

Nicolas Cowan | Associate Professor | McGill University

Tier 2 Canada Research Chair in Planetary Climate

McGill Space Institute
3550 rue University
Montréal, QC H3A 2A7
Canada

514-398-1967 (office)
nicolasbcowan (Skype)
nicolas.cowan@mcgill.ca
msi.mcgill.ca/~cowan

Employment & Education

- **McGill University**, Montréal, QC
Associate Professor, Physics and Earth & Planetary Sciences (6/2019–)
Assistant Professor, Physics and Earth & Planetary Sciences (8/2015–5/2019)
- **Space Science Institute**, Boulder, CO
Senior Research Scientist (7/2015–12/2015)
- **Amherst College**, Amherst, MA
Assistant Professor, Physics & Astronomy (7/2014–6/2015)
- **Northwestern University**, Evanston, IL
CIERA Postdoctoral Fellow, Physics & Astronomy (9/2010–8/2014)
Research Assistant Professor, Earth & Planetary Sciences (12/2012–8/2014)
- **University of Washington**, Seattle, WA
Research Associate, Astronomy (9/2009–8/2010)
Ph.D. Astronomy, w/Certificate in Astrobiology 12/2009
- **McGill University**, Montréal, QC
B.Sc. Physics w/First Class Honours, 2/2004

Awards & Honours

- College of New Scholars, Royal Society of Canada (2022–2029)
- Tier 2 Canada Research Chair in Planetary Climate (2019–2024)
- Heising-Simons Scialog Fellow: Signatures of Life in the Universe (2021, 2022)
- Finaliste du Prix du Québec pour la Relève scientifique (2021)
- Canadian Astronomical Society's Harvey B. Richer Gold Medal (2019)
- Kavli Frontiers Fellow (2013, 2015)
- CIERA Postdoctoral Fellowship (2010–2014)
- NASA Group Achievement Award for EPOXI Mission (2010)
- NSERC Postgraduate Scholarship—Doctoral (2006–2009)
- FRQNT Master's Scholarship (2004–2006)

Instrument Planning & Leadership

- Ariel, ESA's approved and adopted M4 mission (700M €) scheduled to launch in 2029.
→ Canadian PI and Ariel Science Team Coordinator
- James Webb Space Telescope's Near Infrared Imager and Slitless Spectrograph (JWST/NIRISS)
→ Transiting Planet Working Group

- Near Infrared Planet Searcher (NIRPS) on 3.6 m telescope at La Silla, Chile (commissioning)
→ Member of Science Team
- SpectroPolarimètre Infra-Rouge (SPIRou) on Canada–France–Hawaii Telescope (2018–)
→ Member of Science Legacy Survey
- Extrasolar Planet Polarimetry Experiment (ÉPPÉ), CSA Microsat Concept
→ Science PI
- Large UV–Visible–Infrared telescope (LUVOIR), NASA flagship mission concept
→ Canadian Space Agency representative on Science and Technology Definition Team

Funding

- Heising-Simons Scialog (2022–2023): \$200,000 USD for 4 investigators
Volatile Reservoirs and the Habitability of M-Earths
- NSERC Discovery Grant (2021–2026): \$375,000 for 1 investigator
The Surfaces and Atmospheres of Exoplanets
- IAU Office of Astronomy for Development (2019–2020): €5000 for education and outreach
Astronomy in Indigenous Communities (AIC)
- Tier 2 Canada Research Chair (2019–2024): \$600,000 for 1 investigator
Planetary Climate
- FRQNT Équipe (2018–2021): \$212,000 for 4 investigators
Caractérisation d’atmosphères d’exoplanètes avec le télescope spatial James Webb
- FRQNT Regroupement Stratégique (2017–2023): \$2,598,000 for 25 investigators
Centre the Recherche en Astrophysique du Québec (CRAQ)
- NSERC Discovery Grant (2016–2021): \$135,000 for 1 investigator
Observing the Atmospheres and Surfaces of Earth Analogs
- NSERC CREATE (2016–2022): \$1,650,000 for 10 investigators
Technologies for Exo-Planetary Science (TEPS)
- McGill Start-Up Funds (2015–2020): \$150,000 for 1 investigator
McGill Exoplanet Characterization Alliance (MEChA)
- CSA Space Exploration Concept Study (2018–2019): \$175,000 for 6 investigators
Extrasolar Planet Polarimetry Explorer (ÉPPÉ)
- FRQNT Nouveau Chercheur (2017–2019): \$40,000 for 1 investigator
The Climate of Short-Period Planets: Clouds and Temperature Gradients

International & National Service

- Canadian Space Agency’s 2022–2023 Strategic Planning Exercise
→ Co-Investigator for Astrobiology Topical Team
→ Co-Investigator for Exoplanet Astronomy Topical Team
→ Co-Investigator for Planetary Atmospheres Topical Team (2022–)
- Member of NSERC Physics Evaluation Group (2021–)
- NSERC CREATE program *Technologies for Exo-Planetary Sciences*
→ Deputy Director (2018–)
→ Acting Director (2019)

- Institut de recherche sur les exoplanètes (iREx)
→ Conseil Scientifique (2018–)
- Association of Canadian Universities for Research in Astronomy (ACURA)
→ Vice Chair of Board (2021–2022)
→ Member of Board (2019–2022)
- Canadian Time Allocation Committee (CanTAC)
→ Chair of Galactic Panel (2020–2021)
→ Member of Galactic Panel (2018–2021)
- Membre du Comité d'évaluation interdisciplinaire du Fond de recherche du Québec (2018–2021)
- Hubble Space Telescope – Transiting Exoplanet Survey Satellite Advisory Committee (2019)
- Moderator of arXiv astro-ph Earth and Planetary category (2016–2018)
- Undergraduate Fellowships Committee, Institute for Research on Exoplanets (2017–2018)
- Seminar Coordinator for TEPS CREATE Program (2015–2018)
- ACURA-CASCA Thirty Meter Telescope Alternative Site Committee (2016)
- Consultant for Rio Tinto Alcan Planetarium Exo Show (2016)
- Canadian Space Agency's *Origins* and *Astrobiology* Topical Teams
- Hubble Exoplanet Advisory Committee (2015–2016)
- Executive Committee of the NASA Exoplanet Program Analysis Group (2013–2016)
→ Chair of ExoPAG SAG-X: *Exoplanet Atmospheres with JWST and Beyond* (2013–2015)
- Time Allocation Committees: Hubble Space Telescope, Spitzer Space Telescope, CanTAC (Gemini Telescopes and Canada-France-Hawaii Telescope)
- Reviewer: Austrian Science Fund, Cottrell Scholar Award, CRC Press, European Research Council, FWO Pegasus, NASA ROSES/PATM, NASA Exoplanet Research Program, NSERC Discovery Grant (Geosciences and Physics), NSERC Steacie Fellowship, STFC Astronomy Grants Panel, National Research Council of Canada
- Referee: Astronomy & Astrophysics (A&A), A&A Letters, Astrophysical Journal (ApJ), ApJ Letters, Astrobiology, Experimental Astronomy, Icarus, IEEE Spectrum, Journal of Geophysical Research, Monthly Notices of the Royal Astronomical Society (MNRAS), MNRAS Letters, Nature, Nature Astronomy, Publications of the Astronomical Society of the Pacific, Space Science Series

