

CURRICULUM VITA: ADAM JOSEPH MCKAY

Department of Astronomy  
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EDUCATION

- 2008-2013 Ph.D., Astronomy  
New Mexico State University  
Las Cruces, New Mexico, USA
- 2004-2008 B.A., Astrophysics and Mathematics  
Williams College  
Williamstown, MA, USA

WORK EXPERIENCE

University of Texas/McDonald Observatory, Post-doctoral Researcher, December 2013-present  
New Mexico State University, Graduate Assistant, August 2008-December 2013  
Williams College, Teaching Assistant, September 2005-May 2008  
Williams College, Research Assistant, June-August 2007

RESEARCH EXPERIENCE

**University of Texas Austin, Dr. Anita Cochran, Advisor [December 2013-present]**

Currently analyzing echelle spectra of several comets obtained with the ARCES spectrograph at Apache Point Observatory, the 2DCoude spectrograph at McDonald Observatory, and the HIRES spectrograph on Keck I.

**New Mexico State University, Dr. Nancy Chanover and Dr. Michael DiSanti (NASA Goddard), Advisors [June 2009-December 2013]**

Analyzed optical echelle spectra of various comets obtained with the ARCES spectrograph as part of my dissertation research. Also analyzed spectra of comet C/2009 P1 Garradd obtained with the CSHELL spectrograph on NASA's IRTF. Work published in several papers and conference

proceedings.

**New Mexico State University, Dr. Jim Murphy, Advisor [August 2008-June 2009]**

Used the NASA AMES GCM to simulate atmospheric pressure variations that would be measured by a network of landers on the Martian Surface. Work was presented as part of a workshop for the planning of a network mission held at the Southwest Research Institute in Boulder, CO in March 2009 (listed as contributor to The Value of Landed Meteorological Investigations on Mars: The Next Advance for Climate Science, a white paper submitted to the Planetary Science Decadal Survey).

**Williams College, Dr. Jay Pasachoff and Dr. Steven Souza, Advisors [March 2007 May 2008]**

Observed a stellar occultation by Pluto using the Magdalena Ridge Observatory 2.4 meter telescope on March 18, 2007. Analyzed occultation light curves from the June 12 Pluto Occultation for signs of rings or small satellites in the Pluto-Charon system. Observed candidate stellar occultations by asteroids and cometary comae using the Williams College Hopkins Observatory 0.6 meter telescope and analyzed resulting light curves to look for signs of an occultation.

#### AWARDS AND GRANTS

- 2015-present co-I on NASA ROSES Emerging Worlds Grant:  
“Characterizing the Nitrogen Inventory of Comets”,  
PI Neil Dello Russo, Johns Hopkins Applied Physics Laboratory
- 2011-2013 NASA Graduate Student Research Program Fellowship
- 2011 Graduate Research Enhancement Grant  
from the NMSU Vice President of Research

#### SELECT TELESCOPE TIME AWARDED

Spitzer Space Telescope, Cycle 8  
“Observations of CO<sub>2</sub> in Comet C/2009 P1 (Garradd)”  
8.6 hours, PI A. McKay

Spitzer Space Telescope, Cycle 9  
“Observations of CO<sub>2</sub> in Comet C/2012 K5 (LINEAR)”  
18 hours, PI A. McKay

Spitzer Space Telescope, Cycle 10 “Observations of CO<sub>2</sub> in Comets C/2012 S1 (ISON) and C/2012 K1 (PanSTARRS)” 4.9 hours, PI A. McKay

Keck Observatory, Semester 2015B

“Establishing the OI-CO<sub>2</sub> connection with Keck HIRES, Spitzer, WISE, and Rosetta”  
2 nights, PI A. McKay

NASA IRTF, Semesters 2011B and 2012A

“Constraining the Parent-Daughter Relationship in Comet C/2009 P1 Garradd”  
13 half nights, PI A. McKay

Spitzer Space Telescope, Cycle 11+12

“CO<sub>2</sub> Orbital Trends in Comets”  
238 hours, PI M. Kelley, co-I A. McKay

Hubble Space Telescope, Cycle 23

“Far UV Spectroscopic Measurements of the Deuterium Abundance of Comets”  
10 orbits, PI D. Bodewits, co-I A. McKay

Keck Observatory, Semester 2013B

“Keck HIRESb Observations of Sun-Grazing Comet C/2012 S1 (ISON) Pre- and Post-Perihelion”  
2 half nights, PI A. Cochran, co-I A. McKay

