

CURRICULUM VITAE

Dr. Alison F. Banwell (*she/her*)
Research Scientist III
Earth Science and Observation Center (ESOC)
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RESEARCH

My research interests revolve around investigating the impact of Earth's past and future climate on the cryosphere, with a current focus on the Antarctic and Greenland ice sheets. I investigate controls of ice sheet melt, accumulation and dynamics, which are key to understanding global sea-level rise and feedbacks to the climate system. I use a multi-disciplinary approach involving satellite remote-sensing, geospatial analysis, in-situ field observations and modeling.

EDUCATION

- 2008 – 2013: **Ph.D. Glaciology** (UK Natural Environment Research Council (NERC) funded). Scott Polar Research Institute, *University of Cambridge, UK* (thesis submitted: Sep 2012, Defended: Oct 2012, Graduated: Jul 2013).
- 2004 – 2008: **B.Sc. Geology & Physical Geography** (1st Class, with Honours). *University of Edinburgh, UK*.

EMPLOYMENT

- May 2024 - Present **Research Scientist III**, Cooperative Institute for Research in Environmental Sciences (CIRES), *University of Colorado Boulder, USA*
- May 2021 – April 2024 **Research Scientist II**, CIRES, *University of Colorado Boulder, USA*
- May 2020 - April 2021 **Research Scientist I**, CIRES, *University of Colorado Boulder, USA*
- May 2018 - Apr 2020 **CIRES Postdoctoral Visiting Fellow**, advised by Prof. Waleed Abdalati, *University of Colorado Boulder, USA*.
- May 2015 - Apr 2018 **Leverhulme Early Career Research Fellow**, Scott Polar Research Institute, Department of Geography, *University of Cambridge, UK*.
- Oct 2013 - Sep 2016 **Junior Research Fellow and Geography Teaching Associate** at St Catharine's College, University of Cambridge. While physically based at the Scott Polar Research Institute, Department of Geography, *University of Cambridge, UK*.
- Jan 2013 - Sep 2013 **Postdoctoral Scholar**, advised by Prof. Doug MacAyeal, Department of Geophysical Sciences, *University of Chicago, USA*.

CURRENT FUNDED GRANTS

- 2024 -2027: **Institutional PI**, NSF Antarctic Glaciology: “*Collaborative Research: Ice-Shelf Rumppling and its Influence on Ice-Shelf Buttressing Processes*” In collaboration with Lead PI Doug MacAyeal (U. Chicago) and Co-PI Seth Campbell (U. Maine) (\$514k to CU Boulder, out of ~\$1M total). Will be recommended for funding in summer 2024.
- 2024-2027: **Co-I**, NASA GRACE-FO: “*Improved Static and Time-Variable Gravity Signals from GRACE Follow-On Laser Ranging Interferometer Measurements*” in collaboration with Lead PI Khosro Ghobadi-Far (Geology, CU Boulder) (\$800k to CU Boulder).
- 2023-2026: **Lead PI**, NASA ROSES Cryosphere #21-07-0113 “*Ice-Shelf Hydrological Evolution and Impacts on Future Ice-Shelf Stability*” (~\$200k to CU Boulder, out of ~\$627k total) in

collaboration with Co-PI Roger Buck (Columbia University) and Co-PI Smith (Brown University).

- 2023-2026: **Lead PI**, NSF Antarctic Glaciology #2213702: “*Collaborative Research: Improving model representations of Antarctic ice-shelf instability due to surface meltwater processes*” (~\$363k to CU out of ~\$1M total) in collaboration with Co-PIs Lipovsky (U. Washington), Cuzzone and Schlegel (UCLA) and MacAyeal (U. Chicago).
- 2022-2026: **Co-I**, NSF ‘Harnessing the Data Revolution (HDR)’, “*HDR Institute: iHARP - Harnessing the Data and Model Revolution in the Polar Regions*” (\$1M to CU, \$15M total) in collaboration with Co-PI Subramanian (CU Boulder), and PI Janeja (U. Maryland) and Co-PIs Wang (U. Maryland), Morlighem (UCI), and Shekhar (UMN).
- 2020–2024: **Institutional PI**, NSF Antarctic Instrumentation & Facilities #1940473: “*EAGER: Collaborative Research: Mapping Melting Glacial Surfaces with GNSS Reflectometry*”, in collaboration with Lead PI Datta-Barua (Illinois Institute of Technology) and Co-I Kristine Larson (\$192k to CU Boulder out of ~\$700k total).
- 2019-2024: **Lead PI**, NSF Antarctic Glaciology #1841607: ‘*NSFGEO-NERC: Ice-shelf Instability Caused by Active Surface Meltwater Production, Movement, Ponding and Hydrofracture*’, in collaboration with Co-PIs MacAyeal (Chicago), Stevens (Columbia University/Oxford, UK), and NERC Co-PI Willis (Cambridge, UK) (\$617k to CU Boulder out of ~\$1M total).

PREVIOUSLY FUNDED GRANTS AND FELLOWSHIPS

- 2021-2023: **PI**, CIRES Innovative Research Program (IRP): “*Antarctic-wide analysis of surface/near-surface melt on ice-shelves from 1979 to 2021 using microwave radiometer and scatterometer data*” (\$30k, PI).
- 2019-2022: **Co-I**, NASA FINESST grant: ‘*Subsurface lake formation, drainage, and impacts on the stability of the Antarctic ice sheet*’ with PI Lenaerts and our PhD Student Devon Dunmire (both CU Boulder) (\$135k to CU Boulder, Co-I).
- 2018-2021: **International Project Partner**, UK NERC Standard Grant: ‘*Meltwater-Ice-sheet Interactions and the Changing Climate of Greenland*’ (Not Co-PI due to no UK university faculty position), in collaboration with Co-PIs Leeson (Lancaster, UK), Hewitt (Oxford, UK) Goldberg and Gourmelen (Edinburgh, UK) and Le Brocq (Exeter, UK).
- 2018–2020: CIRES ‘*Visiting Research Fellowship*’ (~\$130k, PI)
- 2015–2017: **Senior Personnel** (and Fieldwork Lead), NSF grant #1443126: ‘*Impact of Supraglacial Lakes on Ice-Shelf Stability*’, with PI MacAyeal (U. Chicago) (not official Co-PI due to no US university affiliation in 2015).
- 2015–2018: Leverhulme/Newton Trust (UK) ‘*Early Career Fellowship*’ (£120k/\$151k, total salary and research money, PI).
- 2014: Antarctic Science Ltd (UK). ‘*Antarctic Science International Bursary*’ (£3,700/\$4,700, PI).
- 2013–2016: St Catharine’s College (U. Cambridge) ‘*Junior Research Fellowship*’ (£60k/\$76k total salary, PI).
- 2011: Royal Geographical Society (UK); Dudley Stamp Memorial Fund (£500/\$650, PI).
- 2010: National Geographic Society (US) ‘*Young Explorer*’ grantee (\$5k, PI).
- 2010: Beatrice Shaw Fund award, University of Cambridge (£900/\$1,200, PI).
- 2010: Svalbard Science Forum (EU) ‘*Arctic Field Grant*’ for independent field research (£4,200/\$5,500, PI).
- 2008-2012: CASE PhD studentship with Geological Survey of Denmark and Greenland (GEUS) to supplement NERC PhD grant (£3,000/\$3,800, PI).

