

Dr Rachel P Oien

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Personal Website 

Teaching Fellow (Grade 7)

Sept. 2023 - Present
Durham, England

Durham University, Dept. of Geography

Shortlisted in final 6 for Durham University Academic Tutor of the Year

- Level 3 Dissertation Supervision (Undergraduate Honours)
- Glaciers & Glaciation (Level 2)
- Antarctic Environments (Level 3)
- Scientific Research: Project on Tracking Glacial Terminus (Level 2)
- Earth Surface Processes and Landscapes (Level 3)
- Mountain Landscapes (Level 2)
- Natural Hazards, Risk and Resilience (Level 3)
- Risk Masters Academic Advisor (MSc Taught)
- Level 1 Academic Advisor
- Level 2 Academic Advisor

Honorary Research Fellow

June. 2023 - Present
Aberdeen, Scotland

University of Aberdeen, School of Geosciences

- Collaboration on Low Lying Coastal Cirques in Scandinavia
- Collaboration on Younger Dryas Cirques of the Isles of Greenland
- CryoExchange Member

Postdoctoral Fellow

Sept. 2021 - Sept. 2023
(Remotely based in Aberdeen,
UK)

University at Buffalo, NY, Dept of Geology

- Mapped & Created a usable mask of the Greenland Ice Sheet for the Little Ice Age Maximum
- Used Sentinel 2 surface reflectance and completed statistical comparison to ground-truthed data
- Identifying trimlines, dating records, & archaeological data
- Identify peripheral glaciers and ice caps which have disconnected from the GrIS since the LIA
- GRISO Summer School Participant (Nuuk, Greenland, July 2022)

Lecturer (Grade 7)

August 2021- Jan. 2022
Aberdeen, Scotland

University of Aberdeen, School of Geosciences

- Data Analysis (Level 3)
 - Remote Sensing & GIS (Level 3)
 - Physical Environments (Level 2)
 - Contemporary Environmental Challenges (Underg. Honours)
 - Creating the Anthropocene (Level 1)
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Education

University of Aberdeen
October 2017 - July 2021,
Aberdeen, Scotland

PhD in Physical Geography

Funded by the Scottish Alliance for Geoscience, Earth and Society Fellowship
Research Projects: Modern and Palaeo Scandinavian Cirque Glaciers as Indicators of Climate Change & Climate at the Onset of the Antarctic ice-sheet Growth: a detailed analysis of ice-buried glacial cirques

Advised by Prof. Matteo Spagnolo (Aberdeen), Prof. Brice Rea (Aberdeen), Prof. Robert G. Bingham (Edinburgh), and Dr. Iestyn Barr (Manchester Metropolitan)

Viva: Passed with Minor Corrections: July 12th, 2021
Corrections Accepted July 26th, 2021

Internal Examiner: Dr Dmitri Manguoy, University of Aberdeen
External Examiner: Dr Ramón Pellitero, National Distance Education University

University of Illinois
Urbana-Champaign
August 2013-May 2016,
Champaign, IL, USA

Masters of Science (Research) in Geology and Geophysics

Dissertation: Modelling the glaciological inception of the Fennoscandian Ice Sheet, Advised by Dr Alison Anders

Gustavus Adolphus College
September 2009- June 2013,
Saint Peter, MN, USA

Bachelor of Arts in Geology & Environmental Studies

Honours Thesis: Mapping Depth to Bedrock in a Tropical Pre-Montane Wet Forest, Costa Rica, Advised by Dr Laura Triplett

Skills

ESRI ArcGIS & ArcGIS Pro; QGIS; Remote Sensing; Google Colab & Jupyter Notebooks; Published Geomorphic & Geologic Maps; Python & 3D Numerical Modelling; Google Earth Engine; Project Management; Management of Large Databases; Leadership & Communication; Problem-Solving; GIS, Geomorphology, Physical Geography Curriculum Design

Publications

Powell, C. J. and **R. P. Oien** (2024) Sedimentological reconstruction of Glan-y-môr Isaf, North Wales: A model for the formation of stratified subglacial till assemblages from glaciolacustrine deposits. *Quaternary Science Reviews*. Accepted with Minor Revisions (December 27th, 2024)

Whelan, M. and **R. P. Oien** (2024) Rapid Glacier Retreat in Arctic Canada: Terminus Migration patterns on Bylot Island. *Journal of Glaciology*. Major Revisions (December 20th, 2024)

Carrivick, J. L., Boston, C. M., Sutherland, J. L., Pearce, D., Armstrong, H., Bjørk, A., Kjeldsen, K. K., Abermann, J., **Oien, R. P.**, Grimes, M., James, W. H. M., & Smith, M. W. (2023). Mass Loss of Glaciers and Ice Caps Across Greenland Since the Little Ice Age. *Geophysical Research Letters*, 50(10).
<https://doi.org/10.1029/2023GL103950>

