

Ryan J. MacDonald

Department of Astronomy
University of Michigan
1085 S. University Ave.
Ann Arbor, MI 48109, USA

Phone: +1 (607) 262-5035
E-mail: ryanjmac@umich.edu
Website: <http://distantworlds.space>

CAREER & EDUCATION

NASA Sagan Fellow	2022 –
University of Michigan, Department of Astronomy, USA	
Research Associate	2019–2022
Cornell University, Department of Astronomy and Carl Sagan Institute, USA	
PhD. Astronomy	2015–2019
University of Cambridge, Institute of Astronomy, UK	
Thesis: <i>Revealing the Nature of Exoplanetary Atmospheres</i>	
MPhys. Physics	2011–2015
University of Oxford, Department of Physics, UK	

PUBLICATIONS

60 papers: 10 first author, 8 second author, 7 third author, 1900+ citations ([ADS List](#))

First author:

1. **MacDonald, R.J.**, O'Connor, C., Boehm, V., et al., 2024, *The Atmosphere of a White Dwarf Planet*, **Nature** (submitted)
2. ★May, E.M. & ★**MacDonald, R.J.**, Bennett, K.A., et al., 2023, *Double Trouble: Two Transits of the Super-Earth GJ 1132 b Observed with JWST NIRSpec G395H*, *ApJL*, 959, [L9](#) (★ = Co-lead authors)
3. **MacDonald, R.J.**, 2023, *POSEIDON: A Multidimensional Atmospheric Retrieval Code for Exoplanet Spectra*, *JOSS*, 8(81), [4873](#)
4. **MacDonald, R.J.** & Lewis N.K., 2022, *TRIDENT: A Rapid 3D Radiative Transfer Model for Exoplanet Transmission Spectra*, *ApJ*, 929, [20](#)
5. ★Kaltenegger, L. & ★**MacDonald, R.J.**, Kozakis, T., et al., 2020, *The White Dwarf Opportunity: Robust Detections of Molecules in Earth-like Exoplanet Atmospheres with the James Webb Space Telescope*, *ApJL* 901, [L1](#) (★ = Co-lead authors)
6. **MacDonald, R.J.**, Goyal, J.M, & Lewis N.K., 2020, *Why Is it So Cold in Here? Explaining the Cold Temperatures Retrieved from Transmission Spectra of Exoplanet Atmospheres*, *ApJL*, 893, [L43](#)
7. **MacDonald, R.J.** & Madhusudhan, N., 2019, *The Metal-Rich Atmosphere of the Exo-Neptune HAT-P-26b*, *MNRAS*, 486, [1292](#)
8. **MacDonald, R.J.**, Marley, M.S., Fortney, J.J., & Lewis N.K., 2018, *Exploring H₂O Prominence in Reflection Spectra of Cool Giant Planets*, *ApJ*, 858, [69](#)
9. **MacDonald, R.J.** & Madhusudhan, N., 2017, *Signatures of Nitrogen Chemistry in Hot Jupiter Atmospheres*, *ApJL*, 850, [L15](#)
10. **MacDonald, R.J.** & Madhusudhan, N., 2017, *HD 209458b in New Light: Evidence of Nitrogen Chemistry, Patchy Clouds and Sub-Solar Water*, *MNRAS* 469, [1979](#)

Second author († = student supervised by **MacDonald, R.J.**):