Updated May 6, 2024

- 2008-2012: Natural Environment Research Council (NERC) ‘*Doctoral Training Grant*’, Scott Polar Research Institute, University of Cambridge (£50,000/\$63,000 total salary & research money, PI).
- 2008-2012: Natural Environment Research Council (NERC) ‘*Doctoral Training Grant*’, Department of Geography, University of Durham (£50,000/\$63,000 total salary & research money, PI) (*Awarded, but chose to decline*)

PENDING GRANTS

- 2024-2025: **Institutional PI**, NASA Earth Systems Explorers (ESE) mission, Phase A: “*VITAL: Vegetation, Ice, and Topography from swath Altimetric Lidar*”. In collaboration with Lockheed Martin (PI: Lora Koenig) and Virginia Tech (Deputy PI: Mike Willis) (~\$4.5 million to CU Boulder).

SCIENCE TEAM INVOLVEMENT

- 2021–Present: **CU Boulder PI**, and **Land Ice Co-Lead of the Science Team for ‘VITAL’** (Vegetation, Ice, and Topography from swath Altimetric Lidar), an under-review NASA proposal that will target NASA’s first Earth Systems Explorers (ESE) mission. In collaboration with Lockheed Martin (PI: Lora Koenig) and Virginia Tech (Deputy PI: Mike Willis).

AWARDS

- 2018–2020: CIRES (U. Colorado Boulder) ‘*Visiting Postdoctoral Fellowship*’
- 2015–2018: Leverhulme/Newton Trust (UK) ‘*Early Career Fellowship*’.
- 2014: Antarctic Science Ltd. ‘*Antarctic Science International Bursary*’.
- 2013–2016: St Catharine’s College (U. Cambridge) ‘*Junior Research Fellowship*’.
- 2016: Antarctic Service Medal of the USA.
- 2011: Dow Chemical Company’s ‘*Sustainability Innovation Student Challenge*’. First Prize at University of Cambridge (£6000 prize).
- 2011: St Catharine's College (U. Cambridge) ‘*Graduate Prize for Distinction in Research*’.
- 2010: National Geographic Society ‘*Young Explorer*’ award.
- 2010: International Arctic Science Committee (IASC) workshop presentation award.
- 2008-2012: Natural Environment Research Council (NERC) ‘*Doctoral Training Grant*’, Scott Polar Research Institute, University of Cambridge.
- 2008-2012: Natural Environment Research Council (NERC) ‘*Doctoral Training Grant*’, Department of Geography, University of Durham (*Awarded, but declined in preference of U. Cambridge*).

PEER-REVIEWED PUBLICATIONS (*indicates first authorship by one of my students or postdocs)

- **Total of 48 published (or in press) publications, inc. 14 as first author.**
- **H-Index of 24 with > 2000 citations (Google Scholar).**

Dell, R.L., Arnold, N.S., Willis, I.C., **Banwell, A.F.** de Roda Husman, S. *in press*, Slush doubles total observed meltwater areas across Antarctic ice shelves, *Nature Geoscience*.

Banwell, A.F., Willis, I.C., Stevens, L.A., Dell, R.L. and MacAyeal, D.R., 2024, Observed meltwater-induced flexure and fracture at a doline on George VI Ice Shelf, Antarctica. *Journal of Glaciology*. 1–14.
<https://doi.org/10.1017/jog.2024.31>

*Ochwat, N. E., Scambos, T. A., **Banwell, A. F.**, Anderson, R. S., Maclennan, M. L., Picard, G., Shates, J. A., Marinsek, S., Margonari, L., Truffer, M., and Pettit, E. C. 2024, Triggers of the 2022 Larsen B multi-year

- landfast sea ice breakout and initial glacier response, *The Cryosphere*, 18, 1709–1731, <https://doi.org/10.5194/tc-18-1709-2024>
- *Dunmire, D., Wever, N, **Banwell, A.F.** Lenaerts, J. 2024, “Future (2015-2100) Antarctic-wide ice-shelf firn air depletion from a statistical firn emulator”, *Nature Communications Earth and Environment*. 5, 100 (2024). <https://doi.org/10.1038/s43247-024-01255-4>
- Hanna, E. et al (29 authors including **Banwell A.F.**), 2024, " Short- and long-term variability of the Antarctic and Greenland ice sheets", *Nature Reviews Earth and Environment*, <https://doi.org/10.1038/s43017-023-00509-7> (INVITED).
- *Parvizi, R., Khan, S., **Banwell, A.F.**, Datta-Barua, S., 2024, Surface reflectivity variations of *global navigation satellite system* signals from a mixed ice and water surface, *Navigation*. 71(1). <https://doi.org/10.33012/navi.614>
- *Gantayat, P., **Banwell, A. F.**, Leeson, A. A., Lea, J. M., Petersen, D., Gourmelen, N., and Fettweis, X. 2023, A new model for supraglacial hydrology evolution and drainage for the Greenland ice sheet (SHED v1.0), *Geoscientific Model Development*, 16, 5803–5823, <https://doi.org/10.5194/gmd-16-5803-2023>.
- MacFerrin, M., Mote, T., **Banwell, A.F.**, and Scambos, T. 2023, Ice sheet seasonal melt extent and duration [in “State of the Climate in 2022”]. *Bulletin of the American Meteorological Society*. 104 (9), S339–S341, <https://doi.org/10.1175/BAMS-D-23-0077.1>
- Banwell, A.F.**, Burton, J., Cenedese, C., Golden, K., Åström, J. 2023, Physics of the Cryosphere, *Nature Reviews Physics*. <https://doi.org/10.1038/s42254-023-00610-2> (INVITED).
- Banwell, A.F.**, Wever, N., Dunmire, D., Picard, G. 2023, Quantifying Antarctic-wide ice-shelf surface melt volume using microwave and firn model data: 1980 to 2021, *Geophysical Research Letters*. 50, e2023GL102744. <https://doi.org/10.1029/2023GL102744>
- Picard, G., Leduc-Leballeur, M., **Banwell, A. F.**, Brucker, L., and Macelloni, G. 2022. The sensitivity of satellite microwave observations to liquid water in the Antarctic snowpack, *The Cryosphere*, <https://doi.org/10.5194/tc-16-5061-2022>
- *Coffey, N. B, MacAyeal, D. R., Copland, L., Mueller, D. R., Sergienko, O. V., **Banwell, A. F.**, Lai, C. 2022, Enigmatic surface rolls of the Ellesmere Ice Shelf, *Journal of Glaciology*. 1–12. <https://doi.org/10.1017/jog.2022.3>
- *Dell, R., **Banwell. A.F.**, Willis, I., Arnold, N., Halberstadt, A.R.W., Chudley, T.R., Pritchard, H. 2022, Supervised classification of slush and ponded water on Antarctic ice shelves using Landsat 8 imagery, *Journal of Glaciology*, 68(268), 401–414, <https://doi.org/10.1017/jog.2021.114>
- MacFerrin, M., Mote, T., **Banwell, A.F.**, and Scambos, T. Ice sheet seasonal melt extent and duration [in “State of the Climate in 2021”]. *Bulletin of the American Meteorological Society.*, 103 (8), S325–S329, <https://doi.org/10.1175/BAMS-D-22-0078.1>
- *Dunmire, D., **Banwell, A. F.**, Wever, N., Lenaerts, J. T. M., and Datta, R. T. 2021 Contrasting regional variability of buried meltwater extent over 2 years across the Greenland Ice Sheet, *The Cryosphere*, 15, 2983–3005, <https://doi.org/10.5194/tc-15-2983-2021>
- MacAyeal, D.R., Sergienko, O. V., **Banwell, A. F.**, Macdonald, G. J. Willis, I.C., and Stevens, L.A. 2021. Treatment of ice-shelf evolution combining flow and flexure, *Journal of Glaciology*. 1 – 18, <https://doi.org/10.1017/jog.2021.39>
- Banwell, A. F.**, Datta, R. T., Dell, R. L., Moussavi, M., Brucker, L., Picard, G., Shuman, C. A., and Stevens, L. A. 2021, The 32-year record-high surface melt in 2019/2020 on the northern George VI Ice Shelf, Antarctic Peninsula, *The Cryosphere*, 15, 909–925, <https://doi.org/10.5194/tc-15-909-2021>
- *Dunmire, D., Lenaerts, J. T. M., **Banwell, A. F.**, Wever, N., Shragge, J., Lhermitte, S., et al. 2020, Observations of buried lake drainage on the Antarctic Ice Sheet. *Geophysical Research Letters*. 47, e2020GL087970, <https://doi.org/10.1029/2020GL087970>

