Chenoa Tremblay

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Professional Profile / Areas of Expertise

- 25+ years of working in corporate research and development and 10+ years experience working in academic research including radio astronomy.
- Proven management and project management skills with 15+ years managing, training, and mentoring staff and students.
- Experience with starting and maintaining international collaborations with industry and academic partners.
- Experience with using SuperComputers to analyze large radio astronomy datasets and organization of large quantities of survey information.

Education

June 2016 - December 2018 - Full Time
April 2015 - June 2016 - Part Time
PhD title: "A Search for Molecules at Low Frequency with the Murchison Widefield Array (MWA)"
Curtin University, School of Electrical Engineering, Computing and Mathematical Sciences,
Perth Western Australia
Supervisors: Prof. Steven Tingay, Dr Natasha Hurley-Walker, Dr. Maria Cunningham & Dr. Christopher Jordan
Thesis Overview:
In astronomy, molecules and atoms in space can be studied by detecting their "spectral lines" at specific radio frequencies that characterize that molecule. For my thesis I developed a new way to observe the sky and study the chemistry around stars. Through this I discovered new molecules and characterized large atoms in space by observing the sky at new wavelengths accessible with the MWA. I also developed an innovative software pipeline through a combination of the Python computing package and new and traditional radio astronomy tools. This was one of the first times anyone had published work using these low radio frequencies to study the chemistry of the interstellar medium and stars. My most important findings included:

- Discovery of nitric oxide and the lowest frequency transitions of carbon atoms in our Galaxy by completing the largest simultaneous molecular and recombination line surveys of the Orion Nebula and the centre of our Galaxy.
- In developing new tools for observing at low frequency wavelengths, I advanced our understanding of the technical requirements needed for the international collaboration in developing the future low-frequency Square Kilometre Array (SKA).

January 2008 - July 2011
Extended Education: Non-Degree Graduate Student (Part-Time)
University of New Mexico, Department of Physics and Astronomy, Albuquerque, NM USA

- Mix of 4th year Undergraduate and Graduate (Masters level) classes.
- Classes included: Radio Astronomy, Ordinary Differential Equations, Partial Differential Equations, Electricity and Magnetism, and Analytical Mechanics

September 1995 - May 1999
BA in Chemistry with Minors in Math, Sociology and Cultural Anthropology
Plymouth State University, Department of Chemistry, Plymouth, New Hampshire, USA

- Fourth Year Research in Environmental Chemistry: Detection of vapors in different environments using carbon- and tenax- (sorbent materials) filled tubes. Studied to see if these filled tubes could be used to detect vapors in different locations. I analyzed all samples by Gas Chromatography/ Mass Spectroscopy (GC/MS) and created operation manuals for the instrument.

- Fourth Year Research Sociology & Cultural Anthropology: Studied the effects on family structures when a member has Alzheimer's disease. I worked at a nursing home for a year interacting with the patients and families and completing a study report that was then handed to families that are new to the situation.

Scholarships, Fellowships, and Awards

2021 Awarded cash reward extending knowledge of science to regional communities through education and outreach - AUD 3000 one-time
2020 Awarded non-cash reward for recognition of a job well done leading the organization of the CASS Radio School, CSIRO / Australian Telescope National Facility - AUD 300 one-time
2019-2021 CSIRO Early Research Career Fellowship – AUD89,900 per annum
2019 SuperSTEM Communicator Workshop (competitive), Pawsey Supercomputing Centre
2017 ICRAR Ken & Julie Michaels Prize -- Most outstanding piece of graduate research, Curtin University - AUD 2000 one-time
2017 Curtin University's Innovation & Research Week Poster Display 3rd Place, Curtin University
2016 Astronomical Society of Australia Harley Wood School Travel Scholarship -AUD 100 one-time
2016 Australian Postgraduate Award, Curtin University
2016 Curtin University Postgraduate Scholarship, Curtin University - AUD 32,000 per annum
2015 Runner-Up O'Connor HDR Publication Award, Curtin University
2005 Bodeman Award for Scientific Excellence, Cabot Corporation USD 5000
1999 Top Senior in Chemistry, Plymouth State University
1999 Top Senior for Academic Excellence Award, Plymouth State University

