

Hameed Moqadam

PhD Candidate

Glaciology section, Alfred Wegener Institute

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OBJECTIVE

Looking for a challenging position to apply my expertise in glaciology, geophysics, machine learning, and data science. Focused on contributing to innovative research and practical solutions at the intersection of cryosphere, geophysical analysis, and computational methods.

EDUCATION

- **Alfred Wegener Institute / Constructor University Bremen** 09.2021 – 04.2025
Ph.D. in Glaciology & Computer Science Bremerhaven/Bremen, Germany
 - Tracing Extended Internal Stratigraphy in Ice Sheets using Computer Vision Approaches.
- **Lappeenranta University of Technology (LUT)** 2014 – 2017
MS.c in Environmental Engineering Lappeenranta, Finland
 - Thesis: Modelling of biomass combustion chemistry to investigate gas phase alkali sulfate formation.
- **Tehran South University** 2005 – 2009
BS.c in Thermo-fluid Mechanical Engineering Tehran, Iran
 - Thesis: Thermodynamic analysis of Brayton cycle and gas turbine.

RESEARCH EXPERIENCE

- **Alfred Wegener Institute** 09.2021 – 04.2025
Doctoral researcher Bremerhaven, Germany
 - Automatic ice sheet stratigraphy mapping, using deep learning
 - Generation of stratigraphy mapping benchmark dataset
 - Basal ice segmentation, using generative AI
 - Novel evaluation metrics
 - Review of shortcomings of different stratigraphy mapping methods
- **University of Bergen, Informatics department** 11.2024 – 01.2025
Visiting researcher Bergen, Norway
 - Machine Learning group, Generative AI
- **Forschungszentrum Jülich** 12.2018 – 10.2020
Junior researcher Jülich, Germany
 - Stratospheric ice nucleation modelling using microphysics model MAID
 - Stratospheric dynamics using lagrangian model CLaMS
- **Lappeenranta University of Technology, Thermodynamics Lab** 03.2018 – 09.2018
Research assistant Lappeenranta, Finland
 - Numerical modelling of combustion
 - Computational fluid dynamics (CFD)
- **TU Graz** 06.2016 – 11.2016
Master Thesis worker Graz, Austria
 - Combustion physics
 - Numerical simulation of combustion kinetics (Python implementation)
- **The Netherlands Organization for applied scientific research (TNO)** 10.2015 – 03.2016
Intern researcher Petten, the Netherlands
 - Mathematical modelling of CO₂ adsorption (Matlab implementation)
- **Lappeenranta University of Technology, Thermodynamics Lab** 05.2015 – 09.2015
Intern researcher Lappeenranta, Finland
 - Numerical tool for biomass combustion calculations

PUBLICATIONS

C=CONFERENCE PAPER, J=JOURNAL, P=PRE-PRINT, S=IN SUBMISSION, T=THESIS

- [J] **Moqadam, et al. (2024). Going deeper with deep learning: automatically tracing internal reflection horizons in ice sheets.** DOI, *Journal of Geophysical Research, Machine Learning and Computation*, AGU Publications
- [J] **Moqadam, H. Eisen, O. (2024). Review article: Feature tracing in radio-echo sounding products of terrestrial ice sheets and planetary bodies.** DOI, *The Cryosphere*, EGU Publication .
- [C, T] **Hameed Moqadam, Thomas Gruber (2017). Modelling of Biomass Combustion Chemistry to Investigate Gas Phase Alkali Sulphate Formation.** DOI, *Proceedings of the 25th European Biomass Conference and Exhibition*, Session: 2BV.1.59, pp. 702 - 708, ISBN: 978-88-89407-17-2.

GRANTS

- **Funded** 11.2024 – 01.2025
Helmholtz Information & Data Science Academy (HIDA) - Norwegian Artificial Intelligence Research Consortium (NORA)
[NORA report](#)

FIELD EXPERIENCE

- **Antarctic Land Expedition** 10.2023 – 01.2024
Donning Maud Land, Antarctica
 - Phase-sensitive radar (ApRES) Measurements
 - Stake measurements 800 km (traverse between Neumayer III and Kohnen station, 1124 stakes measures. 411 new stakes mounted.)
 - Snow sampling (isotope measurement)
 - Snow Density measurements
 - Skidoo and snow groomer (Pistenbully) driving
 - Antarctic stations:
 - * Kohnen (7 weeks), Neumayer III (3 weeks), Troll (1 week)
- **Crevasse Rescue training (1 week)** 09.2023
Pitztal, Austria
 - Cravass rescue
 - Glacier emergency training
- **Glacier expedition and field course (1 week)** 07.2022
Vernachtverner, Austria
 - Snow pit digging
 - Snow density measurements
 - Radar measurements (GPR)
- **Research cruise on RV Heincke (North sea, around Helgoland, 4 days)** 04.2022
North Sea
 - Echo-sounder, Multibeam
 - CTD, Multinet
 - Gravitycorer, Box corer, Multicorer

