

# Jake J. Gristey

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## EDUCATION

2014 – 2018 | **PhD. Atmosphere, Oceans and Climate**  
Department of Meteorology, University of Reading, UK.  
Thesis: Understanding Earth's Energy Flows from a Constellation of Satellites.

2010 – 2014 | **MMet. Meteorology and Climate with a year in Oklahoma**  
Department of Meteorology, University of Reading, UK.  
Grade: First-Class Honours.

## EMPLOYMENT

2021 – present | **Research Scientist II**  
CIRES/NOAA Chemical Sciences Laboratory, Boulder, CO, USA.

2022 – present | **Research Affiliate**  
Laboratory for Atmospheric and Space Physics, Boulder, CO, USA.

2018 – 2021 | **Research Scientist I**  
CIRES/NOAA Chemical Sciences Laboratory, Boulder, CO, USA.

Summer 2015 | **Research Internship**  
NASA Jet Propulsion Laboratory, CA, USA.

Summer 2014 | **Post Graduate Research Assistant**  
Department of Meteorology, University of Reading, UK.

Summer 2013 | **Undergraduate Research Placement**  
Department of Engineering, University of Reading, UK.

## PRIZES AND AWARDS

2019 | **Selected Presentation, Gordon Research Seminar**  
Chosen to present at Gordon Research Conference on Radiation and Climate.

2016 | **Early Career Scientist Award, National Centre for Earth Observation**  
Best oral presentation at the NCEO annual science conference.

2016 | **Quo Vadis winner**  
Best oral presentation at annual departmental event.

2014 | **MMet undergraduate prize**  
Highest overall grade in graduation year.

2014 | **Houses of Parliament award**  
Best poster at university event, chosen to present at the Houses of Parliament.

2010 | **Entrance Excellence Scholarship**  
Admission to the University of Reading by exceeding grade requirements.

## SELECTED PRESENTATIONS

### Invited talks

- 2023 Earth Science Seminar, Jet Propulsion Laboratory, Pasadena, CA, USA.  
2023 Government Accountability Office visit: Machine Learning. Boulder, CO, USA.  
2022 Libera Science Team Seminar. Virtual.  
2021 UMBC Department of Physics Colloquium. Virtual.  
2020 ACCP Radiation Study Group. Virtual.  
2019 ARM/ASR PI Meeting. Washington, D.C., USA.  
2016 Satellite Applications Workshop. University of Surrey, UK.  
2016 Royal Meteorological Society. Reading, UK.  
2016 Earth Observation and Space Event. University of Reading, UK.

### Talks

- 2023 CERES Science Team Meeting. NASA GISS, NY, USA.  
2023 Libera Science Workshop. Caltech, Pasadena, CA, USA.  
2023 Global Monitoring Annual Conference. University of Colorado, USA.  
2023 ACPC Annual Meeting. Virtual.  
2023 Hemispheric Albedo Symmetry Mini-Workshop. Virtual.  
2022 AGU Fall Meeting. Chicago, IL, USA.  
2022 NOAA Chemical Sciences Laboratory Seminar. Boulder, CO, USA.  
2022 Earth Radiation Budget Workshop. Hamburg, Germany.  
2022 AMS Atmospheric Radiation Conference. Madison, WI, USA.  
2022 International Radiation Symposium. Thessaloniki, Greece.  
2022 AMS Annual Meeting. Virtual.  
2021 AGU Fall Meeting. New Orleans, LA, USA.  
2021 Libera Science Workshop. LASP, Boulder, CO, USA.  
2021 CLARREO Pathfinder Science Workshop. Virtual.  
2021 ACPC Annual Meeting. Virtual.  
2021 CERES/Libera Joint Science Team Meeting. Virtual.  
2021 AMS Annual Meeting. Virtual.  
2020 AGU Fall Meeting. Virtual.  
2020 ARM/ASR PI Meeting. Virtual.  
2020 Libera Science Workshop. Virtual.  
2019 Gordon Research Seminar: Radiation & Climate. Bates College, MA, USA.  
2018 AMS Atmospheric Radiation Conference. Vancouver, Canada.  
2017 NERC DTP Conference. Imperial College London, UK.  
2017 UK Met Office Satellite Constellation Meeting. Exeter, UK.  
2017 Department of Meteorology Seminar. University of Reading, UK.  
2016 NCEO Science Conference. University of Warwick, UK.  
2016 International Radiation Symposium. University of Auckland, New Zealand.  
2016 Quo Vadis. University of Reading, UK.