Academic Employment (Teaching and Research)

November 2024 - Present Adjunct Assistant Research Professor
University of New Mexico, Department of Physics and Astronomy, Albuquerque, NM, USA
Aug 2024 – Present Project Scientist - BL USE / MeerKAT
Breakthrough Listen, Breakthrough Initiatives, Berkeley SETI Research Center, Berkeley, CA, USA
Aug 2023 – Present Project Scientist - COSMIC / VLA
Feb 2022 – Aug 2023 PostDoctoral Fellow
SETI Institute, Carl Sagan Center for Life in the Universe, Mountain View, CA, USA

- Principle Investigator on successful telescope time allocation proposals for SETI, ISM physics, and galaxy evolution with VLA, VLBA, GBT, MWA, ASKAP, and Parkes 64m.
- Chair ISM science review panel for NRAO/GBO proposals and co-Chair for the VLASS science working group lead.
- OH Project Scientist of Galactic ASKAP Survey-- High spectral resolution study of the HI and OH lines in the Milky Way and Magellanic Systems.
- Parkes 64m Expert Observer
- Summer Student Supervisor - Work with undergraduate students on a summer project relating to astronomy.

June 2023 – June 2024 Visiting Researcher
Berkeley SETI Research Center, University of California, Berkeley, CA 94720, USA

- Joint appointment with UC Berkeley for working with students.

Feb 2022 – Present Visiting Researcher
National Radio Astronomy Observatory, Socorro, NM, USA

- Joint appointment with NRAO.

Jan 2019--Jan 2022 PostDoctoral Fellow
Commonwealth Scientific and Industrial Research Organisation, Perth, Western Australia

- Member of the Australian Square-Kilometre Array Pathfinder (ASKAP) Early Science & Commissioning Team
- Principle Investigator on successful telescope and supercomputer time allocation proposals.
- OH Project Scientist of Galactic ASKAP Survey-- High spectral resolution study of the HI and OH lines in the Milky Way and Magellanic Systems.
- Australian Telescope Compact Array - Duty Astronomer - Assisting observers and looking after the telescope.
- Summer Student Supervisor - Work with undergraduate students on a summer project relating to astronomy.
- Run data reduction workshops for students working with MWA data.

2020--2023 MWA Galactic and ExtraGalactic Science Working Group Chair
2016--2024 MWA Galactic and ExtraGalactic Spectral Line Science Team Lead
2011-2015 Research Associate
International Centre for Radio Astronomy Research, Curtin University, Perth, Western Australia

- Alignment of Multiple Gaussian Components - Project Lead: Dr. Steven Tremblay
- High Mass Star Formation in Isolation - Project Lead: Dr. Andrew Walsh

2011 Research Associate
University of New Mexico, Albuquerque, NM, USA
Assisted in building and testing the first station of the Long Wavelength Array telescope as a casual employee. This job included:

- Testing front-end electronics and analog receiver boards for problem identification and repair
- Building radio shielded cables and performance testing
- Building antennas & assisting on site at the telescope
- Testing the new observing tools for problems and sending feedback to the software developer.

1998-1999 Laboratory Teaching Assistant
Plymouth State University, Plymouth NH, USA
Developed a new laboratory program to update and make it more interesting for students.

Industry Employment

****For more detail: https://www.linkedin.com/in/chenoa-tremblay-b6371210 ****
2019-2022 Owner
Stellar Chemist Consulting, Perth, WA, AUS
2018 Special Projects Manager
2014--2017 Technical Manager
2011--2014 R&D Chemist and Quality Manager
MinAnalytical Laboratory Services, Perth, WA, AUS
2005--2011 Associate Analytical Scientist
Cabot Corporation Albuquerque, NM, USA
2002--2005 Associate Scientist
Xemplar Pharmaceuticals, Fall River, MA, USA
1999--2002 Assistant Scientist
Primedica/Charles River Laboratories, Worchester, MA, USA

Research Funding

(Does not include pending or declined research grants.)
Pawsey Supercomputing Centre
Project Leader: Dr. Chenoa Tremblay
Funding Amount: 1.5 million hours supercomputing time, AUD30,500.
Funding Dates: 1 January 2021 to 31 December 2021
Pawsey Supercomputing Centre
Project Leader: Dr. Chenoa Tremblay
Funding Amount: 2.5 million hours of supercomputing time, AUD51,000
Funding Dates: 1 January 2020 to 31 December 2020