- *Dell, R., Arnold, N., Willis, I., **Banwell, A.**, Williamson, A., Pritchard, H. and Orr, Andrew. 2020, Lateral meltwater transfer across an Antarctic ice shelf, *The Cryosphere*, 14, 2313–2330, <https://doi.org/10.5194/tc-14-2313-2020>
- *Law R, Arnold N, Benedek C, Tedesco M, **Banwell A**, Willis I., 2020, Over-winter persistence of supraglacial lakes on the Greenland Ice Sheet: results and insights from a new model. *Journal of Glaciology* 66(257), 362–372. <https://doi.org/10.1017/jog.2020.7>
- MacAyeal, D.R., Willis, I.C., **Banwell, A.F.**, Macdonald, G.J., and Goodsell, B., 2020, Diurnal lake-level cycles on ice shelves driven by meltwater input and ocean tidal tilt, *Journal of Glaciology*. 1–17. <https://doi.org/10.1017/jog.2019.98>
- Robel, A., & **Banwell, A. F.** 2019. A speed limit on ice shelf collapse through hydrofracture. *Geophysical Research Letters*, <https://doi.org/10.1029/2019GL084397>
- Banwell, A.F.**, Willis, I.C., Macdonald, G.J., Goodsell, B., MacAyeal, D.R. 2019, Direct Measurements of Ice-Shelf Flexure caused by Surface Meltwater Ponding and Drainage, *Nature Communications*, 10, 730, <https://doi.org/10.1038/s41467-019-08522-5>
- Siegert M, Atkinson A, **Banwell A**, Brandon M, Convey P, Davies B, Downie R, Edwards T, Hubbard B, Marshall G, Rogelj J, Rumble J, Stroeve J and Vaughan D, 2019, The Antarctic Peninsula Under a 1.5°C Global Warming Scenario. *Frontiers of Environmental Science* 7:102, <https://doi.org/10.3389/fenvs.2019.00102> (INVITED).
- *Macdonald, G.J., **Banwell, A.F.**, Willis, I.C., Mayer, D., Goodsell, B., MacAyeal, D.R., 2019, Formation of pedestalled, relict lakes on the McMurdo Ice Shelf, Antarctica. *Journal of Glaciology*, <https://doi.org/10.1017/jog.2019.17>
- MacAyeal, D.R., **Banwell, A. F.** Okal, E. A. Lin, J. Willis, I. C. Goodsell, B., Macdonald, G. J. 2019, Diurnal Seismicity Cycle Linked to Subsurface Melting on an Ice Shelf, *Annals of Glaciology*. <https://doi.org/10.1017/aog.2018.29>
- Bell, R., **Banwell, A. F.**, Trusel, L., Kingslake, J. 2018, Antarctic Surface Hydrology & Impacts on Ice Sheet Mass Balance, *Nature Climate Change Nature Clim Change* 8, 1044–1052. <https://doi.org/10.1038/s41558-018-0326-3> (INVITED)
- *Williamson, A.G., **Banwell, A.F.**, Willis, I.C., Arnold, N.S. 2018b. Dual-satellite (Sentinel-2 & Landsat 8) remote sensing of supraglacial lakes in Greenland. *The Cryosphere*. 12, 3045–3065 <https://doi.org/10.5194/tc-12-3045-2018>
- *Macdonald, G.J., **Banwell, A.F.**, MacAyeal, D.R. 2018, Seasonal evolution of supraglacial lakes on a floating ice tongue, Petermann Glacier, Greenland. *Annals of Glaciology*, <https://doi.org/10.1017/aog.2018.9>
- *Williamson, A.G., Willis, I.C., Arnold, N.S., **Banwell, A.F.** 2018a. Controls on rapid supraglacial lake drainage in West Greenland: An Exploratory Data Analysis approach. *Journal of Glaciology*, <https://doi.org/10.1017/jog.2018.8>
- Banwell, A.F.** 2017, Glaciology: Ice-Shelf Stability Questioned, *Nature - News and Views*, 544, 306-307 <https://doi.org/10.1038/544306a> (INVITED).
- Banwell, A.F.**, Willis, I.C., Goodsell, B., Macdonald, G.J., Mayer, D., Powell, A. and MacAyeal, D.R. 2017. Calving and Rifting on McMurdo Ice Shelf, Antarctica *Annals of Glaciology*. 58(75pt1):78-87 <https://doi.org/10.1017/aog.2017.12>
- *Williamson, A.G., Arnold, N.S., **Banwell, A.F.**, Willis, I.C., 2017. A Fully Automated Supraglacial lake area and volume Tracking ("FAST") algorithm: development and application using MODIS imagery of West Greenland. *Remote Sensing of Environment*, 196:113-133, <https://doi.org/10.1016/j.rse.2017.04.032>
- Banwell, A.F.**, Hewitt, I., Willis, I.C., Arnold, N.S. 2016. Moulin density controls drainage development beneath the Greenland Ice Sheet. *Journal of Geophysical Research Earth Surface*, 121, 2248–2269, <https://doi.org/10.1002/2015JF003801>
- Banwell, A. F.** & MacAyeal, D. R. 2015, Ice-shelf fracture due to viscoelastic-flexure stress induced by fill/drain cycles of supraglacial lakes. *Antarctic Science*, 27(6):587-597 <https://doi.org/10.1017/S0954102015000292>