Conference Organizing

- *ExoClimes* Steering Committee (2015–2022)
- SOC for *Extreme Solar Systems IV* (Reykjavik, Iceland)
- SOC for *ExoClimes 2019* (Oxford, UK)
- Co-Chair, *Canadian Astronomical Society Meeting 2019* (Montréal, QC)
- Co-Organizer, *Multi-dimensional characterization of distant worlds 2018* (Ann Arbor, MI)
- SOC for CRAQ 2017 Summer School: *Exoplanet Atmospheres* (Montréal, QC)
- Chair of *ExoClimes 2016* (Squamish, BC)
- Co-Convener, “Mapping Other Worlds” at *Pathways to Habitable Planets II* (Bern, CH)
- SOC of *ExoClimes 2014* (Davos, CH)

Table 1. McGill Teaching and Student Evaluations

Course Number	Title	Semester	Enrollment	Excellent Course	Excellent Teacher
EPSC/ANAT-182	Astrobiology	W2016	136	3.9(1.1) /4.0(0.1)	4.1(1.2) /4.3(0.3)
PHYS-641	Obs. Astrophysics	F2016	10	4.2(0.8) /4.0(0.5)	4.4(0.9) /4.2(0.5)
EPSC/PHYS-186	Astrobiology	W2017	67	4.3(1.0) /4.1(0.4)	4.6(0.6) /4.3(0.5)
ATOC/PHYS-404	Climate Physics	F2017	7	4.7(0.6) /4.1(0.5)	4.7(0.6) /4.3(0.5)
EPSC/PHYS-186	Astrobiology	W2018	44	4.4(0.5) /4.1(0.5)	4.5(0.6) /4.3(0.5)
PHYS-642	Radiative Processes	W2018	9	4.5(0.5) /4.0(0.8)	5.0(0.0) /4.1(0.8)
PHYS-214	Intro. Astrophysics	F2018	29	4.4(0.9) /4.0(0.8)	4.5(1.0) /4.1(0.8)
EPSC/PHYS-186	Astrobiology	W2019	78	4.1(1.3) /4.1(0.5)	4.4(1.2) /4.3(0.5)
ATOC/PHYS-404	Climate Physics	F2019	14	5.0(0.0) /4.1(0.5)	5.0(0.0) /4.3(0.5)
EPSC-645	Planets	*W2020	[†] 21	4.0(1.7) /4.1(0.9)	4.3(1.2) /4.2(0.6)
EPSC/PHYS-186	Astrobiology	*W2020	90	3.7(1.5) /4.1	4.2(1.0) /4.4
ATOC/PHYS-404	Climate Physics	*F2020	16	4.9(0.4) /4.1(0.5)	4.8(0.4) /4.1(0.5)
EPSC/PHYS-186	Astrobiology	*W2021	89	4.7(0.6) /3.8	4.7(0.6) /4.0
ATOC/PHYS-404	Climate Physics	F2021	30	4.5(0.5) /4.1	4.5(0.5) /4.1
EPSC-645	Planets	*W2022	[†] 18	[‡] N/A	[‡] N/A
EPSC/PHYS-186	Astrobiology	*W2022	108	4.3(0.8) /3.7	4.8(0.5) /3.9

Note. — The boldfaced numbers are my scores and standard deviation, while the numbers after the slash are the departmental averages. *W2020 was disrupted by the COVID-19 pandemic, and F2020 and W2021 were taught remotely and W2022 was hybrid. [†]EPSC-645 Planets was co-taught with Prof. John Moores and was offered at both McGill and York and also attracted students from UdeM and Bishop’s—I report the total enrollment. [‡]If too few students complete evaluations, then the results are not released for fear of violating their anonymity.

- Chair of *ExoClimes 2012* (Aspen, CO)
- Co-Convener, “The Geoscience of Exoplanets” at *AGU 2011* (San Francisco, CA)
- SOC for *Future of Astronomy Conference 2011* (Evanston, IL)
- LOC for *Astrobiology Graduate Student Conference 2009* (Seattle, WA)

McGill Teaching

Table 1 summarizes all of my teaching at McGill to date.

Other Teaching

- *Atmospheres 101*, at CRAQ Exoplanet Atmospheres Summer School (2017)
- ASTR 112 *Alien Worlds*, Amherst College (Spring 2015)
- EARTH/ASTR 450/441 *Exoplanets as Planets*, Northwestern University (Winter 2013)
- ASTR 192 *Pre-Major in Astronomy Program*, University of Washington (Autumn 2007)

Service: Physics

- Chief Undergraduate Advisor (2017–2022)
- Undergraduate Curriculum Committee (2017–2021)
- Committee on Equity, Diversity and Inclusion (2020–2021)
- Hiring Committee for Undergraduate Coordinator (2020)

- Convocation Committee (2020)
- Work Disruption Committee (2020)
- Contingency Committee (2020)
- Preliminary Exam Review Committee (2019)
- Hiring Committee for Undergraduate Coordinator (2018)
- Exoplanet Search Committee (2017–2018)
- Exoplanet Search Committee (2016–2017)
- U1 Advisor (2016–2017)
- U0 Advisor (2015–2016)

Service: Earth & Planetary Sciences

- Departmental Tenure Committee (2020–2022)
- Committee on Equity, Diversity and Inclusion (2019–2022)
- Colloquium Committee (2018–2022)
- Graduate Admissions Committee (2017–2018)
- Graduate Student Awards Committee (2017)

Service: McGill Space Institute

- Moderator for *Climate & Habitability of Terrestrial Planets* Panel Discussion (Oct 2020)
- Co-Organizer for *Climate Through Deep Space and Time* Symposia (2020–)
- Planet Lunch organizer (2016–)
- Seminar Committee (2018–2019)

Thesis Committees

- *PhD Defense Internal Member* for Caitlin Beland (EPSC 2021)
- *PhD Defense External Member* for Jing Feng (ATOC 2021)
- *Membre du jury d'examen de maîtrise* pour Raphaël Hardy (UdeM/Physique, 2020)
- *PhD Committee Member* for Elizabeth McBride (PHYS 2020–)
- *PhD Committee Member* for Emilie Parent (PHYS, 2017–)
- *PhD Committee Member* for Rafael Fuentes (PHYS, 2018–)
- *PhD Defense External Member* Matthew Henry (ATOC 2019)
- *PhD Committee Member* for Paul Charlton (PHYS, 2017–2019)
- *Pro-Dean* for Bruno Marot (URBP, 2018)
- *Pro-Dean* for Karine Choquet (HGEN, 2018)
- *MSc External Reviewer* for David Berardo (PHYS, 2017)
- *MSc External Reviewer* for Ying Ran Lin (EPSC, 2017)
- *PhD Internal Examiner* for Anna Delahaye (PHYS, 2017)
- *PhD Defense External Member* for Walaa Al Tamini (PHYS, 2016)
- *PhD Defense External Member* Maziar Bani Shahabadi (ATOC, 2016)
- *PhD Defense External Member* Nina Bonaventura (PHYS, 2016)

Postdoctoral Advising

- Vigneshwaran Krishnamurthy, Postdoctoral Researcher at McGill University (Nov 2022–)
- Giang Nguyen, Postdoctoral Researcher at McGill University (Oct 2022–)
- Anne Boucher, Postdoctoral Researcher at McGill University (Sep 2022–)
- Amy Steele* w/Lee, MSI Postdoctoral Fellow at McGill University (2021–)
- Thomas Navarro* w/Gomez & Merlis, MSI Fellow at McGill University (2019–2022)
→ Research scientist at Space Science Institute
- Holly Sheets, iREx/Astro Postdoctoral Fellow at McGill University (2016–2018)
→ Lecturer in Physics and Astronomy at Sam Houston State University
- Joel Schwartz, Postdoctoral Researcher at McGill University (2016–2017)
→ Teaches high school science in Chicagoland

