

Curriculum Vitae of Alexander Gerard Hayes

Current Address

412 Space Science Bldg.
Ithaca, NY 14853-6801

<http://www.alexanderghayes.com>

hayes@astro.cornell.edu
(607) 793-7531

Permanent Address

219 Buttermilk Lane
Ithaca, NY 14850

LAST UPDATED: MARCH 2017

CURRENT AFFILIATION

Astronomy Department, Cornell University

PERSONAL INFORMATION

Born: May 1981
Married: 3 Children

EDUCATION

Ph.D.	Planetary Science (Minors: Geology / Remote Sensing)	<i>California Institute of Technology</i>	April 2011
M.S.	Planetary Science	<i>California Institute of Technology</i>	June 2008
M.Eng.	Applied & Engineering Physics	<i>Cornell University</i>	Dec. 2003
B.A.	Astronomy / Physics, <i>Summa Cum Laude</i>	<i>Cornell University</i>	May 2003
B.A.	College Scholar (Astrobiology), <i>Summa Cum Laude</i>	<i>Cornell University</i>	May 2003

ACADEMIC AWARDS AND FELLOWSHIPS

World Economic Forum Young Scientist Award (2017)	NASA Graduate Research Fellowship (2008-2011)
Zeldovich Medal, COSPAR / RAS (2016)	Henshaw Fellow, Caltech (2006-2007)
Kavli Fellow, National Academy of Sciences (2014)	David Delano Clark Award, Cornell A&EP (2004)
NASA Early Career Fellowship (2013)	<i>Summa Cum Laude</i> in Astronomy, Cornell (2003)
Ronald Greeley Early Career Award, AGU (2012)	<i>Summa Cum Laude</i> in Astrobiology, Cornell (2003)
Miller Research Fellowship (2011-2012)	Distinction in all Subjects - Cornell University (2003)
USGS Shoemaker Fellowship (2011, <i>Declined</i>)	Cornell University College Scholar (2000-2003)
AGU Outstanding Student Paper Award (2008, 2010)	Cornell University Dean's List (1999-2003)
Sigma Xi Young Scholar Procter Prize (2008)	NASA Group Awards (MER/MSL/Cassini)

TEACHING EXPERIENCE

Cornell University; <i>Teaching Assistant</i>	California Institute of Technology; <i>Teaching Assistant</i>
<ul style="list-style-type: none">A102/104, "Our Solar System" (Spring 2003)A194: "Observational Astronomy" (Fall 2004)A211: Stars, Galaxies and Cosmology" (Fall 2004)	<ul style="list-style-type: none">Ge103: "Planetary Science" (Spring 2008)Ge214: "Spectroscopy of Minerals" (Spring 2009)Ge151: "Planetary Surfaces" (Spring 2010)
Glendale Community College; <i>Guest Lecturer; Astronomy</i> (2008-2011)	
University of California, Berkeley; <i>Guest Lecturer; Earth & Planetary Science and Astronomy</i> (2011-2013)	
Cornell University; <i>Assistant Professor</i>	
<ul style="list-style-type: none">A4410: "Experimental Astronomy" (Fall 2013)A2202: "Our Home in the Solar System" (Spring 2014, Fall 2014)A2202: "A Spacecraft Tour of the Solar System" (Fall 2015, Fall 2016, Fall 2017)A6577: "Planetary Surface Processes" (Spring 2015, Spring 2017)A3310: "Planetary Image Processing" (Fall 2015)A6500: "Scientific Issues in Landing Site Selection Activities for the Mars2020 Rover" (Spring 2016)A1102: "Our Solar System" (Spring 2017)	

PROFESSIONAL APPOINTMENTS

- Astronomy Department, Cornell University; Ithaca, NY**
 - Assistant Professor; *January 2013-Present*
 - Director of Spacecraft Planetary Imaging Facility (NASA RPIF); *January 2013-Present*
 - Graduate Field Member; Earth and Atmospheric Sciences; *September 2013-Present*
 - Graduate Field Member; Astronomy and Space Sciences; *July 2011-Present*

- *Specialization: Planetary Science, Comparative Planetology, Solar System Exploration, Spacecraft Instrumentation, Mission Development*
- **Miller Institute for Basic Research in Science, University of California at Berkeley;** Berkeley, CA
 - Miller Research Fellow; *July 2011-December 2012*
 - *Department Affiliations: Astronomy; Earth and Planetary Science*
 - *Faculty Hosts: William Dietrich, Michael Manga, and Imke de Pater*
- **Division of Geological and Planetary Sciences, California Institute of Technology;** Pasadena, CA
 - Post-Doctoral Scholar; *April 2011-July 2011*
 - Graduate Student; *September 2006-March 2011*
 - *Specialization: Remote Sensing and Modeling of Planetary Surfaces (Visible, Infrared, & Radar) and Spacecraft Instrumentation*
- **Lincoln Laboratory, Massachusetts Institute of Technology;** Lexington, MA
 - Consultant; *September 2006- September 2010 (DOD Secret Clearance)*
 - Associate Staff; *May 2004-September 2006 (DOD Secret Clearance)*
 - *Specialization: Laboratory Experiments and Management; IR Remote Sensing, Instrument Design, Instrument Characterization, and Algorithm Development supporting Ballistic Missile Defense and Tactical Air Defense Programs*
- **School of Earth and Space Exploration, Arizona State University;** Tempe, AZ
 - Remote Software Consultant; *May 2004-September 2006*
 - *Specialization: Planning and Analysis Tools for Tactical Operation of Spacecraft Infrared Spectrometer (Mini-TES Instrument on MER Rovers)*
- **Jet Propulsion Laboratory, California Institute of Technology;** Pasadena, CA
 - Mars Exploration Rover Science Team Affiliate; *January 2004 – May 2004 (employed by Cornell University during primary mission)*
 - *Specialization: Science Payload Operation (Uplink and Downlink of Science and Engineering Cameras)*
- **Center for Radiophysics and Space Research, Cornell University;** Ithaca, NY
 - Student Researcher; *August 1999-December 2003*
 - *Specialization: Instrument Co-Registration, Data-Fusion, and Camera Calibration (Visible and Infrared)*
 - Internships:
 - Summer 2000: *Awarded NASA Space Grant to support XRGs team of the NEAR mission*
 - Summer 2001: *Funded by MER to build and operate student camera laboratory*
 - Summer 2002: *Funded by MER to calibrate visible flight cameras at JPL*
 - Summer 2003: *Funded by MER to create software to visualize spectrometer footprints in visible cameras for spacecraft operations*

BOOK CHAPTERS

- [2] O. Aharonson, **A. G. Hayes**, R. M. C. Lopes, A. Lucas, P. Hayne, T. Perron, and L. A. Soderblom . Titan's Surface Geology (2013), In: I. Mueller-Wodarg (Ed) Titan: Surface, Atmosphere, and Magnetosphere. 646pp., Cambridge Planetary Science Series, Cambridge University Press, Cambridge.
- [1] J. Grotzinger, **A. G. Hayes**, M. O. Lamb, S. M. McLennan. Sedimentary Processes on the Earth, Mars, Titan, and Venus (2013), In: M. Bullock and M. Mackwell (Eds) Comparative Climatology of Terrestrial Planets. 600pp., University of Arizona Press Space Science Series, University of Arizona Press, Tucson .