- MacAyeal, D. R., Sergienko, O. V., **Banwell, A. F.** 2015, A Model of Viscoelastic Ice-Shelf Flexure. *Journal of Glaciology*, 61(228), 635-645, <https://doi.org/10.3189/2015JoG14J169>
- *Mayaud, J., **Banwell, A.F.**, Arnold, N.S., Willis, I.C. 2014, Modeling the response of subglacial drainage at Paakitsoq, W Greenland, to 21st century climate change, *Journal of Geophysical Research Earth Surface*, 119(12), 2619–2634. <https://doi.org/10.1002/2014JF003271>
- Anderson, B., Willis, I., Goodsell, B., **Banwell, A.**, Owens, I., Mackintosh, A., Lawson, W. 2014. Diurnal to decadal ice velocity and water pressure variations on Franz Josef Glacier (Ka Roimata O Hine Hukatere), New Zealand. *Arctic, Antarctic and Alpine Research*. 46(4), 919-932, <https://doi.org/10.1657/1938-4246-46.4.919>
- Banwell, A.F.**, Cabellero, M., Arnold, N., Glasser, N., Cathles, L.M., MacAyeal, D. 2014. Supraglacial lakes on the Larsen B Ice Shelf, Antarctica, and Paakitsoq Region, Greenland: a comparative study. *Annals of Glaciology*. 55(66), <https://doi.org/10.3189/2014AoG66A049>
- Arnold, N.S., **Banwell, A.F.**, Willis, I.C. 2014, High-resolution modelling of the seasonal evolution of surface water storage on the Greenland Ice Sheet, *The Cryosphere*, 8, 1149-1160, <https://doi.org/10.5194/tc-8-1149-2014>
- Banwell, A. F.**, MacAyeal, D., Sergienko, O. 2013b. Break-up of the Larsen B Ice Shelf Triggered by Chain-Reaction Drainage of Supraglacial Lakes. *Geophysical Research Letters*. 40,5872–5876. <https://doi.org/10.1002/2013GL057694>. Featured in *Nature Research Highlights* ('Anatomy of an Ice Shelf's Demise', 503(441), <https://doi.org/10.1038/503441d>) & *Eos Trans. AGU* ('Chain reaction led to breakup of Larsen B Ice Shelf', 95(8), 76 <https://doi.org/10.1002/2014EO080009>).
- Banwell, A. F.**, Willis, I., & Arnold, N. 2013a. Modelling subglacial water routing at Paakitsoq, W Greenland. *Journal of Geophysical Research Earth Surface*. 118, 1282–1295, <https://doi.org/10.1002/jgrf.20093>.
- Tedesco, M., Willis, I., Hoffman, M., **Banwell, A.**, Alexander, P. 2013. Ice dynamic response to slow and fast surface lake drainage on the Greenland Ice Sheet. *Environmental Research Letters*, 8034007, <https://doi.org/10.1088/1748-9326/8/3/034007>
- Banwell, A.F.**, Arnold, N., Willis, I., Tedesco, M., & Ahlstrom, A. 2012b. Modelling supraglacial water routing and lake filling on the Greenland Ice Sheet. *Journal of Geophysical Research Earth Surface*. 117, F04012, <https://doi.org/10.1029/2012JF002393>
- Banwell, A.F.**, Willis, I., Arnold, N., Messerli, A., Rye, C., Ahlstrom, A. 2012a. Calibration and validation of a high resolution surface mass balance model for Paakitsoq, West Greenland. *Journal of Glaciology*. 58(212) 1047-1062, <https://doi.org/10.3189/2012JoG12J034>
- Gulley, J., Walthard, P., Martin, J., **Banwell, A.F.**, Benn, D., Catania, G. 2012. Seasonal evolution of dye-trace breakthrough curves: the effects of changes in roughness. *Journal of Glaciology*. 58(211) <https://doi.org/10.3189/2012JoG11J115>
- Tedesco, M., Luthje, M., Steffen, K., Steiner, N., Fettweiss, X., Willis I, Bayou, N., **Banwell, A. F.** 2012. Measurement and modeling of ablation of the bottom of supraglacial lakes in Western Greenland. *Geophysical Research Letters*. 39, L02502, <https://doi.org/10.1029/2011GL049882>
- Covington, M.D., **Banwell, A.F.**, Gulley, J., Saar, M.O., Willis, I., Wicks, C.M. 2012. Quantifying the effects of glacier conduit geometry & recharge on proglacial hydrograph form. *Journal of Hydrology*, 414–415, pp. 59-71 <https://doi.org/10.1016/j.jhydrol.2011.10.027>

PUBLICATIONS IN REVIEW

- Glen, E., Leeson, A. A., **Banwell, A. F.**, Maddalena, J., Corr, D., Noël, B., and McMillan, M. *in review* A comparison of supraglacial meltwater features throughout contrasting melt seasons: Southwest Greenland, EGUSphere [preprint], <https://doi.org/10.5194/egusphere-2024-23>.

CONFERENCE PROCEEDINGS

- Datta-Barua, S., Parvizi, R., **Banwell, A. F.**, Khan, S. 2023, "GNSS Reflectometry Correlation with Camera Images for Surface Type Determination," Proceedings of the 36th International Technical Meeting of the

Satellite Division of The Institute of Navigation (ION GNSS+ 2023), Denver, Colorado, September 2023, pp. 3257-3266. <https://doi.org/10.33012/2023.19456>

*Parvizi, R., Khan, S., **Banwell, A.F.**, Datta-Barua, S., 2021, Statistical Analysis of Surface Reflectivity with GNSS Reflected Signals from a Mixed Ice and Water Surface, Proceedings of the 34th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION GNSS+ 2021), St. Louis, Missouri, September 2021, pp. 3945-3955. <https://doi.org/10.33012/2021.18108>

BOOK CONTRIBUTIONS

Banwell, A. F. (2016) '*The Greenland Ice Sheet*', '*The Antarctic Ice Sheet*', and '*Grounding Line*' in Thomas, D.S.G. (editor) *The Dictionary of Physical Geography*, Wiley-Blackwell, pp. 648, ISBN: 978-1-118-78233-0

REPORTS

Siegert, M. J., Atkinson, A., **Banwell, A.**, Brandon, M., Convey, P., Davies, B., Downie, R., Edwards, T., Hubbard, B., Marshall, G., Rogelj, J., Rumble, J., Stroeve, J. and Vaughan, D. 2019. The Antarctic Peninsula under a 1.5°C global warming scenario – What change is it locked into? Grantham Institute Briefing note No. 10, Imperial College London, UK. (**INVITED**)

Kingslake, J., Trusel, L., **Banwell, A.**, Bell, R., Das, I., DeConto, R., Tedesco, M., Lenaerts, J. Schoof, C., 2019, Report on Antarctic surface hydrology workshop, Lamont Doherty Earth Observatory, 2018, U.S. Antarctic Program (USAP) Data Center. doi: 10.15784/601170.

CONFERENCE PRESENTATIONS (FIRST AUTHOR ONLY, SINCE 2012)

Banwell, A.F., MacAyeal, D., Willis, I., Stevens, L., and Dell, R.: Observed and modelled surface meltwater-induced flexure and fracture on north George VI Ice Shelf, Antarctica, EGU General Assembly 2023 (<https://doi.org/10.5194/egusphere-egu23-9972>).

Banwell, A.F., Wever, N., Picard, G. and Dunmire, D. 2022 **INVITED** Quantifying Antarctic-wide ice-shelf surface melt from 1980 to 2021, International Glaciological Society (IGS) Cryosphere 2022, Reykjavik, Iceland.

Banwell, A.F., MacAyeal, Dell, R., D., Willis, I., Stevens, L., 2022-8-28: Preliminary Analysis of Melt-Induced Ice-Shelf Flexure on George VI Ice Shelf Observed with GNSS. International Glaciological Society (IGS) Cryosphere 2022, Reykjavik, Iceland.

Banwell, A.F., **INVITED**, Impacts of surface melt and hydrology on Antarctic ice-shelf dynamics and break-up, American Physical Society (APS) March Meeting, 2021.

Banwell, A. F., Datta, R. T., Dell, R. L., Moussavi, M., Brucker, L., Picard, G., Shuman, C. A., and Stevens, L. A. 2020, **INVITED** (virtual). Record surface meltwater ponding on the Northern George VI Ice Shelf, Antarctic Peninsula, during the 2019/2020 melt season, AGU Fall Meeting 2020 (C050-08)

Banwell, A.F., Dell, R., Dunmire, D., MacAyeal, D., Stevens, L.A. and Willis, I.C., 2020 (virtual). Ice-shelf instability due to surface meltwater systems on the George VI Ice Shelf. EGU General Assembly, (<https://doi.org/10.5194/egusphere-egu2020-6190>).