11. †**Agrawal, A.** & **MacDonald, R.J.**, 2024, *Excalibur: An Open Source Molecular and Atomic Cross Section Computation Code for Substellar Atmospheres*, JOSS (submitted)
12. Gressier, A., **MacDonald, R.J.**, Espinoza, N., et al., 2024, *JWST-TST DREAMS: Super-Solar Metallicity in WASP-17 b's Day-side Atmosphere from NIRISS SOSS Eclipse Spectroscopy*, AJ (submitted)
13. Fournier-Tondreau, M., **MacDonald, R.J.**, Radica, M., et al., 2024, *Near-Infrared Transmission Spectroscopy of HAT-P-18 b with NIRISS: Disentangling Planetary and Stellar Features in the Era of JWST*, MNRAS, 528, [3354](#)
14. †**Gomez Barrientos, J.**, **MacDonald, R.J.**, Lewis N.K., & Kaltenegger, L., 2023, *In Search of the Edge: A Bayesian Exploration of the Detectability of the Red-Edge in Exoplanet Reflection Spectra*, ApJ, 946, [96](#)
15. Xu, S., ★Diamond-Lowe, H., ★**MacDonald, R.J.**, et al., 2021, *Gemini/GMOS Transmission Spectroscopy of the Grazing Planet Candidate WD 1856+534 b*, AJ, 162, [296](#) (★ = equal contribution)
16. Rathcke, A.D., **MacDonald, R.J.**, Barstow, J.K., et al., 2021, *HST PanCET Program: A Complete Near-UV to Infrared Transmission Spectrum for the Hot Jupiter WASP-79b*, AJ, 162, [138](#)
17. Lin, Z., **MacDonald, R.J.**, Kaltenegger, L., & Wilson, D.J., 2021, *Differentiating Modern and Prebiotic Earth Scenarios for TRAPPIST-1e: High-resolution Transmission Spectra and Predictions for JWST*, MNRAS, 505, [3562](#)
18. Sedaghati, E., **MacDonald, R.J.**, Casasayas-Barris, N., et al., 2021, *A Spectral Survey of WASP-19b with ESPRESSO*, MNRAS, 505, [435](#)

Third author († = student supervised by **MacDonald, R.J.**):

19. Fairman, C., Wakeford, H.R., & **MacDonald, R.J.**, 2024, *The Importance of Optical Wavelength Data on Atmospheric Retrievals of Exoplanet Transmission Spectra*, AJ, 167, [240](#)
20. †**Gomez Barrientos, J.**, Kaltenegger, L., & **MacDonald, R.J.**, 2023, *A Venus in the Making? Predictions for JWST Observations of the Ultracool M-Dwarf Planet LP 890-9 c*, MNRAS Letters, 524, [L5](#)
21. Alderson, L., Wakeford, H.R., **MacDonald, R.J.**, et al., 2022, *A Comprehensive Analysis of WASP-17b's Transmission Spectrum from Space-Based Observations*, MNRAS, 512, [4185](#)
22. Kirk, J., Rackham, B., **MacDonald, R.J.**, et al., 2021, *ACCESS and LRG-BEASTS: A Precise New Optical Transmission Spectrum of the Ultrahot Jupiter WASP-103b*, AJ, 162, [34](#)
23. Alam, M.K., López-Morales, M., **MacDonald, R.J.**, et al., 2021, *Evidence of a Clear Atmosphere for WASP-62b: the Only Known Transiting Gas Giant in the JWST Continuous Viewing Zone*, ApJL, 906, [L10](#)
24. Lewis, N.K., Wakeford, H.R., **MacDonald, R.J.**, et al., 2020, *Into the UV: The Atmosphere of the Hot Jupiter HAT-P-41b Revealed*, ApJL, 902, [L19](#)
25. Sedaghati, E., Boffin, H.M.J., **MacDonald, R.J.**, et al., 2017, *Detection of Titanium Oxide in the Atmosphere of a Hot Jupiter*, Nature, 549, [238](#)

Co-authored:

26. Benneke B., et al. (including **MacDonald, R.J.**), 2024, *JWST Reveals CH₄, CO₂, and H₂O in a Metal-rich Miscible Atmosphere on a Two-Earth-Radius Exoplanet*, AJ (submitted)
27. Cugno G., et al. (including **MacDonald, R.J.**), 2024, *Mid-Infrared Spectrum of the Disk around the Forming Companion GQ Lup B Revealed by JWST/MIRI*, ApJL (accepted)
28. Kirk, J., et al. (including **MacDonald, R.J.**), 2023, *JWST/NIRCam Transmission Spectroscopy of the Nearby Sub-Earth GJ 341b*, AJ, 167, 90
29. Powell, D., et al. (including **MacDonald, R.J.**), 2024, *Sulphur dioxide in the mid-infrared transmission spectrum of WASP-39b*, Nature, 626 979
30. Lustig-Yaeger, J., et al. (including **MacDonald, R.J.**), 2023, *A JWST Transmission Spectrum of the Nearby Earth-sized Exoplanet LHS 475 b*, Nature Astronomy, 7, 1317
31. Grant, D., et al. (including **MacDonald, R.J.**), 2023, *JWST-TST DREAMS: Quartz Clouds in the Atmosphere of WASP-17b*, ApJL, 956, L29
32. Deibert, E.K., et al. (including **MacDonald, R.J.**), 2023, *ExoGemS High-Resolution Transmission Spectroscopy of WASP-76b with GRACES*, AJ, 166, 141
33. Radica, M., et al. (including **MacDonald, R.J.**), 2023, *Awesome SOSS: Transmission Spectroscopy of WASP-96b with NIRISS/SOSS*, MNRAS, 524, 835
34. Taylor, J, Radica, M., Welbanks, L., **MacDonald, R.J.**, Blečić, J., et al., 2023, *Awesome SOSS: Atmospheric Characterization of WASP-96b Using the JWST Early Release Observations*, MNRAS, 524, 817
35. Lim, O., Benneke, B., Doyon, R., **MacDonald, R.J.**, Piaulet, C., et al., 2023, *Atmospheric Reconnaissance of TRAPPIST-1 b with JWST/NIRISS: Evidence for Strong Stellar Contamination in the Transmission Spectra*, ApJL, 955, L22
36. Coulombe, L., et al. (including **MacDonald, R.J.**), 2023, *A Broadband Thermal Emission Spectrum of the Ultra-hot Jupiter WASP-18b*, Nature, 620, 292
37. Flagg, L., et al. (including **MacDonald, R.J.**), 2023, *ExoGemS Detection of a Metal Hydride in an Exoplanet Atmosphere at High Spectral Resolution*, ApJL, 953, L19
38. Albert, L., et al. (including **MacDonald, R.J.**), 2023, *The Near Infrared Imager and Slitless Spectrograph for the James Webb Space Telescope – III. Single Object Slitless Spectroscopy*, PASP, 135, 075001
39. Libralato, M., et al. (including **MacDonald, R.J.**), 2023, *JWST-TST Proper Motions. I. High-Precision NIRISS Calibration and Large Magellanic Cloud Kinematics*, ApJ, 950, 101
40. Moran, S.E, Stevenson, K.B., Sing, D.K., **MacDonald, R.J.**, Kirk, J., et al., 2023, *High Tide or Riptide on the Cosmic Shoreline? A Water-rich Atmosphere or Stellar Contamination for the Warm Super-Earth GJ 486b from JWST Observations*, ApJL, 948, L11
41. Ridden-Harper, A., et al. (including **MacDonald, R.J.**), 2023, *High-Resolution Transmission Spectroscopy of the Terrestrial Exoplanet GJ 486b*, AJ, 165, 170
42. Feinstein, A., et al. (including **MacDonald, R.J.**), 2023, *Early Release Science of the exoplanet WASP-39b with JWST NIRISS*, Nature, 614, 670