JOURNAL PUBLICATIONS (* INDICATES PAPER WAS LED BY STUDENT OR POSTDOC ADVISEE)

h-INDEX: 39 m-INDEX: 3 i10-INDEX: 77 CITATIONS: 5568 (GOOGLE SCHOLAR)

RESEARCHER ID: P-2024-2014 <http://www.researcherid.com/rid/P-2024-2014>

- [97] K. P. Hand, A.E. Murray, J. B. Garbin, W. B. Brinkerhoff, B.C. Christner, K.S. Edgett, B.L. Ehlmann, C.R. German, **A. G. Hayes**, T.M. Hoehler, S.M. Horst, J.I. Lunine, K.H. Nealon, C. Paranicas, B.E. Schmidt, D.E. Smith, A.R. Rhoden, M.J. Russell, A.S. Templeton, P.A. Willis, R.A. Yingst, C.B. Phillips, M.L. Cable, K.L. Craft, A.E. Hofmann, T.A. Nordheim, R.P. Pappalardo, and the Project Engineering Team (2017): Report of the Europa Lander Science Definition Team. Posted February, 2017.
- [96] Z. Zhang*, **A. G. Hayes**, I. de Pater, D. E. Dunn, M. A. Janssen, P. D. Nicholson, J. N. Cuzzi, B. J. Butler, R. J. Sault, S. Chatterjett, VLA multi-wavelength microwave observations of Saturn's C and B rings, *Icarus*, 2017 (Submitted).
- [95] S. P. D. Birch*, Y. Tang*, **A. G. Hayes**, R. de Freitas Bart, S. Squyres, J. Soderblom, R. Kirk, Geomorphology of Comet 67P/Churyumov-Gerasimenko, *MNRAS*, 2017
- [94] A. Le Gall, C. Leyrat, M. A. Janssen, G. Choblet, G. Tobie, O. Bourgeois, C. Sotin, A. Lucas, C. Howett, R. Krik, R. D. West, R. D. Lorenz, A. Stolzenbach, **A. G. Hayes**, L. Bonnefoy, G. Veyssiere, New thermal anomalies in the subsurface of Enceladus' South Polar Terrain, *Nature Astronomy*, 2017
- [93] Z. Zhang*, **A. G. Hayes**, M. A. Janssen, P. D. Nicholson, J. N. Cuzzi, I. de Pater, D. E. Dunn, Origin of Saturn's A and B Rings, and the Cassini Division as Suggested by Their Non-Icy Material Content, *Icarus*, 2017.
- [92] J. S. Mendez Harper, G. D. McDonald, J. Dufek, M. J. Malaska, **A. G. Hayes**, J. McAdams, A. Stockston, J. J. Wray, The Electrified Dunes of Titan, , *Nature Geosciences*, 2017.
- [91] C. Grima, M. Mastrogiuseppe, **A. G. Hayes**, S. D. Wall, B. Stiles, C. Elachi, Surface Gourhness of Titan's Hydrocarbon Seas, *Icarus*, 2016 (Submitted).
- [90] B.L. Ehlmann, F.S. Anderson, J. Andrews-Hanna, Carter, D. C. Catling, Christiansen, B.A. Cohen, C.D. Dressing, C.S. Edwards, L.T. Elkins-Tanton, K.A. Farley, C.I. Fassett, W.W. Fischer, A.A. Fraeman, M. P. Golombek, V.E. Hamilton, **A. G. Hayes**, C. D. K. Herd, B. Horgan, R. Hu, B.M. Jakosky, J.R. Johnson, J. F. Kasting, Kerber, E.S. Kite, H.A. Knutson, J. I. Lunine, P. R. Mahaffy, N. Mangold, McCubbin, J.F. Mustard, Niles, C. Quantin-Nataf, M. S. Rice, K.M. Stack, D. J. Stevenson, S.T. Stewart, M. J. Toplis, T. Usui, B.P. Weiss, S.C. Werner, R.D. Wordsworth, J.J. Wray, R.A. Yingst, Y.L. Yung, K.J. Zahnle, The Sustainability of Habitability on Terrestrial Planets: Insights, Questions, and Needed Measurements from Mars for Understanding the Evolution of Earth-like Worlds, *JGR Planets*, 2016
- [89] M. J. Malaska, R. Hodyss, J. I. Lunine, **A. G. Hayes**, J. Hofgartner, G. Hollyday, Laboratory Measurements of Nitrogen Dissolution in Titan Lake Fluids, *Icarus*, 2016
- [88] V. Poggiai*, M. Mastrogiuseppe*, **A.G. Hayes**, R.Seu, Liquid Filled Canyons on Titan, *GRL*, 2016
- [87] M. Mastrogiuseppe*, **A.G. Hayes**, V. Poggiali, J. Lunine, J., R. Lorenz, R.Seu, A. Le Gall, K. Mitchell, **A. G. Hayes**, S. P. D. Birch. Bathymetry and Composition of Titan's Ontario Lacus derived from Monte Carlo-based waveform inversion of Cassini RADAR altimetry data, *Icarus*, 2016 (Submitted)
- [86] B. G. Bills, B. W. Styles, R. L. Kirk, **A. G. Hayes**, S. P. D. Birch. A Dynamic Model of Titan's Rotation Constrained by Cassini RADAR Data, *Icarus*, 2016 (Submitted)
- [85] D. Vincent, O. Karatekin, V. Vallaey, **A. G. Hayes**, M. Mastrogiuseppe, C. Notarnicola, V. Dehant, E. Deleersnijder. Numerical study of tides in Ontario Lacus, a hydrocarbon lake on the Surface of the Saturnian moon Titan, *Icarus*, 2016

- [84] C. A. Nixon, R. K. Achterbery, M. Adamkovics, B. Bezard, G. L. Bjoraker, T. Cornet, **A. G. Hayes**, M. T. Lemmin, M. Lopez-Puertas, S. Rodriguez, C. Sotin, N.A Teanby, R. A. West, E. P. Turtle, S. N. Milam. Titan Science with the James Webb Space Telescope (JWST), *Publications of the Astronomy Society of the Pacific (PASP)*, MS #35133R1, 2016.
- [83] J. D. Hofgartner*, **A. G. Hayes**, J. I. Lunine. Titan's Magic Island: Transient Feature in a Hydrocarbon Sea, *Icarus*, 2016
- [82] **A. G. Hayes**, Titan's Lakes and Seas, *Annual Reviews of Earth and Space Science*, 2016
- [81] M.C. Palucis, W. E. Dietrich, **A. G. Hayes**, T. Parker, D. Y. Sumner, N. Mangold, K. Lewis, H. Newsom. Sequence and relative timing of large lakes in Gale crater (Mars) after the formation of Mt. Sharp. *JGR Planets* 2016.
- [80] A. Le Gall, M. J. Malaska, R. D. Lorenz, M. A. Janssen, T. Tokano, **A. G. Hayes**, M. Mastrogiuseppe, G. Veysiere. Composition, seasonal change and bathymetry of Ligeia Mare, Titan, derived from its microwave thermal emission, *JGR Planets* 2016.
- [79] J. Radebaugh, D. Ventra, R. Lorenz, T. Farr, R. Kirk, **A. G. Hayes**, M. Malaska, S. Birch, Z. Liu, J. Lunine, J. Barnes, A. Le Gall, R. M. C. Lopes, E. Stofan, S. D. Wall, and P. Paillou. Alluvial and Fluvial Fans on Saturn's Moon Titan Reveal Processes, Materials, and Regional Geology. *Geology and Geomorphology of Alluvial and Fluvial Fans: From Terrestrial to Planetary Perspectives*, Geological Society Publishing House 2016
- [78] G. D. McDonald*, **A. G. Hayes**, R. C. Ewing, J. M. Lora, C. E. Newman, T. Tokano, A. Soto, G. Chen, A. Lucas. Variations in Titan's dune orientations as a result of orbital forcing. *Icarus* 2016
- [77] S. P. D. Birch*, **A. G. Hayes**, W. E. Dietrich, J. Moore, M. Mastrogiuseppe, O. White, A. D. Howard, M. J. Malaska, R. Kirk, E. Turtle, and J. Barnes. Geomorphology of Titan's polar terrains: Using landscape form to understand surface process. *Icarus* 2016
- [76] S. P. D. Birch*, **A. G. Hayes**, A. D. Howard, J. Moore, and J. Radebaugh. Alluvial Fan Morphology, Distribution, and Formation on Titan. *Icarus* 2016
- [75] M. Malaska, R. L. Lopes D. A. Williams, **A. G. Hayes**, A. M. Shoenfield, M. A. Janssen, A. Le Gall, A. Solomindou, J. Radebaugh, C. D. Neish, S. P. D. Birch, J. Soderblom, T. G. Farr, E. P. Turtle. Geomorphological map of the Afekan Crater Region, Titan: Terrain Relationships in Titan's Equatorial and Mid-Latitudes. *Icarus* 2016
- [74] M. A. Janssen, A. Le Gall, R. M. Lopes, R. D. Lorenz, M. Malaska, **A. G. Hayes**, C. D. Neish, A. Solomonidou, K. L. Mitchell, J. Radebaugh, S. J. Keihm, M. Choukroun, C. Leyrat, P. J. Encrenaz, and M. Mastrogiuseppe. Titan's Surface at 2.18-cm Wavelength Imaged by the Cassini RADAR Radiometer Results and Interpretations through the First Ten Years of Observation. *Icarus* 2016
- [73] R. M. Lopes, M. Malaska, A. Solomonidou, A. Le Gall, M. A. Janssen, C. D. Neish, E. P. Turtle, S. P. D. Birch, **A. G. Hayes**, J. Radebaugh, A. Coustenis, B. W. Stiles, R. L. Kirk, K. L. Mitchell, E. R. Stofan, K. J. Lawrence. Nature, Distribution, and Origin of Titan's Undifferentiated Plains. *Icarus* 2016
- [72] L. E. Bonnefoy*, **A. G. Hayes**, P. O. Hayne, M. J. Malaska. Constraining the spectral properties of Titan's dunes and interdunes through a combined analysis of Cassini RADAR and VIMS. *Icarus* 2016
- [71] R. J. Michaelides*, **A. G. Hayes**, M. Mastrogiuseppe, H. A. Zebker, T. G. Farr, M. J. Malaska, V. Poggiali. Constraining the physical properties of Titan's empty lake basins from nadir and off-nadir radar backscatter. *Icarus* 2016
- [70] M. Malaska, R. L. Lopes **A. G. Hayes**, J. Radebaugh, J. W. Barnes, R. D. Lorenz, E. Turtle. Material flux map of Titan: the fate of dunes. *Icarus* 2016
- [69] M. Mastrogiuseppe*, **A. G. Hayes**, V. Poggiali, R. D. Lorenz, L.I. Lunine, G. Picardi, R. Sue, E. Flamini, G.

