Nancy Chanover

Curriculum Vitae

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Education

2008 **Master of Arts (M.A.) in Education**, *New Mexico State University*, Las Cruces, NM.
Coursework Masters

1991–1997 **Doctor of Philosophy (Ph.D.) in Astronomy**, *New Mexico State University*, Las Cruces, NM.
Dissertation: Temporal Variations in the Vertical Structure of Jupiter's Atmosphere
Advisor: Dr. Reta Beebe

1987-1991 **Bachelor of Arts (B.A.) in Physics, Minor in Astronomy**, *Wellesley College*, Wellesley, MA.
Advisors: Drs. Glenn Stark (Physics) and Richard French (Astronomy)

Employment

2017-present **Professor of Astronomy**, *New Mexico State University*, Las Cruces, NM.

2011-2017 **Associate Professor of Astronomy**, *New Mexico State University*, Las Cruces, NM.

2008-2011 **Assistant Professor of Astronomy**, *New Mexico State University*, Las Cruces, NM.

1998-2008 **College Assistant Professor of Astronomy**, *New Mexico State University*, Las Cruces, NM.

2002-2003 **Tombaugh Scholar**, *New Mexico State University*, Las Cruces, NM.

2000-2001 **Tombaugh Scholar**, *New Mexico State University*, Las Cruces, NM.

1997-1998 **NRC Postdoctoral Research Associate**, *Goddard Space Flight Center*, Greenbelt, MD.
Postdoctoral Advisor: Dr. John Hillman
Research Topics: planetary atmospheres, planetary science instrumentation, acousto-optic tunable filters

Research Interests

My current scholarly activities include:

- visible and near infrared imaging and spectroscopy of giant planet atmospheres in an effort to understand their atmospheric structure, dynamics, and chemistry, and the temporal variability thereof
- instrument development for planetary science and astrobiology applications (i.e. for landed, balloon-borne and small satellite platforms, and for ground-based telescopes)
- characterization of ice in the Moon's south polar region
- data archiving and data fusion

I have developed strong interdisciplinary collaborations with researchers in departments of electrical and computer engineering, mechanical engineering, geology, Earth science, biology, and astrobiology, both within the NMSU system as well as nationwide.

Service

Professional Service and Appointments, 2013-2018

2018-present	U.S. Extremely Large Telescope Program Advisory Committee, member
2017-present	Director of the ARC 3.5m telescope at Apache Point Observatory
2016-present	American Astronomical Society Division for the Planetary Sciences Subcommittee on Professional Culture and Climate (Co-Chair 2016-2017)
2016-2017	Committee On INclusiveness in the SDSS, member (and REU Working Group Chair)
2016	Science Instrument Definition Team for NASA's Gondola for High Altitude Planetary Science (Chair)
2015-2018	American Astronomical Society Council $\rightarrow$ Board of Trustees, member
2015-present	NASA's Planetary Data System Atmospheres Discipline Node, PI
2015-2016	Sloan Digital Sky Survey Pilot REU Program, Coordinator
2014-2017	*Icarus* Editorial Board, member
2013-2016	American Astronomical Society Laboratory Astrophysics Division, Committee Member
2012-2016	NASA Advisory Council/Science Committee/Planetary Science Subcommittee, Committee Member
2013, 2014, 2017	Member of Science Program Committee for Division for Planetary Sciences meetings
2011-2012	Chair of Science Program Committee for 2012 Division for Planetary Sciences meeting, a conference with $\sim$ 1,200 attendees in Reno, NV
ongoing	Reviewer for professional journals, $\sim$ 2 per year
redacted	NASA Review Panel Member for Cassini Data Analysis Program, NASA Astrobiology Institute
redacted	External reviewer for the following NASA Research and Analysis programs: Planetary Astronomy, New Frontiers mission selection, Planetary Mission Data Analysis Program, Outer Planets Research Program, Discovery Data Analysis Program, Planetary Mission Senior Review, Planetary Data Archiving, Restoration, and Tools

