Penelope How

Geological Survey of Greenland and Denmark
Nationality: *British*
Email: *pho@geus.dk*
Twitter: *@DrPennyHow*
https://pennyhow.wordpress.com/

OVERVIEW

Data scientist based in Greenland and Denmark with a strong background in cryospheric sciences, remote sensing, and computer programming. Extensive skills in data processing and automated workflow development, having developed and distributed two open-source photogrammetry software (Pointcatcher, PyTrx) for extracting physical measurements from optical imagery. Highly experienced fieldworker on glaciers in Greenland, Svalbard and Iceland. Dynamic experience in diverse working environments, from teamwork in small groups to collaborations in international project consortiums.

APPOINTMENTS

Data Scientist 2021–present
Geological Survey of Greenland and Denmark (GEUS)
Processing and analysis of climate data and remote sensing imagery, including datasets from the PROMICE and GC-Net.

Remote Sensing Specialist 2019–2021
Asiaq Greenland Survey
Responsible for the automisation and documentation of scientific pipelines, data visualisation, and statistical analysis, including contributions to the ESA Glaciers CCI and the ESA Greenland Ice Sheet CCI+.

Postdoctoral Research Associate 2018–2019
University of York
Appointed to the project 'Archival Polar Photography - Unearthing the Forgotten Record of Glacier Change', using photogrammetry techniques to extract measurements from archive imagery to examine glacier change in Greenland and Antarctica

EDUCATION

PhD Atmospheric and Environmental Sciences 2014–2018
University of Edinburgh
Title: "Dynamical change at tidewater glaciers examined using time-lapse photogrammetry"
Funded by NERC
Registered external PhD student at the University Centre in Svalbard (UNIS)

MSc (by Research) Environmental Science 2012–2013
Lancaster University
Title: "Measuring glacier movement and its influences using a new approach in terrestrial time-lapse techniques"

BSc (Hons) Physical Geography (4 year Australasia course) 2008–2012
Lancaster University
Graduated with a first class degree
Dissertation title: "Linking glacier hypsometry to meltwater isotopic composition"

FURTHER EDUCATION

- Practical course in SAR and InSAR processing at GAMMA Remote Sensing (2019)
- Masters course in Python object-oriented computing design at the University of Edinburgh (2015)

- NERC Advanced Training course in "Practical Use of Mini- and Micro-Unmanned Aerial Vehicles (UAVs) for the Environmental Sciences", hosted at the Scottish Association for Marine Science (2014)
- Glaciology field course (AG-825) at UNIS (2014)

SKILLS

Languages: English (mother tongue), Danish (basic)
Operating systems: Linux, MacOS, Windows
Computer programming: Python, Javascript, Bash, Matlab
Mapping software: ArcGIS, QGIS & GRASS, Google Earth Engine
SfM/photogrammetry toolboxes: PyTrx, Pointcatcher, ImGRAFT, Agisoft Photoscan
Presentation: Microsoft Office, LaTeX
Multimedia: Final Cut Pro, Adobe Photoshop

SELECT PUBLICATIONS [GOOGLE SCHOLAR]

P How et al., "Greenland-wide inventory of ice marginal lakes using a multi-method approach.", *Scientific Reports* **11**, 4481 (2021).

P How et al., "PyTrx: A Python-Based Monoscopic Terrestrial Photogrammetry Toolset for Glaciology", *Frontiers in Earth Science* **8**, 21 (2020).

P How et al., "Calving controlled by melt-under-cutting: detailed calving styles revealed through time-lapse observations", *Annals of Glaciology* **60**, 113-127 (2019).

P How et al., "Rapidly changing subglacial hydrological pathways at a tidewater glacier revealed through simultaneous observations of water pressure, supraglacial lakes, meltwater plumes and surface velocities", *The Cryosphere* **11**, 2691-2710 (2017).

GRANTS/AWARDS

- University of Edinburgh Postdoctoral & Early Career Researcher Exchanges (PECRE) and Erasmus+ funding to undertake studies at the Norwegian Polar Institute, Tromsø (2016)
- University of Edinburgh Meiklejohn Fund for "Examining calving dynamics at a surge-type glacier in Svalbard using terrestrial time-lapse photogrammetry" (2016)
- University of Edinburgh Moray Endowment Fund for "Monitoring glacier-volcano interactions at the Mýrdalsjökull ice cap, Iceland, using permanent terrestrial time-lapse platforms" (2015)

TEACHING EXPERIENCE

Guest lecturing

- Guest lecturing on calving dynamics for the Glaciology course (AG-325) at UNIS (2016)
- Guest lecturing on photogrammetry techniques for the Glaciers and Glaciation course (AG-347) at UNIS (2015)

Demonstrating

- Field demonstrator for the Glaciology (AG-325) and Remote Sensing of the Cryosphere (AGF-312) courses at UNIS over 2015, 2016 and 2017
- Demonstrator for the "Near-ground Earth Observations: New Platforms and Sensors" postgraduate course at the University of Edinburgh over 2016 and 2017

MEMBERSHIPS

Current member of the International Glaciological Society (IGS) and the European Geosciences Union (EGU).