Graduate Advising

- Mahesh Herath, PhD EPS (F2021–).
- Jared Splinter* w/Lafrenière, MSc EPS (F2021–).
- Margaret Bruna, MSc Physics (W2021–). *TEPS Fellow*
- Keavin Moore, PhD EPS (F2018–). *Tomlinson & NSERC Fellow*
- Lisa Dang, MSc→PhD Physics (F2016–S2022). *NSERC, IPAC & TEPS Fellow*
Characterizing the Climate of Distant Worlds [...] with the Spitzer Space Telescope
→ Banting Postdoctoral Fellow at l'Université de Montréal
- Taylor Bell* w/Bastien, MSc→PhD Physics (F2016–S2021). *NSERC & TEPS Fellow*
Characterizing ultra-hot Jupiters through theoretical modelling and precise observations
→ Postdoctoral researcher at NASA Ames
- Claire Guimond, MSc EPS (2016–2018). *TEPS Fellow*
Determining the orbit of directly-imaged exoplanets
→ PhD student at the University of Cambridge
- Dylan Keating, MSc→PhD Physics (F2016–S2021). *TEPS Fellow*
Comparative exoplanetology using thermal phase curves and Bayesian hierarchical modelling
→ Computer vision scientist at Vyoo
- Melissa Marquette* w/Doyon, MSc EPS (F2018–S2021). *TEPS Fellow*
Laying the foundation for high resolution eclipse mapping of hot Jupiters
→ PhD student at the University of Colorado
- Joel Schwartz, PhD Physics Northwestern (2013–2016). *GK-12 Fellow*
I Think I See the Light Curve: The Good (and Bad) of Exoplanetary Inverse Problems
→ Postdoctoral researcher at McGill University
- Sara Rastegar, MSc Physics Northwestern (2012–2014)
Seasonal variations of eccentric exoplanets
→ Adjunct Faculty, Harold Washington College

Visiting Graduate Students & Secondary Advising

- Huiyi (Cheryl) Wang* w/E. Lee (MSc Physics 2021–)

- T. Giang Nguyen* w/J. Moores (PhD ESSE, York University, 2019–2021)
Atmospheres and Oceans of Lava Worlds
- Lucas Teinturier, École Centrale de Lyon (MEng Intern, Winter–Summer 2020)
Removing Clouds from Disk-Integrated Images of Exoplanets
→ PhD student at Observatoire de Paris
- Mathilde Mâlin, Université Paris-Sud (MSc Intern, Summer 2019)
Analytic Orbit Retrieval of Directly-Imaged Exoplanets
→ PhD student in Astronomy & Astrophysics at Observatoire de Paris
- Élie Bouffard* w/D. Haggard, MSc Physics (2017–2019). *NSERC Fellow*
(I contributed knowledge of statistics for time-resolved photometry)
→ Data scientist at Giro

Undergraduate Researchers (*coadvised)

57. Benjamin David* w/Moore, McGill Physics (PHYS 459, 2022–2023)
Water Cycling and Loss on Super-Earths
56. Albert Zhang* w/Moore, McGill Physics (PHYS 459, 2022–2023)
Water Cycling and Loss on Super-Earths
55. Tarik Bouchoutrouch-Ku* w/Dang, McGill Phys & CS (PHYS 489, Winter 2022)
Exoplanet microlensing with Spitzer
54. Calvin Coulbury, McGill Phys & AOS (PHYS 459, 2021–2022)
Analytic radiative-convective models
→ MSc student in Atmospheric & Oceanic Sciences at McGill University
53. Isabelle Sangha, McGill AOS (ATOC 480 & PHYS 396, 2021–2022)
Molecular spectroscopy and the greenhouse effect
52. Dhvani Doshi, Waterloo Physics & Astronomy (iREx and TEPS S2021)
Transit Spectroscopy of Cloudy Earth
51. Lan Xi Zhu, McGill Physics & CS (PHYS-396 W2019, paid S2019 and TEPS S2021)
Climate App 3.0
→ MSc student in Earth & Planetary Sciences at McGill University
50. Xueying Li* w/Bell, McGill Honours Math & Physics (PHYS-479 W2021 and SURA S2021)
Slepian Functions in Exoplanet Mapping
49. Thomas Villeneuve* w/Bell, McGill Honours Math & Physics (PHYS-479, Winter 2021)
Slepian Functions in Exoplanet Mapping
48. Saida Jaime Elizondo* w/Dang, McGill Physics & CS (PHYS-489, Winter 2021)
Lava Planet Phase Curves
→ ACE Consultant, Dynatrace
47. Samson Mercier* w/Dang, McGill Physics & CS (PHYS 489 W2021 and SURA S2021)
55 Cancri e, revisited
→ MSc student at the University of Geneva
46. Alexander Gass* w/Dang, McGill Physics & CS (PHYS 489, W2021 and TEPS S2021)
55 Cancri e, revisited
→ Software Developer, Morgan Stanley

45. Felix Thiel, McGill Physics & CS (PHYS-478, Fall 2020)
The Anti-Greenhouse on Titan
→ MSc student at Queen's University
44. Audrey Bourdon, McGill Physics (Honours Thesis 2019–2020, paid S2020)
Analytic orbit estimation
43. Margaret Bruna, McGill Physics (Honours Thesis 2019–2020, paid S2020–F2020)
Numerical orbit estimation
→ MSc student at McGill University
42. Numa Karolinski, McGill Physics & CS (Honours Thesis 2019–2020 and SURA 2020)
Analytic harmonic lightcurves
41. Lauryn Talbot, McGill Atmospheric Sciences & Physics (Fall 2019)
Developing Climate App modules
40. Youssef Bestavros, McGill Physics (SURA & TEPS intern and 396, Summer–Fall 2019)
Cloud Killer 2.0
→ Analyst at Héma-Québec
39. Agnibha Banerjee, IISER Kolkata Physics (MITACS Globalink Intern, Summer 2019)
Illumination of ultra-short period planets
→ PhD student at the Open University
38. Émilie Laffèche, McGill Planetary Sciences (iREx & USRA intern, Summer 2019)
Retrievals of planetary rotation
→ PhD student at Purdue University
37. Zachary Yetman* w/Bell, John Abbot College Pure & Applied Sciences (Winter 2019)
Accelerating energy balance models
→ BEng student in Aerospace Engineering at Concordia University
36. Nicholas Vieira, McGill Physics (Winter 2019)
Cloud Killer
→ MSc student at McGill University
35. Claude Cournoyer-Cloutier, McGill Physics (Honours Research 2018–2019)
Determining the rotation rate of directly-imaged planets
→ MSc student at McMaster University
34. Jérémie Gagnon, McGill Physics (Honours Research 2018–2019)
Analytic lightcurves of exoplanets
33. Elisa Jacquet, McGill Physics (Fall 2018)
Removing clouds from maps of Earth
→ MSc student at Imperial College London
32. Anthony Courchesne, McGill Computer Science (Fall 2018)
Climate App 2.0
→ MEng student in Robotics and Embodied AI Lab, Université de Montréal
31. Emily Pass, University of Waterloo Physics & Astronomy (iREx & USRA intern 2018)
Estimating dayside temperatures of exoplanets
→ PhD student in Astronomy at Harvard University
30. Juliette Geoffrion, McGill Physics (Summer 2018)
Removing clouds from EPIC maps of Earth
→ MSc student in Physics at Université de Montréal