Oien, R. P., Barr, I. D., Spagnolo, M., Bingham, R. G., Rea, B. R., & Jansen, J. (2022). Controls on the altitude of Scandinavian cirques: What do they tell us about palaeoclimate? *Palaeogeography, Palaeoclimatology, Palaeoecology*, 600, 111062.
<https://doi.org/10.1016/J.PALAEO.2022.111062>

Barr, I. D., Spagnolo, M., Rea, B. R., Bingham, R. G., **Oien, R. P.**, Adamson, K., Ely, J. C., Mullan, D. J., Pellitero, R., & Tomkins, M. D. (2022). 60 million years of glaciation in the Transantarctic Mountains. *Nature Communications*, 13(1), 5526.
<https://doi.org/10.1038/s41467-022-33310-z>

Oien, R. P., Rea, B. R., Spagnolo, M., Barr, I. D., & Bingham, R. G. (2022). Testing the area-altitude balance ratio (AABR) and accumulation-area ratio (AAR) methods of calculating glacier equilibrium-line altitudes. *Journal of Glaciology*, 68(268), 357–368. <https://doi.org/10.1017/jog.2021.100>

Kurjański, B., Rea, B. R., Spagnolo, M., Cornwell, D. G., Howell, J., Comte, J. C., González Quirós, A., Palmu, J. P., **Oien, R. P.**, & Gibbard, P. L. (2021). Cool deltas: Sedimentological, geomorphological and geophysical characterization of ice-contact deltas and implications for their reservoir properties (Salpausselkä, Finland). *Sedimentology*, 68(7), 3057–3101. <https://doi.org/10.1111/sed.12884>

Oien, R. P., Spagnolo, M., Rea, B. R., Barr, I. D., & Bingham, R. G. (2020). Climatic controls on the equilibrium-line altitudes of Scandinavian cirque glaciers. *Geomorphology*, 352, 106986. <https://doi.org/10.1016/J.GEOMORPH.2019.106986>

Grimley, D.A., J.J. Wang, and **R.P. Oien**, 2016, Surficial Geology of Mahomet Quadrangle, Champaign and Piatt Counties, Illinois: Illinois State Geological Survey, USGSSTATEMAP contract report, 2 sheets, 1:24,000, report, 13 p.

Under Review

Oien, R. P. and E. Lee (2024) . Palaeoclimate reconstruction and constraints from cirque floor altitudes in the Western Putorana Nature Reserve, Central Siberia. *Geomorphology*. Under Review (Submission Nov. 1st, 2024)

Oien, R. P., Nowicki, S., and Pearce, D. (2025). A pre-industrial continuous margin of the Greenland Ice Sheet Little Ice Age maximum. *Journal of Remote Sensing of Environment*. Under Review (Submission Jan. 1st, 2025)

In preparation

Oien, R.P., Spagnolo, M., Rea, B., Bingham, R.G., & Barr, I.D. (March 2025). The development of low-lying coastal cirques during the transitional phase of the Scandinavian Ice Sheet. *Quaternary Science Reviews*. (Word Count: 7085)

Oien, R.P., and Kurjański, B., (2025) Reconstruction of Holocene Mountain Glaciers on Disko Island and the Western Islands of Greenland. *Earth Surface Processes and Landforms*. In Preparation (Word Count: 4392).

Acknowledgements

J. Elmo Rawling, III, Paul R. Hanson, 2014. "Dune formation on late Holocene sandy bay barriers along Lake Michigan's Door Peninsula: The importance of increased sediment supply following the Nipissing and Algoma high lake-level phases", Coastline and Dune Evolution along the Great Lakes, Timothy G. Fisher, Edward C. Hansen. [https://doi.org/10.1130/2014.2508\(05\)](https://doi.org/10.1130/2014.2508(05))
- Processed OSL ages, and created figures 1, 2b, and 5b.

Current Research

Steering Committee Member for the IACS Working Group: The delineation of glaciers, ice sheets, and ice sheet basins, 2024 - 2028
(Co-chairs co-chaired by Ken Mankoff and Fabien Maussion)

When's a glacier, a glacier? Disconnection of Ice Bodies in the Peripheral of Greenland since the LIA (Solo Project)

- Reanalysis of Randolph Glacier Inventory to identify which glaciers are no longer contributing to the mass balance of the Greenland Ice Sheet
- Use of Arctic DEM, Sentinel 2, and ArcGIS Mapping
- New estimate of the volume of peripheral glaciers in Greenland

Cirques of the Isles of Western Greenland (Lead: Dr Oien, Collaborators: Dr Small - Durham; Dr Kurjanski - Aberdeen; Dr Lane - Aarhus)

