

V. Lynn Harvey

Laboratory for Atmospheric and Space Physics, University of Colorado, 3665 Discovery Drive Boulder, CO 80303 (lynn.harvey@lasp.colorado.edu, 303-492-2920)

Education

B.S., Atmospheric and Oceanic Sciences, Univ. Wisconsin - Madison, 1992.

M.S., Atmospheric and Oceanic Sciences, Univ. Wisconsin - Madison, 1994.

Thesis Title: *A Climatology of the Aleutian High*

Ph.D., Atmospheric and Oceanic Sciences, Univ. Wisconsin - Madison, 2001.

Dissertation Title: *An Object Oriented Climatology of Stratospheric Anticyclones and Polar Vortices*

Professional Experience

Research Scientist III 2013-present

Laboratory for Atmospheric and Space Physics, University of Colorado – Boulder

Affiliate 2008-present

Atmospheric and Oceanic Sciences Department, University of Colorado – Boulder

Research Scientist II 2005-2012

Laboratory for Atmospheric and Space Physics, University of Colorado – Boulder

Research Scientist I 2003-2005

Laboratory for Atmospheric and Space Physics, University of Colorado – Boulder

Atmospheric Scientist 1997-2003

Atmospheric Sciences Division at NASA Langley Research Center

Research Assistant 1992-1997

University of Wisconsin – Madison

Awards and Affiliations

2016 NASA Group Achievement Award, ATTREX Mission Team member

2014 NASA Group Achievement Award, SEAC⁴RS Mission Team member

2006 American Geophysical Union Editors Citation for Excellence in Refereeing

Journal of Geophysical Research - Atmospheres

2003 NASA Group Achievement Award, LIMS Data Analysis Team member

2001 NASA Group Achievement Award, SOLVE Science Team member

2001 American Geophysical Union Editors Citation for Excellence in Refereeing

Journal of Geophysical Research - Atmospheres

1997 Best Student Paper - Oral Presentation, 10th Conference on the Middle Atmosphere.

2018-2020 European Geophysical Union member
1997-2020 American Geophysical Union member
1991-2020 American Meteorological Society member

Professional Service

Invited Member – International Space Science Institute (ISSI) Team (Orsolini), 2019-2021.
Contributor – SPARC Data Assimilation Working Group Theme 2, 2018-2022.
Invited Member – COSPAR space weather working group (Yue), 2019-2020.
Member - ATOC Admissions Committee, 2012-2020.
Leader - SPARC Reanalysis Intercomparison Project (S-RIP): Chapter 11, 2013-2020.
Member – GOLD Senior Review Proposal Red Team, April 2020.
Elected Member - CEDAR Science Steering Committee, 2016-2019.
Judge - ATOC student poster conference, November 2019.
Organizer - SPARC Data Assimilation workshop, September, 2019.
Convener – IUGG Middle Atmosphere Session, 12 July 2019.
Convener – CEDAR Plenary Session, 18 June 2019.
Judge - CEDAR Workshop MLT poster session, June, 2019.
Organizer – WAVE Red Team review, May, 2019.
Judge – EGU 2019 Outstanding Student Poster and PICO (OSPP) Award, April 2019.
Member - CEDAR Prize award selection subcommittee, January-March, 2019.
Organizer - RAISE workshop, January, 2019.
Co-convener – AMS 2019 session, Whole Atmosphere coupling, January 2019.
Co-convener – AGU 2018 session SM44A on M-I-T coupling, December 2018.
Liaison – AGU 2018 for OSPA SPA-Magnetospheres session SM51G, December 2018.
Judge – AGU 2018 Outstanding Student Paper Award (OSPA), December 2018.
Judge - ATOC student poster conference, 30 November 2018.
Chair - Yunqian Zhu's promotion committee, October 2018.
Convener – CEDAR Plenary Session, 26 June 2018.
Co-convener – CEDAR 2018 session on vertical coupling, June 2018.
Head Judge - CEDAR Workshop MLT poster session, June, 2018.
Member - LASP RS Evaluation Committee, June, 2018.
Speaker – Science Highlight at LASP All-Hands Meeting, May, 2018.
Acting PI – CIPS Instrument, May 11-21, 2018.
Guest Lecture - ATOC Stratospheric Explorations Class, 5 April, 2018.
Invited Member – International Space Science Institute (ISSI) Team (Pedatella), 2014-2018.
Organizer - RAISE workshop, February, 2018.
Judge - AGU 2017 Outstanding Student Paper Award (OSPA), December 2017.
Judge - ATOC student poster conference, December 2017.
Member – Aimee Merkel promotion committee, 2017-2018.
Member – Odele Coddington promotion committee, 2017-2018.
Convener – CEDAR Plenary Session, 23 June 2017.
Head Judge - CEDAR Workshop MLT poster session, June, 2017.
Speaker - LASP REU Workshop, June, 2017.