29. Claudia Bielecki, McGill Physics (Summer 2018)
Eccentricity is Not Responsible for Odd Harmonics
→ MSc in Physics at Université de Montréal
28. Shereen Elaidi, McGill Honours Math & CS (Summer Intern 2018)
Analytic lightcurves of exoplanets
→ MSc in Mathematical Physics at McGill University
27. Evelyn Macdonald, McGill Physics (Honours Research 2017–2018 & SURA intern 2018)
Empirical infrared transit spectrum of Earth
→ PhD student in Physics at University of Toronto
26. Jack Sklar, McGill Physics & CS (Winter 2018)
Gaussian Processes to estimate exoplanet spectra
→ Research Fellow at NIAID → Data Scientist at NIST
25. Laurent Jacob* w/Sheets, Université de Montréal Physics (iREx Fellow 2017)
Searching for refraction in transit lightcurves
→ Data Scientist in Montréal
24. Veenu Suri* w/Rauscher, University of Michigan Astronomy & CS (2015–2017)
Eclipse mapping of exoplanets
→ High School teacher in Illinois → Physics teacher at Bronx Prep High
23. Jackson Hoffart* w/Schwartz, McGill Physics (Honours Research 2016–2017)
Gaussian Process model of Spitzer detector
→ Machine Learning Engineer in Toronto → Analyst at 2° Investing Initiative
22. Maximilien Lamberti* w/Schwartz, McGill Physics (Honours Research 2016–2017)
Gaussian Process model of Spitzer detector
→ Data Scientist in Berlin → MEng at UC Berkeley
21. Holly Marginson, McGill Earth & Planetary Sciences (Honours Research 2016–2017)
Exoplanet lightcurve analysis
→ Tutor at Progressive Learning Academy
20. Louis Richez, McGill Physics (Independent Research 2016)
Mapping Earth with EPIC data
→ Medical Physics at McGill University
19. Élie Bouffard, Université de Sherbrooke Physics (iREx Fellow 2016)
Periodograms of Kepler hot Jupiters
→ MSc student at McGill University → Analyst-Programmer at Giro Inc.
18. Sudarsan Sundarajan* w/Dang (Google Summer of Code 2016)
Spitzer data reduction pipeline
→ Associate Software Engineer at NortonLifeLock Inc.
17. Diana Jovmir, McGill Mathematics & Physics (Summer intern 2016)
Out-of-transit baseline for parameter estimation
→ MSc at University of Montréal → Analyst at Statistics Canada
16. Victoria Chayes* w/Haggard, Bard College Math & Physics (2015–2016)
Inclination-dependence of exoplanet lightcurves
→ PhD student at Rutgers University
15. Dhruv Bisaria, McGill Physics (2016)
Marginalizing over limb-darkening for transit fits
→ PhD student in Astronomy at Queen's University

14. Brendan Gordon, McGill Computer Science (2016)
Using Compute Canada for MCMC error analysis
→ MD student at the University of Manitoba
13. Lisa Dang, McGill Physics (2015)
Cross-validation for error estimation
→ PhD student at McGill University
12. Jyotsana Singh, McGill Earth & Planetary Sciences (2015)
Eclipse uncertainties
→ making music in Montréal
11. Daniel Law, Amherst College Math & Computer Science (2015)
Photometry of exoplanets
→ Data Scientist at Facebook
10. Mashiyat Zaman, Amherst College Astronomy (2015)
Evaluating Uncertainty Estimators of Occultation Models
→ Data Engineer at RCO
9. Ned Kleiner, Amherst College Physics (2015)
Mapping exoplanets
→ PhD student in Earth & Planetary Sciences at Harvard University
8. Wanda Feng, Smith College Astronomy (2014–2015)
Energy balance models of eccentric planets
→ PhD student at Arizona State University
7. Christopher Hansen, Northwestern Physics & Astronomy (2013–2014)
Atmospheric retrieval in the face of systematic errors
→ Product Specialist at Qualtrics
6. Pablo Fuentes, University of Chile Astronomy (2011–2013)
Harmonic Reflected and Thermal Lightcurves
→ Monitor at Observatorio Astronomico Andino
5. Talia Strait, Northwestern Physics & Astronomy (2011–2013)
The effects of clouds on rotational unmixing
→ Director, Digital Analytics at Catalina USA
4. Louis Shekhtman, Northwestern Physics & Astronomy (2011)
Ellipsoidal variations in short-period planets
→ PhD student at Bar-Ilan University → Postdoc at Northeastern University
3. Carl Majeau* w/Agol, Columbia University Computer Science (2010)
Two-dimensional Infrared Map of an Extrasolar Planet
→ Computer programmer in New York City
2. James Bushong* w/Agol, University of Washington Astronomy (2008)
Transits and secondary eclipses of HD 189733 with Spitzer
→ Quality Assurance Engineer at Amazon
1. Virginia Klemm* w/Agol, Astronomy at University of Washington (2006)
Photometry with Spitzer
→ National Weather Service Meteorologist

Public Lectures

29. Montreal Field Naturalists Club (online, Feb 16, 2022)

28. Marianopolis Physics Society (Oct 26, 2021)
27. Club d'astronomie Mont-Tremblant (online, 1 juin 2021)
26. Royal Astronomical Society of Canada (online, Jan 2021)
25. Sun & Science (online, July 2020)
24. Astronomie en fût, Sans Taverne, Montréal, QC (Nov 2019)
23. Pint of Science, Montréal, QC (May 2019)
22. Soup & Science, Montréal, QC (Jan 2019)
21. Homer's Physics, Montréal, QC (Sep 2018)
20. Resident Astronomer, Camp Nominique (Aug 2018)
19. Astronomie en fût, L'île Noire, Montréal, QC (Apr 2018)
18. Solar Eclipse Fireside Chat, Sun Valley ID (Aug 2017)
17. Lunch Talk, Santa Fe Institute, NM (Jul 2017)
16. Pint of Science, Montréal, QC (May 2017)
15. Astronomie en fut, Montréal, QC (Apr 2017)
14. Royal Montreal Curling Club, Montréal, QC (Apr 2017)
13. Physics Matters, Montréal, QC (Apr 2017)
12. Royal Astronomical Society of Canada, Ottawa, ON (Feb 2017)
11. Soup & Science, Montréal, QC (Jan 2017)
10. Homer's Physics, Montréal, QC (Nov 2016)
9. Astro Night, Montréal, QC (Jul 2016)
8. Astro Talk, Montréal, QC (Nov 2015)
7. Benjamin Dean Astronomy Lecture, San Francisco, CA (Dec 2014)
6. *SciTech Cafe*, Amherst, MA (Sep 2014)
5. Lake County Astronomical Society, Fox Lake, IL (Oct 2013)
4. *Chicago Ideas Week*, Chicago, IL (Oct 2013)
3. *From Our Own Backyard to the World*, Evanston, IL (Sep 2013)
2. Tacoma Astronomical Society, Tahoma, WA (Sep 2007)
1. Boeing Employees' Astronomical Society, Seattle, WA (Apr 2007)

Selected Media

- *The James Webb telescope spotted CO₂ in an exoplanet's atmosphere* Science News (Aug 26, 2022)
- *Astronomers estimate 29 potentially habitable exoplanets may have received signals from Earth* CBC (June 25, 2021)
- *This lava planet has 'rocky' weather and winds many times the speed of sound* CNN (Nov 6, 2020)
- *Scientists discover bizarre hell planet where it rains rocks and oceans are made of lava* CBS News (Nov 5, 2020)
- *Astronomers discover extreme planet which rains rocks, has lava seas and 3,000 mph winds* The Telegraph (Nov 3, 2020)

