

Nicolas B. Cowan

CONTACT	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 Assistant Professor, Physics, Earth & Planetary Sciences (8/2015–) Space Science Institute , Boulder, CO Senior Research Scientist (7/2015–8/2015) 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) 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	
LEADERSHIP & SERVICE	LUVOIR Science and Technology Definition Team Canadian Space Agency's <i>Origins</i> and <i>Astrobiology</i> Topical Teams JWST-NIRISS Transiting Planet Working Group Fast Infrared Exoplanet Spectroscopy Survey Explorer (FINESSE) Science Team ACURA-CASCA TMT Alternative Site Committee Hubble Exoplanet Advisory Committee (2015–2016) Executive Committee of the NASA Exoplanet Program Analysis Group (2013–2016) Chair of ExoPAG SAG-X: <i>Exoplanet Atmospheres with JWST and Beyond</i> (2013–2015) Reviewer for A&A, A&A Letters, ApJ, ApJL, Astrobiology, CanTac, CRC Press, Exper. Astro., FWO Pegasus, Hubble Space Telescope, Icarus, IEEE Spectrum, JGR, MNRAS, MNRAS Letters, NASA ROSES/PATM, Nature, PASP, Spitzer Space Telescope	
SUCCESSFUL GRANTS	PI/Co-I for 19 Spitzer and Hubble Space Telescope proposals NSERC Discovery (2016–): Observing the Atmospheres and Surfaces of Earth Analogs NSERC CREATE co-applicant (2016–): Technologies for Exo-Planetary Science Exo-Cartography Workshops at ISSI Bern (2015–2016) NASA Astrobiology Institute support for ExoClimes 2012, 2016	
AWARDS & HONORS	Kavli Frontiers Fellow (2013, 2015) CIERA Postdoctoral Fellowship (2010–2014) NSERC Postgraduate Scholarship (2006–2009) FQRNT Master's Scholarship (2004–2006)	
PUBLICATIONS	≥ 50 papers, ≥ 2500 citations, <i>h</i> -index = 28	

POSTDOCTORAL SCHOLARS Joel Schwartz, Postdoctoral Scholar at McGill University (2016–)
Holly Sheets, iREx Postdoctoral Fellow at McGill University (2016–)

GRADUATE STUDENTS Taylor Bell* w/Bastien, MSc Physics at McGill (2016–). *MSI & CRAQ Fellow*
Lisa Dang, MSc Physics at McGill (2016–).

COADVISED Lisa Esteves w/Jayawardhana, PhD Astro at U. of Toronto (2016–). *TEPS Fellow*
Claire Guimond, MSc EPS at McGill (2016–).
Dylan Keating* w/Doyon, MSc Physics at McGill (2016–). *TEPS & CRAQ Fellow*
Joel Schwartz, PhD Physics at Northwestern (2013–2016). *NSF GK-12 Fellow*
Sara Rastegar, MSc Physics at Northwestern (2012–2014).

UNDERGRADUATE RESEARCHERS Veenu Suri* w/Rauscher, Astronomy & CS at University of Michigan (2015–)
Élie Bouffard, Physics at Université de Sherbrooke (2016)

*COADVISED Sudarsan Sundarajan, Google Summer of Code (2016)
Diana Jovmir, Mathematics & Physics at McGill (2016)
Dhruv Bisaria, Physics at McGill (2016)
Brendan Gordon, Computer Science at McGill (2016)
Lisa Dang, Physics at McGill (2015–2016)
Jyotsana Singh, Earth & Planetary Sciences at McGill (2015)
Daniel Law, Math & Computer Science at Amherst College (2015)
Mashiyat Zaman, Astronomy at Amherst College (2015)
Ned Kleiner, Physics at Amherst College (2015)
Wanda Feng, Astronomy at Smith College (2014–2015)
Christopher Hansen, Physics & Astronomy at Northwestern (2013–2014)
Pablo Fuentes, Astronomy at University of Chile (2011–2013)
Talia Strait, Physics & Astronomy at Northwestern (2011–2013)
Louis Shekhtman, Physics & Astronomy at Northwestern (2011)
Carl Majeau* w/Agol, Computer Science at Columbia University (2010)
James Bushong* w/Agol, Astronomy at University of Washington (2008)
Virginia Klemm* w/Agol, Astronomy at University of Washington (2006)

TEACHING PHYS 641, *Observational Astronomy*, McGill University (Autumn 2016)
EPSC 182, *Astrobiology*, McGill University (Winter 2016)
ASTR 112, *Alien Worlds*, Amherst College (Spring 2015)
EARTH 450, *Exoplanets as Planets*, Northwestern University (Winter 2013)
ASTR 192, *Pre-Major in Astronomy Program*, University of Washington (Autumn 2007)