Journal as Reviewer

Astrophysical Journals
Journal of Geochemical Exploration
Nature Astronomy
Publications of the Astronomical Society of Australia
Astronomy & Astrophysics Journal
Journal of Astronomy & Computing

Publications & Technical Documents

First Author:
Tremblay, C.D., Sofair, J, Steffes, L. et al. “COSMIC's Large Scale Search for Technosignatures during the VLA sky Survey: Survey Description and First Results” 2025 AJ, 169, 3, id.122, 16

Tremblay, C.D., and Tingay, S. “An Extra-galactic Widefield Search for Technosignatures with the Murchison Widefield Array” 2024, ApJ, 972, 76

Tremblay, C.D., Varghese, S.S. et al. “COSMIC: An Ethernet-based Commensal, Multi-mode Digital Backend on the Karl G. Jansky Very Large Array for the Search for Extraterrestrial Intelligence” 2024,, AJ Volume 167, Issue 1, id.35, 20 pp

Tremblay, C.D., Amos, R, and Kobayashi, R.. “Analysis of Chiral Oxirane Molecules in preparation for Next Generation Telescopes” 2024, JA&C, Volume 46, 100791 https://doi.org/10.1016/j.ascom.2024.100791

Tremblay, C.D., Price, D. and Tingay, S. “A Search for Technosignatures toward the Galactic Centre at 150 MHz” 2022, PASA, 39, article id. e008

Tremblay, C.D., Bourke, T., Green, J.A., et al “A Low Frequency Pilot Survey of Southern HII Regions in the Vela Constellation” 2022 MNRAS, 510, Issue 1, pp.593-610

Tremblay, C.D., Green, J.A., Mader, S.L., Phillips, C.J. and Whiting, M. “First Search for Low-Frequency CH with a Square Kilometre Array Precursor Telescope” 2020, PASA, 37, e055 *(Journal Impact factor: 5.067)*

Tremblay, C.D., Gray, M.D., Hurley-Walker, N., Green, J.A., Dawson, J., Dickey, J.M., Jones, P.A., Tingay, S.J. and Wong, O.I. “Nitric Oxide and other molecules: Molecular Modeling and Low Frequency Exploration using the Murchison Widefield Array” 2020, ApJ, 905, 65 *(Journal Impact factor: 5.745)*

Tremblay, C.D., Tingay, S.J. “A SETI Survey of the Vela Region using the Murchison Widefield Array: Orders of Magnitude Expansion in Search Space” 2020, PASA, 37, e035. *(Journal Impact factor: 5.067) Altmetric Media Score 1496*

Tremblay, C.D., Tickner, J., Wheeler, G., Oteri, A., Treasure, D., “PhotonAssay: Efficient & bulk gold analysis in the modern world, Paper II”. 2019, 25-27 November, AusIMM Mining Geology 2019 *Peer reviewed*.

Tremblay, C.D., Wheeler, G., Oteri, A. “PhotonAssay: Efficient & bulk gold analysis in the modern world”. 2019, 2-5 September, Australian Exploration Geoscience Conference Proceedings, Paper Number 205. *Peer reviewed.* DOI: 10.1080/22020586.2019.12073071

Tremblay, C.D. “PhotonAssay: Bringing Gold to the Light”, 2018, 2&3 August, Gold18@Perth Geosymposium, Australian Institute of Geoscientists, Conference Proceedings. Bulletin No 68 *Peer Reviewed*

Tremblay, C.D. “A Search for Molecules at Low Frequencies”, 2018, PhD Thesis, Curtin University

Tremblay C. D., Jordan C. H., Cunningham M., Jones P.A., Hurley-Walker, N. “Low Frequency Carbon Recombination Lines in the Orion Molecular Cloud Complex” 2018, PASA, 35, e018

Tremblay C. D., Jones P.A., Cunningham M., Jordan C. H., Hurley-Walker N. “A Molecular Line Survey around Orion at Low Frequencies with the MWA” 2018, ApJ, 860,145 (9pp)

