

Jake J. Gristey

Email: Jake.J.Gristey@noaa.gov **Address:** DSRC Rm. 2A115
Tel: (+1) 720 491 1089 325 Broadway
Web: <https://cires.colorado.edu/people/jake-gristey> Boulder, CO, USA, 80305

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 department event.

2014 **MMet undergraduate prize**
Graduated top of the class in combined undergraduate/master's program.

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

2010 **Entrance Excellence Scholarship**
Admission to undergraduate program by exceeding grade requirements.

SELECTED PRESENTATIONS

Invited talks

- 2024 Atmospheric Science Seminar, University of Wyoming, USA.
- 2023 ATOC Colloquium, University of Colorado, USA.
- 2023 Earth Science Seminar, Jet Propulsion Laboratory, Pasadena, CA, USA.
- 2023 Government Accountability Office: 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 AGU Fall Meeting. San Francisco, CA, USA.
- 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	UROF Posters in Parliament. House of Commons, London, UK.

ENGAGEMENT, SERVICE, AND OUTREACH

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

KEY SKILLS

2014 – present	Programming and data analysis 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	Atmospheric modelling 1D and 3D radiative transfer: multiple codes. Large eddy simulation: System for Atmospheric Modeling.
2014 – 2018	Teaching Assisted in lectures, problem classes, practicals and marking during PhD.
2016	Gained “Preparing to Teach” qualification.

PEER REVIEW PUBLICATIONS

2024	(20) Gristey, J. J. et al.: Large Eddy Simulation of Shallow Cumulus Clouds in the Southern Great Plains with an Interactive Land Surface Model. <i>In prep.</i>
2024	(19) Angevine, W. M., J. Olson, J. J. Gristey , and D. Turner: Subgrid cloud parameterization in an eddy diffusivity mass flux mesoscale model. <i>Under review.</i>

- 2024 (18) Diamond, M. S., **J. J. Gristey**, and G. Feingold: Earth's Observed Hemispheric Albedo Symmetry by Cloud Type: Climatology, Trends, and Tests of Cloud Adjustment Hypotheses. *Under review*. <https://doi.org/10.1002/essoar.10512318.1>
- 2024 (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. AIP Conf. Proc.* 2988, 070004, <https://doi.org/10.1063/5.0183587>
- 2024 (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. AIP Conf. Proc.* 2988, 050006, <https://doi.org/10.1063/5.0183869>
- 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>