43. Alderson, L., et al. (including **MacDonald, R.J.**), 2023, *Early Release Science of the Exoplanet WASP-39b with JWST NIRSpec G395H*, Nature, 614, [664](#)
44. Rustamkulov, Z., et al. (including **MacDonald, R.J.**), 2023, *Early Release Science of the exoplanet WASP-39b with JWST NIRSpec PRISM*, Nature, 614, [659](#)
45. Ahrer, E., et al. (including **MacDonald, R.J.**), 2023, *Early Release Science of the exoplanet WASP-39b with JWST NIRCam*, Nature, 614, 653 [653](#)
46. The JWST Transiting Exoplanet Community Early Release Science Team, et al. (including **MacDonald, R.J.**), 2023, *Identification of Carbon Dioxide in an Exoplanet Atmosphere*, Nature, 614, [649](#)
47. Rackham, B., Espinoza, N., Berdyugina, S.V., Korhonen, H., **MacDonald, R.J.**, et al., 2023, *The Effect of Stellar Contamination on Low-resolution Transmission Spectroscopy: Needs Identified by NASA's Exoplanet Exploration Program Study Analysis Group 21*, RASTI, 2, [148](#)
48. Wong, I., et al. (including **MacDonald, R.J.**), 2022, *The Hubble PanCET Program: A Featureless Transmission Spectrum for WASP-29b and Evidence of Enhanced Atmospheric Metallicity on WASP-80b*, AJ, 164, [30](#)
49. Barstow, J.K., et al. (including **MacDonald, R.J.**), 2022, *A Retrieval Challenge Exercise for the Ariel Mission*, Experimental Astronomy, 53, [447](#)
50. Foote, T.O., et al. (including **MacDonald, R.J.**), 2022, *The Emission Spectrum of the Hot Jupiter WASP-79b from HST/WFC3*, AJ, 163, [7](#)
51. Goyal, J.M., Lewis, N.K., Wakeford, H.R., **MacDonald, R.J.**, & Mayne, N.J., 2021, *Why is it So Hot in Here? Exploring Population Trends in Spitzer Thermal Emission Observations of Hot Jupiters using Planet-Specific Self-Consistent Atmospheric Models*, ApJ, 923, [242](#)
52. Mishra, I., et al. (including **MacDonald, R.J.**), 2021, *A Comprehensive Revisit of Select Galileo/NIMS Observations of Europa*, PSJ, 2, [183](#)
53. Deibert, E.K., et al. (including **MacDonald, R.J.**), 2021, *Detection of Ionized Calcium in the Atmosphere of the Ultra-Hot Jupiter WASP-76b*, ApJL, 919, [L15](#)
54. Weaver, I., et al. (including **MacDonald, R.J.**), 2021, *ACCESS: An Optical Transmission Spectrum of the High-gravity, Hot Jupiter HAT-P-23b*, AJ, 161, [278](#)
55. Mishra, I., et al. (including **MacDonald, R.J.**), 2021, *Bayesian analysis of Juno / JIRAM's NIR observations of Europa*, Icarus, 357, [114215](#)
56. Tinetti, G., et al. (including **MacDonald, R.J.**), 2020, *Ariel: Enabling planetary science across light-years*, [ESA Ariel Mission Definition Study Report](#)
57. Molaverdikhani, K., Helling, Ch., Lew, B.W.P., **MacDonald, R.J.**, et al., 2020, *Understanding the atmospheric properties and chemical composition of the ultra-hot Jupiter HAT-P-7b: II. Mapping the effects of gas kinetics*, A&A, 635, [A31](#)
58. Helling, Ch., et al. (including **MacDonald, R.J.**), 2019, *Understanding the atmospheric properties and chemical composition of the ultra-hot Jupiter HAT-P-7b: I. Cloud and chemistry mapping*, A&A, 631, [A79](#)
59. Pinhas, A., Madhusudhan, N., Gandhi, S., & **MacDonald, R.J.**, 2018, *H₂O Abundances and Cloud Properties in Ten Hot Giant Exoplanets*, MNRAS, 482, [1485](#)
60. Kilpatrick, B.M., et al. (including **MacDonald, R.J.**), 2018, *Community Targets of JWST's Early Release Science Program: Evaluation of WASP-63b*, AJ, 156, [103](#)