- Mitri, C. Notarnicola, P. Paillou, and H. Zebker. A Bayesian Method for Recovering the Depth and Composition of Titan's Lakes/Seas using the Cassini RADAR, *IEEE* 2016.
- [68] **A. G. Hayes**, W. Dietrich, A. D. Howard, R. L. Kirk, E. P. Turtle, J. W. Barnes, A. Lucas, K. L. Mitchell. Topographic Constraints on the evolution of Titan's north polar landscape. *GRL* 2017
- [67] Z. Zhang*, **A. G. Hayes**, M. Janssen, P. D. Nicholson, D. Dunn, and I. dePater, and J. Cuzzi. Clues to the Origin and Composition of Saturn's C-Ring from Passive Microwave Observations by Cassini, *Icarus* 2016
- [66] O. Mousis, J. I. Lunine, **A. G. Hayes**, J. D. Hofgartner. The Fate of Ethane in Titan's Hydrocarbon Lakes and Seas, *Icarus* 2016.
- [65] M. Adamkovics, J. L. Mitchell, **A. G. Hayes**, P. Rojo, P. Corlies, and J. W. Barnes. Meridional variation in tropospheric methane on Titan observed with AO spectroscopy at Keck and VLT, *Icarus* 2016.
- [64] J. Radebaugh, J.W. Barnes, R. D. Lorenz, **A. G. Hayes**, K. Arnold, C. Chandler. Alluvial Plains on Titan, *Planetary Science* 2015
- [63] J.W. Barnes, R. D. Lorenz, J. Radebaugh, **A. G. Hayes**, K. Arnold, C. Chandler. Production and Global Transport of Titan's Sand Particles, *Planetary Science* 2015
- [62] R. C. Ewing, G. McDonald, **A. G. Hayes**, Multi-Spatial Analysis of Aeolian Dune Field Patterns, *Geomorphology, BGS Special Issue* 2015
- [61] R. C. Ewing, **A. G. Hayes**, A. Lucas. Sand Dune Patterns on Titan controlled by long-term climate cycles, *Nature Geosciences*, 2015
- [60] A. Lucas, R. Rodriguez, C. Narteua, B. Charnay, T. Tokano, A. Garcia,, M. Thiriet, S. Courrech, **A. G. Hayes**, R. Lorenz, O. Aharonson. C. Ewing, G. McDonald, **A. G. Hayes**, Insight on growth mechanisms and dune orientation on Titan, *GRL* 2014
- [59] J. D. Hofgartner*, **A. G. Hayes**, J. I. Lunine, H. Zebker, B. Stiles, C. Sotin, J. W. Barnes, B. H. Brown, P. Encrenaz, R. D. Kirk, A. Le Gall, R. M. Lopes, R. D. Lorenz, M. Malaska, K. L. Mitchell, P. Paillou, J. Radebaugh, E. Turtle, S. Wall, C. Wood, and the Cassini RADAR Team, Discovery of Transient Features in a Titan Sea, *Nature Geosciences*, 2014
- [58] J. M. Lora, J. I. Lunine, J. L. Russell, **A. G. Hayes**, Simulations of Titan's Paleoclimate, *Icarus* 2014
- [57] **A. G. Hayes**, C. I. Fassett, R. D. Lorenz, J. I. Lunine, K. L. Mitchell, T. J. Parker, E. H. Stanley, and L. Winslow. Lacustrine Environments on Earth, Mars, and Titan, *Geomorphology, BGS Issue* 2014 (submitted)
- [56] J. W. Barnes, C. S. Sotin, J. M. Soderblom, **A. G. Hayes**, M. Donelan, S. Rodriguez, S. L. Mouelic, K. H. Baines, T. B. McCord, Cassini/VIMS Observes Rough Surface on Titan's Punga Mare in Specular Reflection, *Planetary Science* 2014
- [55] R. D. Lorenz, R.L. Kirk, **A. G. Hayes**, Y. Z. Anderson, J. I. Lunine, A RADAR Map of Titan's Seas: Application to Mission Studies and Oceanographic Studies. *Icarus* 2014
- [54] G. Mitri, R. Orosei, **A. G. Hayes**, A. Coustenis, G. Fanchini, K. Khurana, J. P. Lebreton, R. Lopes, R. D. Lorenz, L. Iess, R. Meriggiola, M. L. Moriconi, C. Sotin, E. Stofan, T. Tokano, F. Tosi. The Exploration of Titan with an Orbiter and a Lake-Probe, *Planetary and Space Science* 2014
- [53] H. Zebker, **A. G. Hayes**, M. Janssen, A. Le Gall, R. D. Lorenz, L. Wye. Surface of Ligeia Mare, Titan, from Cassini Altimeter and Radiometer Analysis, *GRL* 2014
- [52] M. Mastrogiuseppe*, V. Poggiali, **A. G. Hayes**, R. D. Lorenz, L.I. Lunine, G. Picardi, R. Sue, E. Flamini, G. Mitri, C. Notarnicola, P. Paillou, and H. Zebker. The Bathymetry and Composition of a Titan Sea, *GRL* 2014
- [51] M. Palucis, W. E. Dietrich, **A.G. Hayes**, D.Y. Sumner, C. Hardgrove, S. Gupta, and F. Calef, [The origin and evolution of the Peace Vallis fan system that drains to the Curiosity landing area, Gale Crater](#), *JGR Planets* 2014