### Posters

- 2023 Gordon Research Conference: Radiation & Climate. Bates College, MA, USA.  
2023 CIRES Rendezvous. University of Colorado, USA.  
2023 AMS Annual Meeting. Denver, CO, USA.  
2021 AGU Fall Meeting. New Orleans, LA, USA.  
2021 CIRES Rendezvous. University of Colorado, USA.  
2020 CIRES Rendezvous. University of Colorado, USA.  
2019 AGU Fall Meeting. San Francisco, CA, USA.  
2019 CIRES Rendezvous. University of Colorado, USA.  
2019 Gordon Research Conference: Radiation & Climate. Bates College, MA, USA.  
2018 UK Met Office Academic Partnership day. Exeter, UK.  
2017 AGU Fall Meeting. New Orleans, LA, USA.  
2017 UK Met Office Academic Partnership day. Exeter, UK.  
2017 EGU General Assembly. Vienna, Austria.  
2016 UK Met Office Academic Partnership day. Exeter, UK.  
2015 NERC Responding to Environmental Change event. London, UK.  
2015 Gordon Research Conference: Radiation & Climate. Bates College, MA, USA.

2014 | BCUR International Conference. University of Nottingham, UK.  
2014 | UROP Posters in Parliament. House of Commons, London, UK.

## ENGAGEMENT, SERVICE, AND OUTREACH

2019 – present		<b>Professional activities</b>
2020 – present		Libera satellite mission: Angular distribution model lead; science team member.
2020 – present		NOAA CSL Early Career Seminar: Group lead.
2021 – present		Frontiers in Remote Sensing: Editorial board (review editor).
2022 – present		NOAA CSL Working Group for Equity and Inclusion: Member.
2022 – present		PhD committee member: Matt Watwood (CU/LASP).
		AGU session lead convener: “The Spectral Dimension of Shortwave and Longwave Radiation in the Earth System”.
2023		Guest editor of Remote Sensing special issue: “Remote Sensing for Cloud, Aerosol, Radiation, and Precipitation Interactions”
2022		UCAR SOARS program co-mentor: Mark Irby-Gill.
2021		AGU session chair: “The Flows of energy through the climate system”.
Active	Royal Meteorological Society & American Geophysical Union: member.	
Ongoing	<b>Journal article reviewer</b>	
	ACP, AMT, BAMS, ESSD, Front Remote Sens, GRL, IEEE, JAMES, JAOT, JCLI, JGR, QJRM, Remote Sens Environ, Remote Sensing.	
	<b>Blog posts and media interviews</b>	
2021	<a href="https://www.arm.gov/news/features/post/73286">https://www.arm.gov/news/features/post/73286</a>	
Ongoing	<a href="https://socialnetwork.blog/author/jakegristey/">https://socialnetwork.blog/author/jakegristey/</a>	

## KEY SKILLS

2014 – present		<b>Programming and data analysis</b>
		Languages: Extensive Python. Some FORTRAN and MATLAB.
		Big data experience: Satellite observations, reanalysis datasets, weather and climate model output, surface observations.
		Analysis techniques: Machine learning, principal component analysis, spherical harmonic retrieval, cluster analysis.
2014 – present		<b>Atmospheric modelling</b>
		1D and 3D radiative transfer: multiple codes.
		Large eddy simulation: System for Atmospheric Modeling.
2014 – 2018		<b>Teaching</b>
		Assisted in lectures, problem classes, practicals and marking during PhD.
		Gained “Preparing to Teach” qualification.