- First mapping and reconstruction of Holocene cirques in the peripheral and adjacent to the Younger Dryas ice extent
- Define the palaeoclimatic conditions
- PISM modelling
- New Landscape system

Peripheral Glaciers on the Margins of the Scandinavian Ice Sheet (Lead: Dr Oien, Collaborators: Dr Lane - Aarhus; Dr Kurjanski - Aberdeen; Dr Orr - Durham; Dr Boyes - Sheffield)

- Investigates small but climate-sensitive peripheral glaciers as indicators of SIS growth and retreat.
- Employs geomorphic mapping, cosmogenic radionuclide (CRN) dating, and Schmidt-Hammer exposure dating.
- Informs ice sheet models by clarifying PG responses to transitional climate phases.
- Enhances understanding of marginal glacier contributions to SIS mass balance and future climate-change predictions.

Peri-Green: The response of peripheral glaciers of the Greenland Ice Sheet to rapid warming during the Holocene. (Lead: Dr Oien, Collaborators: Dr Lane - Aarhus; Dr Kurjanski - Aberdeen; Dr Small - Durham)

- Investigates peripheral glaciers as crucial indicators of Greenland Ice Sheet (GrIS) margin dynamics and regional climate responses.
- Focuses on the Holocene Thermal Maximum (10–6 ka) when temperatures rose by 2–4°C, providing an analogue for future warming scenarios.
- Integrates geomorphic mapping, cosmogenic nuclide dating, and sediment core analyses in the Nuuk region of Greenland.
- Aims to refine deglaciation models, improve understanding of GrIS retreat processes, and enhance sea-level rise projections under changing climates.

Overdeepening of Cirques, an in-depth analysis of cirque bathymetry (Lead: Dr Kurjanski - Aberdeen, Collaborators: Dr Oien; Prof Ian Evans - Durham)

- Acquire data and generate bathymetric maps and topo-bathymetric digital elevation models (DEM) for the whole cirque floor using Echosounder (UAV drone)
- Reconstruct palaeo cirque glaciers using the pre-existing DEM (without accounting for the tarn volume)
- Reconstruct palaeo cirque glaciers using the newly generated digital elevation model
- Compare the reconstruction and assess the effect of more accurate reconstruction on paleoclimate indicators

Low Elevation Cirques (Dr Barr - Manchester Metropolitan, Prof Bingham - Edinburgh; Prof Rea - Aberdeen; Prof Spagnolo - Aberdeen)

Low-elevation cirques located around the Lofoten Islands are unique as they are near sea level. These cirques would require special precipitation and temperature conditions to form glaciers. Using the physical morphometrics of these glaciers. Their conditions would occur during the transitional phase of an ice sheet.

Palaeoglacial Reconstruction of Putorana, Russia (Co-Author: Dr Lee, U of Sheffield)

- First glacial reconstruction in the Putorana Nature Reserve
- Geomorphology has been mapped using Arctic DEM
- Applied ACME2 and GLaRE tools in GIS
- Morphometrics and glacial surfaces from the previous ice extent
- Climatic conditions are also being estimated from glacial ELAs

The persistence of mountain topography, particularly amphitheatre-shaped landscapes: Happy Mountains (Co-Author: Dr Orr, Durham)

- The resilience of amphitheatre-shaped hollows in glacial and nonglacial environments
- Physical parameters & morphology
- OCTOPUS Cosmo dating set
- Definition of new parameter signifying the stability of catchment headwaters

Geyik Cirques (Lead: Prof Ian Evans, Durham)

- Cirque Mapping
- Glacial History & Reconstruction
- ACME 2.0
- Spatial Relationship & Morphometrics

Peloponnese Glaciation (Lead: Dr Cook, U of Dundee)

- Cirque Mapping
 - Glacial History & Reconstruction
 - ACME 2.0
 - Spatial Relationship & Morphometrics
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Previous Research

University at Buffalo
Sept 2021- Sept 2023

Postdoctoral Fellow: Time Machine (PI: Prof Sophie Nowicki)

- Focus on pre-industrial boundaries of the Greenland Ice Sheet (GrIS)
- Identifying set markers: trimlines, dating moraines, geomorphic features, archaeological sites and ship voyages
- Constructing a historical terrestrial map of the GrIS
- Importance: Current sea-level rise projections need better constraints, thus encompassing the entire retreat phase of the GrIS from the Little Ice Age to present-day will improve current models

Postgraduate Researcher

University of Aberdeen
Oct 2017- July 2021

1. Perform geomorphic mapping of modern Scandinavian cirque glaciers in ArcGIS

- Completed Pearson correlation and PCA to establish the relationship between cirque glaciers with modern climate
- Extracted ELAs using ArcGIS toolset
- Published in J. of Geomorphology