Tremblay, C. D., Hurley-Walker, N. et al. “A First Look for Molecules between 103 and 133 MHz using the Murchison Widefield Array” 2017, MNRAS, 471,4,p.4144-4154 *Altmetric Media Score 28*

Tremblay, C. D, Walsh, A., Longmore, S., Urquhart, J., Konig C., “A search for High Mass Stars Forming in Isolation using CORNISH & ATLASGAL ” 2015, PASA, 32, 47

Tremblay C. D. and Gibson A. “VLBI Observations of Compact Objects at 1.4GHz” Published NRAO student project website May, 2011

Co-Author:

Toomey, L., Hobbs G. et al. “SDHDF: A new file format for spectral-domain radio astronomy data” 2024, JA&C, Volume 47, 100804 https://doi.org/10.1016/j.ascom.2024.100804

Velović, V., Filipović M. D., Barnes L., Norris R. P., **Tremblay C. D.** et al. “Collimation of the kiloparsec-scale radio jets in NGC 2663” 2022, MNRAS, V516, I2, pp.1865-1880

Dempsey, J. et al. “GASKAP-HI Pilot Survey Science III: An unbiased view of cold gas in the Small Magellanic Cloud” 2022, PASA V39, article id. e034

V. A. Moss,. C.E. Trenham. W. Hotan, R. Kobayashi, G. A. Rees, **C. D. Tremblay**, L. Burtscher, and R. D. Ekers “The path to a more accessible and inclusive future of meetings in astronomy” Appeared in “Astronomy Beyond the Common Senses (2021)” 2022, Conference Proceedings Book ISSN 1405-2059 *(Peer Reviewed)*

Ingallinera, A. et al. “Evolutionary Map of the Universe (EMU): discovering 18-cm OH maser sources in ASKAP continuum images of the SCORPIO field” 2022, MNRAS Letters, 512,1,L21–L26

Dickey, J.M. et al “GASKAP Pilot Survey Science II: ASKAP Zoom Observations of Galactic 21-cm Absorption” 2022, ApJ, V 926, 2, id.186, 20 pp.

Pingel, N.M. et al “GASKAP-HI Pilot Survey Science I: ASKAP Zoom Observations of HI Emission in the Small MagellanicCloud”, 2021, PASA, V 39, article id. e005

J. Camilo Zapata, A-M Syme, K. N. Rowell et al. “Computational Infrared Spectroscopy of 956 Phosphorus-bearing Molecules” 2021, Front. Astron. Space Sci, doi: 10.3389/fspas.2021.639068 (invited article) *(Journal Impact factor: 0.605)*

Moss, V. A.; Adcock, M; Hotan, A. W.; Kobayashi, R.; Rees, G. A.; Siegel, C.; **Tremblay, C. D.**; Trenham, C. E.; “Forging a path to a better normal for conferences and collaboration” Nature Astronomy, Invited Comment Article 2021 DOI: 10.1038/s41550-021-01325-z *(Journal Impact factor: 11.518)*

C.S. Anderson, G. Heald, J. A. Eilek, E. Lenc, B. M. Gaensler, et al. “Early Science from POSSUM: Shocks, turbulence, and a massive new reservoir of ionized gas in the Fornax cluster”, 2021, PASA, 38, e020 (*Journal Impact factor: 5.067)*

D. McConnell, C. L. Hale, E. Lenc, J. K. Banfield, et al. “The Rapid ASKAP Continuum Survey I: Design and First Results” 2020, PASA, 37, E048. *(Journal Impact factor: 5.067)*

A. P. Beardsley, M.Johnston-Hollitt, C. M. Trott, J. C. Pober, J. Morgan, D. Oberoi. D. L. Kaplan, C. R. Lync, G. E. Anderson, P. I. McCauley, S. Croft, C. W. James, O. I. Wong, **C. D. Tremblay**, et al. “Science with the Murchison Widefield Array: Phase I Results and Phase II Opportunities” 2019, PASA, 36, e050 *(Journal Impact factor: 5.067)*

Tingay S.J., **Tremblay C.D.,** and Croft S. “A search for ExtraTerrestrial Intelligence (SETI) toward the Galactic Anticenter with the Murchison Widefield Array“ 2018, ApJ, 856,31T *(Journal Impact factor: 5.533)*