Member - LASP RS Evaluation Committee, June, 2017.
 Organizer - RAISE workshop, February, 2017.
 Judge - AGU 2016 Outstanding Student Paper Award (OSPA), December, 2016.
 Liaison – AGU 2016 for OSPA SPA-Aeronomy session SA51B, December, 2016.
 Co-convener – AGU 2016 sessions SA51B, SA54A, December, 2016.
 Judge - CEDAR Poster session, June, 2016.
 Member - LASP RS Evaluation Committee, June, 2016.
 Speaker - LASP REU Workshop, June, 2016.
 Speaker - ATOC Critical Thinking Class, 17 February, 2016.
 Judge - ATOC student poster conference, December 2015.
 Co-organizer - 2015 HEPPA/SOLARIS meeting, November 2015.
 Organizer - RAISE workshop, November 2015.
 Speaker - LASP REU Workshop, June, 2015.
 Judge - ATOC student poster conference, December 2014.
 Panel Reviewer - NASA ACPMAP, 2014
 Judge - SOARS Poster Conference, 2014
 Co-convener - 2013 CEDAR coupling during SSWs session, June, 2013.
 Member - LASP VIS Team, 2012-2013.
 Faculty Advisor - ATOC Seminar 2012-2013
 Judge - ATOC student poster conference, December 2012.
 Chair - Odele Coddington's promotion committee 2012.
 Co-organizer - 2012 HEPPA meeting, October 2012.
 LASP RS Representative - CU Boulder Faculty Assembly, 2009-2012
 Member - LASP Computer Science Advisory Committee (CSAC), 2008-2010
 Co-organizer - JGR-Atmospheres and Space physics special issue 2010.
 Co-organizer - 2009 HEPPA meeting, October 2009.
 Co-organizer - Spring 2009 AGU vertical coupling session.
 Judge - ATOC student poster conference, December 2009.
 Member - Xiaohua Fang promotion committee, 2009.
 Member - Sebastian Schmidt promotion committee, 2009.
 Judge - ATOC student poster conference, December 2008.
 Judge - ATOC student poster conference, December 2007.
 Judge - ATOC student poster conference, December 2006.
 Organizer - ATOC seminar series, 2005-2012

Education and Public Outreach

- Interview – Channel 9 News, *The Polar Vortex*, <http://www.9news.com/weather/how-does-the-polar-vortex-really-affects-us-/372165128>, December 2016.
- Contributor - SpaceWeather.com article, *Mystery of the missing noctilucent clouds*, <http://news.spaceweather.com/mystery-of-the-missing-noctilucent-clouds/>, June 2017.
- Interview – NPR Morning Edition, *The Polar Vortex*, March 2018 (not aired).