2. Assessing the veracity of glacier equilibrium line altitudes calculated for satellite-derived glacier topography

- Completed a comparison of the accuracy of GIS-calculated ELAs vs. measured mass balance
- Executed a statistical analysis in SPSS
- Computed ELAs using ArcGIS toolbox

Assessed accuracy of open-source data including GLIMS & WGMS aggregated by multiple users

Published in J. of Glaciology

3. Analysed palaeo cirque glacier equilibrium line altitudes as indicators of palaeoclimate across Scandinavia

- Mapped 4000 & evaluated palaeo cirques in ArcGIS in swaths across Norway & Sweden
- Applied the Automated Cirque Extraction tool in ArcGIS for physical metrics
- Completed advanced statistical analysis of cirque physical properties to connect to regional palaeoclimates
- Published in Palaeogeography, Palaeoclimatology, Palaeoecology

Field Assistance: 3 weeks of GPR, ERT & sedimentological profiles, Finland (Sept 2019)

- Published in J. of Sedimentology

Edinburgh Centre for Carbon Innovation Programme Consultant Internship

Assess the practical potential for natural flood management (NFM) approaches at

Climate XChange
Aberdeen, Scotland

January 2019 - May 2019,

a field/ farm scale, through interviews with key stakeholders to shed light on critical factors, opportunities and challenges under the future climate.

Illinois State Geological
Survey
May 2016 - August 2016

Academic Hourly Assistant for State Map Project

Worked with Dr. David Grimley
Published USGS Geomorphic Map
Perform geologic mapping of Quaternary deposits in 1:24,000 scale quadrangle
Data compilation and map computerisation
Laboratory work of cores including descriptions, magnetic susceptibility
Field investigations and coring

University of Illinois
Urbana-Champaign
August 2013 - May 2016

Graduate Research Assistant

Project: Using the Parallel Ice Sheet Model (PISM), a coupled numerical model of ice sheet/ice shelves to estimate the climatic conditions of the onset of the Fennoscandian Ice Sheet during the Eemian/Weischelian transition
-Executed sensitivity analysis of climatic parameters
-Python Application
-Collaborate and coordinate with advisors and consultation with the Norwegian Geological Survey
-Geomorphic Mapping in the Romsdalen Fjord, Norway with Dr. Ola Fredin, Norwegian Geological Survey
-Cosmogenic and OSL sampling in Finndalen, Norway with Dr. David Egholm (Aarhus University)
Fieldwork published in Andersen et al., 2018 (J. of Geophysical Research: Earth Surface) [DOI:10.1029/2018JF004670](https://doi.org/10.1029/2018JF004670)
-July 2015; worked with Andy Aschwanden, Arctic Supercomputing Center, University of Alaska-Fairbanks

WIDER: Evidence-Based Learning Reform

Transform laboratory activities to active learning through weekly surveys
Establish learning goals
Implementation of laboratory homework
Designed interactive labs using groundwater models & plate tectonics

Gustavus Adolphus College
August 2010 - June 2012

Research Assistant

Conducted individual field experiments on the fine sediment deposited by the Minnesota River during a large-scale flood
Completed analysis of six different ecological sites to determine viability for future conservation purposes
Developed skills in OSL with SAR, GPR, ArcGIS, EM-38, Surfer, water table mapping, soil identification, glacier properties, rock and mineral identification, and lake coring

Texas A & M University
May - August 2012

**National Science Foundation Research Experience for Undergraduates
Ecohydrology of a Tropical Montane Cloud Forest, Soltis Center for Research
and Education, San Isidro de Peñas Blancas, Costa Rica**
Dr Chris Houser & Dr Christine Morgan

This [internship](#) consisted of an analysis of a small watershed to more closely understand the water budget. My part of the project was to map the depth of bedrock (saprolitic tuff) to quantify the soil. A map estimate of the bedrock depth would give a volume of soil within the watershed and an estimate of the water holding capacity. The methods used:

- Bucket Augering/Drilling – sampled over 100 holes
- Particle Size Analysis via Hydrometer Method
- ArcGIS – constructed 3D map of soil morphology
- Thermoluminescence Dating of Volcanic Tuff
- Six weeks of fieldwork in Costa Rica

**National Science Foundation Research Experience for Undergraduates
Dune Geomorphology and Geochronology**

Dr. J. Elmo Rawling III & Paul Hanson (University of Nebraska)

This internship consisted of an analysis of the parabolic sand dunes of two previous high stands in Door County, Lake Michigan, Lake Nipissing, and Lake Algoma. Through this research, we were able to connect to wind patterns, lake levels and sediment supplies that occurred during the middle of the Holocene period from 5ka to 3.2ka using the following:

- Ground Penetrating Radar
- Particle Size Analysis
- Processed OSL dating at the University of Nebraska
- Research on climate and lake levels of Nipissing and Algoma Lakes
- Four weeks of fieldwork in Door County, WI

Work Published in GSA Special Paper [https://doi.org/10.1130/2014.2508\(05\)](https://doi.org/10.1130/2014.2508(05))

Grants

Submitted

Walter Kundert Fellowship, Royal Geographical Society, Nov 2024 (£10,000)

Tracing Past Warmth: Holocene Peripheral Glacier Responses to Rapid Climate Shifts as Insights into Greenland Ice Sheet Stability Under Future Warming

Inverness Bursary, Jan 2nd, 2025 (£1000)

High and Far. But How Deep? Mapping remote and high-altitude tarns (glacial cirque lakes) to improve past climate reconstructions

POLARin, Nov. 28th, 2024 (€25,000)

Peri-Green: The response of peripheral glaciers of the Greenland Ice Sheet to rapid warming during the Holocene.

Quaternary Research Association, Small Grant -Feb 1st, 2025 (£1650)

Low-Elevation Peripheral Glaciers: Key Indicators of Climate Change in the Southern Scandinavian Ice Sheet

British Society of Geomorphology, Early Career Grant, Feb 1st, 2025 (£5000)

High and Far. But How Deep? Survey of remote and high-altitude pro-glacial lakes in Austria

Applied but not selected

1851 Research Early Career Fellowship, Royal Commission Exhibition of 1851, January 2024 (Finalist but not selected) £150,000

Leverhulme Early Career Fellowship, Durham University, December 2024 (Internal Review) £140,000

Leverhulme Early Career Fellowship, Durham University, December 2023 (Internal Review) £140,000

Awarded

Research Development Funding, Durham, Dept of Geography

Low-Elevation Peripheral Glaciers: Key Indicators of Climate Change in the Scandinavian Ice Sheet, Nov 2024 (£2100)

Travel Grant, European Geophysics Union (€500)

Geomorphology Representative, for planning and coordinating EGU 24, April 2024

Postdoctoral Fellowship, National Science Foundation through University at Buffalo, NY

Research Allowance (\$30,000)

SINERGIS Project, University of Bergen (£1000)

Travel grant to present at the Stability of the Greenland Ice Sheet- lessons from the past workshop in Bergen, Norway, April 2023

Quaternary Research Association (£900)

Travel grant to present and convene at the International Quaternary Association Conference in Rome, Italy, July 2023

International Quaternary Association (€1500)

Travel grant to present at the International Quaternary Association Conference in Rome, Italy, July 2023

Scottish Alliance for Geoscience, Earth & Society Graduate Bursary (£500)

Travel grant to present at the International Quaternary Association Conference in Dublin, Ireland, July 2019

Scottish Alliance for Geoscience, Earth & Society Graduate Bursary (£18,000)

Modern and Palaeo Scandinavian Cirque Glaciers as Indicators of Climate Change, Research Allowance, Oct 2017- July 2021

The North Academic Research Grant, University of Aberdeen (£2000)

Travel grant to participate in the Urbino Summer School for Palaeoclimatology in Urbino, Italy, July 2018

Graduate Research Grant, University of Illinois (\$2000)

Modelling the Inception of the Fennoscandian Ice Sheet using PISM
Programming Collaboration with Dr. Andy Aschwanden, University of Alaska-Fairbanks, developer of PISM, July 2015

Leighton Award, University of Illinois (\$2600)

Geomorphic Mapping in the Romsdalen Fjord, Norway with Dr. Ola Fredin, Norwegian Geological Survey
Cosmogenic and OSL sampling in Finndalen, Norway with Dr. David Egholm
July-August 2014

Roscoe Jackson Award, University of Illinois (\$800)

Creating a more inclusive environment for Geoscience Students
Graduate Support Fund to attend AGU and present the WIDER educational research, December 2014

Geological Society of America (\$500)

Climate and Chronological Age of Nipissing Dune in Door County, WI
Student assistance to attend GSA, Oct 2012

Honours & Awards

Shortlisted as final 6 for Academic Tutor of the Year, *Durham University*
- Student-led nomination, June 2024

First Decade Award Nominee for Early Professional Achievement, *Gustavus Adolphus College, USA*, April 2023

Harriet Wallace Outstanding Woman in Geology Award by the Department of Geology, *University of Illinois Urbana-Champaign, USA*, April 2016

Outstanding Teaching Assistant Award for Spring 2015 by the Department of Geology, *University of Illinois Urbana-Champaign, USA*,