SELECTED PRESS *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)
Planetology comes of age, The Economist (Jan 11, 2014)
Heat and Tidally-Locked Planets, Academic Minute (Sept 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)
Earth Through Time, Sky & Telescope (Aug 2010)
5 Questions, Discover Magazine (Oct 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)
Mapping Uncharted Territories, SEED Magazine (December 2008)
Gassy Windbags, Quirks & Quarks, CBC Radio (Jan 13, 2007)

INVITED TALKS

University of Michigan, Astronomy Seminar (Mar 30, 2017)
 St. Lawrence University, Geology Colloquium (Oct 7, 2016)
 “Energy Budgets of Short Period Planets” at *Exoplanets I* (Jul, 2016)
 Université de Montréal, Astronomy Seminar (Apr 28, 2016)
 NASA Goddard, Astrophysics Colloquium (Mar 15, 2016)
 “Short Period Planets” at *Kavli Frontiers of Science* (Nov, 2015)
 “Transiting Temperate Terrestrials” at *Exploring the Universe with JWST (Oct, 2015)*
 MIT, Astronomy Colloquium (Sept 22, 2015)
 “Water On—and In—Rocky Worlds” at *CCTP2*, (Sep, 2015)
 ETH, Geoscience Seminar (July 24, 2015)
 Université de Genève, Astronomy Seminar (July 21, 2015)
 NYU Abu Dhabi, Physics Colloquium (May 11, 2015)
 McGill University, Physics, Earth & Planetary Sciences (Feb 12, 2015)
 University of Massachusetts, Astronomy Colloquium (Nov 13, 2014)
 University of Arizona, Theoretical Astrophysics Colloquium (Oct 20, 2014)
 Trinity College, Physics Seminar (Sept 26, 2014)
 Bard College, Physics Seminar (Sep 17, 2014)
 Joint Astronomy Colloquium, Max Planck Institute for Astronomy (July 15, 2014)
 Institut de Planétologie et d’Astrophysique de Grenoble, Seminar (July 3, 2014)
 Adler Planetarium, Astronomy Seminar (May 23, 2014)
 Jet Propulsion Laboratory, Astrophysics Seminar (May 15, 2014)
 Space Telescope Science Institute, Astronomy Colloquium (April 17, 2014)
 Texas Tech University, Geosciences Colloquium (March 14, 2014)
 Amherst College, Physics & Astronomy (March 11, 2014)
 Harvard-Smithsonian CfA, Institute for Theory and Computation (Dec 3, 2013)
ExoPAG Meeting 8, Denver, CO (Oct 5, 2013)
 Ohio State University, Astronomy (Aug 29, 2013)
 University of Cambridge, Institute of Astronomy (April 25, 2013)
 University of Florida, Astronomy (April 17, 2013)
 Purdue University, Earth, Atmospheric & Planetary Sciences (April 3, 2013)
 San Francisco State University, Physics (Feb 27, 2013)
 Northwestern University, Earth and Planetary Sciences (Nov 30, 2012)
 California Institute of Technology, Astronomy (Nov 28, 2012)
Stochastic Flows and Climate Modeling, Aspen, CO (June 2012)
 University of Bern, Center for Space and Habitability (Apr 27, 2012)
 University of Western Ontario, Physics and Astronomy (Apr 16, 2012)
 University of Illinois, Astrophysics (Nov 1, 2011)
Future of Astronomy, Evanston, IL (Sept 1, 2011)
 University of Michigan, Astronomy (Feb 24, 2011)
 Michigan State University, Astronomy & Astrophysics (Feb 23, 2011)
Exoplanet Science from Solar System Probes, Santa Barbara, CA (May 2010)
The View from 5 AU, Irvine, CA (March 2010)
 UC Davis, Cosmology (Mar 11, 2010)
 Seattle University, Natural Science (Feb 5, 2010)

PUBLIC LECTURES

Astro Night, Montreal, QC (Jul 26, 2016)
 Astro Talk, Montreal, QC (Nov 11, 2015)
 Benjamin Dean Astronomy Lecture at California Academy of Sciences (Dec 8, 2014)
SciTech Cafe, Amherst, MA (Sept 22, 2014)
 Lake County Astronomical Society, Fox Lake, IL (Oct 18, 2013)
Chicago Ideas Week, Chicago, IL (Oct 15, 2013)
From Our Own Backyard to the World, Evanston, IL (Sept 12, 2013)
 Tacoma Astronomical Society, Tahoma, WA (September 2007)
 Boeing Employees’ Astronomical Society, Seattle, WA (April 2007)

PUBLICATIONS

Notable Papers (highly-cited, multi-disciplinary, or just plain clever)
My students and I are **bold**

“Odd Modes in Exoplanet Photometry: Weather or Artifact?”