Banwell, A. F., Macdonald, G., Willis, I. Goodsell, B., MacAyeal, D. 2018. **INVITED** Formation of pedestalled, relict lakes on the McMurdo Ice Shelf, Antarctica, and effect on ice-shelf stability. West Antarctic Ice Sheet (WAIS) Workshop.

Banwell, A. F., MacAyeal, D., Willis, I., Macdonald, G., Goodsell, B. Flexural response of the McMurdo Ice Shelf to surface lake filling and drainage. 2018 **INVITED** Workshop on Antarctic Surface Hydrology and Future Ice Shelf Stability, Lamont-Doherty Earth Observatory Palisades, New York

Banwell, A. F., MacAyeal, D., Willis, I., Macdonald, G., Goodsell, B. 2017. **INVITED** Flexural-response of the McMurdo Ice Shelf to surface lake filling and drainage. AGU Fall Meeting 2017 (C24C-01).

Banwell, A. F., MacAyeal, D., Macdonald, G., Willis, I., Goodsell, B. 2016. Flexural-response of the McMurdo Ice Shelf to surface lake filling and drainage. International Glaciological Society (IGS) International Symposium, University of Colorado Boulder, USA.

- Banwell, A. F.,** MacAyeal, D., Willis, I., Macdonald, G., Goodsell, B. 2017, Flexural-response of the McMurdo Ice Shelf to surface lake filling and drainage. International Glaciological Society (IGS) British Branch Meeting, Lancaster University, UK.
- Banwell, A. F.,** Hewitt, I., Willis, I., Arnold, N. 2016. Moulin density controls drainage development beneath the Greenland Ice Sheet. EGU General Assembly (EGU2016-310)
- Banwell, A. F.,** Hewitt, I., Willis, I., Arnold, N. 2015. Subglacial hydrology at Paakitsoq, Insights from two hydrological models. International Glaciological Society (IGS) British Branch Meeting, Durham University, UK.
- Banwell, A. F.,** Hewitt, I., Willis, I., Arnold, N. 2015. Subglacial hydrology at Paakitsoq, Insights from two hydrological models. International Glaciological Society (IGS) International Symposium, Hofn, Iceland.
- Banwell, A. F.** and MacAyeal, D. 2015, Ice-shelf fracture due to viscoelastic-flexure stress induced by fill/drain cycles of supraglacial lakes. International Glaciological Society (IGS) International Symposium, Hofn, Iceland.
- Banwell, A. F.,** MacAyeal, D. and Sergienko, O., Rosier, S., Gudmundsson, H. 2013. Chain-reaction drainage of surface lakes triggered the Larsen B Ice Shelf break-up: a continuation. International Glaciological Society (IGS) International Symposium, Chamonix, France.
- Banwell, A. F.,** Willis, I., Arnold, N. 2013. **INVITED** Modelling subglacial water routing at Paakitsoq, W Greenland. AGU Fall Meeting (C33B-0729).
- Banwell, A. F.,** MacAyeal, D. and Sergienko, O. 2013. Chain-Reaction Drainage of Supraglacial Lakes Triggered the Larsen B Ice Shelf Break-Up. AGU Fall Meeting (C43D-06)
- Banwell, A. F.,** Cabellero, M., Arnold, N., Glasser, N., Cathles, L.M., MacAyeal, D. 2013 Supraglacial lakes on the Larsen B, Antarctica, and Paakitsoq, Greenland: a comparative study. IGS International Symposium, Beijing, China.
- Banwell, A. F.,** MacAyeal, D. and Sergienko, O. 2013. Chain-Reaction Drainage of Supraglacial Lakes Triggered Capsize-Driven Break-Up of Larsen B Ice Shelf, IGS British Branch Meeting, Loughborough University, UK.
- Banwell, A.F.,** Arnold, N., Willis, I., Tedesco, M., & Ahlstrom, A. 2012, Modelling supraglacial water routing, lake filling, and subglacial water routing for the Paakitsoq region, West Greenland. International Glaciological Society (IGS) International Symposium, University of Alaska Fairbanks, USA.
- Banwell, A.F.,** Willis, I., Arnold, N., Tedesco, M., & Messerli, A., Ahlstrom, A. 2011, Parameterization and testing of a surface melt and water routing model for the Greenland Ice Sheet, AGU Fall Meeting (C23D-0520).

INVITED SEMINARS

- May 2024: “Antarctic ice shelf surface melt and hydrology, and implications for dynamics and break-up”, Earth and Space Sciences, University of Washington, USA. *In person.*
- March 2024: “Antarctic ice shelf surface melt and hydrology, and implications for dynamics and break-up”, ETH Zurich, Switzerland. *Via Zoom.*
- January 2024: “Antarctic ice shelf surface melt and hydrology, and implications for dynamics and break-up”, National Snow and Ice Data Center (NSIDC), CU Boulder, USA. *Via Zoom*
- December 2023: “GPS in Glaciology’ Crary Lab Science Talk, McMurdo Station, Antarctica. *In person.*
- November 2023: “Life as a researcher in Antarctica”, Mechanical, Material, and Aerospace Engineering Department, Illinois Institute of Technology, USA. Given *Via Zoom* from McMurdo Station, Antarctica, with colleague Prof. Datta-Barua.
- December 2022: “Ice-shelf Instability Caused by Surface Meltwater”, Science talk series, Rothera Research Station, Antarctica. *In person.*
- April 2022: “Impacts of surface melt and hydrology on Antarctic ice-shelf dynamics and break-up”, Hydrologic Sciences, University of Nevada Reno, USA. *In person.*

- October 2019: “Ice-Shelf Instability due to Surface Meltwater Ponding & Drainage”, Earth Science and Observation Center, CIRES, CU Boulder, USA. *In person.*
- October 2018: “Ice-Shelf Flexure and Fracture due to Surface Meltwater Ponding and Drainage”, Atmospheric and Oceanic Sciences, CU Boulder, USA. *In person.*
- February 2018: “Surface Meltwater Ponding and Drainage Causes Ice-Shelf Flexure & Fracture”, Department of Applied Mathematics and Theoretical Physics (DAMPT), U. Cambridge, UK. *In person.*
- November 2017: “Flexural response of the McMurdo Ice Shelf to meltwater lake filling and draining”, Scott Polar Research Institute, University of Cambridge, UK. *In person.*
- October 2013: “Surface Meltwater Lakes on the Greenland and Antarctic Ice Sheets”, The Royal Society, London, UK. *In person.*

POSTDOC ADVISING/MENTORING

- 2022 – 2023: Dr Devon Dunmire, ATOC, CU Boulder. Co-advisor with Dr Aneesh Subramanian (funded by our NSF HDR ‘iHARP’ grant).
- 2021 – 2023: Dr Rebecca Dell, Scott Polar Research Institute, University of Cambridge, UK. Co-advisor with Drs Ian Willis & Neil Arnold (funded by a European Space Agency (ESA) fellowship).
- 2021 – 2023: Dr Prateek Gantayat, Lancaster University, UK. Co-advisor with Dr Amber Leeson (contributes to UK NERC Standard Grant: ‘*Meltwater-Ice-sheet Interactions and the Changing Climate of Greenland*’).
- 2020 – 2023: Dr Roohollah Parvizi, Illinois Institute of Technology. Co-advisor/mentor with Prof Seebany Datta-Barua. Postdoc employed on our NSF EAGER grant.

