Jordan Brook | CV

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Passionate radar scientist with a particular interest in severe weather and data assimilation. Strong computational and physical sciences background with catastrophe modelling experience for insurance.

Education and Employment

Ongoing Positions

- **Research Scientist, Bureau of Meteorology**
  Radar data assimilation — *2023 – Current*
- **Adjunct Research Fellow, University of Queensland**
  Student supervision and field work — *2023 – Current*

Academic Qualifications

- **Doctor of Philosophy, University of Queensland**
  Atmospheric Sciences, — *2019 – 2023*
- **Bachelor of Science (Honours), University of Queensland**
  Geographical Sciences Major, GPA: 7.0, Thesis awarded a mark of 98% — *2018*
- **Bachelor of Science, University of Queensland**
  Physics and Computational Science Dual Major, GPA: 6.125 — *2015 – 2017*

Academic Awards

- **Dean's Award for Outstanding PhD Thesis**
  Awarded by the University of Queensland and nominated by thesis examiners, — *2023*
- **Australian Postgraduate Award Scholarship**
  Post-graduate research funding awarded by the Australian Government, — *2019 - 2023*
- **University of Queensland Excellence Scholarship**
  Awarded based on academic and leadership achievements, — *2015 – 2018*
- **Dean's Commendation for Academic Excellence**
  Recognising outstanding academic performance, — *2015 & 2018*
- **Australian Students Prize**
  Awarded to the 500 highest achieving secondary school graduates, ATAR 99.85, — *2015*

Relevant Publications

- **Brook, J.**, C. Bishop*, A. Protat, 2024: *Pre-Emptive Forecasting with the Ensemble Transform Kalman Filter*, International Symposium on Data Assimilation 21-25 Oct., Kobe, Japan. **Presenting Author.*
- Soderholm, J., M. Kumjian, **J. Brook**, A. Peterson, A. Protat, J. Brimelow, S. Tromel and M. Kunz, 2024: *Measuring hail-like trajectories and growth with the Hailsonde*, Bull. Am. Meterol. Soc., *Under Review*
- Protat, A., V. Louf and **J. Brook**, 2024: *SWIRL: The First Australian Operational Radar-Based 3D Wind Analysis System*, J. Atmos. Ocean Technol., https://doi.org/10.1175/JTECH-D-23-0155.1
- **Brook, J.**, A. Protat, J. Soderholm, H. McGowan and R. Warren, 2024: *A radar-based hail climatology of Australia*, Mon. Weather Rev., https://doi.org/10.1175/MWR-D-23-0130.1
- **Brook, J.**, A. Protat, J. Soderholm, R. Warren and H. McGowan, 2022: *A Variational Interpolation Method*

for Gridding Weather Radar Data, J. Atmos. Ocean Technol., https://doi.org/10.1175/JTECH-D-22-0015.1.

Relevant Experience

Field Campaigns

- **Research Voyage IN2019V06**
  Research Vessel Investigator — *Oct 2019 – Dec 2019*

  I was a part of a six-week voyage aimed at taking observations of the daily cycles of convective storms in Australia's far northern waters. My role was to take periodic atmospheric soundings and assist with radar operations aboard the ship.

- **Large Hail Formation and Trajectories Campaign (LIFT)**
  German Research Foundation — *Jun 2024 – Jul 2024*

  I was an invited participant of this field campaign aimed at collecting in-situ observations of hail trajectories using world-first "Hailsonde" instruments.

- **In-situ Collaborative Exp. for the Collection of Hail In the Plains (ICECHIP)**
  National Science Foundation — *May 2025 – Apr 2025*

  I am an invited participant of this recently-funded international field campaign for collecting hail measurements in the United States. My current roles involve organizing sonde deployment strategy in the lead up to the experiment.

Projects and Internships

- **Australian Unified Radar Archive (AURA)**
  Software Developer and Maintainer — *Jan 2023 – Current*

  I have contributed important software for AURA's processing pipeline, including the gridding, azimuthal shear, and K_{dp} algorithms. Applying these codes to many centuries of historic radar data has taught me invaluable lessons on writing reliable and efficient code. Access here: https://dx.doi.org/10.25914/40KE-NM05

- **ACCESS Modelling**
  Bureau of Meteorology — *May 2023 – Current*

  I have been involved in running, experimenting and altering versions of our operational weather forecasting model ACCESS. This includes observation monitoring of the operational suite, experimenting with radar data assimilation techniques, and other duties within the Data Assimilation working group.

- **Antarctic Climate and Ecosystems Research Council**
  Physical Oceanography Research Scholar — *Nov 2016 – Feb 2017*

  In this role I worked on global ocean/atmosphere models to determine the effects of climate change on carbon sequestration and subduction in the Southern Ocean.

Academic References

- **Prof. Hamish McGowan**
  Professor, School of Earth and Environmental Sciences, UQ — *h.mcgowan@uq.edu.au*
- **Dr. Alain Protat**
  "Radar Science and Nowcasting" Team Leader, The Bureau of Meteorology — *alain.protat@bom.gov.au*