- [50] A. Lucas, O. Aharonson, C. Deledalle, **A. G. Hayes**, R. Kirk, E. Howington-Kraus. Insights into Titan's geology and hydrology based on enhanced image processing of Cassini RADAR data *JGR Planets* 2014
- [49] C. Culha*, **A. G. Hayes**, M. Manga, and A. Thomas. Doule Ridges on Europa Accommodate Some of the Missing Surface Contraction, *JGR Planets* 2014
- [48] G. Mitri, R. Meriggola, **A. G. Hayes**, G. Tobie, A. Genova, J. I. Lunine, and L. Iess. Shape, Topography, Gravity Anomalies, and Tidal Deformation on Titan, *Icarus* 2014
- [47] R. D. Lorenz, B. W. Stiles, O. Aharonson, A. Lucas, **A. G. Hayes**, R. L. Kirk, A. Zebber, E. P. Turtle, F. Nimmo, C. D. Neish, J. W. Barnes, E. R. Stofan [A Global Topographic Map of Titan](#), *Icarus* 2013.
- [46] C. D. Neish, R. L. Kirk, R. D. Lorenz, V. Bray, P. Schenk, B. Stiles, E. P. Turtle, K. Mitchell, **A. G. Hayes** [Crater Topography on Titan: Implications for Landscape Evolution](#), *Icarus* 2013.
- [45] **A. G. Hayes**, R. D. Lorenz, M. Manga, M. A. Donelan, H. L. Tolman, W. W. Fischer, S. D. Graves, M. P. Lamb, J. I. Lunine, P. Encrenaz, O. Aharonson, and the Cassini RADAR Team. [Wind driven capillary-gravity waves on Titan's Lakes: Hard to Detect or Non-Existent?](#) *Icarus* 2013.
- [44] R. M. C. Lopes, R. L. Kirk, K. L. Michell, A. LeGall, J. W. Barnes, **A. G. Hayes**, J. Kargel, L. Wye, J. Radebaugh, E. R. Stofan, M. A. Janssen, C. D. Neish, S. D. Wall, C. A. Wood, J. I. Lunine, and M. Malaska. [Cryovolcanism on Titan: New Results from the Cassini RADAR and VIMS](#). *Journal of Geophysical Research, Planets*, 2013.
- [43] R. D. Lorenz and **A. G. Hayes**. [The Growth of Wind-Waves in Titan's Hydrocarbon Seas](#). *Icarus* 2012.
- [42] B. Ventura, N. Claudia, D. Casarano, F. Posea, L. Wye, and **A. G. Hayes**. [Electromagnetic models and inversion techniques for Titan's Ontario Lacus depth estimation from Cassini RADAR data](#). *Icarus* 2012.
- [41] C. Sotin, K.J. Lawrence, B. Reinhardt, J. W. Barnes, R. H. Brown, **A. G. Hayes**, S. Le Mouelic, L. A. Soderblom, B. J. Buratti, R. N. Clark, R. Jaumann, J. M. Soderblom, K. Stephan, K. H. Baines, and P. D. Nicholson. [Observations of Titan's northern lakes at 5 microns: Implications for the organic cycle and geology](#). *Icarus* 2012.
- [40] A. Le Gall, **A. G. Hayes**, and R. C. Ewing, M. A. Janssen, J. Radebaugh, C. Savage, and P. Encrenaz. [Latitudinal and altitudinal controls of Titan's dune field morphometry](#). *Icarus*, 2012.
- [39] E. P. Turtle, J. E. Perry, **A. G Hayes**, R. D. Lorenz, J. W. Barnes, A. S. McEwen, R. A. West, T. L. Ray, A. D. Del Genio, J. M. Barbara, and E. L. Schaller. [Extensive and Rapid Surface changes near Titan's equator: Evidence for April Showers?](#) *Science*, 2011.
- [38] A. Le Gall, M. A. Janssen, L. C. Wye, **A. G. Hayes**, H. Zebker, R. D. Lorenz, J. Radebough, J. I. Lunine, R. L. Kirk, R. M. C. Lopes, S. Wall, P. Callahan, E. R. Stofan, T. Farr, and the Cassini RADAR Team. [Cassini SAR Radiometry, Scatterometry, and Altimetry Observations of Titan's Dune Fields](#) *Icarus*, 2011.
- [37] **A. G. Hayes**, J. Grotzinger, L. Edgar, W. Watters, S. Squyres, and J. Sohl-Dickstien. [Reconstruction of Ancient Eolian Bed Forms and Paleo-Currents from Cross-Bedded Strata at Meridiani Planum, Mars](#). *Journal of Geophysical Research: Planets*, Vol. 116, E00F21, April 2011.
- [36] J. W. Barnes, J. Bow, J. Schwartz, R. H. Brown, J. Soderblom, **A. G. Hayes**, S. Le Mouelic, S. Rodriguez, C. Sotin, R. Jaumann, K. Stephan, L. A. Soderblom, R. N. Clark, B. J. Buratti, K. H. Baines, and P. D. Nicholson. [Organic sedimentary deposits in Titan's dry lakebeds: Probable Evaporite](#). *Icarus Letters*, 2011.
- [35] L. A. Edgar, J. P. Grotzinger, **A. G. Hayes**, D. M. Rubin, S. W. Squyres, J. F. Bell, and K. E. Herkenhoff. Stratigraphic Architecture of Bedrock Reference Section, Victoria Crater, Meridiani Planum, Mars. *Journal of Sedimentary Research*, 2011.
- [34] **A. G. Hayes**, O. Aharonson, J. Lunine, H. Zebker, L. Wye, R. Lorenz, E. Turtle, P. Paillou, G. Mitri, S. Wall, E. R. Stofan, C. Elachi, and The Cassini RADAR Team. [Transient Surface Liquid in Titan's Polar Regions from Cassini](#). *Icarus*, vol. 211, January 2011

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- [32] R. Lorenz, B. Stiles, **A. G. Hayes**, R. L. Kirk, P. Callahan, O. Aharonson, C. Wood, E. R. Stofan, J. Radebaugh, and K. L. Mitchell. [Hypsometry on Titan](#). Icarus, vol. 211, January 2011
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- [14] J. R. Johnson, W. M. Grundy, M. T. Lemmon, J. F. Bell, M. J. Johnson, R. G. Deen, R. E. Arvidson, W. H. Farrand, E. A. Guinness, **A. G. Hayes**, K. E. Herkenhof, F. Seelos, J. Soderblom, and S. Squyres. [Spectrophotometric properties of materials observed by Pancam on the Mars Exploration Rovers: 1. Spirit](#). *Journal of Geophysical Research (Planets)*, 111:2, February 2006.
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- [11] J. M. Richardson, J. C. Aldridge, D. C. Harrison, **A. G. Hayes**, E. L. Hines, L. A. Jiang, and K. I. Schultz. [The Standof Aerosol Active Signature Testbed \(SAAST\) at MIT Lincoln Laboratory](#). In Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, volume 6239 of Presented at the Society of Photo-Optical Instrumentation Engineers (SPIE) Conference, June 2006.
- [10] L. A. Jiang, D. R. Schue, D. C. Harrison, **A. G. Hayes**, E. L. Hines, J. M. Richardson, and K. J. Schultz. [Active Range of the Optical Systems Test Facility at MIT Lincoln Laboratory](#). In Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, volume 6214 of Presented at the Society of Photo-Optical Instrumentation Engineers (SPIE) Conference, June 2006.
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- [3] P. R. Christensen, S. W. Ruf, R. L. Fergason, A. T. Knudson, S. Anwar, R. E. Arvidson, J. L. Bandfield, D. L. Blaney, C. Budney, W. M. Calvin, T. D. Glotch, M. P. Golombek, N. Gorelick, T. G. Graf, V. E. Hamilton, **A. G. Hayes**, J. R. Johnson, H. Y. McSween, G. L. Mehall, L. K. Mehall, J. E. Moersch, R. V. Morris, A. D. Rogers, M. D. Smith, S. W. Squyres, M. J. Wolf, and M. B. Wyatt. [Initial Results from the Mini-TES Experiment in Gusev Crater from the Spirit Rover](#). *Science*, 305:837-842, August 2004.
- [2] J. F. Bell, S. W. Squyres, K. E. Herkenhof, J. N. Maki, H. M. Arneson, D. Brown, S. A. Collins, A. Dingizian, S. T. Elliot, E. C. Hagerott, **A. G. Hayes**, M. J. Johnson, J. R. Johnson, J. Joseph, K. Kinch, M. T. Lemmon, R. V. Morris, L. Scherr, M. Schwochert, M. K. Shepard, G. H. Smith, J. N. Sohl-Dickstein, R. J. Sullivan, W. T. Sullivan, and M. Wadsworth. [Mars Exploration Rover Athena Panoramic Camera \(Pancam\) investigation](#). *Journal of Geophysical Research (Planets)*, 108:8063, November 2003.
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INVITED SEMINARS