SELECTED PRIZES & HONOURS

NASA Sagan Prize Fellowship	2022
Royal Astronomical Society Travel Award	2018
Paul Murdin Prize, University of Cambridge	2017
Kavli Summer Program in Astrophysics Fellowship, UC Santa Cruz	2016
Public Outreach Prize, University of Oxford	2014
Gibbs Prize (twice awarded), University of Oxford	2013, 2014
Scholarship, University College, University of Oxford	2012–2014

ACCEPTED OBSERVING PROPOSALS

1. **JWST Cycle 3**, 16 hrs, GO 5866 (PI: MacDonald, R.J.) 2024
Oceans of Uncertainty: A Veritable Waterworld or a Desolate Wasteland?
2. **JWST Cycle 3**, 4 hrs, GO 5204 (PI: Limbach, M.A.) 2024
Probing the Dynamical History and the Mid-IR SED of WD 1856b
3. **JWST Cycle 3**, 16 hrs, GO 5844 (PI: Radica, M.) 2024
Starspots, Hazes, and Disequilibrium Chemistry: A Deep Dive into the Atmosphere of HAT-P-18b
4. **JWST Cycle 3**, 82 hrs, GO 6456 (PI: Allen, N.) 2024
Using stellar contamination proxy TRAPPIST-1b to search for an atmosphere on TRAPPIST-1e
5. **JWST Cycle 2 (DDT)**, 16 hrs, GO 6543 (PI: Cadieux, C.) 2023
Stellar Activity Characterization of LHS 1140 — Is LHS 1140 b a Mini-Neptune or a Water World?
6. **JWST Cycle 2**, 82 hrs, GO 4098 (PI: Benneke, B.) 2023
Exploring the existence and diversity of volatile-rich water worlds
7. **JWST Cycle 2**, 62 hrs, GO 3969 (PI: Espinoza, N.) 2023
Hot Jupiter Atmospheric Forecast: Are mornings cloudier than evenings in other worlds?
8. **JWST Cycle 2**, 7 hrs, GO 4082 (PI: Radica, M.) 2023
Putting it all Together: Dynamics and Chemistry Probed Through Transmission Spectroscopy of a Cloud-Free Exoplanet
9. **JWST Cycle 2**, 14 hrs, GO 4105 (PI: Alderson, I.) 2023
Not Your Normal Neptune: Exploring the Chemical Processes at Play in HAT-P-11b
10. **HST Cycle 30**, 122 orbits, GO 17183 (PI: Wakeford, H.) 2022
Hubble Ultraviolet-optical Survey of Transiting Legacy Exoplanets (HUSTLE) Treasury Program
11. **JWST Cycle 1**, 13 hrs, GO 2358 (PI: MacDonald, R.J.) 2021
Revealing the Atmospheric Composition of a White Dwarf Planet
12. **JWST Cycle 1**, 76 hrs, GO 1981 (PI: Stevenson, K.) 2021
Measuring the Prevalence and Diversity of M-Dwarf Planet Atmospheres
13. **JWST Cycle 1**, 3 hrs, GO 2507 (PI: Vanderburg, A.) 2021
Thermal Emission from the First Planet Transiting a White Dwarf
14. **HST Cycle 29**, 23 orbits, GO 16695 (PI: Rustamkulov, Z.) 2021
Mapping Atmospheric Dynamics at the Limbs of an Exceptional Hot Saturn
15. **Gemini**, 224 hrs, N0394/Gemini 2020-LP-10 (PI: Turner, J.) 2020
Exploring the Diversity of Exoplanet Atmospheres at High Spectral Resolution

CONFERENCE TALKS, COLLOQUIA, & SEMINARS (SELECTED)