- Contributor – Press release, *New Clues to Origins of Mysterious Atmospheric Waves in Antarctica*, <https://cires.colorado.edu/news/new-clues-origins-mysterious-atmospheric-waves-antarctica>, 25 July 2018.
- Contributor – LiveScience.com article, *Gravity Waves Ripple Across Antarctica's Skies, and Researchers Think They Know Why*, <https://www.livescience.com/63178-weird-gravity-waves-antarctica-explained.html>, 26 July 2018.
- Contributor – SpaceWeather.com article, *A Mystery in the Mesosphere*, <https://spaceweatherarchive.com/2018/08/15/a-mystery-in-the-mesosphere/>, 15 August 2018.
- Editor's Highlight in EoS, *Dramatic Stratospheric Warmings Carved a Hole in the Ionosphere*, <https://eos.org/research-spotlights/dramatic-stratospheric-warmings-carved-a-hole-in-the-ionosphere>, 11 September 2018.
- Editor's Highlight in EoS, *New Characterization of the Mesospheric Polar Vortices*, <https://eos.org/editor-highlights/new-characterization-of-the-mesospheric-polar-vortices>, 2 October 2018.
- Interview – CU Journalism 2001 with Prof. Daugherty, *The Polar Vortex*, 6 February 2019.
- Contributor – SpaceWeather.com article, *Huge Blue Cloud Circles the North Pole*, <https://spaceweatherarchive.com/2019/05/31/huge-blue-cloud-circles-the-north-pole/>, 31 May 2019.
- Contributor – SpaceWeather.com article, *Mysterious Moisture in the Mesosphere*, <https://spaceweatherarchive.com/2019/06/19/mysterious-moisture-in-the-mesosphere/>, 19 June 2019.
- Interview – Science News, *Night-shining 'noctilucent' clouds have crept south this summer*, <https://www.sciencenews.org/article/night-shining-noctilucent-clouds-have-crept-south-summer?tgt=nr>, 10 July 2019.
- Contributor – SpaceWeather.com article, *What's Up in the Mesosphere?*, <http://spaceweather.com/archive.php?view=1&day=12&month=07&year=2019>, 12 July 2019.
- Contributor – SpaceWeather.com article, *Record-cold Sets Stage for Big Noctilucent Clouds*, <https://spaceweather.com/archive.php?view=1&day=26&month=11&year=2019>, 26 November 2019.
- Contributor – SpaceWeather.com article, *Planetary Wave Supercharges Southern Noctilucent Clouds*, <https://spaceweatherarchive.com/2019/12/04/a-planetary-wave-is-supercharging-noctilucent-clouds/>, 4 December 2019.
- Contributor – SpaceWeather.com article, *High-altitude Balloon Photos of Polar Stratospheric Clouds*, <https://spaceweatherarchive.com/2020/02/04/first-ever-balloon-photos-of-polar-stratospheric-clouds/>, 4 February 2020.
- Contributor – SpaceWeather.com article, *Noctilucent Cloud Forecast*, <https://spaceweather.com>, 10 May 2020.
- Contributor – SpaceWeather.com article, *Noctilucent Cloud Season Has Begun*, <https://spaceweather.com>, 21 May 2020.

- Contributor – SpaceWeather.com article, *Record Cold in the Mesosphere*, <https://spaceweatherarchive.com/2020/06/09/record-cold-in-the-mesosphere/>, 9 June 2020.
- Contributor – Mlive.com article, *Record cold at 50 miles up could mean shiny noctilucent clouds this summer; Here's where, when to look*, <https://www.mlive.com/weather/2020/06/record-cold-at-50-miles-up-could-mean-shiny-noctilucent-clouds-this-summer-heres-where-when-to-look.html>, 15 June 2020.
- Contributor – Sky and Telescope article, *Nights of Noctilucent Clouds*, <https://skyandtelescope.org/observing/nights-of-noctilucent-clouds/>, 17 June 2020.
- Contributor – NASA Earth Observatory article, *Another Lively Season of Night-Shining Clouds*, <https://earthobservatory.nasa.gov/images/146950/another-lively-season-of-night-shining-clouds>, 9 July 2020.
- Contributor – Press release, *Equatorial Winds Ripple Down to Antarctica*, <https://cires.colorado.edu/news/equatorial-winds-ripple-down-antarctica>, 17 August 2020.
- Contributor – SpaceWeather.com article, *Strange Antarctic Weather Extends to the Edge of Space*, <https://spaceweatherarchive.com/2020/12/02/strange-antarctic-weather-extends-to-the-edge-of-space/>, 2 December 2020.
- Contributor – The Watchers article, *Noctilucent clouds (NLCs) over the South Pole are missing this year*, https://watchers.news/2020/12/03/noctilucent-clouds-nlcs-south-pole-missing-2020/?utm_source=dlvr.it&utm_medium=twitter, 3 December 2020.