- [49] *Annual Meeting of New Champions*; World Economic Forum, Dalian, People's Republic of China, June 2017
- [48] *Colloquium, Department of Earth and Environmental Science*; University of Illinois, Chicago, IL, April 2017
- [47] *Planetary Science Seminar, Division of Geological and Planetary Sciences*; Caltech, Pasadena, CA, Feb. 2017
- [46] *NASA Hyperwall*; GSA Poster Hall, Denver, CO, September 2016
- [45] *Science Cabaret*; Cultivare, Ithaca, NY, September 2016

- [44] *Academy Day Speaker, The International Academy of Aeronautics*; Istanbul, Turkey, July 2016 (**Canceled**)
- [43] *Science Colloquium*; Jet Propulsion Laboratory, Pasadena, CA, April 2016
- [42] *TEDx CornellTech2016*; New York, NY, April 2016
- [41] *Planetary Seminar, Department of Earth and Atmospheric Sciences*; Georgia Tech, Atlanta, GA, April 2016
- [40] *Colloquium, Department of Physics*; SUNY Albany, Albany, NY, March 2016
- [39] *Invited Instructor, Titan Oceanography*; AGU Ocean Science Meeting, New Orleans, LA, February 2016
- [38] *Colloquium, Department of Physics*; Louisiana State University, Baton Rouge, LA, February 2016
- [37] *Invited Review, Planetary Systems: A Synergistic View*; Rencontres du Vietnam, Quy Nhon, July 2015
- [36] *Colloquium, Department of Planetary Sciences*; University of Arizona, Tucson, AZ, April 2015
- [35] *Invited Speaker, 10 Years after Huygens Landing: Titan Workshop*; ASI, Tor Vergata, Italy, January 2015
- [34] *Department Seminar, Department of Geosciences*; SUNY Stony Brook, Stony Brook, NY, January 2015
- [33] *Invited Review, 45th Binghamton Geomorphology Symposium*; Knoxville, TN, October 2014
- [32] *Invited Speaker, Star Fest*; Rochester Academy of Sciences; Rochester, NY, July 2014
- [31] *Invited Review, Titan Through Time III*, John's Hopkins Applied Physics Lab; Laurel, MD, April 2014
- [30] *Colloquium, Astronomy Department* ; Cornell University, Ithaca NY, March 2014
- [29] *Colloquium, Planetary Science Directorate*; South West Research Institute, Boulder CO, February 2014
- [28] *Department Seminar, Division of Geological and Planetary Sciences*; Caltech, Pasadena CA, January 2014
- [27] *Division Seminar, Division of Geological and Planetary Sciences*; Caltech, Pasadena CA, January 2014
- [26] *Planetary Lunch Seminar, Astronomy Department*; Cornell University, Ithaca NY, September 2013
- [25] *Class of 2003 10-Year Reunion*; Cornell University, Ithaca NY, June 2013
- [24] *Cassini Project Science Office; Cassini-Huygens Analysis and Results from the Mission (CHARM)*; April 2013
- [23] *Colloquium, Earth and Atmospheric Sciences*; Cornell University, Ithaca NY, January 2013
- [22] *Planetary Lunch Seminar, Astronomy Department*; Cornell University, Ithaca NY, January 2013
- [21] *Lunch Seminar, Miller Inst. for Basic Research in Science*; Univ. of California, Berkeley CA, October 2012
- [20] *Colloquium, Earth and Planetary Sciences*; University of California, Santa Cruz CA, May 2012
- [19] *Colloquium, Space Department*; Johns Hopkins Univ. Applied Physics Lab., Laurel MD, March 2012
- [18] *Colloquium, Geology Department*; University of California, Davis CA, January 2012
- [17] *SETI Seminar Series*; SETI Institute, Mountain View, CA, January 2012
- [16] *CIPS Seminar Series*; Astronomy Department, University of California, Berkeley, CA, December 2011
- [15] *East Bay Astronomical Society*; Chabot Space and Science Center, Oakland, CA, December 2011
- [14] *Colloquium, Department of Geological Sciences*; University of Alabama, Birmingham, AL, November 2011
- [13] *Joint EPS/Astronomy Colloquium*; University of California, Berkeley, CA, September 2011
- [12] *Aerospace Research Laboratories Colloquium Series*; Northrup Grumman, El Segundo, CA, May 2011
- [11] *Planetary Science Seminar Series*; Jet Propulsion Laboratory, Pasadena, CA, May 2011
- [10] *Special Colloquium, Astronomy Department*; Cornell University, Ithaca NY, March 2011
- [9] *EAS Seminar Series; Department of Earth and Atmospheric Sciences*, Purdue University, February 2011
- [8] *Planetary Lunch Seminar; Dept. of Earth and Space Sciences*, University of California, LA, CA, January 2011
- [7] *Colloquium; NASA Astrobiology Inst. Icy Satellites Environments*, JPL, Pasadena, CA, September 2010.
- [6] *Chairman's Counsel Colloquium; Division of Geological & Planetary Sci.*, Caltech, Pasadena CA, June 2010
- [5] *Future Missions to Titan: Scientific and Engineering Challenges*; Keck Institute, Pasadena, CA, May 2010.

- [4] *Colloquium; Department of Geophysics, Stanford University; Stanford, CA, April 2010.*
- [3] *Dinner Speaker, Outer Planets Assessment Group; St. Regis Hotel, Washington, D.C., February 2010.*
- [2] *Colloquium; Institute of Earth Sciences, Hebrew University; Jerusalem, Israel, July 2009.*
- [1] *Yuk Yung Lunch Seminar; Division of Geological and Planetary Sciences, Caltech, Pasadena, CA, March 2009*