Exoplanets V, Leiden, Netherlands	2024
Extreme Solar Systems V, Christchurch, New Zealand	2024
Rocky Worlds III, ETH Zürich, Switzerland	2024
TASTY Astrophysics Seminar, University of Toronto, Canada (invited)	2023
Astronomy Colloquium, University of British Columbia, Canada (invited)	2023
Exoclines VI, Exeter, UK	2023
Astrophysics Seminar, Université de Montréal, Canada (invited)	2023
Physics & Astronomy Colloquium, University of Toledo, USA (invited)	2023
ITC Colloquium, Harvard University, USA (invited)	2023
JWST's First Six Months of Exoplanet Data, Bavaria, Germany (invited)	2022
Astronomy Colloquium, University of Rochester, USA (invited)	2022
Astronomy Colloquium, University of Michigan, USA	2022
Planetary Lunch Seminar, UC Santa Cruz, USA (invited)	2022
ESO Atmo 2021 (invited lecturer)	2021
CloudNineCon (keynote speaker)	2021
Exocoffee, MPA Heidelberg, Germany (invited)	2021
Exoplanet Modelling in the James Webb Era, RAS, UK	2021
Exoplanets Presentation, Harvard University, USA (invited)	2020
Exoplanet Journal Club Seminar, JPL, USA (invited)	2020
Planetary Science Group Talk, LPL, University of Arizona, USA (invited)	2020
JWST Exo-Webinar (invited)	2020
BDEXOCON III, University of Delaware, USA	2019
Exoplanets II, University of Cambridge, UK	2018
UK Exoplanet Community Meeting, University of Oxford, UK	2018

TEACHING & PROFESSIONAL DEVELOPMENT

Guest Lecturer in Astronomy , U. Michigan	2023 –
Postdoctoral Short Course on College Teaching in STEM , U. Michigan	2023
JWST First Exoplanet Spectrum Workshop , Cornell University	2022
Guest Lecturer , Cornell University	2019–2023
Invited Lecturer , ESO Atmo 2021 Workshop	2021
Postdoctoral Leadership Program , Cornell University	2020
Physics & Astrophysics Tutor (Part II) , University of Cambridge	2015–2017
Physics & Mathematics Tutor , Cambridge	2015–2018

STUDENT RESEARCH SUPERVISION

Supervisor , Yanbo Pan, Undergraduate Student (U. Michigan)	2024 –
Supervisor , Eshan Raul, Undergraduate Student (U. Michigan)	2024 –
Supervisor , Sarahi Palma, Undergraduate Student (U. Michigan)	2023 –
Co-Supervisor , Elijah Mullens, PhD Student (Cornell)	2022 –
Supervisor , Alicia Highland, Undergraduate Student (U. Michigan)	2023
Supervisor , Ruizhe Wang, Undergraduate Student (Cornell)	2022–2024
Supervisor , John Kappelmeier, Undergraduate Student (Cornell)	2022–2023
Supervisor , Jonathan Gomez Barrientos, Undergraduate Student (Cornell)	2021–2022
Co-Supervisor , Ishan Mishra, PhD Student (Cornell)	2019–2022
Supervisor , Arnav Agrawal, Undergraduate Student (Cornell)	2020–2021