Keck Observatory, Semester 2015B

“The Volatile Composition of Comet C/2013 US10 Catalina”  
2 half nights, PI N. Dello Russo, co-I A. McKay

PUBLICATIONS

- McKay, A.J., Kelley, M.S., Cochran, A.L., DiSanti, M. A., Dello Russo, N., and Lisse, C.M., 2015, Icarus in Press, arXiv ID:1510.02165, *The CO<sub>2</sub> Abundance in Comets C/2012 K1 (PanSTARRS), C/2012 K5 (LINEAR), and 290P/Jager as Measured with Spitzer*
- McKay, A.J., Cochran, A.L., DiSanti, M. A., Villanueva, G., Dello Russo, N., Vervack, R.J., Morgenthaler, J.P., Harris, W.M., and Chanover, N.J., 2015, Icarus, 250, 504-515 *Evolution of H<sub>2</sub>O, CO, and CO<sub>2</sub> Production in Comet C/2009 P1 Garradd During the 2011-2012 Apparition*
- McKay, A.J., Chanover, N.J, DiSanti, M. A., Morgenthaler, J.P., Cochran, A.L., Harris, W.M., and Dello Russo, Neil, 2014, Icarus, 231, 193-205 *Rotational Variation of Daughter Species Production Rates in Comet 103P/Hartley: Implications for the Progeny of Daughter Species and the Degree of Chemical Heterogeneity*
- McKay, A.J., Chanover, N.J, Morgenthaler, J.P., Cochran, A.L., Harris, W.M., and Dello Russo, Neil, 2013, Icarus, 222, 684-690 *Observations of the Forbidden Oxygen Lines in DIXI Target Comet 103P/Hartley*
- McKay, A.J., Chanover, N.J, Morgenthaler, J.P., Cochran, A.L., Harris, W.M., and Dello Russo, Neil, 2012, Icarus, 220, 277-285. *Forbidden Oxygen Lines in Comets C/2006 W3 Christensen and C/2007 Q3 Siding Spring: Implications for the Sublimation of Volatile Ices*
- Kawakita, H.; Dello Russo, N.; Vervack, R., Jr.; Kobayashi, H.; DiSanti, M.A.; Opitom, C.; Jehin, E.; Weaver, H.A.; Cochran, A.L.; Harris, W.M.; Bockele-Morvan, D.; Biver, N.; Crovisier, J.; McKay, A. J.; Manfroid, J.; Gillon, M., 2014, Astrophysical Journal, 788, 110-16. *Extremely Organic-rich Coma of Comet C/2010 G2 (Hill) during its Outburst in 2012*
- Bodewits, D., Farnham, T., A'Hearn, M., Feaga, L., McKay, A., Schleicher, D., Sunshine, J., 2014, The Astrophysical Journal, 786:48 (9 pp.). *The Evolving Activity of the Dynamically Young Comet C/2009 P1 Garradd*
- Kawakita, H., Kobayashi, H., Dello Russo, N., Vervack, R.J., Hashimoto, M., Weaver, H.A., Lisse, C.M., Cochran, A.L., Harris, W., Bockelee-Morvan, D., Biver, N., Crovisier, J., and McKay, A.J., 2013, Icarus, 222, 723-733. *Parent Volatiles in Comet 103P/Hartley 2 Observed by Keck II with NIRSPEC During the 2010 Apparition*
- Dello Russo, N., Vervack, R.J., Weaver, H.A., Lisse, C.M., Kawakita, H., Kobayashi, H., Cochran, A.L., Harris, W., Bockelee-Morvan, D., Biver, N., Crovisier, J., and McKay, A.J., 2013, Icarus, 222, 707-722. *A High-Resolution Infrared Spectral Survey of 103P/Hartley 2 on the Night of the EPOXI Closest Approach*
- Dello Russo, N., Vervack, R.J., Lisse, C.M., Weaver, H.A., Kawakita, H., Kobayashi, H., Cochran, A.L., Harris, W., McKay, A.J., Biver, N., Bockelee-Morvan, D., and Crovisier, J., 2011,

ApJL, 734, L8. *The Volatile Composition and Activity of Comet 103P/Hartley 2 During the EPOXI Closest Approach*