Grant Reviewer: NASA Living With a Star Program, NASA Atmospheric Chemistry and Modeling Program, NASA Heliophysics Technology and Instrument Development for Science Program, NASA Earth and Space Science Fellowship (NESSF) Program, NSF Office of Polar Programs, NSF Geosciences, NSF Aeronomy, NSF Coupling Energetics and Dynamics of Atmospheric Regions (CEDAR), Natural Sciences and Engineering Research Council of Canada, Marsden Fund (The Royal Society of New Zealand), The Czech Science Foundation

Manuscript Reviewer: Journal of the Atmospheric Sciences, Journal of Geophysical Research (JGR)-Atmospheres, JGR-Space Physics, Atmospheric Chemistry and Physics, Atmospheric Environment, Geophysical Research Letters, Journal of Atmospheric and Solar-Terrestrial Physics, Quarterly Journal of the Royal Meteorological Society, Annales Geophysicae, Polar Research, Atmospheres, Dynamics of Atmospheres and Oceans, Journal of Climate, and Scientific Reports

Educational Service

Cynthia Singleton, Ph.D. (2004) – Committee Member
 Katelynn Greer, M.S. (2005) – Committee Member
 Chihoko Yamashita, Ph.D. (2010) – Committee Member
 Donovan Wheeler, M.S. (2011) – Advisor

Katelynn Greer, Ph.D. (2011) – Committee Member
Laura Holt, Ph.D. (2012) – Committee Member
Susanne Benze, Ph.D. (2012) – Committee Member
Jeff France, Ph.D. (2012) – Advisor
Matthias Brakebusch, Ph.D. (2013) – Committee Member
Ethan Peck, Ph.D. (2014) – Committee Member
Madeline Smith, Ph.D. (2016) – Examiner
Eileen Kirby, B.A. (2017) – Committee Member
Josh Pettit, Ph.D. (2019) – Committee Member
Colby Brabec, B.A. (2019) – Committee Member

Adrianna Hackett (Cora Randall, University of Colorado, 2014-2017)
Marin Stanev (Joerg Gumbel, Stockholm University, 2015-2016)
Koen Hendrickx (Linda Megner, Stockholm University, 2015-2016)
Colin Triplett (Richard Collins, University of Alaska Fairbanks, 2016-2018)
Jian Zhao (Xinzhao Chu, University of Colorado, 2016-2018)
Yunqian Zhu (Brian Toon, University of Colorado, 2017-2019)
Fede Conte (Jorge Chau, Leibniz-Institut für Atmosphärenphysik, 2016-2019)
Ryan Ligon (Cora Randall, University of Colorado, 2018-2019)
Victoria Hartwick (Brian Toon, University of Colorado, 2016-2019)
Jennifer Alspach (Richard Collins, University of Alaska Fairbanks, 2018-2019)
Chris Maloney (Brian Toon, University of Colorado, 2013-2020)
Colby Brabec (Cora Randall, University of Colorado, 2017-2020)
Zimu Li (Xinzhao Chu, University of Colorado, 2018-2020)
Amanda Steckel (Xinzhao Chu, University of Colorado, 2019-2020)
Jackson Jandreau (Xinzhao Chu, University of Colorado, 2019-2020)

Invited Talks

Harvey, V.L., The role of the polar vortex in Sun-Earth coupling, *HEPPA-SOLARIS*, Bergen, Norway, June 8 2021.

Harvey, V.L., C.E. Randall, E. Becker, L.P. Goncharenko, & J.A. France, The role of the polar vortex in whole atmosphere coupling, *27th International Union of Geodesy and Geophysics General Assembly*, Montreal, Quebec, Canada, 8-18 July, 2019.

Harvey, V.L., The polar vortex extension into the mesosphere, *Coupling, Energetics and Dynamics of Atmospheric Regions (CEDAR) Workshop – Plenary Session Science Highlight*, Santa Fe, New Mexico, 24 June 2019.

Harvey, V.L., C.E. Randall, E. Becker, L.P. Goncharenko, & J.A. France, The role of the polar vortex in whole atmosphere coupling, *American Geophysical Union Meeting*, Washington D. C., 10-14 December, 2018.

Harvey, V.L., The role of the polar vortex in whole atmosphere coupling, *Polar Science Symposium*, National Institute of Polar Research (NIPR), Tokyo, Japan, 4-7 December, 2018.

Harvey, V.L., Introduction to Mesospheric Dynamics, *Coupling, Energetics and Dynamics of Atmospheric Regions (CEDAR) Workshop*, Santa Fe, New Mexico, 24 June 2018.

