Fram Centre-funded project “Marine base maps for the Porsanger Fjord” led by Aivo Lepland (Geological Survey of Norway, NGU).

Flagship

Fjord and coast, Theme: Structure, function and change in Arctic and boreal fjord ecosystems

Funding Source

Fram Centre

Summary of Results

The project is ongoing and the status of the project is summarised below:

SAMPLE COLLECTION (completed):

- 8 sediment cores were collected in the Porsanger Fjord by NGU in June 2013 for radionuclide analyses. The budget allows for analyses of 6 of the cores.
- Samples of seawater from the inner and outer part of the Porsanger Fjord were collected by IMR in October 2013
- Samples of sediments and river water from two rivers draining into the Porsanger Fjord (Børselva and Stabburselva) were collected by chemistry students and teacher at “Lakselv videregående skole” in September 2013. For more information on this part of the project, see section 7.

SAMPLE PREPARATION (ongoing):

- 8 sediment cores were cut into 1 cm thick slices (1-10 cm) or 2 cm thick slices (below 10 cm) at NGU in October 2013. 6 of the cores were chosen for further work. 2 cores will be stored for future work.
- 3 sediment cores will be dried and homogenised at IMR and 3 sediment cores will be dried and homogenised at NRPA in November/December.
- 4 surface sediments from Børselva and Stabburselva will be dried and homogenised at IMR in November/December.
- 2 samples of river water from Børselva and Stabburselva have been processed by the NRPA.
- 2 samples of seawater from the Porsanger Fjord will be processed at IMR in March/April 2014.

SAMPLE ANALYSIS (not yet started):

- 3 sediment cores will be analysed for gamma-emitters and dated using the Pb-210-method at IMR in January-March 2014
- March 2014
- 4 samples of surface sediments Børselva and Stabburselva will be analysed at IMR in January 2014
- 2 samples of river water from Børselva and Stabburselva will be analysed at NRPA soon.
- 2 samples of seawater from the Porsanger Fjord will be analysed at IMR in March/April 2014.
- We aim at finalise sample analyses in April 2014.

For the Management

This point will be addressed at a later stage in the project.

Published Results/Planned Publications

Results from the proposed project will be published in reports and peer review journals. We will provide our results to the NGU project, and aim for joint publications of our findings.

Communicated Results

We have involved a chemistry class and their teacher at "Lakselv Videregående Skole" in sample collection from Børselva and Stabburselva. They will use the results from the project in a school project. We plan to visit the school in May/June to lecture about our findings. We believe this is an efficient way of reaching out with our results to the local society.

Interdisciplinary Cooperation

This project is an inter-disciplinary cooperation between geologists (NGU) and chemists/biologists working with different aspects related to the presence of anthropogenic and natural radionuclides in the marine environment. Information emerging from this project is of mutual benefit for the different disciplines:

- Knowledge about geological parameters such as grain size (obtained within the above mentioned NGU project) may help interpreting potential variations in activity concentrations of the anthropogenic radionuclide caesium-137 between different sampling locations
- Dating of sediment cores with the lead-210-method (results obtained within this project) may help interpreting NGU's geochemical results

Budget in accordance to results

Funding from the Fram Centre and cooperation with NGU (both regarding sample collection and the mutual utility of results) is of crucial importance for this project.

Could results from the project be subject for any commercial utilization

No

Conclusions

This point will be addressed at a later stage in the project.