## PEER REVIEW PUBLICATIONS

2023		(20) <b>Gristey, J. J.</b> et al.: Simulation of LASSO Continental Shallow Convection with an Interactive Land Surface Model. <i>In prep.</i>
2023		(19) Diamond, M. S., <b>J. J. Gristey</b> , and G. Feingold: Earth's Observed Hemispheric Albedo Symmetry by Cloud Type: Climatology, Trends, and Tests of Cloud Adjustment Hypotheses. <i>Under review.</i> <a href="https://doi.org/10.1002/essoar.10512318.1">https://doi.org/10.1002/essoar.10512318.1</a>
2023		(18) Angevine, W. M., J. Olson, <b>J. J. Gristey</b> , and D. Turner: Subgrid cloud parameterization in an eddy diffusivity mass flux mesoscale model. <i>Under review.</i>

- 2023 (17) **Gristey, J. J.** and J. C. Chiu: Understanding our Climate System through the Lens of Spectral Reflected Solar Radiation. *Proceedings of the International Radiation Symposium 2022*. In press.
- 2023 (16) Hakuba, M. Z., B. C. Kindel, **J. J. Gristey**, A. Bodas-Salcedo, G. L. Stephens, and P. Pilewskie: Simulated variability in visible and near-IR irradiances in preparation for the upcoming Libera mission. *Proceedings of the International Radiation Symposium 2022*. In press.
- 2023 (15) **Gristey, J. J.**, K. S. Schmidt, H. Chen, D. R. Feldman, B. C. Kindel, J. Mauss, M. van den Heever, M. Z. Hakuba, and P. Pilewskie: Angular Sampling of a Monochromatic, Wide-Field-of-View Camera to Augment Next-Generation Earth Radiation Budget Satellite Observations. *Atmos. Meas. Tech.* 16, 3609–3630, <https://doi.org/10.5194/amt-16-3609-2023>
- 2023 (14) Chen, H., K. S. Schmidt, S. T. Massie, V. H. Nataraja, M. Norgren, **J. J. Gristey**, G. Feingold, R. Holz, and H. Iwabuchi: The Education and Research 3D Radiative Transfer Toolbox (EaR3T) – Towards the Mitigation of 3D Bias in Airborne and Spaceborne Passive Imagery Cloud Retrievals. *Atmos. Meas. Tech.*, 16, 1971–2000. <https://doi.org/10.5194/amt-16-1971-2023>
- 2022 (13) Diamond, M. S., **J. J. Gristey**, J. E. Kay, and G. Feingold: Anthropogenic aerosol and cryosphere changes drive Earth’s strong but transient clear-sky hemispheric albedo asymmetry. *Nature Commun. Earth Environ.*, 3, 206. <https://doi.org/10.1038/s43247-022-00546-y>
- 2022 (12) **Gristey, J. J.**, G. Feingold, K. S. Schmidt, and H. Chen: Influence of aerosol embedded in shallow cumulus cloud fields on the surface solar irradiance. *J. Geophys. Res. Atmos.*, 127, e2022JD036822. <https://doi.org/10.1029/2022JD036822>
- 2021 (11) **Gristey, J. J.**, W. Su, N. G. Loeb, T. H. Vonder Haar, F. Tornow, K. S. Schmidt, M. Z. Hakuba, P. Pilewskie, and J. E. Russell: Shortwave Radiance to Irradiance Conversion for Earth Radiation Budget Satellite Observations: A Review. *Remote Sens.*, 13(13), 2640. <https://doi.org/10.3390/rs13132640>
- 2021 (10) Stephens, G. L., O. V. Kalashnikova, **J. J. Gristey**, P. Pilewskie, D. R. Thompson, X. Huang, M. Lebsock, and K. S. Schmidt: The Spectral Nature of Earth’s Reflected Radiation: Measurement and Science Applications. *Front. Remote Sens.*, 2, 11. <https://doi.org/10.3389/frsen.2021.664291>
- 2021 (9) Riihimaki, L. D., C. Flynn, A. McComiskey, D. Lubin, Y. Blanchard, J. C. Chiu, G. Feingold, D. R. Feldman, **J. J. Gristey**, C. Herrera, G. Hodges, E. Kassianov, S. E. LeBlanc, A. Marshak, J. J. Michalsky, P. Pilewskie, S. Schmidt, R. C. Scott, Y. Shea, K. Thome, R. Wagener, and B. Wielicki: The Shortwave Spectral Radiometer for Atmospheric Science: New Capabilities, Applications, and Experience from the ARM User Facility. *Bull. Amer. Meteor. Soc.* 1-39. <https://doi.org/10.1175/BAMS-D-19-0227.1>
- 2020 (8) **Gristey, J. J.**, G. Feingold, I. B. Glenn, K. S. Schmidt, and H. Chen: On the relationship between shallow cumulus cloud field properties and surface solar irradiance. *Geophysical Research Letters*, 47, e2020GL090152. <https://doi.org/10.1029/2020GL090152>