- *Astronomers discovered the most inhospitable planet ever* Daily Mail (Nov 3, 2020)
- *New study details atmosphere on 'hot Neptune' 260 light years away that 'shouldn't exist'*, Phys.org (Oct 23, 2020)
- *À la recherche d'une Terre 2.0*, ExoBouchées (tournage en octobre 2020)
- *Un biomarqueur découvert dans l'atmosphère de Vénus: un signe de vie?*, Québec Science (14 sept, 2020)
- *Astronomers find signs of life on Venus*, CBC The National (Sep 14, 2020)
- *Astronomers may have found hints of life in clouds of Venus*, CBC News (Sep 14, 2020)
- *Finding Earth-Like Planets*, Weekly Space Hangout (Oct 30, 2019)
- *An infrared selfie*, Nature Astronomy (Sept 2019)
- *Habitable zones on a tidally locked planet?*, Universe Today (Sept 26, 2019)
- *La face obscure de certaines exoplanètes se révèle*, Radio Canada (28 août 2019)
- *Astronomers Find Water on an Exoplanet Twice the Size of Earth*, Scientific American (Sep 11, 2019)
- *Hawaï: quand un projet astronomique et une contestation autochtone se télescopent*, Le Devoir (août 2019)
- *Emerging Fields in Astrophysics* Global News (June 2019)
- *En route vers l'infini et encore plus loin encore* Le Devoir (juin 2019)
- *For every exoplanet we see transiting a star, how many go unseen?* Quirks & Quarks, CBC Radio (Jan 12, 2019)
- *Hints of Oort clouds around other stars may lurk in the universe's first light*, Science News (Nov 2018)
- *La neuvième planète existe-t-elle?*, Québec Science (juillet 2018)
- *Natasha Hall Show*, CJAD 800 AM (Jun 2017, Apr 2018)
- *Exoplanet Everests May Be Detectable When Giant Telescopes Come Online*, Scientific American (March 2018)
- *Des vents défient nos théories sur l'exoplanète CoRoT-2b*, Radio Canada (23 jan 2018)
- *Signes de vie: comment scruter les exoplanètes à la recherche de vie extraterrestre*, (avr 2017)
- *What Newly Discovered Planets Can Tell Us*, CTV News (Feb 2017)
- *Découverte de 3 planètes potentiellement habitables*, Québec Science (fev 2017)
- *Planet Nine*, Cosmic Front Next, Japan Broadcasting Corporation (Aug 2016)
- *Des nouvelles de Jupiter*, La Presse (26 juin 2016)
- *Sommes nous seuls dans le cosmos?* Québec Science (juillet 2016)
- *Planet Nine Hunters Enlist Big Bang Telescopes*, New Scientist (Feb 24, 2016)
- *The light of other worlds*, Nature (Feb 18, 2016)
- *NASA's Next Space Telescope Promises the Stars—and Planets, Too*, Scientific American (Feb 9, 2015)
- *Nick Cowan on Exoplanets*, California Academy of Sciences (Dec 8, 2014)
- *Walking on Water*, Uptown Radio 1 (March 28, 2014)
- *Maata näkyvissä supermaapalloilla*, Tähdet ja Avaruus (March 2014)
- *Balvaniranje na prelazu neodvisnosti*, Beta Magazine (Aug 2012)

- *Planetology comes of age*, The Economist (Jan 11, 2014)
- *Heat and Tidally-Locked Planets*, Academic Minute (Sept 2013)
- *60 Billion Earth-like Planets Could Exist in Milky Way*, Voice of America (June 2013)
- *Mapping Distant Planet Surfaces Possible*, Inside Science (Jan 2013)
- *Can Astronomers Detect Exoplanet Oceans?* Astrobiology Magazine (Jul 2012)
- *Earth from an exoplanetary perspective*, Sky at Night (May 2011)
- *Mapping New Worlds*, Astronomy Now (Sep 2010)
- *Earth Through Time*, Sky & Telescope (Aug 2010)
- *5 Questions*, Discover Magazine (Oct 2009)
- *Out There: Water, Water Everywhere*, Space.com (Oct 2009)
- *Scientist Like Me: Faces of Discovery*, Pacific Science Center (Autumn 2009)
- *Un camaïeu de bleus*, Ciel & Espace (juillet 2009)
- *The New Exoplanetology*, Wired (May 29, 2009)
- *How to spot oceans on alien worlds*, Scientific American (May 28, 2009)
- *Exoplanet Mapping Tested on Earth*, Sky & Telescope (May 28, 2009)
- *Boffins develop interstellar alien ocean-spotting tool*, The Register (May 27, 2009)
- *How to Map an Exoplanet's Oceans*, New Scientist (May 16, 2009)
- *UW-led team's work means we may be able to find oceans[...]*, Seattle PI (June 9, 2009)
- *Mapping Uncharted Territories*, SEED Magazine (December 2008)
- *Gassy Windbags*, Quirks & Quarks, CBC Radio (Jan 13, 2007)

Invited Talks & Reviews

17. *Habitable Exoplanets, What is Our Future in Space?*, Montréal (May 4, 2022)
16. *Global Energy Budgets with TESS+ARIEL Phases, ARIEL Meeting* (Oct 2020, online)
15. *Small-Satellite Astronomy, Long Range Planning Town Hall at CSA*, QC (Oct 2019)
14. *McGill Exoplanet Characterization, AGU-AAS Kavli Exoplanets*, IS (Aug 2019)
13. *Richer Prize Talk: McGill Exoplanet Characterization, CASCA Meeting*, QC (June 2019)
12. *Char. Terrestrial Exoplanets, Compar. Climate of Terr. Planets 3*, TX (Aug 2018)
11. *The Future of Direct Imaging from Space, Exoclipse*, ID (Aug 2017)
10. *Energy Budgets of Short Period Planets, CASCA Meeting*, AB (May 2017)
9. *Energy Budgets of Short Period Planets, Exoplanets I*, CH (Jul 2016)
8. *Short Period Planets, Kavli Frontiers of Science*, CA (Nov 2015)
7. *Transiting Temperate Terrestrials, Expl. the Uni. with JWST*, ND (Oct 2015)
6. *Water On and In Rocky Worlds, Comp. Clim. of Terr. Planets 2*, CA (Sep 2015)
5. *Hot Jupiters, Stochastic Flows and Climate Modeling*, CO (Jun 2012)
4. *Phase Variations of WASP-12b, Future of Astronomy*, IL (Sept 1, 2011)
3. *EPOXI Observations of Earth, Exoplanet Sci. from SS Probes*, CA (May 2010)
2. *Obs. in the Cruise Phase of a Mission, The View from 5 AU*, CA (March 2010)
1. *Thermal Phase Variations of Planets, Exoplanets for Planet. Sci.*, FL (2010)