Cowan, Chayes, **Bouffard**, Meynig & Haggard, *MNRAS*, submitted, 2016

“Planet-Induced Stellar Pulsations in HAT-P-2’s Eccentric Planetary System”

de Wit et al., *ApJ*, submitted, 2016

“Knot a Bad Idea: Testing BLISS Mapping for *Spitzer* Exoplanet Eclipses”

Schwartz & **Cowan**, *PASP*, accepted, 2016

“Discovery of Patchy Clouds in a Young, Extremely Red L-Type Brown Dwarf”

Lew et al., *ApJL*, 829, 32, 2016

“Community Exoplanet Targets for JWST’s Early Release Science Program”

Stevenson et al., *PASP*, 128, 967, 2016

“3.6 and 4.5 μm *Spitzer* Phase Curves of the Hot Jupiters WASP-19b and HAT-P-7b”

Wong et al., *ApJ*, 823, 122, 2016

“Cosmologists in Search of Planet Nine: the Case for CMB Experiments”

Cowan, Holder & Kaib, *ApJL*, 822, L2, 2016

“Inferring Planetary Obliquity Using Rotational & Orbital Photometry”

Schwartz, Sekowski, Haggard, Pallé & **Cowan**, *MNRAS*, 457, 926, 2016

“3.6 and 4.5 μm Phase Curves of the Eccentric Hot Jupiter WASP-14b”

Wong et al., *ApJ*, 811, 122, 2015

“Balancing the Energy Budget of Short-Period Giant Planets”

Schwartz & **Cowan**, *MNRAS*, 449, 4192, 2015

“*Spitzer* Secondary Eclipse Observations of Three Cool Giant Planets”

Kammer et al., *ApJ*, 810, 118, 2015

“Brief Follow-up on Recent Studies of Theia’s Accretion”

Kaib & **Cowan**, *Icarus Note*, 258, 14, 2015

“*Spitzer* Eclipses of the Dense, Modestly-Irradiated, Giant Exoplanet HAT-P-20b”

Deming et al., *ApJ*, 805, 132, 2015

“Feeding Zones of Terrestrial Planets and Insights Into Moon Formation”

Kaib & **Cowan**, *Icarus*, 252, 161, 2015

“Characterizing Transiting Planet Atmospheres through 2025”

Cowan, Greene et al., *PASP*, 127, 311, 2015

“Features in the Broadband Eclipse Spectra of Exoplanets: Signal or Noise?”

Hansen, **Schwartz** & **Cowan**, *MNRAS*, 444, 3632, 2014

“Atmospheric Circulation and Variability of the Eccentric Hot Jupiter XO-3b”

Wong et al., *ApJ*, 794, 134, 2014

- “The Exoplanet Opportunity: Top-Down Planetary Science”
Cowan, *Eos*, 95, 209, 2014
- “The 4.5 μm Full-Orbit Phase Curve of the Hot Jupiter HD 209458b”
Zellem et al., *ApJ*, 790, 53, 2014
- “Atmospheric Characterization of the Hot Jupiter Kepler-13Ab”
Shporer et al., *ApJ*, 788, 92, 2014
-
- “Water Cycling Between Ocean and Mantle: Super-Earths Need Not be Waterworlds”
Cowan & Abbot, *ApJ*, 781, 27, 2014
- “Inference of Inhomogeneous Clouds in an Exoplanet Atmosphere”
Demory et al., *ApJL*, 776, 25, 2013
- “Secondary Eclipse Photometry of Exoplanet WASP-5b with Warm Spitzer”
Baskin et al., *ApJ*, 773, 124, 2013
- “Lightcurves of Stars & Exoplanets: Estimating Inclination, Obliquity and Albedo”
Cowan, **Fuentes** & Haggard, *MNRAS*, 434, 2465, 2013
-
- “Stabilizing Cloud Feedback Expands the Habitable Zone of Tidally Locked Planets”
Yang, **Cowan** & Abbot, *ApJL*, 771, 45, 2013
- “Warm Spitzer Photometry of Hot Jupiters HAT-P-3b, HAT-P-4b and HAT-P-12b”
Todorov et al., *ApJ*, 770, 102, 2013
- “Orbital Phase Variations of the Eccentric Giant Planet HAT-P-2b”
Lewis et al., *ApJ*, 766, 95, 2013
-
- “Determining Reflectance Spectra of Surfaces and Clouds on Exoplanets”
Cowan & **Strait**, *ApJL*, 765, 17, 2013
- “Thermal Phases of Earth-Like Planets”
Cowan, Voigt & Abbot, *ApJ*, 757, 80, 2012
- “Land Fraction and Habitability”
Abbot, **Cowan** & Ciesla, *ApJ*, 756, 178, 2012
- “3.6 and 4.5 μm Phase Curves of HD 189733b”
Knutson et al., *ApJ*, 754, 22, 2012
- “Spitzer/MIPS 24 μm Observations of HD 209458b”
Crossfield et al., *ApJ*, 752, 81, 2012
- “A False Positive for Ocean Glint on Exoplanets”
Cowan, Abbot & Voigt, *ApJL*, 752, 3, 2012
- “A Two-Dimensional Map of the Extrasolar Planet HD 189733b”
Majeau, Agol & **Cowan**, *ApJL*, 747, 20, 2012
-
- “Thermal Phase Variations of WASP-12b”
Cowan, Machalek, Croll, **Shekhtman** et al., *ApJ*, 747, 82, 2012

