

SISSAL VÁGSHEYG ERENBJERG

CONTACT

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EDUCATION

2016 – today **DOCTORIAL STUDENT**

SPECIALIZATION IN PHYSICAL OCEANOGRAPHY AND NUMERICAL MODELLING

Thesis working title: Water exchange in Sundalagið and adjacent fjords: a model study (Funded by the Faroese Research Council)

Supervised by: Prof. Eigil Kaas (University of Copenhagen) and Dr. Bogi Hansen (University of the Faroe Islands)

Synopsis:

- Investigating water mass exchange in a Faroese fjord system, as a model study.
- Setting up a numerical ocean model for the Faroe Islands archipelago on a high performance computer.
- Investigating and understanding the ocean and fjord dynamics on the Faroe Shelf with FarCoast800.

2012 – 2013 **MASTER OF SCIENCE, THE UNIVERSITY OF COPENHAGEN: PHYSICS WITH GEOPHYSICS AS QUALIFICATION PROFILE**

SPECIALIZATION IN CLIMATE PHYSICS AND ENVIRONMENT

Thesis title: Arctic Bromine Chemistry - The link to Ozone Depletion Events; implemented into the Danish Eulerian Hemisphere Model

Supervised by: Prof. Ole John Nielsen (University of Copenhagen), Dr. Jesper H. Christensen (University of Aarhus) and Dr. Anne Lærke Sørensen (Harvard University)

Synopsis: The thesis focused on halogenated atmosphere chemistry:

- Recognizing important chemical reactions including bromine chemistry, competing with mercury depletion in the Arctic free troposphere
- Implementation into the Danish Eulerian Hemisphere Model,
- Validating model runs towards in-situ observations and quantifying improved model performance.

RESEARCH INTERESTS

I have a strong interest in the environment and high performance computer modelling thereof, primarily of the ocean, through numerical geophysical fluid dynamics. My main interest is running high-performance computer models and programming in python, FORTRAN and C. I have previously worked with both atmosphere and cryosphere. I have conducted projects with several different numerical models and my current project is using the Regional Ocean Model System (ROMS). My other areas of interest are within: climate change, atmosphere chemistry and processes, glaciology, analysis of persistent organic pollutants, Oil spill contingency and response, model output and data validation. In my research I have mainly focused on arctic and subarctic areas and the influence and response of the environment and climate with regards to both natural and anthropogenic influences.

RESEARCH EXPERIENCE

2016 - today PHD PROJECT – UNIVERSITY OF COPENHAGEN AND FISKAALING A/S

Synopsis: In this PhD-project a high resolution numerical 3D-model will be implemented for the Sundalagið and adjacent fjords in order to understand the circulation and water exchange between the different part of the fjords, which has a quite complex bathymetry and variable hydrography. The model simulations will be validated towards a vast amount of data including hydrographic and current profile data both from spatial surveys and timeseries from moored instruments. The influence of various weather conditions on the hydrography and circulation on both short and seasonal scale will be investigated with emphasis on influence on the stratification, the vertical mixing processes, residence time in the various basins and how present fish farms are dynamically connected. Further, a sea lice model will be coupled to the physical model in order to increase the understanding of the spatial, vertical and temporal dispersion of the first stages of sea lice obtained from recent successful plankton net trawlings in the region.

2014-2016 NATIONAL ENVIRONMENT AGENCY OF THE FAROE ISLANDS – ARCTIC MONITORING AND ASSESMENT PROGRAMME (AMAP)

Geophysicist: My role was to collect samples, prepare for chemical analysis and analyse and present the data and contribute to the data report for the AMAP programme.

2015 HARVARD UNIVERSITY, T. H. CHAN SCHOOL OF PUBLIC HEALTH

Visiting scientist: Chemical analysis of methyl mercury in Faroese food items (pilot whale and seabirds) from the Faroe Islands, by a Tekran 2700 CVA-FS

2011 – 2012 MASTER COURSES IN ARCTIC GEOPHYSICS AND TECHNOLOGY, THE UNIVERSITY CENTER IN SVALBARD (UNIS) – NORWAY

Master Courses with focus on arctic field studies, including:

- Thermodynamics of sea ice and loads on structures,
- Polar atmosphere chemistry,
- Techniques for the Detection of Organo-Chemical Pollutants in the Arctic Environment, transport and faith
- Environmental Toxicology Measuring PCBs in passive air samplers from Barentsburg by GC-MS, Svalbard

2012 MARINE CRUISE TO NORTHERN SVALBARD, NORWAY

Participation in a cruise to the northern part of Svalbard, collecting air samples, planktonic samples and investigating oil spill contingency methods in ice covered regions of the Arctic.