University and Department Service, 2013-2018

2014-2016	Astrophysical Research Consortium (ARC) Board of Governors, member
2013-2016	College of Arts and Sciences Colloquium Committee, member
2012-2015	College of Arts and Sciences Planning and Budget Committee, member
2011-2014	ADVANCE mentor
2008-2015	member of faculty search committees for Physics (2012), Mechanical and Aerospace Engineering (2009-2010), and Astronomy (2008, 2010, 2015)
2017-present	College of Arts and Sciences Faculty Affairs Committee, member
2015-present	Tombaugh Committee, Chair
2013-present	Astronomy Undergraduate Committee, member (Chair: 2015-present)
2011-present	Astronomy Graduate Curriculum Committee, member
2011-present	Astronomy Promotion and Tenure Committee, member
2009-present	Astronomy First Year Graduate Student Advisor
2008-present	Astronomy Graduate Admissions Committee, member (Chair: 2010-2015)

2006-present	hosted at least one Astronomy colloquium speaker per year
2004-present	coordinated biweekly Planetary Group meetings
2000-present	Astronomy Observatories Committee, member

Teaching and Mentoring

Courses Taught

ASTR 105G	*The Planets* (a General Education class)
ASTR 105G	*The Planets: Climate Change Across the Solar System* (a pilot First Year Seminar class)
ASTR 110G	*Introduction to Astronomy* (a General Education class), both face-to-face and online
ASTR 305V	*Life in the Universe* (a Viewing the Wider World, General Education class)
ASTR 400	*Undergraduate Research Topics*
ASTR 401	*Topics in Modern Astrophysics* (a calculus-based astrophysics course for advanced undergraduates)
ASTR 402	*Introduction to Astronomical Observations and Techniques* (a calculus-based observational astronomy course for advanced undergraduates)
ASTR 500	*Seminar* (a 1-credit, graduate level course)
ASTR 598	*Special Research Programs* (a directed study course)
ASTR 600	*Predissertation Research*
ASTR 620	*Planetary Processes*
ASTR 700	*Doctoral Dissertation*

Ph.D. Students Graduated

- Alexander Thelen (2018), Postdoctoral researcher, Goddard Space Flight Center
- Kyle Uckert (2016), Postdoctoral researcher, Jet Propulsion Laboratory
- Candace Gray (2015), Support Astronomer at Apache Point Observatory
- Adam McKay (2013), NASA Postdoctoral Fellow, Goddard Space Flight Center
- Charles Miller (2013), Research Associate, New Mexico State University
- Michael Sussman (2011), Data Analyst, Groupon
- Paul Strycker (2011), Associate Professor, Concordia University Wisconsin
- Randall Carlson (2011), Assistant Professor, U.S. Air Force Academy
- James Norwood (2010), community college instructor
- Carrie Anderson (2006), Deputy Lab Chief, NASA Goddard Space Flight Center
- Takafumi Temma (2005), working in industry, Japan

Current Graduate Students (Primary Advisor)

- Emma Dahl, anticipated Ph.D. 2020
- Kristen Luchsinger, anticipated Ph.D. 2022
- Ali Hyder, anticipated Ph.D. 2023
- Matthew Varakian, anticipated Ph.D. 2023

Formal and Informal Mentoring of Undergraduate Students

- Kayla DeVogel (2015-2016), NMSU Physics B.S., 2016
- Joni Clark (2012-2016), NMSU Physics B.A., 2016, enrolled in Fisk-Vanderbilt Bridge program
- Amber Medina (2011-2015), NMSU Physics B.S., 2016, enrolled in Harvard Astronomy graduate program
- Shannon Rees (2010-2016), NMSU Geology B.S., enrolled in Northern Arizona U. Geology graduate program
- Maria Spies (2010), NMSU Physics B.S.