Ranked as 'Excellent' instructor by the Graduate College Teaching Academy based on student evaluations, *University of Illinois Urbana-Champaign, USA*

Additionally:

- Spring 2014: Ranked 'Outstanding' - awarded to top 10% of instructors
- Fall 2014: Ranked 'Outstanding' - awarded to top 10% of instructors
- Spring 2015: Ranked 'Outstanding' - awarded to top 10% of instructors

Institutional Service

European Geophysics Union
May 2021 - Present

EGU Early Career Representative

ECR for Geomorphology Division

- Current Vocal for General Assembly Working group of ECS
- Lead Convenor for Mountain Glacial Session (EGU 25)
- Convening 4 ECR developmental short courses (EGU 25)
- Assist in organising Geomorphology Division Meeting & Planning of Medal Talks
- Planned and Hosted a Seminar for the Diversity Working Group on Bully and Harassment in the Field
- Attended EGU planning meetings in the Hague (Oct 2024)

Co-Rep (2021-2024)

- Attended EGU planning meetings in Frankfurt (Oct 2022), Prague (Jan 2023)
- Organised and chaired 6 Short Courses for EGU 2023, 2024
- Chaired Geomorphology Session on Icy Mountain Landscapes

-Organised and edited EGU blog to highlight people in Geomorphology

University of Aberdeen
May 2020-July 2021

UniBuddy Ambassador for

- Incoming guide and representative for postgraduates in Geoscience
- Assisted with Foreign graduate student transition to Scotland

Scottish Alliance for Geoscience,
Earth & Society, 2018- 2021

Forum for Ice-Ocean Research Development (FIORD)

Early Career Representative & Website Developer

- Maintained organisation website

University of Illinois
Urbana-Champaign
October 2015-February 2016

Department of Earth Science & Environmental Change

School of Earth, Society and the Environment (SESE) Research Review Chair & Organiser

- Organised Research Event for the Departments of Earth Science, Geography & GIS, Atmospheric Sciences, and Environmental Sustainability
- 250-person event of talks, posters and awards

University of Illinois
Urbana-Champaign
October 2013- October 2015

Department of Earth Science & Environmental Change

School of Earth Society and the Environment Research Review Committee member

Teaching & Mentoring Experience

Durham University
Sept 2023- Present

Currently enrolled: DELTA 2: Route to Fellowship (Sept. 24 - June 2025)

Durham University, Fellow of Higher Education Academy (HEA) application submission June 2025

Associate Fellowship of the Higher Education Academy

Accepted Feb. 4th, 2021

Undergraduate Supervisions

8 Students 2024- 2025

6 Students 2023-2024

Cameron Powell, top undergraduate dissertation in Geography & Awarded the Willimott Prize

- Nominated for Alfred Steers Dissertation Prize (decision April 2025)
 - Powell and Oien, 2024. *Quaternary Science Reviews*, Accepted Dec 2024
- Max Whelan was awarded first-place prize in the annual [DurhamARCTIC](#) Dissertation competition
- Whelan and Oien, 2024, *J. of Glaciology*, Accepted Dec. 2024

Lectured, Workshops, Seminars, Marking, and Field Trips; Durham University 2024-25

- Mountain Landscapes
- Glaciers & Glaciation
- Antarctic Environments
- Scientific Research in Geography: Term 1 Project - Remote Sensing in the Arctic
- Introduction to Geographical Research Field Trip: Glacial Sediments
- L1 and L2 Academic Advising
- L3 Dissertation Advising
- MSc Taught Advising

2023-24

- Mountain Landscapes
- Earth Surface Processes and Landforms
- Natural Hazards, Risk, and Resilience
- Placement Year Advising (10 students)
- L1 and L2 Academic Advising
- L3 Dissertation Advising
- MSc Taught Advising

University at Buffalo, NY
Sept 2021- Sept 2023

PhD supervision and mentorship

Advising Ana Carolina Moraes Luzard (University at Buffalo) under the supervision of Prof. Sophie Nowicki, including regular one-on-one meetings, draft reviews, and guidance on data analysis.

Mentoring postgraduate students (Caleb Walcott, Karlee Prince, Liza Wilson) in Prof. Jason Briner's palaeoclimate lab, reviewing figures, discussing research findings, and attending project meetings as part of the GRate Project.

Durham University
November 2023- Present

Supervising Ethan Lee during his PhD at Newcastle University (now a Postdoctoral Researcher at the University of Sheffield), co-developing a secondary project on the mountain glacial history of the Putorana Nature Reserve in Central Russia; research currently under review in the *Journal of Geomorphology*.