2011 POLAR ATMOSPHERE FIELD TRIP TO NY-ÅLESEUND, SVALBARD

2011 – 2011 LABORATORY PROJECT IN ICE CORE LAB CENTER FOR ICE AND CLIMATE, UNIVERSITY OF COPENHAGEN

Lab work during spring semester melting and measuring gas, stable isotopes and conductivity in 50 meters of NGRIP ice core.

Dissertation title: Measuring 50 meters of NGRIP ice for determination of methane concentration in glacial transition around Dansgaard-Oeschger event 20-21 by a PICARRO gas analyzer

2010 **BSC IN NAOTECHNOLOGY FROM UNIVERSITY OF COPENHAGEN**

Dissertation title: Greenland CO₂ record, data compilation and analysis of compiled data

GRANTS AND COLLABORATIONS

FUNDING AWARDED:

2015 Faroese Research Council PhD Studentship (DKK 640,000)

SUCCESSFUL COLLABORATIONS:

2013 onwards As an employee of Fiskaaling, collaboration with industry is a requirement. My PHD is partly funded by 2 large aquaculture companies MOWI Ltd. and Bakkafrøst Ltd.. The work is in close collaboration with the Marine Research in Bergen and the University of Copenhagen.

PUBLICATIONS

In prep.:

Erenbjerg, SV, Albrechtsen, J., Simonsen, K., Olsen, E., Kaas, E., Hansen, B.

Mixing in a Faroese fjord, a model study.

Erenbjerg, SV, Albrechtsen, J., Simonsen, K., Sandvik A., Kaas, E.

High resolution modelling of the Faroe shelf circulation by FarCoast800.

NON-PEER REVIEWED PUBLICATIONS

Publisher: Joint Institute for Nuclear Research, Dubna, Russian Federation

Mosses as biomonitors of air pollution: 2015/2016 survey of heavy metals, nitrogen and POPs in Europe and beyond.

Erenbjerg, S.V.

Fresh water Forcing in Sundalagið and adjacent fjords. Fiskaaling rit 2020-02

(with colleagues at the Faroese Environment Agency)

Mercury consumption calculator, with colleagues at Faroese Environment Agency, available at: kyksilvur.us.fo

Andreasen, B., Hoydal, K., Mortensen, R., Erenbjerg, S.V., Dam, M.
AMAP Faroe Islands 2013 - 2016: Heavy Metals and POPs Core Programme

Nielsen, S. í T., Hoydal, K., Mortensen, R., Erenbjerg, S.V., Dam, M.
AMAP Faroe Islands 2009 - 2012: Heavy Metals and POPs Core Programme

Dam, M., Riget, F.F., Bossi, R., Erenbjerg, S.V.
Perfluorinated alkyl substances in terrestrial and freshwater environments in Greenland and Faroe Islands - technical report

PRESENTATIONS

VISINDAVØKAN 2020 TORSHAVN, FAROE ISLANDS

Presentation: (In Faroese) Public presentation on: High Performance Computing, the link to Covid-19 vaccine and weather forecast
S. Erenbjerg

VISINDAVØKAN 2019 TORSHAVN, FAROE ISLANDS

Presentation: (In Faroese) Short public presentation on FarCoast800, linking to climate change
S. Erenbjerg

WORKSHOP ON THE CIRCULATION ON THE INNER FAROE SHELF 2019 AT FAROE MARINE RESEARCH INSTITUTE

Presentation: On the inner shelf modelling of Faroe Islands by FarCoast800
S. Erenbjerg

EUROPEAN GEOPHYSICAL UNION MEETING 2017 VIENNA, AUSTRIA

Poster presentation: Implementation and validation of a current model system in the greatest sound in the North East Atlantic archipelago of the Faroe Islands
S. Erenbjerg, J. Albretsen, L. Asplin, E. Joensen, K. Simonsen, A. Sandvik, E. Kaas

WORKSHOP WITH INSTITUTE OF MARINE RESEARCH BERGEN 2017, AT FISKAALING

Presentation: The FarCoast800, the first simulations
S. Erenbjerg

ESTAURINE, COASTAL, ASSOCIATION 2016 BREMEN, GERMANY

Poster presentation: Water exchange in a Faroese fjord system
S. Erenbjerg, E. Joensen, K. Simonsen

INTERNATIONAL POLAR YEAR, 2012 MONTREAL, CANADA

Poster presentation: Implementing Halogen Chemistry into the Danish Eulerian Hemisphere Model
S. Erenbjerg, A.L. Sørensen, J.H. Christense, O.J. Nielsen

VOLUNTEER WORK

Board member of the Science Academic Council, University of Copenhagen (2010 and 2011)

Board member of the joint Student Council, University of Copenhagen (2010 and 2011)

Member of the executive Committee of the joint Student Council, University of Copenhagen (October 2008 - November 2009)

President of the Nano technology Student Council, University of Copenhagen (2008 - 2010)