CONFERENCE ATTENDANCE

Oral Presentation

- **European Geosciences Union (EGU) general assembly** 04.2025
Autoregressive mark-tracing for radiostratigraphy: A lightweight model for annotating internal reflection horizons in ice sheets. Vienna, Austria
[Abstract](#)
- **8th Geomar Data Science Symposium** 06.2023
Mapping Extended Internal Stratigraphy in Ice Sheets using Computer Vision Approaches. Kiel, Germany
[Book of Abstracts](#)
- **European Geosciences Union (EGU) general assembly** 05.2023
Tracing Extended Internal Stratigraphy in Ice Sheets using Computer Vision Approaches. Vienna, Austria
[Abstract](#)

Session Convener

- **European Geosciences Union (EGU) general assembly** 04.2025
Machine Learning for Cryospheric Sciences. Vienna, Austria
[Session Description](#)
- **ICY MARE conference** 09.2023
Applications of machine learning in marine sciences. Oldenburg, Germany

Poster Presentation

- **FRISP - Forum for Research into Ice Shelf Processes** 07.2024
Going deeper with deep learning, tracing deep internal reflection horizons in ice sheets. Bremerhaven, Germany
- **European Geosciences Union (EGU) general assembly** 04.2024
Mapping of deep internal reflection horizons, method modifications and applications. Vienna, Austria
[Abstract](#)
- **The Willi Dansgaard Centenary Symposium, Niels Bohr Institute** 08.2022
Automatic Mapping of Internal Stratigraphy in Ice Sheets, using conventional and learning methods. Copenhagen, Denmark
- **StratoClim final meetings and conference** 05.2019
Cirrus clouds evolution and origin observed through StratoClim campaign. Potsdam, Germany

JOURNAL REVIEWS

- Reviewer for [Environmental Data Science](#) (Cambridge University Press & Assessment)
- Reviewer for [The Cryosphere \(TC\)](#) (Copernicus Publications)

SKILLS

- **Programming Languages:** Python, Matlab, Fortran, HPC
- **Technical skills:** Linux, Unix, Git, \LaTeX , HPC, QGIS, COMSOL, ParaView, Ansys CFX
- **Climate and geospatial data:** NetCDF, ECMWF reanalysis (Era-interim, Era-5)
- **Data Science & Machine Learning:** Segmentation, Classification, Auto-encoders, CNN, GNN, Generative AI, TensorFlow, PyTorch
- **Soft skills:** Excellent communication, Public speaking, Team-worker and sociable, Fast learner
- **Mathematical modelling:** Finite Volume (FVM), Finite Difference (FDM), Turbulence models, CFD
- **Field skills:** Skidoo and snow groomer driving
- **Languages:** English (C2), German (B1), French (B1), Persian (Mother tongue)

PROFESSIONAL MEMBERSHIPS

- **European Geoscience Union – EGU** 2019 – *present*
- **International Glaciological Society – IGS** 2021 – *present*
- **Dokteam member (PhD students representatives at Alfred Wegener Institute)** 2021 – 2022
 - Attending department and directorate meetings.
 - Organising PhD days 2023 in Potsdam (internal conference for AWI PhD students).
 - Contact person for PhD student queries.
 - Organising social events.
- **Association of Polar Early Career Scientists – APECS** 2021 – *present*
- **Scientists for Future (S4F Deutschland)** 2019 – *present*

INVITED TALKS

- University of Bergen, Geoscience department December 2024
- University of Bergen, Informatics Department November 2024
- University of Tübingen, Glaciology & Geophysics group March 2023
- Talk for the winners of German AI national competitions (Bundeswettbewerb KI, www.bw-ki.de) April 2023

SUMMER SCHOOLS

- **Summerschool on Ice Sheets and Glaciers in the Climate System** 06.2022
Mapping Extended Internal Stratigraphy in Ice Sheets using Computer Vision Approaches. Karthaus, Italy
[Karthaus 2022 Summerschool](#)
- **Science and Climate change communication, education and engagement** 09.2023
DEEPICE training program Meielisalpe, Switzerland
[DEEPICE Training School](#)

SERVICE AND OUTREACH

- Development of Cape Verde digital twin in the frame of MarDATA-WASCAL program collaboration (Mindelo, Cape Verde, March 2024).
- Scientist for Future representative at Research Mile at the Maritime Week in Bremen (Bremen, Germany, September 2023).
- Gave a speech at the Ju-Docs ceremony 2019 at the Jülich research center for the scientists and doctoral researchers of the entire center, ~500 audience (Jülich, Germany, September 2019).

REFERENCES

1. **Olaf Eisen**

Professor of Glaciology
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Relationship: PhD supervisor

2. **Adalbert Wilhelm**

Professor of Statistics
Constructor University Bremen
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Relationship: PhD supervisor

Bergen, Norway, March 20, 2025