GRADUATE STUDENT ADVISING

- 2023 – present: Michela Savignano (Masters), Department of Geography, CU Boulder. Co-advisor with Prof. Waleed Abdalati.
- 2023 – present: Ethan Carr (Masters, followed by PhD candidate), Department of Geography, CU Boulder. Co-advisor with Prof. Mark Serreze.
- 2020 – present: Emily Glen (PhD); Thesis title TBD (funded by UK NERC Standard Grant: ‘*Meltwater-Ice-sheet Interactions and the Changing Climate of Greenland*’), Lancaster University, UK; co-advisor with Dr Amber Leeson.
- 2018 – 2022: Devon Dunmire (PhD): “*Buried lake formation, drainage, and impacts on Antarctic ice sheet stability*”, ATOC, CU Boulder, co-advisor with Prof. Jan Lenaerts. Successful defense September, 2022.
- 2017 – 2021: Rebecca Dell (PhD): “*Investigating the surface hydrology of Antarctic ice shelves using remote sensing and machine learning*”, U. Cambridge; co-advisor with Drs Ian Willis & Neil Arnold. Successful defense July 2021.
- 2014 – 2019: Grant Macdonald (PhD): “*Evaluating the surface hydrology of ice shelves*”, Dept. Geophysical Sciences, U. Chicago; co-advisor with Prof. Doug MacAyeal. Successful defense November 2019.
- 2014 – 2018: Andrew Williamson (PhD): “*Remote sensing of supraglacial lakes on the Greenland Ice Sheet*”, U. Cambridge; co-advisor with Drs Neil Arnold & Ian Willis. Successful defense May 2018.

GRADUATE STUDENT COMMITTEE INVOLVEMENT

- 2022 – present: Naomi Ochwat (PhD candidate): Geological Sciences, CU Boulder. PhD advisor: Ted Scambos.

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- 2022 – present: Ian McDowell (PhD candidate): Hydrologic Sciences, University of Nevada, Reno. PhD advisor: Kaitlin Keegan.

UNDERGRADUATE STUDENT MENTORING

- Jan 2021 - Present: Anna Kilpatrick, University of Chicago. Helped to analyze our automatic weather station data in combination with timelapse photo data, acquired as part of our field project for my NSF grant #1841607 (*NSFGEO-NERC: Ice-shelf Instability Caused by Active Surface Meltwater Production, Movement, Ponding and Hydrofracture*).
- Jan 2018 – Dec 2019: Kayla Franklin, University of Chicago. Helped to set-up and test all automatic weather station equipment before deployment in Antarctica for my NSF grant #1841607. Now employed in Earth Science-related industry.
- Jan. 2022 – May 2022: Lan Tran, Illinois Institute of Technology. Employed on our Collaborative NSF EAGER grant. Helped to plan and test camera set-up for deployment in Antarctica.

HIGH-SCHOOL STUDENT MENTORING

- April – Aug 2021 Ella Xu, Naperville High School, Illinois. Now a student at Yale majoring in Earth Science. Ella designed and tested a time-lapse camera for deployment on the George VI Ice Shelf, Antarctica, as part of our NSF grant #1841607 (*NSFGEO-NERC: Ice-shelf Instability Caused by Active Surface Meltwater Production, Movement, Ponding and Hydrofracture*).
- Sep 2023 – Mar 2024: Nina Hankewycz, Dobbs Ferry High School, New York. Nina acquired WorldView imagery from the Polar Geospatial Center to analyze the temporal and spatial evolution of the ice-shelf compression rolls near to the NZ Scott Base Antarctica.

TEACHING INTERESTS

Glaciology, remote sensing, hydrology, GIS, geomorphology, hydrology, coastal systems, natural hazards, statistics.

UNDERGRADUATE TEACHING EXPERIENCE

- Spring 2019: Guest Lecturer for Prof. Mike Willis' advanced 'Cryosphere' class (3rd/4th year undergraduates), Dept. Geological Sciences, CU Boulder.
- 2016 – 2018: College Teaching Associate for Physical Geography, St Catharine's College, University of Cambridge, UK.
- 2010 – 2017: Lecturer, U. Cambridge Physical Geography Department week-long fieldtrip to Arolla (2010, 2013, 2015) and Loetschental (2017), Switzerland.
- 2009 – 2018: Undergraduate tutor and lab class lecturer (all years), Dept. Geography, U. Cambridge, UK.

GRADUATE STUDENT EXAMINING

- 2013 – 2018: Examiner (essay and dissertation marker) for the *MPhil in Polar Studies*, Department of Geography, University of Cambridge, UK.

SERVICE

- 2021 – Present: Glaciologist on the Science Alliance for *Protect our Winters (POW)*, a non-profit, bipartisan, climate advocacy group (<https://protectourwinters.org/alliance/alison-banwell/>). Attended two POW 'Science Summits' (Jun. 2022 and Apr. 2023) and

one POW Leadership Summit (Sep. 2023). Gave a science talk to the POW Staff at their annual meeting in Boulder, CO (Mar. 2024) entitled “*Dangers of surface melting and ponding on Antarctic ice shelves*”.

- 2021 – Present: Mentor for the *CIRES Mentoring Scheme*, CU Boulder.
- 2012 – Present: Regular reviewer for international journals including: Nature, Nature Communications, Science Advances, J. Geophysical Research, Geophysical Research Letters, Remote Sensing, Earth and Planetary Science Letters, Journal of Glaciology, Annals of Glaciology, Cold Regions Science and Technology.
- 2012 – Present: Regular external proposal reviewer for federal funding agencies including: US National Science Foundation Office of Polar Programs (x13 total), UK Natural Environment Research Council (x2 total), New Zealand Antarctic Research Institute (x1 total).
- April 2024: EGU General Assembly session convener; ‘*Hydrology of ice sheets, ice shelves and glaciers*’.
- Feb 2024: *NASA ROSES 2023* panel membership.
- Dec 2023: AGU Fall Meeting 2023 session convener, ‘*Understanding Ice-Shelf Processes*’.
- May 2023: Invited speaker/mentor at the NSF-funded *Polar Postdoc Leadership Workshop*, organized by the Polar Science Early Career Community Office (PSECCO) and held at the CU Boulder Mountain Research Station. This workshop brought together future leaders in polar science, consisting of 20 postdocs from across the US. Its goal was to facilitate their engagement with polar science topics and to equip them with the necessary skills and training to build confidence for assuming leadership roles.
- April 2022: Committee member for the CIRES Innovative Research Program (IRP) award scheme.
- Dec 2021: AGU Fall Meeting 2021 session convener, ‘*Understanding Ice-Shelf Processes*’.
- Apr-Jun 2021: Invited organizational committee member for NSF-funded workshop; “*Crevasse Risk Management and Safety Workshop*” (consisting of weekly meetings followed by an 8-hour virtual workshop over 2 days).
- Dec 2020: AGU Fall Meeting 2020 session convener, ‘*Understanding Ice-Shelf Processes*’.
- March 2019: Contributor to meeting and author of scientific report for UK’s Foreign and Commonwealth Office (FCO) Polar Regions Department, focusing on ‘*The Antarctic Peninsula under a 1.5°C global warming scenario*’. Invited as the ice-shelf expert by Prof. Martin Siegert (Imperial College, London, UK).
- Feb 2018: Organizing Committee member for the NSF-funded workshop on ‘*Antarctic Surface Hydrology and Future Ice-Shelf Stability*’, Lamont Doherty Earth Observatory, Columbia University, New York.
- Dec 2017: AGU Fall Meeting 2017 session convener, ‘*C005: Antarctic Ice Shelves: surface and basal processes, instability and breakup*’.
- Dec 2013: AGU Fall Meeting 2013 session convener, ‘*C011: Glacier, Ice Cap, & Ice Sheet Hydrology*’.
- 2010 - 2012: *UK Polar Network* Committee Member.