Post Graduate Teaching Assistant,
University of Aberdeen

University of Aberdeen, October 2017 - July 2021

Assist with Level 1-3 physical geography courses (Climate Change & ArcGIS)
Designed original practical exercises for Level 1 and 2 courses
Mentored and assisted with ArcGIS and remote sensing laboratories
Lead field trips on local geomorphology
Led and assisted on the glaciology field trip (Level 4)
Graded projects and tutorial lessons (Level 1 & 3)

Principles of Learning & Teaching in Higher Education Associate Fellow

Professional Standards Framework for Teaching & Supporting Learning in Higher Education

University of Illinois
Urbana-Champaign, USA

Graduate Teaching Certificate (Equivalent to AFHEA), 2016

Designed to develop teaching skills and reflective practice. Documents teaching experience, professional development, and the constructive use of student feedback

Teaching Assistant, Geomorphology	University of Illinois Urbana-Champaign, USA, 2014-2016 Laboratory Instructor for senior-level geology course Lead eight field trips investigating and mapping the Quaternary and modern-day geomorphic sediment and landforms Graded weekly essays Designed labs to include field, readings, discussion and public outreach projects
Teaching Assistant for Physical Geology	University of Illinois Urbana-Champaign, USA, 2013-2016 Laboratory instructor & Lecturer for a course of 150 students Lead multiple lab sections per semester (2-hour) Grade labs, course homework and exams Redesign the laboratory course curriculum to consist of evidence-based learning Funded by WIDER grant #1347722
Teaching Assistant for Geology	Gustavus Adolphus College, 2011 - 2013 Assist 'Geomorphology' and 'Principles of Geology' students Aid students with weekly labs Facilitate study sessions Grade all labs and exams Accompany students with fieldwork projects

Presentations

QRA ADM Newcastle, January 6-8th, 2025	Lee, E. and Oien, R.P. Cirques within Central Siberia's Putorana Plateau region, their morphometrics and implications for palaeoclimate. Quaternary Research Association Annual Discussion Meeting. Poster.
EGU General Assembly Vienna, Austria, April 2024	Oien, R.P. and Kurjanski, B. Geomorphological Analysis of Cirques in the Western Islands of Greenland, EGU General Assembly 2024, EGU24-11858, Poster. Orr, E. and Oien, R.P. Exploring landscape persistence and erosion dynamics in mountain catchments: A morphometric approach in the Swiss Alps and Blue Ridge Mountains, USA, EGU General Assembly 2024, EGU24-3918, Poster. Lee, E. and Oien, R.P. Insights from Cirque Floor Altitudes in the Western Putorana Nature Reserve, Russian Federation, EGU General Assembly 2024, EGU24-3632, Poster.
21st Congress of INQUA Rome, Italy, July 2023	Oien, R. P. , Barr, I. D., Spagnolo, M., and Rea, B. (July 2023). The development of low-lying coastal cirques during the transitional phase of the Scandinavian Ice Sheet; International Quaternary Research Association, Oral.
PalaeoGreenland Workshop Bergen, Norway, April 2023	Oien, R. P. , Nowicki, S., Pearce, D., and Csatho, B. (April 18-22, 2023). The Little Ice Age Maxima, Greenland Ice Sheet Stability: Lessons from the past. Bergen, Norway. Oral.
European Geophysics Union Vienna, Austria, May 2022	Oien, R. P. , Nowicki, S., and Csatho, B. (May 23-27, 2022). The pre-industrial digital elevation model of the Greenland Ice Sheet from the 17th and 18th Centuries, European Geophysical Union General Assembly, EGU22-10811, Oral.
Invited Guest Lecture Gustavus Adolphus College, March 10th, 2022	Oien, R. P. (March 10th, 2022). Analysing cirque Equilibrium-Line Altitudes as indicators of palaeoclimate; Invited Lecture at Gustavus Adolphus College, St. Peter, Minnesota, USA