Harvey, V.L., Science Highlights from the AIM Mission, LASP Mission Operations Group, Boulder, Colorado, 9 August 2017.

Harvey, V.L., Polar vortex effects on Lidar remote sensing of the Antarctic middle atmosphere: Collaborative Opportunities, Cooperative Institute for Research in Environmental Science Prof. Xinzhao Chu Research Group, Boulder, Colorado, 24 July 2017.

Harvey, V.L., Earth's Middle Atmosphere, *Research Experience for Undergraduates (REU) Orientation*, CU-LASP, Boulder, Colorado, 1 June 2017.

Harvey, V.L., The polar vortex in the MLT of WACCM, *High Altitude Observatory Colloquium*, NCAR HAO, Boulder, Colorado, 15 February 2017.

Harvey, V.L., Earth's Middle Atmosphere, *Research Experience for Undergraduates (REU) Orientation*, CU-LASP, Boulder, Colorado, 7 June 2016.

Harvey, V.L., Blast from the Past – Misinformation in your nightly weather report and the history of the Polar Vortex, *NASA Langley Center Colloquium*, NASA Langley Research Center, Hampton, Virginia, 5 April, 2016.

Harvey, V.L., Blast from the Past – Misinformation in your nightly weather report and the history of the Polar Vortex, *Sigma Series Seminar*, Virginia Air and Space Museum, Hampton, Virginia, 5 April, 2016.

Harvey, V.L., Blast from the Past – Misinformation in your nightly weather report and the history of the Polar Vortex, *LASP Public Lecture*, CU-LASP, Boulder, Colorado, 3 February, 2016.

Harvey, V.L., Earth's Middle Atmosphere, *Research Experience for Undergraduates (REU) Orientation*, CU-LASP, Boulder, Colorado, 9 June 2015.

Harvey, V.L., Chemical and Dynamical Definitions of the Stratospheric and Mesospheric Polar Vortices, *Stockholm University Atmospheric Science Seminar*, Stockholm, Sweden, 16 April 2015.

Harvey, V.L., Stratospheric Vortices: A 4-dimensional perspective, *ATOC Seminar*, Boulder, Colorado, 28 September 2012.

Harvey, V.L., From Surface Cold-Air Outbreaks to Polar Mesospheric Clouds: Observing and Modeling the Earth's Atmosphere, *LASP Seminar*, Boulder, Colorado, 6 September 2012.

Harvey, V.L., & C.E. Randall, Atmospheric Effects of Energetic Particle Precipitation, *NSERC CREATE Training Program in Arctic Atmospheric Science*, Alliston, Ontario, Canada, 26 July 2012.

Harvey, V.L., Using Meteorological, Satellite, and ground-based data to study the Arctic, *NSERC CREATE Training Program in Arctic Atmospheric Science*, Alliston, Ontario, Canada, 25 July 2012.

Harvey, V.L., Middle Atmosphere Dynamics: The Polar Vortices, Anticyclones, and the Stratopause, *NSERC CREATE Training Program in Arctic Atmospheric Science*, Alliston, Ontario, Canada, 24 July 2012.

Harvey, V.L., Mesospheric Transport in WACCM, *High Altitude Observatory Colloquium*, Boulder, Colorado, 30 March 2011.

Harvey, V.L., R.L. Collins, D. Atkinson, B. Thuraijah, The stratospheric warming event in 2009, Canadian Network for the Detection of Atmospheric Change (CANDAC) workshop, Toronto, Canada, 16 October 2009.

Harvey, V.L., The Polar Vortex, Cooperative Institute for Research in Environmental Science Prof. Xinzhao Chu Research Group, Boulder, Colorado, 31 August 2009.

Harvey, V.L., et al., HIRDLS observations of the stratopause: Comparisons with SABER and MLS, *HIRDLS Science Team Meeting*, Boulder, Colorado, 14 July 2009.

Harvey, V.L., et al., The four-dimensional evolution of stratospheric warming events during IPY, *Coupling, Energetics and Dynamics of Atmospheric Regions (CEDAR) Workshop*, Santa Fe, New Mexico, 2 July 2009.

Harvey, V.L., et al., The Arctic polar stratosphere and mesosphere during IPY, *Arctic Change Conference*, Toronto, Canada, December 2008.