FIELDWORK EXPERIENCE

- Nov - Dec 2023: Field *Leader* (and Co-PI) for NSF-funded project on the McMurdo Ice Shelf, Antarctica: ‘*Mapping Melting Glacial Surfaces with GNSS Reflectometry*’.

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- Oct - Dec 2022: Field *Leader* (and Lead PI) for NSF-funded project on the George VI Ice Shelf, Antarctic Peninsula: ‘*Ice-shelf Instability Caused by Active Surface Meltwater Production, Movement, Ponding and Hydrofracture*’.
- Oct - Nov 2019: Field *Leader* (and Lead PI) for NSF-funded project on the George VI Ice Shelf, Antarctic Peninsula: ‘*Ice-shelf Instability Caused by Active Surface Meltwater Production, Movement, Ponding and Hydrofracture*’.
- Dec 2015 – Jan 2017: Field *Leader* for 3 separate field deployments (each ~6 weeks) on the McMurdo Ice Shelf, Antarctica. Funded by NSF grant ‘*Impact of Supraglacial Lakes on Ice-Shelf Stability*’ (PI: Doug MacAyeal).
- Apr/May 2010: Field *Leader* (and PI) to map subglacial channels and install pressure sensors under Rieperbreen Glacier, Spitsbergen, Norway. Funded by my Svalbard Science Forum ‘*Arctic Field Grant*’ (~6 weeks).
- Nov/Dec 2009: Field team *Member* with Profs. Doug Benn and Jason Gulley to map subglacial caves in the Ngzumpa and Khumbu glaciers in the Nepal Himalaya (~6 weeks).
- June 2011: Field team *Leader* with Prof. Marco Tedesco to monitor surface meltwater lakes and processes on the Greenland Ice Sheet (~4 weeks).
- 2010 – 2017: *Lecturer* and ‘*glacier group*’ *leader*, U. Cambridge Geography Department teaching fieldtrips (each 1 week long) to Arolla (2010, 2013, 2015) and Loetschental (2017), Switzerland.
- June 2009: Field team *member* with Prof. Alun Hubbard to monitor surface meltwater lakes and processes on the Greenland Ice Sheet (~2 weeks).
- Aug/Oct 2009: Field team *member* with Prof. Jason Gulley to map subglacial channels in Hansbreen, Svalbard, while based at the Polish Field Station in Hornsund (~8 weeks).

OUTREACH ACTIVITIES

Talks to the public/high-school students:

- x2 outreach seminars to 6th grade students via Zoom from McMurdo Station, Antarctica. Entitled “*Science and life in Antarctica*” November 2023.
- Guest speaker for ‘*Antarctica In Sight Live: Antarctica and the Climate Crisis*’ webinar, organized by the *UK Antarctic Heritage Trust*. April 25, 2022 <https://www.youtube.com/watch?v=uaxUUmR4vn8>
- Lecturer for a public talk about Antarctic climate/science in Millennium Park, Chicago, in association with two concerts called ‘*The White Wanderer*’ on February 1, 2020 (<https://vimeo.com/27677216>). These concerts were the work of the Chicago-based artist collective, Luftwerk, who I have been collaborating with since 2017. These concerts were influenced by both seismic data from the Ross Ice Shelf, and from the breaking away of the Larsen C Ice Shelf’s iceberg (A68) in 2017. An abstract was presented at the AGU Fall Meeting 2022 in support of this work (MacAyeal, D., Young, K., Backmeier, P., Gallero, S., Banwell, A. (2022), ‘*White Wanderer Requiem: Music inspired by the cryoseismology of the last days of iceberg B15A*’ (SY52A-08)).
- Guest Lecturer for *London International Youth Science Forum* for age 16 – 18 award-winning, international students. Lecture title: “Rapid melting of the Greenland and Antarctic Ice Sheets”, (July 2014, 2015, 2017, 2018).
- Demonstrator/Lecturer for *University of Cambridge Science Festival* showing how temporary automatic weather stations can be used to collect data on glaciers/ice sheets/shelves (February 2009 and 2010).
- Guest Lecturer for ‘*Reach Cambridge*’ international summer school for age 16 – 18 students (2009).

Podcast interviews:

- ‘Breaking the Ice Ceiling’, on the *Caroline Gleich Show*. Caroline is a professional ski mountaineer and climate activist. Her Breaking the Ice Ceiling series interviews leading female polar scientists. December 2021

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(<https://www.audacy.com/podcast/the-caroline-gleich-show-88e0d/episodes/breaking-the-ice-ceiling-dr-alison-banwell-ep-38-35bca>).

- '*Ordinarily Extraordinary - Conversations with women in STEM*' (115. Dr. Alison Banwell - Glaciologist; Glacier Scientist; PhD in Polar Studies), October 2023, <https://podcasts.apple.com/us/podcast/115-dr-alison-banwell-glaciologist-glacier-scientist/id1517307796?i=1000630136656>.

Development of educational/teaching material:

- Co-developer of an Antarctic glaciology/climate change component to children's iPad/tablet app called '*Molly's World*', with Prof. Richard Weston (<https://www.richardweston.info/mollys-world>).

Coverage of my work in the media:

- Phys.org: 'Ice shelves fracture under weight of meltwater lakes, study shows', May 2024, https://phys.org/news/2024-05-ice-shelves-fracture-weight-meltwater.html#google_vignette.

- *Environmental News Network*: 'Ice Shelves Fracture Under Weight of Meltwater Lakes', May 2024, <https://www.enn.com/articles/74548-ice-shelves-fracture-under-weight-of-meltwater-lakes>.

- *Phys.org*: 'Antarctic ice shelves experienced only minor changes in surface melt since 1980, study finds', Jun. 2023, <https://phys.org/news/2023-06-antarctic-ice-shelves-experienced-minor.html>.

- *NSIDC*: "Widespread melting and ponded water on the Peninsula Ice Shelves" Feb. 7, 2023, <https://nsidc.org/ice-sheets-today/analyses/widespread-melting-and-ponded-water-peninsula-ice-shelves>.

- *BBC Radio 4: 'Women's Hour'*: 20 minute interview about women conducting fieldwork in Antarctica. Dec. 2021, <https://www.bbc.co.uk/programmes/m0012s7l>.

- *NSF Highlight*: '10 NSF-funded studies that show the challenges and complexities of climate change', Apr. 2021, <https://beta.nsf.gov/science-matters/10-nsf-funded-studies-show-challenges-and-complexities-climate-change>.

- *NASA Landsat Science*: 'Extreme Melt on Antarctica's George VI Ice Shelf', Feb. 2021, <https://landsat.gsfc.nasa.gov/article/extreme-melt-antarcticas-george-vi-ice-shelf>.

- *Environmental News Network (ENN)*: 'Extreme Melt on Antarctica's George VI Ice Shelf', Mar. 2021, <https://www.enn.com/articles/67246-extreme-melt-on-antarctica-s-george-vi-ice-shelf>.

- *Boulder's Daily Camera*: 'CU Boulder scientists find Antarctica's George VI ice shelf experienced record melting in recent summer', Mar. 2021, <https://www.dailycamera.com/2021/03/13/cu-boulder-scientists-find-antarcticas-george-vi-ice-shelf-experienced-record-melting-in-recent-summer/>.

- *BBC Radio 4 Today* on effects of Covid-19 on Antarctic fieldwork. Nov. 2020.