- Daniel Robison (2009), NMSU Physics student
- Stephen Bussard (2007-2010), NMSU Physics B.S.
- Tristan Likes (2005-2006), NMSU Geology B.S., Mechanical Engineering M.S.
- Yvonne Torres (2002-2004), NMSU Physics B.S., employed at University of Arizona Imaging Technology Lab
- Daniel Lofton (2000-2002), NMSU Geography B.S., employed at Harris Corporation
- Elizabeth Simrell (2000-2001), NMSU Physics B.S., employed at Kirtland AFB

In addition to the students listed above, I have served on 3 Astronomy Masters Committee, 16 Astronomy Ph.D. committees, 24 Electrical Engineering Masters Committees, one Geology Masters Committee, two Psychology Masters Committees, and 4 Electrical Engineering Ph.D. Committees. I have also served as the Faculty Advisor for the Society of Astronomy Students, an undergraduate student organization, since its inception in 2012.

Awards and Publicity

June 2016	*Air and Space* magazine article related to autonomous robot probes for Martian caves
July 2015	NMSU press release related to Europa CubeSat concept study
Sep. 2015	television interview about NMSU's *Salon Discovery* event
June 2014	NMSU press release related to cave studies
Nov. 2012	NMSU press release related to cave studies
April 2010	NMSU Teaching Academy Innovation Award
2009-2010	3 NMSU press releases related to observations of the LCROSS impact
Oct. 2009	television interviews about LCROSS observations on KRWG-TV, KVIA, and KRQE
2008, 2009	research featured in *NMSU Research News* publication

Professional Memberships

- American Astronomical Society/Division for Planetary Sciences, Laboratory Astrophysics Division
- American Geophysical Union
- Astronomical Society of the Pacific
- American Association of Variable Star Observers
- Association for Women in Science
- Sigma Xi

Publications

Peer Reviewed Publications (past 5 years) [* denotes a student- or postdoc-led paper]

1 K. Uckert*, N. J. Chanover, S. Getty, D. G. Voelz, W. B. Brinckerhoff, N. McMillan, X. Xiao, P. J. Boston, X. Li, A. McAdam, D. A. Glenar, and A. Chavez. The Characterization of Biosignatures in Caves using an Instrument Suite. *Astrobiology, in press*, 2017.

2 A. E. Thelen*, C. A. Nixon, N. J. Chanover, E. M. Molter, M. A. Cordiner, R. K. Achterberg, J. IV Serigano, P. G. J. Irwin, N. Teanby, and S. B. Charnley. Spatial Variations in Titan's Atmospheric Temperature: ALMA and Cassini Comparisons from 2012-2015. *Icarus, submitted*, 2017.

3 A. Thelen,*, N. J. Chanover, J. Murphy, S. Stochaj, and K. Rankin. A Europa CubeSat Concept

Study for Measuring Atmospheric Production and Structure. *Journal of Small Satellites*, 6:591–607, August 2017.

4 S. Cho, C. Pelzman, D. Voelz, and N. Chanover. Multispectral and Polarimetric Photodetection using a Plasmonic Metasurface. *IEEE Sensors Journal, submitted*, 2017.

5 J. Norwood*, J. Moses, L. N. Fletcher, G. Orton, P. G. J. Irwin, S. Atreya, K. Rages, T. Cavalié, A. Sánchez-Lavega, R. Hueso, and N. Chanover. Giant Planet Observations with the James Webb Space Telescope. *Publ. Astron. Soc. Pac.*, 128(1):018005, January 2016.

6 J. Norwood*, H. Hammel, S. Milam, J. Stansberry, J. Lunine, N. Chanover, D. Hines, G. Sonneborn, M. Tiscareno, M. Brown, and P. Ferruit. Solar System Observations with the James Webb Space Telescope. *Publ. Astron. Soc. Pac.*, 128(2):025004, February 2016.

7 M. J. Loeffler, R. L. Hudson, N. J. Chanover, and A. A. Simon. The spectrum of Jupiter's Great Red Spot: The case for ammonium hydrosulfide (NH_4SH). *Icarus*, 271:265–268, June 2016.