Harvey, V.L., R.L. Collins, & B. Thuraijah, The Arctic polar stratosphere and mesosphere during IPY 2007-2008, *NOAA Seminar*, Boulder, Colorado, 30 April 2008.

Harvey, V.L., R.L. Collins, C.E. Randall, J.A. France, & D. Wheeler, The Arctic polar stratosphere and mesosphere during IPY 2007-2008, *Mesosphere Lower Thermosphere Seminar*, Boulder, Colorado, 14 March 2008.

Harvey, V.L., R.L. Collins, C.E. Randall, & S. Pawson, The Arctic polar stratosphere and mesosphere during IPY, *Invited Noble Seminar, University of Toronto*, Toronto, Canada, 5 February 2008.

Harvey, V.L., et al., Low-ozone pocket definition using MLS data, *Invited Seminar in the Department of Atmospheric Sciences*, University of Reading, Reading, United Kingdom, September 2006.

Grant Funding History

Co-I – NASA NNH19ZDA001N-LWS (Simon Plunkett, simon.p.plunkett@nasa.gov, 202-358-2034, PI Collins, University of Alaska Fairbanks) – Wave-Driven Asymmetries in the Ionosphere-Thermosphere due to Asymmetries in the Northern and Southern Polar Vortices

Period of Award	8/2020 – 8/2024
Person Months/Year	1
Total CU Budget	\$266,432

PM - NASA NNH18ZDA001N H-DSC (James Spann, jim.spann@nasa.gov, 301-358-0574, PI Randall, LASP) – Wave-induced Atmospheric Variability Enterprise (WAVE)

Period of Award	3/2020 – 2/2022
Person Months/Year	3
Total CU Budget	\$1,062,740

Institutional-PI – NASA NNH19ZDA001N-IIP (Parminder Ghuman, p.ghuman@nasa.gov, 301-286-8000, PI Cossel, NIST) – Frequency Comb Spectrometer for Satellite Atmospheric Remote Sensing

Period of Award	1/2020 – 6/2021
Person Months/Year	0.5
Total CU Budget	\$70,000

Co-I – NASA NNH18ZDA001N-HSR (Arik Posner, arik.posner@nasa.gov, 202-358-0727, PI Goncharenko, MIT Haystack Observatory) – Can Gravity Wave Generation in the Mesospheric Polar Vortex Drive Traveling Ionospheric Disturbances?

Period of Award	7/2019 – 6/2022
Person Months/Year	3
Total CU Budget	\$234,999

Co-I – NASA NNH19ZDA001N-IIP (Parminder Ghuman, p.ghuman@nasa.gov, 301-286-8000, PI Bailey, Va Tech) – Rocket Observations of Nitric Oxide

Period of Award 4/2019 – 4/2021
Person Months/Year 0.5
Total CU Budget \$524,749

Co-I – NASA NNH18ZDA001N-HGIO (Terry Onsager, terrance.g.onsager, 202-358-1615, PI Goncharenko, MIT Haystack Observatory) – Ionospheric Imprint of Regional Mesopause Variability - a Four Dimensional Study of Atmospheric Coupling

Period of Award 4/2019 – 3/2022
Person Months/Year 2.5
Total CU Budget \$320,529

PI – NASA NNH17ZDA001N-HSR (Arik Posner, arik.posner@nasa.gov, 202-358-0727) – Lagrangian Coherent Structures as Sun-Earth Coupling Agents

Period of Award 7/2018 – 7/2021
Person Months/Year 3
Total CU Budget \$764,290

PI – NASA NNH16ZDA001N-HGIO (Terry Onsager, terrance.g.onsager@nasa.gov, 202-358-1615) – The Polar Vortex in the Mesosphere-Lower Thermosphere

Period of Award 1/2017 – 12/2020
Person Months/Year 3
Total CU Budget \$429,277

Co-I - NASA Explorers (Elsayed Talaat, elsayed.r.talaat@nasa.gov, 202-358-3804, PI Russell, Hampton University) - Aeronomy of Ice in the Mesosphere

Period of Award 4/2003 – 9/2022
Person Months/Year 3
Total CU Budget \$81,991,116

Co-I – NASA Living With a Star (Elsayed Talaat, elsayed.r.talaat@nasa.gov, 202-358-3804, PI Randall, University of Colorado) – Response of the Atmosphere to Impulsive Solar Events