- *The World (Public Radio International) on NPR*: 'Antarctica's hydrofracture risk', Aug. 26, 2020 <https://www.pri.org/file/2020-08-26/antarctica-s-hydrofracture-risk>

- *NASA Earth Observatory*: 'Widespread Melt on the George VI Ice Shelf', Jan. 2020 <https://earthobservatory.nasa.gov/images/146189/widespread-melt-on-the-george-vi-ice-shelf>.

- *UK Metro*: Nasa discovers Antarctic ice shelf melting at 'worrying' and record-breaking rate, Jan. 2020, <https://metro.co.uk/2020/01/23/nasa-discovers-antarctic-ice-shelf-melting-worrying-record-breaking-rate-12109534/>.

- *BBC Radio 4 Today Program* on climate change: 10 minute interview with me, which was recorded in Antarctica. Guest Edited by Greta Thunberg, Dec.2019. Link to program no longer available.

- *EE News*: 'Scientists see huge ice shelf 'flex' for first time', Feb. 14 2019 <https://www.eenews.net/articles/scientists-see-huge-ice-shelf-flex-for-first-time/>.

- *Space Daily*: "Ice shelves buckle under weight of meltwater lakes" Feb 14. 2019 https://www.spacedaily.com/reports/Ice_shelves_buckle_under_weight_of_meltwater_lakes_999.html.

- *Scientific American*: 'Antarctica's Ice Shelves Get a Bounce from Ephemeral Lakes', 2019 <https://www.scientificamerican.com/article/antarctica-s-ice-shelves-get-a-bounce-from-ephemeral-lakes/>.

- *Daily Mail*: ‘Meltwater lakes created by warmer summers are causing Antarctic ice shelves to buckle and break experts warn after expedition confirms computer simulation findings’, 2019, <https://www.dailymail.co.uk/sciencetech/article-6699499/Warmer-summer-causing-Antarctic-ice-shelves-bend.html>.
- *IFL Science*: ‘Meltwater Lakes Are Causing Antarctic Ice Shelves To Buckle Under The Weight’, 2019, <https://www.iflscience.com/environment/meltwater-lakes-are-causing-antarctic-ice-shelves-to-buckle-under-the-weight/>.
- *Forbes*: ‘Thousands Of ‘Quakes’ Rock Antarctica’s Ice Shelves At Night - Here’s Why’, 2019, <https://www.forbes.com/sites/robinandrews/2019/02/28/thousands-of-quakes-rock-antarcticas-ice-shelves-at-night-heres-why/#5f6e087233ae>,
- University of Cambridge’s Science Magazine, *BlueSci*: ‘Breaking up at Sea, the great collapse of an ice shelf’, issue 42, p. 12–13, 2018 (https://issuu.com/bluesci/docs/pdf_online), and the associated ‘*BlueSci Podcast*’, <https://www.listennotes.com/podcasts/bluesci-podcast/ep-2-elizabeth-murchison-buJXAlqBQyH/>.
- *Science Daily*: ‘Is Antarctica becoming more like Greenland?’ 2018, <https://www.sciencedaily.com/releases/2018/11/181120125806.htm>.
- *AGU’s EOS*: Kornei, K. ‘Rare glacial river drains potentially harmful lakes’, *EOS*, 99, 2018 <https://doi.org/10.1029/2018EO101071>.

Other contributions to media outlets:

- *Protect our Winters (POW) Science Blog*, as a member of the POW Science Alliance, Apr 2024, <https://protectourwinters.org/how-can-gps-monitor-glacier-ice-melt-a-proof-of-concept-field-test-in-antarctica/>.
- *Protect our Winters (POW) Science Blog*, as a member of the POW Science Alliance, Jan 2023, <https://protectourwinters.org/an-expedition-to-a-rapidly-melting-glacier/>.
- *AFP Fact Check*: ‘Misleading posts claim record Antarctica cold disproves global warming’ Oct 22, 2021 <https://factcheck.afp.com/http%253A%252F%252Fdoc.afp.com%252F9Q68LD-1>.
- *The Independent*: ‘Melting of Antarctica’s Larsen C Ice Shelf at 40-year record high, study says’, Nov 6, 2020 <https://www.independent.co.uk/environment/antarctica-ice-shelf-larsen-c-melt-b1642993.html>.
- *Live Science*: ‘Half of Antarctic ice shelves could collapse in a flash, thanks to warming’, Aug 26, 2020 <https://www.livescience.com/antarctic-ice-shelf-cracks-melting.html>.
- *Science*: ‘Coronavirus forces United States, United Kingdom to cancel Antarctic field research’, Jun 12, 2020, <https://www.sciencemag.org/news/2020/06/coronavirus-forces-united-states-united-kingdom-cancel-antarctic-field-research>.
- *The Revelator*: ‘Antarctica: Too big to melt’, May 2020, <https://therevelator.org/antarctica-melting/>.
- *NPR, Here and Now (radio interview, 5.41 minutes)*: ‘An Iceberg Triple The Size Of San Francisco Breaks Off Antarctica’s Most Endangered Glacier’, Feb 2020, <https://www.wbur.org/hereandnow/2020/02/17/antarctica-iceberg-breaks-off>.
- *National Geographic*: ‘A huge iceberg just broke off West Antarctica’s most endangered glacier’, Feb 2020, <https://www.nationalgeographic.com/science/2020/02/antarctica-pine-island-glacier/>.
- *National Geographic*: ‘How Antarctica is melting from above and below’, 2019 <https://www.nationalgeographic.com/science/2019/10/how-antarctic-melting-above-below-ice-sheet/>.
- *Earther*: ‘This Part of Antarctica Was Not Supposed to Be Shrinking’, 2019, <https://earther.gizmodo.com/this-part-of-antarctica-was-not-supposed-to-be-shrinkin-1831740968>.
- *Carbon Brief*: ‘Sea level rise due to Antarctic ice melt has tripled over past five years’, 2018 https://www.carbonbrief.org/sea-level-rise-due-antarctic-ice-melt-has-tripled-over-past-five-years?utm_source=TwitterVid&utm_campaign=AntarcticIce0618.
- *Carbon Brief*: ‘Foehn winds causing Antarctica’s Larsen C ice shelf to melt in winter’, 2018, <https://www.carbonbrief.org/foehn-winds-causing-antarcticas-larsen-c-ice-shelf-to-melt-in-winter>.
- *Earther*: ‘Antarctica Is Losing An Unfathomable Amount of Ice’, 2018, <https://earther.com/antarctica-is-losing-an-unfathomable-amount-of-ice-1826799202>.

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- *Gizmodo*: 'Why Did an Enormous Chunk of West Antarctica Suddenly Start Melting?', 2017
<https://gizmodo.com/why-did-an-enormous-chunk-of-west-antarctica-suddenly-s-1796152023>.
- *Wall Street Journal*: 'Water on Antarctic Ice Shelves a Wider, Older Phenomenon Than Thought', 2017,
<https://www.wsj.com/articles/water-on-antarctic-ice-shelves-a-wider-older-phenomenon-than-thought-1492621721>.
- *Climate Central*: 'Antarctic Surface Melt More Widespread Than Thought', 2017,
<http://www.climatecentral.org/news/antarctic-surface-melt-widespread-21364>.
- *The Independent*: 'Vast rivers and waterfalls discovered across Antarctica', 2017,
<https://www.independent.co.uk/environment/antarctica-rivers-waterfalls-discovered-south-pole-ice-shelf-nature-columbia-university-a7691361.html>.