

## John E. Moores, Ph.D.

Centre for Planetary Science & Exploration  
University of Western Ontario  
1151 Richmond Street  
London, Ontario CANADA N6A 5B7

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### EDUCATION

- Doctor of Philosophy, Planetary Science**  
Lunar and Planetary Laboratory, University of Arizona  
Aug 2003- December 2008  
Dissertation: *Effects of insolation on habitability and the isotopic history of Martian water.*  
Advisor: Peter H. Smith
- Bachelor of Applied Science (Conferred with Honors)**  
Engineering Science Program (Aerospace/Space Systems)  
University of Toronto  
September 1999-June 2003

### AWARDS, SCHOLARSHIPS and FELLOWSHIPS

- 2010-present      Natural Sciences and Engineering Research Council (NSERC) Postdoctoral Fellowship (PDF)
- June 2010          Canadian Meteorological and Oceanographic Society Roger Daley Postdoctoral Publication Award for "Atmospheric Dynamics at the Phoenix Landing Site as seen by the Surface Stereo Imager."
- July 2009          NASA Group Achievement Awards (2) for contributions to Phoenix mission
- 2008- 2009        NSERC Visiting Fellowship (VF)
- April 2008        University of Arizona College of Science Galileo Circle Scholar
- Sept. 2006        NSERC Post Graduate Scholarship (PGS Doctoral, Foreign Tenure)
- 2005 - 2008        University of Arizona Graduate College Registration Scholarship
- April 2006        University of Arizona College of Science Galileo Circle Scholar
- May 2005          Canadian Space Agency Student Poster Competition 3rd Prize (5<sup>th</sup> Canadian Space Exploration Workshop) for "Results from the Descent Imager/Spectral Radiometer (DISR) Experiment on the Huygens probe at Titan"
- May 2004          University of Arizona Aerospace and Mechanical Engineering Space Prize for *Europa Cryo-Ocean Exploration Submersible* Mission Concept

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### POSITIONS HELD

2010 -present	NSERC PDF: Joint with the Canadian Astrobiology Training Program (CATP) University of Western Ontario
2009 - 2010	Postdoctoral Fellow Department of Earth and Space Science and Engineering, York University
2009	Chair, Planetary Atmospheres: Dynamics, Chemistry, Climate and Couplings III, American Geophysical Union Joint Meeting
2007 - 2009	Visiting Scholar, York University Department of Earth and Space Science and Engineering
2008 - 2009	NSERC Visiting Fellow Environment Canada
2008	Phoenix Mission Operations: Strategic Science Planner, Science Planner/Integrator and Surface Stereo Imager/ASTG liaison
2008	Atmospheric Science Theme Group (ASTG) Member, Phoenix Mission
2007 - 2008	Phoenix Mission Science Team Member at Collaborator Level
2005 - 2008	Graduate Research Associate, Lunar and Planetary Laboratory, University of Arizona
2007	Editor, Proceedings of the 10 <sup>th</sup> Lunar and Planetary Laboratory Conference
2005 - 2007	Lunar and Planetary Laboratory Conference Organizing Committee
2006	Editor, Proceedings of the 9 <sup>th</sup> Lunar and Planetary Laboratory Conference
2005	Editor, Planetary Science Field Geology Practicum
2004 - 2005	Prospective Student Week Graduate Student Coordinator
2003 - 2005	Graduate Research Assistant, Lunar and Planetary Laboratory University of Arizona

### SUCCESSFUL GRANTS

(Dollar values are for the entire value over the life of the grant)

2010	C\$80,000	NSERC	Isotopes in Martian Atmospheric Modeling, PDF
2010	C\$80,000	CATP	Polygonal Terrain on Mars as an Astrobiological Niche
2006	C\$42,000	NSERC	Proposal for Support of Isotopic Work, PGS-D (Foreign)
2006	US\$97,000	NASA OPR	Experimental simulation of cometary sublimation (co-authored with R.H Brown and D.S. Lauretta)
2005	US\$15,000	LPL/UA	Experimental Equipment for Isotopic Work (tuaq project)

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### TEACHING EXPERIENCE and EDUCATION/PUBLIC OUTREACH

January 21, 2011	Invited Lecture to the Royal Astronomical Society of Canada Mississauga Chapter
November 24, 2010	Invited Lecture to the Royal Astronomical Society of Canada Toronto Chapter
2009 - 2010	Guest Lecturer for PHYS 3070: Planets and Planetary Systems York University (Total in-class lecturing time: 8 hours)
2010 – present	Co-Host of “Live from York U” radio program on Astronomy.fm
2009 – present	Docent, York University Observatory
August 2, 2008	Invited Lecture on Phoenix Mission University of Arizona’s Discovery Days
Spring 2007	Guest Lecturer for PTYS 206: The Golden Age of Planetary Exploration University of Arizona
2006 - 2007	Teaching Associate, University of Arizona
2004 - 2008	Docent at Phoenix Science Operations Centre