GRANT AWARDS

1. JWST Cycle 3, GO 5866 (PI: MacDonald, R.J.) 2024–2027
Oceans of Uncertainty: A Veritable Waterworld or a Desolate Wasteland?
Grant Award: **\$68,313** (pending)
2. JWST Cycle 3, GO 5204 (PI: Limbach, M.A.) 2024–2027
Probing the Dynamical History and the Mid-IR SED of WD 1856b
Grant Award: **\$45,183** (pending)
3. JWST Cycle 3, GO 5844 (PI: Radica, M.) 2024–2027
Starspots, Hazes, and Disequilibrium Chemistry: A Deep Dive into the Atmosphere of HAT-P-18b
Grant Award: **\$30,122** (pending)
4. JWST Cycle 3, GO 6456 (PI: Allen, N.) 2024–2027
Using stellar contamination proxy TRAPPIST-1b to search for an atmosphere on TRAPPIST-1e
Grant Award: **\$80,279** (pending)
5. Heising-Simons Foundation Grant #2023-4742 2023
(Co-Leads: Holmbeck, E.M, Ong, J.M., & MacDonald, R.J.)
Astronomy Mentorship Program for Upcoming Postdocs Workshop
Grant Award: **\$50,000**
6. JWST Cycle 2, GO 4098 (PI: Benneke, B.) 2023–2026
Exploring the Existence and Diversity of Volatile-rich Water Worlds
Grant Award: **\$22,068**
7. JWST Cycle 2, GO 3969 (PI: Espinoza, N.) 2023–2026
Hot Jupiter Atmospheric Forecast: Are Mornings Cloudier than Evenings in Other Worlds?
Grant Award: **\$23,084**
8. NASA Hubble Fellowship Program (PI: MacDonald, R.J.) 2022–2025
A Multidimensional Approach to Exploring Disequilibrium Chemistry in Exoplanet Atmospheres
Grant Award: **\$377,258**
9. NASA ROSES XRP (PI: Faherty, J.) 2022–2025
Read Between the Lines: Determining Atmosphere and Bulk Compositions for Planetary Mass Objects Using Spectral Retrievals
Grant Award: **\$209,999**
10. JWST Cycle 1, GO 2358 (PI: MacDonald, R.J.) 2022–2025
Revealing the Atmospheric Composition of a White Dwarf Planet
Grant Award: **\$91,220**
11. JWST Cycle 1, GO 1981 (PI: Stevenson, K.) 2023–2025
Measuring the Prevalence and Diversity of M-Dwarf Planet Atmospheres
Grant Award: **\$23,710**

PROFESSIONAL AFFILIATIONS

Member, Canadian Astronomical Society (CASCA)	2023 –
Member, American Astronomical Society (AAS)	2021 –
Member, AAS Division for Planetary Sciences (DPS)	2021 –
Fellow of the Royal Astronomical Society (RAS)	2016 –

PRESS RELEASES

* “ <i>Webb Detects Tiny Quartz Crystals in the Clouds of a Hot Gas Giant</i> ” (NASA)	2023
* “ <i>JWST’s first spectrum of a TRAPPIST-1 planet</i> ” (U. Michigan)	2023
* “ <i>Water, temperature variations confirmed in hot gas giant</i> ” (U. Michigan)	2023
* “ <i>Webb Finds Water Vapor, But From a Rocky Planet or Its Star?</i> ” (NASA)	2023
* “ <i>NASA’s Webb Confirms Its First Exoplanet</i> ” (NASA)	2023
* “ <i>An exoplanet atmosphere as never seen before</i> ” (U. Michigan)	2022
* “ <i>NASA’s Webb Detects Carbon Dioxide in Exoplanet Atmosphere</i> ” (NASA)	2022
* “ <i>Can life survive a star’s death? Webb telescope will explore</i> ” (Cornell)	2020
* “ <i>Researchers use ‘hot Jupiter’ data to mine exoplanet chemistry</i> ” (Cornell)	2020
* “ <i>Inferno World with Titanium Skies</i> ” (ESO)	2017

INTERNATIONAL SCIENCE TEAMS

JWST Water World Characterization Team (Member, PI: Benneke B.)	2023 –
Hubble HUSTLE UV Treasury Program Team (Member, PI: Wakeford H.)	2022 –
JWST Telescope Scientist GTO Team (Member, PI: Clampin M)	2021 –
JWST Transiting Exoplanet ERS Program (Member, PI: Batalha N.)	2020 –
JWST Canadian NIRISS GTO Team (Member, PI: Lafrenière D.)	2020 –
STARGATE Collaboration (Executive Committee Member)	2019 –
ACCESS Ground-based Exoplanet Survey (Collaborator)	2020–2021
Roman Science Investigation Team (Member, PI: Macintosh B.)	2019–2021
Hubble PanCET Treasury Program Team (Member, PI: Sing D.)	2019–2022