Tingay S.J., **Tremblay C.D.**, Walsh A., and Urquhart R., “An Opportunistic Search for ExtraTerrestrial Intelligence (SETI) with the Murchison Widefield Array” 2016, ApJ Letters, 827, 2, L22, 5. *(Journal Impact factor: 8.955)*

Tremblay, S. Taylor, G. B. Ortiz, A. A. **Tremblay, C. D**. et.al. “Compact Symmetric Objects and Supermassive Binary Black Holes in the VLBA Imaging and Polarimetry Survey” 2016, MNRAS, 459, 820 *(Journal Impact factor: 4.961)*

Technical Documents:

Kristina Nyland, Kate Alexander, Heinz Andernach, Joseph R. Callingham, Phil Cigan, Tracy Clarke, Dillon Dong, Jan Gordon, Brian R. Kent, Mark Lacy, Casey law, Steve Myers, Juergen Ott, Wendy Peters, Emil Polisensky, Greg Sivakoff, **Chenoa Tremblay,** Charlotte Ward, Sufia Birmingham, Pallavi Patil, Andreea Petric, Jason Kooi, and the VLASS Survey Science Group, “VLASS Epoch 4 Science Case” NRAO internal document

Chenoa Tremblay, Jack Hickish, Ross Donnachie, Savin Shynu Varghese, Daniel Czech, and Mark Ruzindana in collaboration from the COSMIC Team “COSMIC Requirements Document for Observing and Processing during the VLA Sky Survey”

Green, J.A. et al “Parkes Ultra-high Band Receiver Science Case” Australian Telescope National Facility Technical Documents 2021

Moss, V. A.; Hotan, A. W.; Kobayashi, R.; Rees, G. A.; Siegel, C.; **Tremblay, C. D**. et al. “The Future of Meetings: Outcomes and Recommendations”, 2020, Zendo, doi:10.5281/zenodo.4345562

Green, J.A. et al “Parkes Future Science Case:2020 onward” Australian Telescope National Facility Technical Documents 2020
https://www.parkes.atnf.csiro.au/observing/documentation/ParkesScience2020_2030_19062020.pdf

ASKAP Early Science & Commissioning Team Members “ASKAP Science Observation Guide” Australian Telescope National Facility Technical Documents 2019 https://www.atnf.csiro.au/projects/askap/index.html

Tremblay C. D., Tremblay S.E., and Craig J. “Complete Guide to Antenna Assembly” Long Wavelength Array, University of New Mexico, technical note July, 2011

Tremblay C. D., Tremblay S.E., and Craig J. “Making Connec-Connec RFI Shielded Cables” Long Wavelength Array, University of New Mexico, technical note July, 2011

Acknowledgements:
Taylor, G. et. al. “First Light for the First Station of the Long Wavelength Array” 2012, J. Astron. Instrum. 01, 1250004

Students:

2024 - Present - PhD Student - Ella Hort, University of New Mexico Thesis Topic: TBD
2024-2025 Senior Thesis Advisor - Cruz, G. “Star Formation in the Andromeda Galaxy” Rutgers University
2024 Summer REU Student - Stiegler, N. M. “Searching for Technosignatures above 25GHz with COSMIC on the VLA" University of California, Berkeley
2024 Summer REU Student - Cruz, G. “Star Formation in the Andromeda Galaxy” NRAO
2023–Present Undergraduate Intern - Sofair, J. designing a software pipeline to flag RFI in VLA data using Excess Kurtosis.
2023 Summer REU Student - Steffes, L. “COSMIC SETI on the VLA “ University of California, Berkeley publication in preparation for submission to ApJ.
2023 Summer REU Student - Jewel, A.I, Tremblay C., & L Sjouwerman “Investigating Astrophysical Features Associated with Masers in the Andromeda Galaxy” NRAO Student Project: https://www.nrao.edu/students/2023/Reports/JewellAnya.pdf
2023 Summer Student - Sofair, J, Tremblay C., Demorest, P.B., & Steffes L. “RFI Flagging with Excess Kurtosis in the COSMIC SETI Experiment”, NRAO Student Project Report: https://www.nrao.edu/students/2023/Reports/SofairJared.pdf
2021–2022 Master’s Student - Barrett, R. University of Queensland, Brisbane, Australia Thesis Title “A Technosignature Search for Extraterrestrial Intelligence Around 25 Eclipsing Exoplanets Selected from the Transiting Exoplanet Survey Satellite Catalogue.” Graduated 12/2022
2021 Summer Student - Gaschk, E. “Searching M22 for Technosignatures with Parkes 64m dish” CSIRO