### RESEARCH INTERESTS

- Surface processes of icy and arid bodies
- The atmospheres and volatile cycles of Mars and Titan
- Habitable niches on the Martian surface and throughout the solar system
- Atmospheric, surface and ocean remote sensing of planetary bodies
- Science-Driven Space Mission Design

### PROFESSIONAL AFFILIATIONS

2007 - 2011	American Geophysical Union, Full Member
2010 - 2011	American Astronomical Society, Div. for Planetary Sciences, International Affiliate
2010 - 2011	Geological Association of Canada, Full Member

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### PUBLICATIONS

#### First Author

**Moores, J.E.**, Smith, P.H. and Boynton, W. (2011a) Adsorptive Fractionation of HDO on JSC MARS-1 during Sublimation with Implications for the Regolith of Mars. *Icarus* doi: 10.1016/j.icarus.2010.10.020.

**Moores, J.E.**, L. Komguem, J.A. Whiteway, M.T. Lemmon, C. Dickinson and F. Daerden (2011b) Observations of Near-Surface Fog at the Phoenix Mars Landing Site. Accepted for publication at *Geophysical Research Letters*.

**Moores, J.E.**, Brown, R.H., Lauretta, D.S. and Smith, P.H. (2011c) Adsorptive Fractionation of HDO on JSC MARS-1 during Long-Term Sublimation of Dusty Water Ice. Under review at *Planetary and Space Science*.

**Moores, J.E.**, Lemmon, M.T., Smith, P.H., Komguem, L., Whiteway, J. (2010) Atmospheric dynamics at the Phoenix landing site as seen by the Surface Stereo Imager. *Journal of Geophysical Research, Planets*. 115, E00E08 doi:10.1029/2009JE003409.

**Moores, J.E.**, Pelletier, J.D., and Smith, P.H. (2008) Crack propagation by differential insolation on desert surface clasts. *Geomorphology*. 102, 472-481 doi: 10.1016/j.geomorph.2008.05.012

**Moores, J.E.**, Smith, P.H., Tanner, R., Schuerger, A.C. and Venkateswaran, K.J. (2007) The Shielding Effect of Small-Scale Martian Surface Geometry on Ultraviolet Flux. *Icarus* 192, 417-433.

#### Contributing Author

Brown, R.H., D.S. Lauretta, B. Schmidt and J. Moores (2011) Experimental and Theoretical Simulations of Ice Sublimation with Implications for the Chemical, Isotopic and Physical Evolution of Icy Objects. Under review at *Planetary and Space Science*.

Dickinson, C., J.A. Whiteway, L. Komguem, J.E. Moores and M.T. Lemmon (2010) Lidar Measurements of Clouds in the Planetary Boundary Layer on Mars. *Geophys. Res. Lett* doi: 10.1029/2010GL044317

Holstein-Rathou, C., H.P. Gunnlaugsson, J. Merrison, K. Bean, B. Cantor, J. Davis, R. Davy, N. Drake, M. Ellehoj, W. Goetz, Stubbe Hviid, C. Lange, S.E. Larsen, M. Lemmon, M. Madsen, M.C. Malin, J. Moores, P. Nørnberg, P. Smith, L. Tamppari, P. Taylor (2010) Winds at the Phoenix Landing Site. doi: 10.1029/2009JE003411 *Journal of Geophysical Research*.

Tamppari, L., Bass, D.S., Cantor, B., Daubar, I., Fisher, D., Fujii, K.K., Gunnlaugsson, H., Hudson, T.L., Kass, D.M., Kleinboehl, A., Lemmon, M.T., Mellon, M.T., **Moores, J.E.**, Searls, Seelos, F.P., M., Smith, M.D., Smrekar, S.E., Taylor, P., Von Holstein-Rathlou, C.O., Whiteway, J., Wolff, M. (2010) Phoenix and MRO Coordinated Atmospheric Measurements. doi:10.1029/2009JE003415 *Journal of Geophysical Research, Planets*.