SELECT ADVISEE CONFERENCE ABSTRACTS / PROCEEDINGS

- [22] M. Mastrogiuseppe, **A.G. Hayes**, et al., Sounding the Seas of Titan: Updates on the Depth and Composition of Kraken Mare, Ligeia Mare, Punga Mare, and Ontario Lacus. *EGU*, Vienna, Austria, April 2016.
- [21] B. Hadnott, **A.G. Hayes**, et al., Characterization of the Temperature Dependence of O-H Vibrational Modes in Hydrated and Hydroxylated Minerals, with Application to Planetary Exploration. *LPSC*, The Woodlands, TX, March 2016.
- [20] B. Hadnott, **A.G. Hayes**, et al., Near Infrared Spectroscopy of Liquid Hydrocarbon Mixtures: Application for In-Situ Titan Lake Missions. *LPSC*, The Woodlands, TX, March 2016.
- [19] B. Hadnott, R. Hodyss, **A.G. Hayes**, et al., Near Infrared Spectroscopy of Liquid Hydrocarbon Mixtures for Understanding the Composition of Titan's Lakes, *DPS*, Washington, D.C., November 2015.
- [18] P. Corlies, **A. G. Hayes** et al., Using the VIMS Dataset to Understand Titan's Hydrologic Cycle Through Cloud Characterization, *DPS*, Washington, D.C., November 2015.
- [17] S. Birch, **A. G. Hayes** et al., Geomorphology of Titan's Polar Terrains: Constraining Surface Processes, *AGU*, San Francisco, CA, Dec. 2015.
- [16] S. Birch, **A. G. Hayes** et al., Hydrologic Processes on the Surface of Titan, *Rencontres du Vietnam, Planetary Systems: A Synergistic View*, Quy Nhon, Vietnam, July 2015.
- [15] J. Hofgartner, **A. G. Hayes** et al., Observing Dynamic Processes in Titan's Surface Liquids, *Rencontres du Vietnam, Planetary Systems: A Synergistic View*, Quy Nhon, Vietnam, July 2015.
- [14] R. J. Michaelides, **A. G. Hayes** et al., Determining the physical properties of Titan's empty lake basins from radar backscatter modeling, *LPSC*, The Woodlands, TX, March 2015.
- [13] J. Hofgartner, **A. G. Hayes** et al., Titan's Magic Island: Transient Features in a Titan Sea, *LPSC*, The Woodlands, TX, March 2015.
- [12] J. Hofgartner, **A. G. Hayes** et al., Titan's Magic Island: Transient Features in a Titan Sea, *AGU*, San Francisco, CA, Dec. 2014. **[invited]**
- [11] J. Hofgartner, D. B. Campbell, **A. G. Hayes**, J. I. Lunine, Specular Reflections from Titan's Equatorial Region: Solving the Decade Old Mystery, *AGU*, San Francisco, CA, Dec. 2014.
- [10] S. Birch, **A. G. Hayes** et al., Geomorphologic Mapping of Titan's Poles, *AGU*, San Francisco, CA, Dec. 2014.
- [9] P. Corlies, **A. G. Hayes** et al., Update on the VLT/SIFONI Titan Cloud Monitoring Campaign, *DPS*, Tucson, AZ, October 2014.
- [8] Z. Zhang, **A. G. Hayes** et al., Microwave Observations of Saturn's Rings, *DPS*, Tucson, AZ, October 2014.
- [7] J. Hofgartner, **A. G. Hayes** et al., The Case of Titan's Mysterious New Island: Analysis of Anonymously Bright Features in the Cassini T92 Pass over Titan's Ligeia Mare. *LPSC*, The Woodlands, TX, March 2014.
- [6] G. McDonald, **A. G. Hayes** et al., Examining Effects of Orbital Forcing on Titan's Dune Orientations. *LPSC*, The Woodlands, TX, March 2014.
- [5] R. J. Michaelides, **A. G. Hayes** et al., Determining physical properties of Titan's empty lake basins through radar backscatter modeling. *LPSC*, The Woodlands, TX, March 2014.

- [4] J. Hofgartner, **A. G. Hayes** et al., The Case of Titan's Mysterious New Island: Analysis of Anonymously Bright Features in the Cassini T92 pass over Titan's Ligeia Mare. *AGU*, San Francisco, CA, Dec. 2013.
- [3] C. Chula, **A. G. Hayes** et al., Double-Ridges on Europa can Accommodate Some of the Missing Surface Contraction. *AGU*, San Francisco, CA, Dec. 2013.
- [2] Z. Zhang, **A. G. Hayes** et al., Saturn's Rings in the Microwave with Cassini, *DPS*, Denver, CO, Oct. 2013.
- [1] C. Chula, **A. G. Hayes** et al., Identifying Contraction and Expansion Along Double Ridges and Bands on Europa with Strike-Slip Displacement. *LPSC*, The Woodlands, TX, March 2013.

CONFERENCE ABSTRACTS / PROCEEDINGS

- [34] **A. G. Hayes** et al., Wind-Waves on Titan. *AGU*, San Francisco, VA, Dec. 2016 [**invited**]
- [33] **A. G. Hayes** et al., Bathymetry and Composition of Titan's Lakes. *DPS*, Pasadena, CA, Oct. 2016
- [32] **A. G. Hayes** et al., Sedimentology of Titan's Polar Terrain. *GSA*, Denver, CO, Sep. 2016 [**invited**]
- [31] **A. G. Hayes** et al., The Lakes and Seas of Titan; An Update from the Cassini RADAR Team. *COSPAR*, Istanbul, Turkey, Aug. 2016 [**invited**][**Conference Canceled**]
- [30] **A. G. Hayes** et al., Cassini RADAR Observations of Saturn's Largest Moon, Titan. *AGU*, San Francisco, CA, Dec. 2015 [**invited**]
- [29] **A. G. Hayes** et al., Topographic Constraints on the Evolution and Interconnectivity of Titan's Lacustrine Basins. *AGU*, San Francisco, CA, Dec. 2015
- [28] **A. G. Hayes** et al., Evidence for Wind-Waves on Titan's Kraken Mare. *AGU*, San Francisco, CA, Dec. 2014
- [27] **A. G. Hayes** et al., Recent Discoveries by the Cassini RADAR. *DPS 2014*, Tucson, AZ, October 2014
- [26] **A. G. Hayes** et al., A Mariner's Insights in Titan's Seas: Mirrors, Depth Sounds, and Magic Islands. *COSPAR 2014*, Moscow, Russia, August 2014
- [25] **A. G. Hayes**. Titan's Lakes and Seas: A Review. *Titan Through Time Workshop III*, Laurel, MD, April 2014
- [24] **A. G. Hayes** et al., The Distribution and Volume of Titan's Hydrocarbon Lakes and Seas. *LPSC*, The Woodlands, TX, March 2014.
- [22] **A. G. Hayes** et al., Constraining the evolution of Titan's north polar landscape. *AGU*, San Francisco, CA, Dec. 2013 [**Invited**].
- [21] **A. G. Hayes** et al., Microwave Observation of Saturn's rings from Cassini. *European Planetary Science Congress (EPSC)*, London, England, September 2013.
- [20] **A. G. Hayes** et al., Constraining the evolution of Titan's north polar landscape. *European Planetary Science Congress (EPSC)*, London, England, September 2013.
- [19] **A. G. Hayes** et al., Morphologic Analysis of Polar Landscape Evolution on Titan. *LPSC*, The Woodlands, TX, March 2013.
- [18] **A. G. Hayes** et al., Wind driven capillary-gravity waves on Titan's Lakes: Hard to Detect or Non-Existent? *LPSC*, The Woodlands, TX, March 2013.
- [17] **A. G. Hayes, A. G. Hayes** et al., Determining Timescales of the Dune Forming Winds on Titan. *Third International Planetary Dunes Workshop*, Flagstaff, AZ, June 2012.
- [16] **A. G. Hayes** et al., Lacustrine Geomorphology on Titan; Glimpses into the Evolution of Titan's Polar Landscapes. *EGU Spring Meeting Abstracts*, April 2012 [**Invited**]