8 A. J. McKay*, A. L. Cochran, M. A. DiSanti, G. Villanueva, N. D. Russo, R. J. Vervack, J. P. Morgenthaler, W. M. Harris, and N. J. Chanover. Evolution of H_2O, CO, and CO_2 production in Comet C/2009 P1 Garradd during the 2011-2012 apparition. *Icarus*, 250:504–515, April 2015.

9 M. J. Loeffler, R. L. Hudson, N. J. Chanover, and A. A. Simon. Giant-planet chemistry: Ammonium hydrosulfide (NH_4SH), its IR spectra and thermal and radiolytic stabilities. *Icarus*, 258:181–191, September 2015.

10 K. Uckert*, N. J. Chanover, C. B. Olkin, L. A. Young, H. B. Hammel, C. Miller, and J. M. Bauer. An investigation of the temperature variations in Neptunes upper stratosphere including a July 2008 stellar occultation event. *Icarus*, 232:22–33, April 2014.

11 A. J. McKay*, N. J. Chanover, M. A. DiSanti, J. P. Morgenthaler, A. L. Cochran, W. M. Harris, and N. D. Russo. Rotational variation of daughter species production rates in Comet 103P/Hartley: Implications for the progeny of daughter species and the degree of chemical heterogeneity. *Icarus*, 231:193–205, March 2014.

12 C. L. Gray*, N. J. Chanover, T. G. Slanger, and K. Molaverdikhani. The effect of solar flares, coronal mass ejections, and solar wind streams on Venus 5577 Å oxygen green line. *Icarus*, 233:342–347, May 2014.

13 N. J. Chanover, D. G. Voelz, D. A. Glenar, and E. F. Young. AOTF-Based Spectral Imaging for Balloon-Borne Platforms. *Journal of Astronomical Instrumentation*, 3:1440005, 2014.

14 S. D. Benecchi, K. S. Noll, A. Thirouin, E. Ryan, W. M. Grundy, A. Verbiscer, A. Doressoundiram, D. Hestroffer, R. Beaton, D. Rabinowitz, and N. Chanover. The UT 7/8 February 2013 Sila-Nunam mutual event future predictions. *Icarus*, 229:423–427, February 2014.

Funding

The research I have conducted while at NMSU has been supported through federal grants from NASA and the National Science Foundation through nationally competed grant proposals. Since becoming a tenure track faculty member in 2008, I have been a Principal Investigator on grants totaling nearly $9M (*$6.4M since becoming an Associate Professor*), and served as a Co-Investigator on additional grants for more than $3M. I have fully supported five Astronomy graduate students through my own research grants and helped six additional graduate students obtain external funding through NASA-funded fellowship opportunities. The following is list of my currently active

grants:

2017-2019 **3.5m Telescope Director**, *Subcontract*, Astrophysical Research Consortium, $90,000.

2016-2021 **Planetary Data System Atmospheric Sciences Node**, *PI*, NASA/Planetary Science Division, $4.1M.

2016-2019 **Ground-based Support of Juno: Jupiter Near-Infrared and Visual Imaging and Spectra**, *Co-I*, NASA/Planetary Astronomy Program, $102,000.

2016-2019 **A Fiber-Coupled Plasmonic Spectrometer for In Situ Characterization of Solar System Surfaces**, *PI*, NASA/Planetary Instrument Concepts for the Advancement of Solar System Observations (PICASSO) Program, $381,000.

2015-2019 **The Chemical History and Evolution of Titan's Atmosphere as Revealed by ALMA**, *Faculty PI*, NASA/Advanced STEM Training and Research (ASTAR) Fellowship, $165,000.

2015-2019 **FreeClimber: Analyzing Steep Terrain and Subsurface Habitability on Mars and Earth**, *Co-I; NMSU PI*, NASA/Planetary Science and Technology Through Analog Research, $263,000 to NMSU.

2015-2019 **Ice at the Moon's South Pole: Particle Dynamics and Photometric Properties of the LCROSS Debris Plume**, *PI*, NASA/Lunar Data Analysis Program, $271,000.