- 2020 (7) Angevine, W. M., J. Olson, **J. J. Gristey**, I. B. Glenn, G. Feingold, and D. Turner: Scale awareness, resolved circulations, and practical limits in the MYNN-EDMF boundary layer and shallow cumulus scheme. *Mon. Wea. Rev.* 148, 4629–4639. <https://doi.org/10.1175/MWR-D-20-0066.1>
- 2020 (6) **Gristey, J. J.**, G. Feingold, I. B. Glenn, K. S. Schmidt, and H. Chen: Surface Solar Irradiance in Continental Shallow Cumulus Fields: Observations and Large Eddy Simulation. *J. Atmos. Sci.*, 77, 1065–1080. <https://doi.org/10.1175/JAS-D-19-0261.1>
- 2020 (5) Glenn, I. B., G. Feingold, **J. J. Gristey**, and T. Yamaguchi: Quantification of the radiative effect of aerosol-cloud-interactions in shallow continental cumulus clouds. *J. Atmos. Sci.*, 77, 2905–2920. <https://doi.org/10.1175/JAS-D-19-0269.1>
- 2020 (4) Riihimaki, L. D., C. Flynn, A. McComiskey, J. C. Chiu, D. R. Feldman, **J. J. Gristey**, A. Habte, C. Herrera, G. Hodges, S. Jones, E. Kassianov, B. Kindel, M. Kutchenreiter, K. Lantz, S. E. LeBlanc, A. Marshak, J. J. Michalsky, D. Stanitski, S. Schmidt, H. Scott, H. Telg, A. Theisen, and R. Wagner: ARM Shortwave Spectral Radiometry Strategy Review Report. United States, pp. 22. <https://doi.org/10.2172/1600683>
- 2019 (3) **Gristey, J. J.**, J. C. Chiu, R. J. Gurney, K. P. Shine, S. Havemann, J.-C. Thelen, and P. G. Hill: Shortwave spectral radiative signatures and their physical controls. *J. Clim.*, 32, 4805–4828. <https://doi.org/10.1175/JCLI-D-18-0815.1>
- 2018 (2) **Gristey, J. J.**, J. C. Chiu, R. J. Gurney, C. J. Morcrette, P. G. Hill, J. E. Russell, and H. E. Brindley: Insights into the diurnal cycle of global Earth outgoing radiation using a numerical weather prediction model. *Atmos. Chem. Phys.*, 18, 5129–5145. <https://doi.org/10.5194/acp-18-5129-2018>
- 2017 (1) **Gristey, J. J.**, J. C. Chiu, R. J. Gurney, S.-C. Han, and C. J. Morcrette: Determination of global Earth outgoing radiation at high temporal resolution using a theoretical constellation of satellites. *J. Geophys. Res. Atmos.*, 122, 1114–1131. <https://doi.org/10.1002/2016JD025514>