Colloquia & Seminars

54. Astrophysics Seminar, **University of Waterloo** (March 9, 2022, online)
53. Astronomy Colloquium, **Northern Arizona University** (Mar 8, 2021, online)
52. Redpath Museum Seminar, **McGill University** (Jan 29, 2021, online)
51. Earth & Planetary Sciences Symposium, **Harvard University** (Nov 2, 2020, online)
50. Origins Seminar, **University of Arizona** (Mar 2020, online)
49. Physics Colloquium, **Carleton University** (Feb 2020)
48. Physics & Astronomy Colloquium, **McMaster University** (Nov 2019)
47. Atmospheres, Oceans & Climate Colloquium, **MIT** (Apr 2019)
46. Atmospheric & Oceanic Sciences Seminar, **McGill University** (Feb 2019)
45. Astrophysics Colloquium, **Jet Propulsion Laboratory** (May 2018)
44. Geology Colloquium, **University of Colorado** (Apr 2018)
43. Physics Colloquium, **Royal Military College of Canada** (Feb 2018)
42. Physics Colloquium, **Université de Montréal** (Dec 2017)
41. Physics Colloquium, **University of Oregon** (Oct 2017)
40. Astrophysics Seminar, **Los Alamos National Laboratory** (Jul 2017)
39. TEPS Seminar, **York University** (May 2017, online)
38. Astronomy Seminar, **University of Michigan** (Mar 2017)
37. Geology Colloquium, **St. Lawrence University** (Oct 2016)
36. Astronomy Seminar, **Université de Montréal** (Apr 2016)
35. Astrophysics Colloquium, **NASA Goddard** (Mar 2016)
34. Astronomy Colloquium, **MIT** (Sep 2015)
33. Geoscience Seminar, **ETH** (Jul 2015)
32. Astronomy Seminar, **Université de Genève** (Jul 2015)
31. Physics Colloquium, **NYU Abu Dhabi** (May 2015)
30. Physics Seminar **McGill University** (Feb 2015)
29. Astronomy Colloquium, **University of Massachusetts** (Nov 2014)
28. Theoretical Astrophysics Colloquium, **University of Arizona** (Oct 2014)
27. Physics Seminar, **Trinity College** (Sep 2014)
26. Physics Seminar, **Bard College** (Sep 2014)
25. Joint Astronomy Colloquium, **Max Planck Institute for Astronomy** (Jul 2014)
24. Seminar, **Institut de Planétologie et d'Astrophysique de Grenoble** (Jul 2014)
23. Astronomy Seminar, **Adler Planetarium** (May 2014)
22. Astrophysics Seminar, **Jet Propulsion Laboratory** (May 2014)
21. Astronomy Colloquium, **Space Telescope Science Institute** (Apr 2014)
20. Geosciences Colloquium, **Texas Tech University** (Mar 2014)
19. Physics & Astronomy Colloquium, **Amherst College** (Mar 2014)
18. ITC Seminar, **Harvard-Smithsonian CfA** (Dec 2013)
17. Astronomy Colloquium, **Ohio State University** (Aug 2013)

16. Institute of Astronomy, **University of Cambridge** (Apr 2013)
15. Astronomy Colloquium, **University of Florida** (Apr 2013)
14. Earth, Atmospheric & Planetary Sciences Colloquium, **Purdue University** (Apr 2013)
13. Physics Seminar, **San Francisco State University** (Feb 2013)
12. Earth and Planetary Sciences Colloquium, **Northwestern University** (Nov 2012)
11. Astronomy Colloquium, **California Institute of Technology** (Nov 2012)
10. Center for Space and Habitability Colloquium, **University of Bern** (Apr 2012)
9. Physics and Astronomy Colloquium, **University of Western Ontario** (Apr 2012)
8. Astrophysics Colloquium, **University of Illinois**, (Nov 2011)
7. Astronomy Colloquium, **University of Michigan** (Feb 2011)
6. Astronomy & Astrophysics, **Michigan State University** (Feb 2011)
5. Cosmology Seminar, **UC Davis** (Mar 2010)
4. Natural Science Colloquium, **Seattle University** (Feb 2010)
3. Astrophysics Seminar, **Institute for Advanced Study** (Jan 2010)
2. Astronomy Seminar, **Hertzberg Institute of Astrophysics** (Oct 2009)
1. Planetary Science Seminar, **NASA Goddard Space Flight Center** (Sep 2009)

Refereed Publications

116 publications (47 led by group members)

Google Scholar: \gtrsim 8700 citations, $h=50$, $i10=90$

NASA Astrophysics Data System: \gtrsim 6500 citations, $h=45$, $i10=84$

Group members bolded: **undergrads**, **grads**, **postdocs**.

116. [Combining Photometry and Astrometry to Improve Orbit Retrieval of Directly Imaged Exoplanets](#)
Margaret Bruna, **Nicolas B. Cowan**, Julia Sheffler, Hal M. Haggard, **Audrey Bourdon**, **Mathilde Mâlin**
Monthly Notices of the Royal Astronomical Society, submitted, 2022
115. A Mass-Metallicity Trend from a Uniform Analysis of 62 Transiting Exoplanets
 Mark Swain, **Jared Splinter**, Raissa Estrela, Jonathan Fortney, Gael Roudier, **Nicolas Cowan**, Robert Zellem, Geoffrey Bryden, David Ciardi, David Latham, Robert Green, Gautam Vasisht, Edward Wright, and Yuk L. Yung
AAS Journals, submitted, 2022
114. CO or no CO? Narrowing the CO abundance constraint and recovering the H₂O detection in the atmosphere of WASP-127b using SPIRou
 Anne Boucher, David Lafrenière, Stefan Pelletier, Antoine Darveau-Bernier, Michael Radica, Romain Allart, Étienne Artigau, Neil J. Cook, Florian Debras, René Doyon, Charles Cadieux, Ryan Cloutier, Pía Cortés-Zuleta, **Nicolas B. Cowan**, Xavier Delfosse, Jean-François Donati, Thierry Forveille, Eric Gaidos, Konstantin Grankin, Guillaume Hébrard, Jorge H. C. Martins, Eder Martioli, Adrien Masson, and Sandrine Vinatier
AAS Journals, submitted, 2022

113. [APLeSOSS: A Producer of Profiles for SOSS. Application to the NIRISS SOSS Mode](#)
Radica, Michael; Albert, Loïc; Taylor, Jake; Lafrenière, David; Coulombe, Louis-Philippe; Darveau-Bernier, Antoine; Doyon, René; Cook, Neil; **Cowan, Nicolas**; Espinoza, Néstor; Johnstone, Doug; Kaltenecker, Lisa; Piaulet, Caroline; Roy, Arpita; Talens, Geert Jan
Publications of the Astronomical Society of the Pacific, in press, 2022
112. [Revisiting the Iconic Spitzer Phase Curve of 55 Cancri e: Hotter Dayside, Cooler Nightside and Smaller Phase Offset](#)
Samson Mercier, **Alexander Gass**, **Lisa Dang**, **Nicolas B. Cowan**, Taylor J. Bell
Astronomical Journal, in press, 2022
111. [GJ 1252b: A Hot Terrestrial Super-Earth With No Atmosphere](#)
Ian J.M. Crossfield, Matej Malik, Michelle L. Hill, Stephen R. Kane, Bradford Foley, Alex S. Polanski, David Coria, Jonathan Brande, Yanzhe Zhang, Katherine Wienke, Laura Kreidberg, **Nicolas B. Cowan**, Diana Dragomir, Varoujan Gorjian, Thomas Mikal-Evans, Björn Benneke, Jessie L. Christiansen, and Drake Deming
Astrophysical Journal Letters, in press, 2022
110. [ATOCA: an algorithm to treat order contamination. Application to the NIRISS SOSS mode](#)
Darveau-Bernier, Antoine; Albert, Loïc; Talens, Geert Jan; Lafrenière, David; Radica, Michael; Doyon, René; Cook, Neil J.; Rowe, Jason F.; Artigau, Étienne; Benneke, Björn; **Cowan, Nicolas**; **Dang, Lisa**; Espinoza, Néstor; Johnstone, Doug; Kaltenecker, Lisa; Lim, Olivia; Pelletier, Stefan; Piaulet, Caroline; Roy, Arpita; Roy, Pierre-Alexis; Splinter, Jared; Taylor, Jake; Turner, Jake D.
Publications of the Astronomical Society of the Pacific, in press, 2022
109. [Deep and chemically heterogeneous magma oceans on lava planets](#)
Charles-Édouard Boukaré, **Nicolas B. Cowan**, and James Badro
Astrophysical Journal, 936, 148, 2022
108. [TOI-1452 b: SPIRou and TESS reveal a temperate super-Earth transiting an M4 dwarf](#)
Charles Cadieux, René Doyon, Mykhaylo Plotnykov, Guillaume Hébrard, Farbod Jahandar, Étienne Artigau, Diana Valencia, Neil J. Cook, Eder Martioli, Thomas Vandal, Jean-François Donati, Ryan Cloutier, Norio Narita, Akihiko Fukui, Teruyuki Hirano, François Bouchy, **Nicolas B. Cowan**, Erica J. Gonzales, David R. Ciardi, Keivan G. Stassun, Luc Arnold, Björn Benneke, Isabelle Boisse, Xavier Bonfils, Andrés Carmona, Pía Cortés-Zuleta, Xavier Delfosse, Thierry Forveille, Pascal Fouqué, João Gomes da Silva, Flavien Kiefer, Ágnes Kóspál, David Lafrenière, Jorge H. C. Martins, Claire Moutou, J.-D. do Nascimento, Jr., Merwan Ould-Elhkim, Stefan Pelletier, Joseph D. Twicken, Luke G. Bouma, Scott Cartwright, Antoine Darveau-Bernier, Konstantin Grankin, Masahiro Ikoma, Jon M. Jenkins, Taiki Kagitani, Kiyoe Kawauchi, Takanori Kodama, Takayuki Kotani, David W. Latham, Kristen Menou, George Ricker, Sara Seager
Astronomical Journal, 164, 96, 2022
107. [Earth-Like Stratospheric Clouds Do Not Impede Transit Spectroscopy with JWST](#)
Dhvani Doshi, **Nicolas B. Cowan**, Yi Huang
Monthly Notices of the Royal Astronomical Society, 515, 1982, 2022
106. [K2 and Spitzer phase curves of lava planet K2-141 b hint at a tenuous rock vapor atmosphere](#)
S. Zieba, M. Zilinskas, L. Kreidberg, **T. G. Nguyen**, Y. Miguel, **N. B. Cowan**, R. Pierrehumbert, L. Carone, **L. Dang**, M. Hammond, T. Louden, R. Lupu, L. Malavolta, and K. B. Stevenson
Astronomy & Astrophysics, 664, A79, 2022.