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### PUBLICATIONS (continued)

Whiteway, J., Komguem, L., Dickinson, C., Cook, C., Seabrook, J., Popovici, V., Duck, T., Davy, R., Taylor, P., Pathak, J., Fisher, D., Carswell, A., Daly, M., Hipkin, V., Tamppari, L., Renno, N., Smith, P.H. **Moores, J.** and Lemmon, M.T. (2009) Mars Water Ice Clouds and Precipitation. *Science* vol 325, Issue 5936 pp. 68- doi: 10.1126/science.1172344.

Schuerger, A.C., Fajardo-Cavazos, P., Clausen, C.A., **Moores, J.E.**, Smith, P.H. and Nicholson, W.L. (2008) Slow degradation of ATP in simulated martian environments suggests long residence times for the biosignature molecule on spacecraft surfaces on Mars. *Icarus* 194, 86-100.

Tomasko, M.G., Smith, P.H. , **Moores, J.E.** and 37 co-authors (2005) Rain, winds and haze during the Huygens probe's descent to Titan's surface. *Nature* vol 438 n°7069 pp 765-778.

### Non-Refereed and Technical

Shinohara, C. and Moores, J.E. (2005) *Surface Stereo Imager Experiment Implementation Plan*. Phoenix Mars Mission Technical Report.

**Moores, J.E.** (2004) *Final report on the University of Arizona Mars UV atmospheric modeling program*. Deliverable for JPL contract 1249621

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### SELECTED CONFERENCE PRESENTATIONS, POSTERS and INVITED TALKS

- Moores, J.E.**, L. Komguem, J.A. Whiteway, C. Dickinson and M.T. Lemmon (2010 - Poster) Investigations of ice-water cloud and fog at the Phoenix landing site. DPS abstract n°42.3024.
- Moores, J E**, P Smith, R Brown, D Lauretta, W Boynton (2009 - oral) *Experimental Results of Fractionation of HDO and H<sub>2</sub>O with simulated Martian Dust: Implications for the interpretation of past climate on Mars.* American Geophysical Union Joint Meeting
- Moores, J.E.**, J W Bottenheim, S Natcheva, A Sheppard, R Staebler, A Steffen, P Lee (2009 - oral) *Preliminary Results from the 2009 OOTI Campaign: Bromine, Ozone and Mercury.* American Geophysical Union Joint Meeting.
- Moores, J.E.** (2009 - Invited) *Martian Meteorology: Insights from the Phoenix Mission to the Martian Arctic.* 1-hour Seminar delivered at Environment Canada and York University.
- Moores, J.E.**, Lemmon, M.T., Smith, P.H. and the Phoenix Science Team (2008 - poster) *Atmospheric dynamics at the Phoenix landing site as seen by the Surface Stereo Imager.* American Geophysical Union Fall Meeting (AGUFM08)
- Moores, J.E.** (2008 - Invited) *Production of soils and the shielding effect of small-scale surface features.* Lunar and Planetary Laboratory Conference (LPLC08)
- Moores, J.E.**, Smith, P.H., Brown, R.H., Lauretta, D.S., Boynton, W.V. and Drake, M.J. (2008 - oral) *Experimental Results on Isotopic Fractionation of Dusty Deuterated Water Ice During Sublimation.* Lunar and Planetary Science Conference (LPSC08)
- Moores, J.E.**, Pelletier, J.D. and Smith, P.H. (2007 - poster) *Clast Breakdown on Desert Surfaces by Differential Insolation of Cracks 2007.* American Geophysical Union Fall Meeting (AGUFM07)
- Moores, J.E.**, Smith, P.H., Tanner, R., Schuerger, A.C. and Venkateswaran, K.J. (2007 - Oral) *The Shielding Effect of Small-Scale Martian Surface Geometry on Ultraviolet Flux.* Lunar and Planetary Science Conference (LPSC07)
- Moores, J.E.**, Brown, R.H., Lauretta, D.S., and Smith, P.H. (2006 - poster) *Sublimation of Water Ice in Low pressure Environments: Isotopic Effects and Implication for the Martian Paleoclimate Record.* 4<sup>th</sup> International Conference on mars Polar Science and Exploration, Davos, Switzerland.
- Moores, J.E.** (2006 - oral) *Introduction to the Special Session: The relationship between Planetary Science and Space Missions in the context of LPL.* 2006 Lunar and Planetary Laboratory Conference (LPLC 06).
- Moores, J.E.**, Tomasko, M.G., Smith, P.H. et al (2005 - poster) *Results from the Descent Imager/Spectral Radiometer (DISR) Experiment on the Huygens probe at Titan.* 5th Canadian Space Exploration Workshop Workshop (CSEW5). Recipient of the 3rd prize in the student poster contest.