SCIENCE COMMUNICATION & PUBLIC OUTREACH

JWST Early Release Science Program Communications Team	2022 –
YouTube Channel with 6.3 Million+ Views	2014 –
Physics Magazine - “ <i>The Skinny on Detecting Life with the JWST</i> ”	2023
Scientific American - “ <i>Did JWST Just Find Water on a Rocky Exoplanet?</i> ”	2023
YouTube - “ <i>Discovery of SO₂ in an Exoplanet Atmosphere</i> ” (10,000+ views)	2022
Carl Sagan Institute Video Outreach Team Leader	2020–2022
Solve It! Podcast - “ <i>Where are the Aliens?</i> ”	2021
Total Space Interview - “ <i>JWST: Looking Forward to the Past</i> ”	2021
ExoCup 2020 Winning Campaign - <i>WD 1856 b</i>	2020
Forbes - “ <i>Can Life Outlive Its Host Star? NASA’s Webb Telescope Will Find Out</i> ”	2020
YouTube - “ <i>When will Alien Life be Found on Exoplanets?</i> ” (50,000+ views)	2020
The Cosmic Companion - “ <i>Half Planet, Half Star?</i> ”	2020
Centauri Dreams - “ <i>Exoplanet Atmospheres: Recalibrating Our Models</i> ”	2020
BBC Radio Guest Expert	2015–2019
Fascinate Pod - “ <i>Earth, Mars, then Beyond.</i> ”	2019
New Scientist Freelance Article - “ <i>Weather Forecasts from Alien Worlds</i> ”	2018
Public Observing Evenings, Institute of Astronomy, Cambridge	2015–2018
The Naked Scientists Podcast - “ <i>Exoplanet Atmosphere Explored by Astronomers</i> ”	2017
The Unseen Podcast - “ <i>Exoplanet Atmospheres</i> ”	2017
Stargazing Oxford Stallholder & Demonstrator	2012–2015
Zooniverse Citizen Science Projects, <i>Higgs Hunters Science Blog</i> Writer	2014

ACADEMIC SERVICE

JWST Telescope Allocation Committee	Various
Hubble Telescope Allocation Committee	Various
NASA ROSES Grant Review Panelist	Various
NASA FINESST Research Proposal Reviewer	Various
NSF Grant Review Panelist	Various
Astronomy Mentorship Program for Upcoming Postdocs , Co-Lead	2023 –
Referee for AAS Journals, A&A, MNRAS, RASTI	2019 –
NASA ExoPAG SAG 21, Subgroup Co-Lead	2020–2022
NASA Exoplanet Archive Atmospheres Environment Group	2021
Scientific Organizing Committee, ESO Atmo 2021 Workshop	2021
ESA Ariel Mission Retrieval Challenge	2019
Local Organising Committee, Exoplanets II, Cambridge, UK	2018
Graduate Student Forum, Institute of Astronomy, Cambridge, UK	2015–2018
Undergraduate Teaching Committee, Department of Physics, Oxford, UK	2013–2015

PUBLIC TALKS

Treasure Coast Astronomical Society, FL, USA (online)	2023
City Club of Ithaca, NY, USA (online)	2022
JWST Cycle 1 Science Sampler, STScI, MD, USA (online)	2021
JWST Pre-Launch Event, Space Foundation Discovery Center, CO, USA (online)	2021
JWST Pre-Launch Event, Newark Museum of Art, NJ, USA (online)	2021
Warren Astronomical Society, MI, USA (online)	2020
High Energy Physics and Astrophysics Club, Morocco (online)	2020
Kopernik Observatory, NY, USA	2020
Cambridge University Astronomical Society, UK	2019
Seething Observatory, Norwich, UK	2018
Physics and Astronomy Society, University of Aberystwyth, UK	2018
Long Eaton Astronomical Society, Derbyshire, UK	2017
Papworth Astronomy Club, Cambridgeshire, UK	2017
Institute of Astronomy Open Evenings, Cambridge, UK	2016–2018
Edinburgh International Science Festival, UK	2016
Pint of Science, Cambridge, UK	2016
Big Bang Fair East Midlands, Derby, UK	2015
Oxford University Space and Astronomy Society, UK	2015
Department of Physics, University Oxford, UK	2014