International Association for Geomorphology, GeoNor Virtual, October 2020	Oien, R. P. , Spagnolo, M., Rea, B., Barr, I. D., Bingham, R. G., Jansen, J. (October 2020). Analysing palaeo cirque glacier equilibrium line altitudes as indicators of palaeoclimate across Scandinavia; International Association for Geomorphology, GeoNor. Oral.
International Glaciology Society British Branch Virtual, October 2020	Oien, R. P. , Spagnolo, M., Rea, B., Barr, I. D., Bingham, R. G., Jansen, J. (October 2020). Analysing palaeo cirque glacier equilibrium line altitudes as indicators of palaeoclimate across Scandinavia; International Glaciology Society British Branch Meeting, Oral
European Geophysics Union Vienna, Austria, May 2020	Oien, R. P. , Spagnolo, M., Rea, B., Barr, I. D., Bingham, R. G., Jansen, J. (May 4-8, 2020). Analysing palaeo cirque glacier equilibrium line altitudes as indicators of palaeoclimate across Scandinavia; European Geophysical Union General Assembly, Oral.
20th Congress of INQUA Dublin, Ireland, July 2019	Oien, R. P. , Spagnolo, M., Rea, B., Barr, I. D., and Bingham, R. G. (July 25-31, 2019). Comparison of equilibrium line altitudes calculated from glacier topography versus directly measured equilibrium line altitudes for glaciers in Scandinavia & worldwide; 20th Congress of the International Union for Quaternary Research (INQUA). Poster.
European Geophysics Union Vienna, Austria, April 2018	Oien, R. P. , Spagnolo, M., Rea, B., Bingham, R., and Barr, I., (April 9-14, 2018). Analysing climatic influence on modern cirque equilibrium-line altitude, southern Scandinavia; European Geophysical Union General Assembly; Bibcode: 2018EGUGA2018308O. Poster.
American Geophysical Union Fall Meeting San Francisco, December 2014	Oien, R. P. , Anders, A. M., and Long, A., (2014) Improving the Laboratory Experience for Introductory Geology Students Using Active Learning and Evidence-Based Reform; American Geophysical Union Fall Meeting. Bibcode: 2014AGUFMED21D3472O. Poster.
Invited Guest Lecture at Gustavus Adolphus College Saint Peter, MN, October 2014	Oien, Rachel. (October 13, 2014). Modelling the Holocene collapse of the Fennoscandian Ice Sheet using a numerical model constrained by LiDAR mapping and cosmogenic exposure ages; Guest Lecture at Gustavus Adolphus College, St. Peter, Minnesota, USA. Oral.
American Geophysical Union Fall Meeting San Francisco, December 2012	Oien, Rachel. (December 3-7, 2012). Mapping Depth to Bedrock in a Tropical Pre-Montane Wet Forest & Thermoluminescence Dating of Volcanic Ash in Costa Rica; American Geophysical Union Fall Meeting. Poster.
Geological Society of America National Meeting Charlotte, NC, November 2012	Oien, Rachel. (November 4-7, 2012). Mapping Depth of Bedrock in a Tropical Pre-Montane Wet Forest in Costa Rica; Geological Society of America Annual Meeting & Exposition. https://costaricareu.tamu.edu/media/1403/oien.pdf . Poster.
Geological Society of America National Meeting Minneapolis, MN, October 2011	Branecky, C., Chavez, N., Oien, R. P. , Ruiz, J., Rawling III, J. Elmo, Hanson, P., Hart, D. (October 9-12, 2011). Geomorphology, OSL ages and volume estimates of a Nipissing beach ridge/dune complex near Kangaroo Lake, Door County Peninsula, WI; Geological Society of America National Meeting. Poster.

Professional Development

Future of Greenland Ice Sheet Science (FOGSS) workshop: the goal is to increase the impact of research around the Greenland Ice Sheet through collaboration and idea sharing, March 2023

Greenland Ice Sheet Ocean Science Summer School (GRISO): 3-week interdisciplinary course on the *Impacts of glacier retreat on Greenland coastal margins*. Nuuk, Greenland, July 2022

ELMER/ICE Course: 2-week course on Elmer is an open-source, parallel, Finite Element code. A flow-line model with basic diagnostic, thermomechanical coupling and sliding. Tete Rousse diagnostic. Elmer/Ice-Sheet lower order mode and inverse problem, November 2020

Graduate Career and Writing Workshop
Scottish Alliance for Geoscience, Earth & Society
John Howe, December 2017; 2018; 2019

Advanced R graphics and (non-linear) regression modelling for environmental data
University of Glasgow- Charalampos Chaniailidis; December 2019

Quaternary Research Association- Glacial Landscapes Field Course
Late Quaternary glaciation of Glen Cova & Strathmore, eastern Scotland, Oct. 2019

Intro to R; University of Aberdeen, School of Geoscience; April 2019

Challenge of Science Leadership - A survival tool kit for early-career scientists
Barefoot Thinking Company; December 2018

Past Global Change Reconstructions and Modelling Techniques
Urbino Summer School in Paleoclimatology; July 2018

How to Write and Publish a Scientific Paper and Scientific Ethics;
ABC/J Scientific Writing Course
University of Cologne, Institute of Geophysics and Meteorology; April 2018

Challenge of Science Leadership Strategy Workshop
Barefoot Thinking Company; December 2017

Professional Associations & Memberships

Geological Society of America
Sigma Xi
International Glaciological Society (IGS)
British Society of Geomorphology
European Geophysics Union
Quaternary Research Association
International Association of Geomorphologists
Nordic Union for Quaternary Research (NORDQUA)
International Union for Quaternary Research (INQUA)
International Association for Cryospheric Sciences
Association for Early Career Polar Scientists (APECS)