Professional Memberships & Certifications

2023 — present: Full Member American Astronomical Society
2021 — present:Junior Member International Astronomical Union
2021 — present: Member SKA science working group - Our Galaxy & Cradle of Life
2015 — 2022: Member of the Astronomical Society of Australia
2012 — present: Lead Auditor Certified for NATA and ISO Standards
2012 — present: Quality Management System development & implementation
2016 — 2019: Member of the The Royal Australian Chemical Institute
2009 — 2011: Member of the American Chemical Society

Leadership Roles

2024-present	Co-Chair VLA Sky Survey Science Working Group
2024	Organizer & Chair Interstellar Frontiers: Bridging Technosignatures, Astrobiology, and the SKA Conference, Perth, Western Australia
2023-present:	Chair the ISM Science Review panel for NRAO/GBO proposals
2023:	URSI General Assembly Session Leader on Radio Technosignatures, Sapporo Japan
2022:	SOC & LOC APRIM Axion Dark Matter Meeting, Virtual Online
2020	Personal Media Training from Science in Public, Virtual Online

2020:	SOC & LOC The Future of Meetings Symposium, Virtual Online Chair- contributed content schedule and organization
2019:	Chair - SOC & LOC CSIRO Radio Astronomy School, Narrabri NSW, AUS
2017:	Future Scientist Award Judge, Kelly Scientific, Perth WA, AUS
2016-2017:	Journal Club Coordinator, Curtin University, Perth WA, AUS
2016:	SOC & LOC Bolton and Student Symposium, CSIRO Perth WA, AUS
2016:	SOC ASA Harley Wood School of Astronomy, Sydney, NSW, AUS

Selected Invited Presentations

Presentation	Math & Space - Math Festival	San Marcos, Tx, USA	April 2024
Presentation	10 Year Anniversary of the MWA	Perth, WA, Aus	July 2023
Presentation	Penn State SETI Symposium	Virtual, USA	July 2023
Presentation	Associated Universities Board Meeting Luncheon	Albuquerque, NM, USA	June 2023
Presentation	NM Technical Institute Student Colloquium	Albuquerque, NM, USA	Sept 2022
Presentation	Our Galaxy SKA Science Working group	Virtual, International	Oct 2022
Presentation	Breakthrough Discuss	UC Santa Cruz, CA, USA	June 2022
Workshop	OzGrav ECR Workshop: Improving virtual collaboration	Virtual, International	Nov 2021
Presentation	ECR Virtual Visiting Astronomer at Caltech	Pasadena, CA, USA	June 2021
Workshop	Science Teachers Association of Western Australia: Future of Science	Perth, WA, AUS	Dec 2020
Presentation	ASTRON Lunch Talk	Virtual, Netherlands	Oct 2020
Seminar	Traveling Researcher: CSIRO	Marsfield, NSW,AUS	Jan 2020
Presentation	AusIMM Mining Geology 2019	Perth, WA, AUS	Nov 2019
Presentation	2019 CSIRO Radio Astronomy School	Narrabri, NSW, AUS	Sept 2019
Presentation	Association of Mining & Exploration Companies 2019: Data to Discovery	Perth, WA, AUS	Sept 2019
Panel	HarleyWood School of Astronomy	Brisbane, QLD, AUS	July 2019
Seminar	University of Western Aus.	Perth, WA, AUS	Feb 2019
Presentation	Exploration Geochemistry	Perth, WA, AUS	Dec 2018
Presentation	Geochemistry Symposium	Perth, WA, AUS	Aug 2018
Presentation:	Royal Australian Chemical Institute Member Meeting	Perth, WA, AUS	Feb 2018
Presentation:	MWA-GEG Busy Week	Perth, WA, AUS	Jan 2018