“Warm Spitzer Observations of XO-4b, HAT-P-6b, and HAT-P-8b”
Todorov et al., *ApJ*, 746, 111, 2012

“Measures of Galaxy Environment I — What is *Environment?*”
Muldrew et al., *MNRAS*, 419, 2670, 2012

“A Spitzer Transmission Spectrum for the Exoplanet GJ 436b”
Knutson et al., *ApJ*, 735, 27, 2011

“Rotational Variability of Earth’s Polar Regions”
Cowan et al., *ApJ*, 731, 76, 2011

“The Statistics of Albedo and Energy Recirculation on Hot Exoplanets”
Cowan & Agol, *ApJ*, 729, 54, 2011

“Secondary Eclipse Photometry of WASP-4b with Warm Spitzer”
Beerer et al., *ApJ*, 727, 23, 2011

“Warm Spitzer Photometry of the Transiting Exoplanets CoRoT-1b and CoRoT-2b”
Deming et al., *ApJ*, 726, 95, 2011

“A Model for Thermal Phase Variations of Circular and Eccentric Exoplanets”
Cowan & Agol, *ApJ*, 726, 82, 2011

“The Climate of HD 189733b from Fourteen Transits and Eclipses Measured by Spitzer”
Agol et al., *ApJ* 721, 1861, 2010

“The 8 micron Phase Variation of the Hot Saturn HD 149026b”
Knutson et al., *ApJ*, 703, 769, 2009

“Alien Maps of an Ocean-Bearing World”
Cowan et al., *ApJ*, 700, 915, 2009

“The Mass-Metallicity Relation in Galaxy Clusters”
Ellison et al., *MNRAS*, 396, 1257, 2009

“Multi-Wavelength Constraints on the Day-Night Circulation Patterns of HD 189733b”
Knutson et al., *ApJ*, 690, 822, 2009

“Inverting Phase Functions to Map Exoplanets”
Cowan & Agol, *ApJL*, 678, 129, 2008

“The Environment of Galaxies at Low Redshift”
Cowan & Ivezić, *ApJL*, 674, 13, 2008

“Hot Nights on Extrasolar Planets: Mid-IR Phase Functions of Hot Jupiters”
Cowan, Agol & Charbonneau, *MNRAS*, 379, 641, 2007

“A Map of the Day-Night Contrast of the Extrasolar Planet HD 189733b”
Knutson et al., *Nature*, 447, 7141, 2007

“TIGRESS Highly-Segmented High-Purity Germanium Clover Detector”
Scraggs et al., *Nuclear Instruments and Methods*, A543, 431, 2005

“Position sensitivity of the TIGRESS 32-fold segmented HPGe clover detector”
Svensson et al., *Nuclear Instruments and Methods*, A540, 348, 2005

REPORTS &
PROCEEDINGS

“Report of the Hubble Space Telescope Exoplanet Committee”
Deming et al., report to Ken Sembach, 2016

“Regarding Large Mission Concepts to Study for the 2020 Decadal Survey”
Gaudi et al., ExoPAG report to Paul Hertz, 2016

“Water On—and In—Terrestrial Planets”
Cowan, CCTP2 NASA Conference Proceedings, 2015

“Inverting Phase Curves to Map Exoplanets”
Cowan & Agol, IAU Symposium, 253, 544, 2009

“Transits and secondary eclipses of HD 189733 with Spitzer”
Agol, **Cowan**, **Bushong** et al. IAU Symposium, 253, 209, 2009

“Increasing the Number of Underrepresented Minorities in Astronomy”
Norman et al., Astro2010 Position Papers 38–40, 2009

“Pre-MAP: A Case Study in Evaluating Astronomy Diversity Efforts”
Haggard, Garner & **Cowan**, *Spectrum* June 2008

“Observations of Extrasolar Planets During the non-Cryogenic Spitzer Mission”
Deming, Agol, Charbonneau, **Cowan**, Knutson & Marengo, *AIPC*, 943, 89, 2007