105. [Atmospheric gravitational tides of Earth-like planets orbiting low mass stars](#)
Thomas Navarro, Timothy M. Merlis, **Nicolas B. Cowan**, Natalya Gomez
Planetary Science Journal, 3, 162, 2022.
104. [The impact of ultraviolet heating and cooling on the dynamics and observability of lava planet atmospheres](#)
T. Giang Nguyen, **Nicolas B. Cowan**, Raymond T. Pierrehumbert, Roxana E. Lupu, and John E. Moores
Monthly Notices of the Royal Astronomical Society, 513, 6125, 2022.
103. [A New Analysis of 8 Spitzer Phase Curves and Hot Jupiter Population Trends: QATAR-1b, QATAR-2b, WASP-52b, WASP-34b, and WASP-140b](#)
E.M. May, K.B. Stevenson, J.L. Bean, **Taylor J. Bell**, **Nicolas B. Cowan**, **Lisa Dang**, Jean-Michel Desert, Jonathan J. Fortney, **Dylan Keating**, Eliza M.-R. Kempton, Thaddeus D. Komacek, Nikole K. Lewis, Megan Mansfield, Caroline Morley, Vivien Parmentier, Emily Rauscher, Mark R. Swain, Robert T. Zellem, and Adam Showman
Astronomical Journal, 163, 256, 2022.
102. [Mapping the surface of partially cloudy exoplanets is hard](#)
L. Teinturier, **N. Vieira**, **E. Jacquet**, **J. Geoffrion**, **Y. Bestavros**, **Dylan Keating** and **N. B. Cowan**
Monthly Notices of the Royal Astronomical Society, 511, 440, 2022.
[BLOG](#)
101. [Thermal Phase Curves of XO-3b: an Eccentric Hot Jupiter at the Deuterium Burning Limit](#)
Lisa Dang, **Taylor J. Bell**, **Nicolas B. Cowan**, Heather A. Knutson, Daniel Thorngren, Tiffany Kataria, Nikole K. Lewis, Keivan G. Stassun, Jonathan J. Fortney, Eric Agol, Gregory P. Laughlin, Adam Burrows, Karen A. Collins, Drake Deming, **Diana Jovmir**, Jonathan Langton, **Sara Rastegar**, and Adam P. Showman
Astronomical Journal, 163, 32, 2022.
100. [Atmospheric characterization of hot Jupiters using hierarchical models of Spitzer observations](#)
Dylan Keating & **Nicolas B. Cowan**
Monthly Notices of the Royal Astronomical Society, 509, 289, 2022.
99. [Longitudinally Resolved Spectral Retrieval \(ReSpect\) of WASP-43b](#)
Patricio Cubillos, **Dylan Keating**, **Nicolas B. Cowan**, Johanna Vos, Ben Burningham, Marie Ygouf, Theodora Karalidi, Yifan Zhou, and Eileen Gonzales
Astrophysical Journal, 915, 54, 2021.
98. [A Comprehensive Reanalysis of Spitzer’s 4.5 \$\mu\$ m Phase Curves, and the Phase Variations of the Ultra-hot Jupiters MASCARA-1b and KELT-16b](#)
Taylor J. Bell, **Lisa Dang**, **Nicolas B. Cowan**, Jacob Bean, Jean-Michel Désert, Jonathan J. Fortney, **Dylan Keating**, Eliza Kempton, Laura Kreidberg, Michael R. Line, Megan Mansfield, Vivien Parmentier, Kevin B. Stevenson, Mark Swain, and Robert T. Zellem
Monthly Notices of the Royal Astronomical Society, 504, 3316, 2021.
97. [TESS unveils the optical phase curve of KELT-1b](#)
C. von Essen, M. Mallonn, A. Piette, **N. B. Cowan**, N. Madhusudhan, E. Agol, V. Antoci, K. Poppenhaeger, K.G. Stassun, S. Khalafinejad, and G. Tautvaišienė
Astronomy & Astrophysics, 648, 71, 2021.
96. [A survey of exoplanet phase curves with Ariel](#)
B. Charnay; J. Mendonça; L. Kreidberg; **N.B. Cowan**; J. Taylor; **T.J. Bell**; O. Demangeon;