Meech, K.J., and 196 co-authors, including McKay, A.J., 2011, ApJL, 734, L1. *EPOXI: Comet 103P/Hartley 2 Observations from a Worldwide Campaign*

#### CONFERENCE PRESENTATIONS

McKay, A.J., Cochran, A.L., Dello Russo, N., and Kelley, M.S., 2015, 47th Division of Planetary Sciences Meeting November 2015 in National Harbor, MD, AAS/Division for Planetary Sciences Meeting Abstracts. *Daughter Species Abundances in Comet C/2014 Q2 (Lovejoy)*

McKay, A.J., Kelley, M.S., Cochran, A.L., Dello Russo, N., DiSanti, M.A., Lisse, C., and Chanover, N.J., 2014, 46th Division of Planetary Sciences Meeting November 2014 in Tucson, AZ, AAS/Division for Planetary Sciences Meeting Abstracts. *The CO<sub>2</sub> abundance in Comet C/2012 K1 (PanSTARRS) as Measured by Spitzer*

McKay, A.J., Cochran, A.L., Dello Russo, N., Weaver, H.A., Vervack, R.J., Harris, W.M., Kawakita, H., DiSanti, M.A., Chanover, N.J., and Tsvetanov, Z., 2014, Asteroids, Comets, and Meteors Meeting June 30-July 4, 2014 in Helsinki, Finland. *Evolution of Fragment Species Production in Comet C/2012 S1 (ISON) from R=1.6-0.4 AU*

McKay, A.J. and Cochran, A. 2014, 45th LPSC meeting March 2014 in the Woodlands, TX, LPI contribution 1777. *High Resolution Optical Spectroscopy of Comet C/2012 S1 ISON from R=1.6-0.4 AU Pre-Perihelion*

McKay, A.J., Chanover, N.J., DiSanti, M.A., Morgenthaler, J.P., Villanueva, G., Cochran, A.L., Harris, W.M., Dello Russo, Neil, and Vervack, R.J. 2013, in BAAS, DPS meeting October 2013 in Denver, CO, Abstract 502.07. *The Origin of Daughter Species in Cometary Comae: Results from Observations of Comets 103P/Hartley and C/2009 P1 Garradd*

McKay, A.J., Chanover, N.J., DiSanti, M.A., Morgenthaler, J.P., Cochran, A.L., Harris, W.M., Dello Russo, Neil, and Vervack, R.J. 2012, in BAAS, DPS meeting October 2012 in Reno, NV, Abstract 506.09. *Infrared and Optical Spectroscopy of Comet C/2009 P1 Garradd: CO Abundance and Implications for the Atomic Oxygen Yield from CO Photodissociation*

McKay, A.J., Chanover, N.J., DiSanti, M.A., Morgenthaler, J.P., Cochran, A.L., Harris, W.M., and Dello Russo, Neil 2012, ACM meeting May 2012 in Niigata, Japan Abstract ID 6212. *Using Atomic Oxygen as a Proxy for CO<sub>2</sub> Production in Comets: Application to Comets 103P/Hartley and C/2009 P1 Garradd*

McKay, A.J., Chanover, N.J., Morgenthaler, J.P., Cochran, A.L., Harris, W.M., and Dello Russo, Neil 2011, EPSC-DPS join meeting October 2011 in Nantes, France, pg. 651. *Searching for Compositional Heterogeneity in DIXI Target Comet 103P/Hartley Using High Resolution Optical Spectroscopy*

McKay, A.J., Chanover, N.J, Dello Russo, Neil, Cochran, A.L., Harris, W.M., and Morgenthaler, J.P. 2011, LPSC meeting March 2011 in The Woodlands, TX, LPI Contribution no. 1608, pg. 1621. *High Resolution Optical Spectroscopy of Comet 103P/ Hartley on UT Nov 4*

McKay, A.J., Chanover, N.J, Morgenthaler, J.P., Cochran, A.L., Harris, W.M., and Dello Russo, Neil 2010, in BAAS, DPS meeting October 2010 in Pasadena, CA, Vol. 42, pg. 962. *Forbidden Oxygen Lines in Comets C/2006 W3 Christensen and C/2007 Q3 Siding Spring*

McKay, A.J. and Chanover, N.J 2009, in BAAS, DPS meeting October 2009 in Fajardo, PR, Abstract no. 15.05. *High Resolution Optical Spectroscopy of Comet 17P/Holmes During Its Outburst in October 2007*