Period of Award 5/2014 – 4/2019
Total CU Budget \$987,000

Co-PI - NSF CEDAR (Carrie Black, cblack@nsf.gov, 703-292-8518, Co-PI Goncharenko, MIT Haystack Observatory) – Understanding the High-to-Mid Latitude Ionospheric Response to Stratospheric Warmings)

Period of Award 7/2014 – 6/2018
Total CU Budget \$398,171

Co-I – NSF Office of Polar Programs (PI Collins, rlc@gi.alaska.edu, 907-474-7607, University of Fairbanks) - Understanding the Wave-Driven Circulation and Variability of the Polar Atmosphere through Coordinated Observation, Analysis, and Modeling

Period of Award 6/2011 – 5/2014
Total CU Budget \$113,558

Co-I – NASA Living With a Star (Madhulika Guhathakurta, Madhulika.Guhathakurta@nasa.gov, 202-358-1992, PI Randall, University of Colorado) – Atmospheric Coupling via Energetic Particle Precipitation

Period of Award 9/2010 – 9/2013
Total CU Budget \$506,631

Co-I – NSF CEDAR (Robert M. Robinson, rmrobins@nsf.gov, 703-292-8529, PI Thayer, University of Colorado) – Investigation of Baroclinic Disturbances in the Polar Wintertime Middle Atmosphere

Period of Award 12/2009 – 11/2013
Total CU Budget \$436,940

Co-I – NASA HGI (Jeffrey Hayes, jhayes@nasa.gov, 202-358-0353, PI Smith, aksmith@ucar.edu, NCAR) - Investigating Discrepancies between Observed and Modeled Ozone in the Mesosphere

Period of Award 5/2009 – 4/2013
Total CU Budget \$106,947

Co-I - NSF Office of Polar Programs (PI Collins, rlc@gi.alaska.edu, 907-474-7607, University of Fairbanks) – Pan-Arctic Studies of the Coupled Tropospheric, Stratospheric and Mesospheric Circulation

Period of Award 3/2007 – 2/2010
Total CU Budget: \$297,434

PI – NASA New Investigator Program (Ming Wei, ming-ying.wei-1@nasa.gov, 202-358-0771) – The mesospheric polar vortex

Period of Award 8/2006 – 7/2009
Total CU Budget: \$294,455

PI – NASA ACPMAP (Rangasayi N. Halthore, Rangasayi.N.Halthore@nasa.gov, 202-358-1780) - Dynamical Effects on Ozone Trends

Period of Award 5/2006 – 4/2010
Total CU Budget: \$218,465

Refereed Publications (Students that I Advise or Mentor)

Harvey, V.L., Z. Lawrence, G. Manney, et al., The Arctic Mesospheric Polar Vortex in 2019/2020: Exceptional or Ordinary?, *J. Geophys. Res. Atmos.*, in prep, 2021.

Goncharenko, L.P., **V.L. Harvey**, C.E. Randall, A.J. Coster, S.-R. Zhang, J. A. France, A. Zalozovsky, I. Galkin, M. Spraggs, Observations of pole-to-pole, stratosphere to ionosphere connection, *Geophys. Res. Lett.*, doi:10.1002/2019GL084124, in prep, 2021.

Harvey, V.L., C.E. Randall, L. Hoffmann, E. Becker, L.P. Goncharenko, WAVE team?, Gravity wave climatology near the stratospheric polar vortices, *J. Geophys. Res. Atmos.*, in prep, 2021.

Greer, K.R., **V.L. Harvey**, L.P. Goncharenko, R. Eastes, & A. Burns, Antarctic 2019 Sudden Stratospheric Warming Effects on Longitudinally Varying Thermospheric Composition, in prep, 2021.

Chu, X., **V.L. Harvey**, et al., McMurdo lidar observations of the 2019 SSW, in prep, 2021.

Vadas, S.L., et al.

Becker, E., S.L. Vadas, K. Bossert, **V.L. Harvey**, & C. Zülicke, A high-resolution whole-atmosphere model with resolved gravity waves and specified large-scale dynamics in the troposphere and lower stratosphere, in prep, 2021.

Mlynczak, M.G., **V.L. Harvey**, J. Yue, L. Hunt, The coldest mesopause in the last 800,000 years, *Nature Geoscience Perspective*, in prep, 2021.