- B. Edward; C. Haswell; G. Morello; L. Mugnai; E. Pascale; G. Tinetti; P. Tremblin; R. Zellem
Experimental Astronomy, 19, 2021.
95. [Phase Curves of Hot Neptune LTT 9779b Suggest a High-Metallicity Atmosphere with Non-zero Albedo](#)
Ian J. M. Crossfield, Diana Dragomir, **Nicolas B. Cowan**, Tansu Daylan, Ian Wong, Tiffany Kataria, Drake Deming, Laura Kreidberg, Thomas Mikal-Evans, Varoujan Gorjian, James Jenkins, Björn Benneke, Karen A. Collins, Christopher J. Burke, Christopher E. Henze, Scott McDermott, Ismael Mireles, David Watanabe, and Bill Wohler
Astrophysical Journal Letters, 903, 1, 2020.
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 94. [Cloud Atlas: Unraveling the vertical cloud structure with the time-series spectrophotometry of an unusually red brown dwarf](#)
Ben W.P. Lew, Daniel Apai, Mark Marley, Didier Saumon, Glenn Schneider, Yifan Zhou, **Nicolas B. Cowan**, Theodora Karalidi, Elena Manjavacas, L. R. Bedin, Paulo A. Miles-Paez
Astrophysical Journal, 903, 15, 2020.
 93. [Modelling the atmosphere of lava planet K2-141b: implications for low and high resolution spectroscopy](#)
T. Giang Nguyen, **Nicolas B. Cowan**, **Agnibha Banerjee**, John E. Moores
Monthly Notices of the Royal Astronomical Society, 499, 4605, 2020.
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 92. [Pixel Level Decorrelation in Service of the *Spitzer* Microlens Parallax Survey](#)
Lisa Dang, S. Calchi Novati, S. Carey and **N. B. Cowan**
Monthly Notices of the Royal Astronomical Society, 497, 5309, 2020.
 91. [Keeping M-Earths Habitable in the Face of Atmospheric Loss by Sequestering Water in the Mantle](#)
Keavin Moore & **Nicolas B. Cowan**
Monthly Notices of the Royal Astronomical Society, 496, 3786, 2020.
 90. [Smaller than expected bright-spot offsets in *Spitzer* phase curves of the hot Jupiter Qatar-1b](#)
Dylan Keating, Kevin B. Stevenson, **Nicolas B. Cowan**, Emily Rauscher, Jacob L. Bean, **Taylor Bell**, **Lisa Dang**, Drake Deming, Jean-Michel Désert, Y. Katherina Feng, Jonathan J. Fortney, Tiffany Kataria, Eliza M.-R. Kempton, Nikole Lewis, Michael R. Line, Megan Mansfield, Erin May, Caroline Morley, and Adam P. Showman
Astronomical Journal, 159, 225, 2020.
 89. [Cloud Atlas: High-precision HST/WFC3/IR Time-Resolved Observations of Directly-Imaged Exoplanet HD106906b](#)
Yifan Zhou, Dániel Apai, Luigi Bedin, Ben Lew, Glenn Schneider, Adam Burgasser, Elena Manjavacas, Theodora Karalidi, Stanimir Metchev, Paulo Alberto Miles Paez, Patrick J. Lowrance, **Nicolas Cowan**, and Jacqueline Radigan
Astronomical Journal, 159, 140, 2020.
 88. [Cloud Atlas: Weak color modulations due to rotation in the planetary-mass companion GU Psc b and 11 other brown dwarfs](#)
Ben W.P. Lew, Dániel Apai, Yifan Zhou, Jacqueline Radigan, Mark Marley, Glenn Schneider, **Nicolas B. Cowan**, Paulo A. Miles-Paéz, Elena Manjavacas, Theodora Karalidi, L. R. Bedin, Patrick J. Lowrance, and Adam J. Burgasser
Astronomical Journal, 159, 125, 2020.

87. [Evaluating Climate Variability of the Canonical Hot Jupiters HD 189733b & HD 209458b through Multi-Epoch Eclipse Observations](#)
B. M. Kilpatrick, T. Kataria, N. K. Lewis, R. T. Zellem, G. W. Henry, **N. B. Cowan**, J. de Wit, J. J. Fortney, H. K. Knutson, S. Seager, A. P. Showman, G. S. Tucker
Astronomical Journal, 159, 51, 2020.
86. [Evidence for H₂ Dissociation and Recombination Heat Transport on KELT-9b](#)
Megan Mansfield, Jacob L. Bean, Kevin B. Stevenson, Thaddeus D. Komacek, **Taylor J. Bell**, Xianyu Tan, Matej Malik, Thomas G. Beatty, **Nicolas B. Cowan**, **Lisa Dang**, Jean-Michel Désert, Jonathan J. Fortney, B. Scott Gaudi, **Dylan Keating**, Eliza M.-R. Kempton, Laura Kreidberg, Michael R. Line, Vivien Parmentier, Keivan G. Stassun, Mark R. Swain, Robert T. Zellem
Astrophysical Journal Letters, 888, L15, 2020.
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85. [Cloud Atlas: Variability in and out of the Water Band in the Planetary-mass HD 203030B Points to Cloud Sedimentation in Low-gravity L Dwarfs](#)
Miles-Páez, Paulo A.; Metchev, Stanimir; Apai, Dániel; Zhou, Yifan; Manjavacas, Elena; Karalidi, Theodora; Lew, Ben W. P.; Burgasser, Adam J.; Bedin, Luigi R.; **Cowan, Nicolas**; Lowrance, Patrick J.; Marley, Mark S.; Radigan, Jacqueline; Schneider, Glenn
Astrophysical Journal, 883, 181, 2019.
84. [Mass Loss from the Exoplanet WASP-12b Inferred from Spitzer Phase Curves](#)
T. J. Bell, M. Zhang, P. E. Cubillos, **L. Dang**, L. Fossati, K. O. Todorov, **N. B. Cowan**, D. Deming, R. T. Zellem, K. B. Stevenson, I. J. M. Crossfield, I. Dobbs-Dixon, J. J. Fortney, H. A. Knutson, M. R. Line.
Monthly Notices of the Royal Astronomical Society, 489, 1995, 2019.
83. [A Universal Nightside Temperature on Hot Jupiters due to Nocturnal Clouds](#)
Keating, D., **Cowan, N. B.**, **Dang, L.**
Nature Astronomy, 3, 1092, 2019.
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82. [Constraining dayside effective temperatures of hot Jupiters through Gaussian process regression](#)
Pass, E. K., **Cowan, N. B.**, Cubillos, P. E., **Sklar, J. G.**
Monthly Notices of the Royal Astronomical Society, 489, 941, 2019.
81. [An empirical infrared transit spectrum of Earth: opacity windows and biosignatures](#)
Macdonald, E. J. R., **Cowan, N. B.**
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80. [Constraining Exoplanet Metallicities and Aerosols with the Contribution to ARIEL Spectroscopy of Exoplanets \(CASE\)](#)
Zellem, Robert; Swain, Mark; **Cowan, Nicolas**; Bryden, Geoffrey; Komacek, Thaddeus; Colavita, Mark; Ardila, David; Roudier, Gael; Fortney, Jonathan; Bean, Jacob; Line, Michael; Griffith, Caitlin; Shkolnik, Evgenya; Kreidberg, Laura; Moses, Julianne; Showman, Adam; Stevenson, Kevin; Wong, Andre; Chapman, John; Ciardi, David; Howard, Andrew; Kataria, Tiffany; Kempton, Eliza; Latham, David; Mahadevan, Suvrath; Melendez, Jorge; Parmentier, Vivien.
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79. [Empirical Predictions for the Period Distribution of Planets to be Discovered by the Transiting](#)

- [Exoplanet Survey Satellite](#)
Jonathan H. Jiang, Xuan Ji, **Nicolas Cowan**, Renyu Hu, Zonghong Zhu.
Astronomical Journal, 158, 96, 2019.
78. [Three direct imaging epochs could constrain the orbit of Earth 2.0 inside the habitable zone](#)
Guimond, C.M. & **Cowan, N.B.**
Astronomical Journal, 157, 188, 2019.
77. [Cloud Atlas: Rotational Spectral Modulations and Potential Sulfide Clouds in the Planetary-Mass, Late T-Type Companion Ross 458C](#)
Elena Manjavacas, Daniel Apai, Ben W. P. Lew, Yifan Zhou, Glenn Schneider, Adam J. Burgasser, Theodora Karalidi, Paulo A. Miles-Paez, Patrick J. Lowrance, **Nicolas Cowan**, Luigi R. Bedin, Mark S. Marley, Stan Metchev, and Jacqueline Radigan
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76. [Cloud Atlas: High-Contrast Time-Resolved Observations of Planetary-Mass Companions](#)
Y. Zhou, D. Apai, B. W. P. Lew, G. Schneider, E. Manjavacas, L. R. Bedin, **N. B. Cowan**, M. S. Marley, J. Radigan, T. Karalidi, P. J. Lowrance, P. A. Miles-Paez, S. Metchev, A. J. Burgasser.
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75. [Cloud Atlas: Hubble Space Telescope Near-IR Spectral Library of Brown Dwarfs, Planetary-Mass Companions, and Hot Jupiters](#)
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74. [A More Informative Map: Inverting Thermal Orbital Phase and Eclipse Lightcurves of Exoplanets](#)
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