Pettit, J.M., C.E. Randall, E.D. Peck, & **V.L. Harvey**, A new MEPED-based Precipitating Electron data set, *J. Geophys. Res. Space Physics*, in prep, 2021.

McCormack, J., **V.L. Harvey**, N. Pedatella, K. Sato, D. Koshin, et al., Evaluation of high-top general circulation models in the mesosphere and lower thermosphere, *J. Geophys. Res. Atmos.*, in prep, 2021.

Siskind, D.E., **V.L. Harvey**, F. Sassi, J.P. McCormack, C.E. Randall, M.E. Hervig, & S.M. Bailey, 2- and 3-dimensional structure of the descent of mesospheric trace constituents after the 2013 SSW elevated stratopause event, in prep, 2021.

(84) **Harvey, V.L.**, S. Datta-Barua, N. Pedatella, N. Wang, C.E. Randall, D.E. Siskind, & W.E. van Caspel, NO transport via Lagrangian Coherent Structures into the top of the polar vortex, doi:10.1020/2020JD034523, submitted, 2021.

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Presentations (Students that I Advise or Mentor)

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Goncharenko, L.P., **V.L. Harvey**, K.R. Greer, S. Zhang, & A. Coster, Impact of Antarctic Sudden Stratospheric Warming on Low and Mid-Latitude Ionosphere, *American Geophysical Union Meeting*, December, 2020. (virtual)

Bailey, S., B. McClintock, J. Carstens, J. Yonker, B. Thurairajah, C. Randall, **V.L. Harvey**, D. Siskind, M. Stevens, B. Poche, & S. Das, Sounding Rocket Observation of Lower Thermospheric Nitric Oxide in the Polar Night, *American Geophysical Union Meeting*, December, 2020. (virtual)

Fujiwara, M., G.L. Manney, L.J. Gray, J. Wright, J. Anstey, T. Birner, S. Davis, E. Gerber, **V.L. Harvey**, M.I. Hegglin, C. Homeyer, J.A. Knox, K. Krüger, A. Lambert, C. Long, P. Martineau, B. Monge-Sanz, M.L. Santee, S. Tegtmeier, S.H. Chabrillat, G.P. Compo, W. Ebisuzaki, Y. Harada, K. Onogi, C. Kobayashi, K. Wargan, J. Whitaker, & R. Dragani, Overview of the SPARC Reanalysis Intercomparison Project (S-RIP) during 2013-2020, *American Geophysical Union Meeting*, December, 2020. (virtual)

Chu, X., **J. Jandreau**, **V.L. Harvey**, E. Becker, **Z. Li**, **I. Geraghty**, X. Li, & Y.-T.C. Lin, McMurdo Lidar observations of Vertical Winds, Temperatures, and Metal Layers before, during, and after the 2019 Antarctic SSW, *American Geophysical Union Meeting*, December, 2020. (virtual)

Prakash, A., X. Chu, M. Da Costa Lindo, S. Raizada, M. Astarita, & **V.L. Harvey**, Analysis of a Decade of PMC Observations by Fe Boltzmann Lidar at McMurdo, Antarctica, *American Geophysical Union Meeting*, December, 2020. (virtual)

Pettit, J.M., C.E. Randall, E.D. Peck, and V.L. Harvey, A new MEPED-based Precipitating Electron data set, *American Geophysical Union Meeting*, December, 2020. (virtual)

Harvey, V.L., S. Datta-Barua, N. Wang, N. Pedatella, C.E. Randall, & D.E. Siskind, The influence of the 2009 Arctic vortex split on the distribution of NO near the polar winter mesopause in WACCMX+DART, *American Geophysical Union Meeting*, December, 2020. (virtual)

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Siskind, D.E., F. Sassi, J.P. McCormack, **V.L. Harvey**, C.E. Randall, M.E. Hervig, S.M. Bailey, Understanding the details of the descent of mesospheric air following the 2013 elevated stratopause event, *American Geophysical Union Meeting*, December, 2020. (virtual)

Chu, X., **V.L. Harvey**, et al., A decade of lidar observations of polar mesospheric clouds in Antarctica – what have we learned?, COSPAR Scientific Assembly, 15-22 August 2020. (virtual)

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