- [15] **A. G. Hayes** et al., Air-Sea Interactions on Titan: Wind Driven Capillary-Gravity Waves; Hard to Detect or Non-Existent. *AGU Ocean Sciences Meeting*, February 2012.
- [14] **A. G. Hayes** et al., Reorientation Timescales and Pattern Dynamics for Titan's Dunes: Does the Tail Wag the Dog or the Dragon? *AGU Fall Meeting Abstracts*, December 2011.
- [13] **A. G. Hayes** et al., Onset of Gravity-Capillary Waves on Titan's Lakes and Seas, *DPS/EPSC Joint Meeting*, Nante, France, October 2011.
- [12] **A. G. Hayes** et al., Titan's Methane Cycle and its Effects on the Surface. *AGU*, San Francisco, CA, Dec. 2010. **[Invited]**
- [11] **A. G. Hayes** et al., Reconstruction of Eolian Bedforms and Paleocurrents from Cross-Bedded Strata at Victoria Crater, Meridiani Planum, Mars. *DPS*, Pasadena, CA, October 2010.
- [10] **A. G. Hayes** et al., Titan's Lakes: Implications for Change on Seasonal and Orbital Timescales. *COSPAR*, July 2010. **[Invited]**
- [9] **A. G. Hayes** et al., Bathymetry and Absorptivity of Titans Ontario Lacus. *EGU*, May 2010.
- [8] **A. G. Hayes** et al., Observations and Modeling of Transient Lacustrine Features in Titan's South Polar Region. *AGU*, Dec. 2009. **[Invited]**
- [7] **A. G. Hayes** et al., Evidence for Transient Surface Liquid in Titan's South Polar Region. *DPS*, Puerto Rico, September 2009.
- [6] **A. G. Hayes** et al., Titan's global lake distribution and implied hydrocarbon hydrology from Cassini SAR imagery and topography. *AGU*, San Francisco, CA, December 2008.
- [5] **A. G. Hayes** et al., Hydrocarbon Lakes on Titan: Asymmetric Distribution and Relative Topography. *Titan After Cassini-Huygens Book Symposium*, 2008.
- [4] **A. G. Hayes** et al., Joint Analysis Of Titan's Surface Using The Cassini Vims And Radar Instruments. *DPS*, Ithaca, NY, September 2008.
- [3] **A. G. Hayes** et al., Reconstruction of Eolian Bedforms from Cross-Bedded Strata at Victoria Crater, Meridiani Planum, Mars. *AGU*, San Francisco, CA, December 2007.
- [2] **A. G. Hayes** et al., Titan's Lake Distribution and Classification from the Cassini RADAR *AGU*, San Francisco, CA, December 2007
- [1] **A. G. Hayes** et al., Titan's North Polar Region: Lake Distribution, Statistics, and Implied Methane Hydrology from Cassini SAR. *DPS*, October 2007.

ADVISING

Postdoctoral

- Valerio Poggiali (11/2016 – Present)
- Marco Mastrogiuseppe (10/2014 – 10/2016)
Now Senior Scientist at La Sapienza Roma

Graduate

- | | |
|--|---|
| <ul style="list-style-type: none"> • Jason Hofgartner (01/2013 – 12/2015) [Co-Advised]
Ph.D., Astronomy
Now NASA Postdoctoral Fellow at JPL • Zhimeng Zhang (03/2013 – 12/2016)
Ph.D., Astronomy
Now NASA Postdoctoral Fellow at JPL | <ul style="list-style-type: none"> • Paul Corlies (09/2013 – Present)
Ph.D., Astronomy • Nicolas Kutsop (08/2014 – Present)
Ph.D., Astronomy • Samuel Birch (08/2014 – Present)
Ph.D., Earth and Atmospheric Science |
|--|---|

- Thomas Gautier (10/2015 – 09/2016)
M.Eng., Applied and Engineering Physics
Now Technical Staff at Syracuse Research Corp.

- Mengnan Zhao (09/2013 – 09/2014)
Ph.D., Applied and Engineering Physics
1st Year Committee, AEP

Visiting Graduate

- Marica Raguso (10/2015 – 09/2016)
Ph.D., La Sapienza Roma

- Valerio Poggiali (06/2015 – 09/2015)
Ph.D., La Sapienza Roma
Now Postdoctoral Scholar at Cornell

Undergraduate

- Ian Cummings; Cornell (09/2016 – Present)
- Travis Rogowski; Hofstra (05/2016 – 08/2016)
- Peter Dohn; RPI (05/2016 – 08/2016)
- Vinisha Mittal (01/2016 – 01/2017)
- John Kelland; Cornell (10/2015 – Present)
- Weigang Liang; Cornell (09/2015 – Present)
- Harry Tang Yuhui; Cornell (06/2015 – Present)
- Joseph Mullen; Drake Univ. (06/2015 – 09/2016)
- Ryan de Freitas Bart; Cornell (09/2014 – Present)
- Jialong Wang; Cornell (09/2015 – 01/2016)
- Kylee Hereid; Simpson Univ. (06/2016 – 09 /2015)

- Roger Michaelides; Cornell (10/2012 – 05/2015)
- Scott Mansfield; Cornell (02/2013 – 05/2015)
- Thomas Gautier; Cornell (05/2013 – 05/2015)
- Lea Bonnefoy; Cornell (01/2014 – 09/2015)
- Sam Birch; UC Berkeley (06/2013 – 09/2013)
- George McDonald; Cornell (02/2013 – 08/2014)
- Julia Cisneros; Texas A&M (06/2014-09/2013)
- Christian Klein; Regis College (06/2013-09/2013)
- Abby Perrot; Cornell (02/2013 – 01/2014)
- Cansu Chula; UC Berkeley (09/2011 – 09/2013)
- Curtis Baden; UC Berkeley (09/2011 – 09/2013)

HIGH SCHOOL

- Harrison Yaeger; Bellmore Central (05/2016 – Present)
- Leonardo Cuzzo; WCM HS (05/2016 – Present)
- Ian Cummings; Ithaca HS (10/2015 – 09/2016)
- Leslie Young; Ithaca HS (11/2014 – 09/2015)
- Peter Dohn; Corning HS (07/2014 – 08/2014)
- Rishi Verma; Ithaca HS (07/2014 – 08/2014)

MISSION PARTICIPATION

- Europa Clipper
 - Europa Imaging System – Topographic Imager (EIS-T); *Co-I* (2015 – Present)
 - Europa Imaging System – Reconnaissance Camera (EIS-R); *Co-I* (2015 – Present)
- Mars2020 Rover
 - MastamZ; *Co-I, Co-Lead Calibration Working Group* (2014 – Present)
- Mars Science Laboratory
 - Participating Scientist Collaborator (2012 – 2017)
- Cassini-Huygens Mission to Saturn
 - Participating Scientist (2012 – Present)
 - RADAR Team; *Associate Team Member* (2008 - Present)
 - VIMS Team; *Associate* (2012 – Present)
- Mars Exploration Rover (MER)
 - Panoramic Camera (Pancam); *Payload Uplink / Downlink Lead* (2004-2005)
 - Microscopic Imager (MI); *Payload Uplink / Downlink Lead* (2004-2005)
 - Engineering Cameras (Eng. Cam); *Payload Uplink / Downlink Lead* (2004-2005)
 - *Flight Calibration Team*; Pancam / MI / Eng. Cam (2003)
 - *Collaborator* (2003 – Present)

PRE-PROPOSAL OR UNDER REVIEW:

- CAESAR (Comet Sample Return) [NASA New Frontiers 4 Proposal]
 - *Payload Lead / Successor PI* (PI is Steven Squyres, Cornell University)

- Oceanus (Titan Orbiter) [NASA New Frontiers 4 Proposal]
 - *Deputy PI* (*PI* is Christophe Sotin, Jet Propulsion Laboratory)
- Dragonfly (Titan Re-Locatable Lander) [NASA New Frontiers 4 Proposal]
 - *Co-I* (*PI* is Elizabeth Turtle, Applied Physical Laboratory)

NOT SELECTED:

- Exploration of Enceladus and Titan (E²T) (Saturn Orbiter) [ESA M5 Proposal]
 - *Co-I* of US Contributed Infrared Camera (*European PI* is Giuseppe Mitri, University de Nantes)
- Kuiper (Near-Earth observatory) [NASA Discovery 13]
 - *Deputy PI of VIS/NIR Camera* (*PI* is James Bell, ASU)
- Exploration of Enceladus and Titan (E²T) (Saturn Orbiter + Titan Sea Probe) [ESA M4 Proposal]
 - *PI* of US Contributed Sea Lander System (*European PI* is Gabriel Tobie, University de Nantes)
- Europa Clipper (Jupiter Orbiter) [NASA Flagship]
 - Multi-channel Spectrometer for Europa (MuSE); *Co-I* (*PI* is Kevin Hand, JPL)
- Mars2020 (Mars Rover) [NASA Flagship]
 - Near Infrared Spectrometer (NIRSpec); *Instrument Scientist* (*PI* was Tony Colaprete, NASA Ames)
- Jupiter Icy Moons Explorer (JUICE) (Jupiter Orbiter) [ESA L3 Mission]
 - Jupiter and Icy-Moons Imagers (JIMI); *Co-I* (*PI* was Elizabeth Turtle, JHU APL)
- Journey to Enceladus and Titan (JET) (Saturn Orbiter) [NASA Discovery 12]
 - *Co-I* (*PI* was Christophe Sotin, JPL)
- Titan Mare Explorer (TiME) (Titan Lake Lander) [NASA Discovery 12]
 - *Collaborator* (*PI* was Ellen Stofan, Proxemy Research)

OBSERVING

- ESO 2013 Period 93A, “Seasonal changes in Titan’s meteorology through cloud monitoring with VLT/SINFONI”
 - 21 hrs + 8.6 hrs ToO from April 1 – Sep. 30, 2014
- Gemini ES-026, “Investigating seasonal changes in Titan’s meteorology through cloud monitoring with GPI”
 - 2 hrs from April 1 – Sep. 30, 2014
- VLA 2014 Period 2014B, “Multi-frequency Observations of Saturn and its Rings”
 - 16 hours, Priority A
- ESO 2014 Period 94, “Seasonal changes in Titan’s meteorology through cloud monitoring with VLT/SINFONI”
 - 11.4 hrs + 2 hrs ToO from Oct. 1, 2014 – March 31, 2015
- Gemini 2015A Rapid ToO, “Seasonal changes in Titan’s meteorology through cloud monitoring with GPI”
 - 8 hrs from April 1 – Sep. 30, 2015
- Gemini Fast Turnaround, “Seasonal changes in Titan’s meteorology through cloud monitoring with NIFS”
 - .5 hrs from April 1 – April 30, 2015
- Gemini 2015B Rapid ToO, “Seasonal changes in Titan’s meteorology through cloud monitoring with GPI”
 - 3 hrs from June 1 – Sep. 30, 2015
- Gemini Fast Turnaround, “Seasonal changes in Titan’s meteorology through cloud monitoring with NIFS”
 - 1.1 hrs from June 1 – August 30, 2015
- IRTF Semester 2015B “Seasonal changes in Titan’s metrology through cloud monitoring with SpeX”
 - 34 nights from August 1 – Sep. 30 2015
- IRTF Semester 2016A “Seasonal changes in Titan’s metrology through cloud monitoring with SpeX”
 - 34 nights from January 1 – August. 1 2016
- IRTF Semester 2016B “Seasonal changes in Titan’s metrology through cloud monitoring with SpeX”
 - 34 nights from August 1 – Sep. 30 2016

PROFESSIONAL ACTIVITIES

- Workshop Organizer:
 - Cassini VIMS Team Meeting, Spring 2016; Ithaca NY
 - Titan *Lakefest2015!* Summer 2015; Ithaca NY
 - KISS Workshop: In-Situ Sample Handling Technologies for Titan's Surface, Spring 2015; Pasadena CA
 - Titan Surface Workshop, Fall 2014; Ithaca NY
 - Regional Planetary Imaging Facilities Directors Meeting, Fall 2013; Ithaca NY
- Conference Organizer
 - 2018 COSPAR Meeting: *Ocean Worlds Sessions*
 - 2017 LPSC Program Committee
- Session Organizer:
 - 2016 COSPAR Meeting: *Ocean Worlds; Europa, Enceladus, Titan, Triton, and Beyond (Canceled)*
 - 2014 GSA Meeting: *Dynamic Planetary Geology Revealed by Long-Term Observations*
 - 2013 EPSC Meeting: *Surface Modification Processes on Planets and Satellites with an Atmosphere*
- Session Chair:
 - 2016 LPSC Meeting; Oral: *Titan: A Real Cool World*
 - 2014 DPS Meeting; Oral: *Titan's Surface*
 - 2014 LPSC Meeting; Oral: *Springtime in Titan's Lake District*
 - 2013 LPSC Meeting; Oral: *Titan's Surface*
 - 2010 DPS Meeting; Oral: *Titan's Surface*
 - 2010 COSPAR Meeting; Oral: *Titan's Atmosphere I*
- Guest Editor:
 - "*Recent Advances in Surface Processes and Surface-Atmosphere Interactions on Titan*", *Icarus* 2016
- Mission Concept Studies:
 - NASA Ice Giants Science Definition Team, 2016-Present
 - NASA Europa Lander Science Definition Team, 2016-Present
 - JPL Europa Lander Study, 2015-2016
 - JPL Titan Mission Concept Study, JPL, 2013-2014
 - NASA Lake Lander Concept Study, Decadal Survey, JPL, 2009-2010
- Committee Member: 2006-2008 SPIE Defense And Security Symposium; *Technologies for Synthetic Environments, Hardware-in-the-loop-Testing*
- Panel Reviewer: *Mars Data Analysis Program (MDAP), Cassini Data Analysis Program (CDAP), Outer Planets Research Program (OPR), Solar System Observations Program (SSO), Discovery 13 Step-2*
- External Reviewer: *Mars Data Analysis Program (MDAP), Cassini Data Analysis Program (CDAP), Outer Planets Research Program (OPR), Mars Fundamental Research Program (MFRP), NASA Earth and Space Science Fellowship (NESSF), NASA Postdoctoral Program (NPP), Belgian Research Action Through Interdisciplinary Networks (BRAIN), Planetary Data Archiving Restoration and Tools (PDART), EUROPA14 Instrument Reviews, Solar System Workings (SSW)*
- Peer Reviewer: *Astrophysical Journal, Geology, Geomorphology, Geophysical Research Letters, Icarus, Journal of Geophysical Research, Nature, Nature Geosciences, Planetary Science, Planetary and Space Science, Science, Ocean Engineering, IEEE TGRS*

SERVICE ACTIVITIES

External:

- NAS Committee on Astrobiology and Planetary Science (2017-Present)
- AAS DPS Federal Relations Sub-Committee (2015-Present)
- AAS DPS Education and Public Outreach Committee (2010-Present)

- Icarus Editorial Advisory Board; Elsevier / AAS DPS (2013-2016)
- Chair of the Titan sub-committee of the International Outer Planets Watch (IOPW) (2015-Present)
- Director; Cornell/NASA Spacecraft Planetary Imaging Facility [NASA RPIF] (2012-Present)

Internal (Cornell):

- Faculty Steering Committee, Cornell University College Scholar Program (2016-Present)
- Advisory Board, Carl Sagan Institute, Cornell University (2015-Present)
- Agenda Committee, College of Arts and Sciences, Cornell University (2015-Present, Chair 2016-Present)
- Advisory Board, Cornell University College Scholar Program (2014-Present)
- Assistant Professor Search Committee, Cornell Astronomy Department (2016-2017)
- 1st Year Committee, Cornell Astronomy Department (2015-Present)
- Website Committee, Cornell Astronomy Department (2014-Present)
- Course Committee, Cornell Astronomy Department (2013-2015)
- Enhanced Colloquium Committee, Cornell Astronomy Department (2013-2015)
- College of Arts and Sciences Dean's Advisory Council Dinner Presentations (2013 – Present)
- Science Communications Workshop: Allan Alda Center for Communication Science (May 2013)

Internal (Caltech):

- Resident Associate; Caltech Avery House (2008-2011)

SELECTED FIELD EXPERIENCE

- **Mojave Desert / Death Valley, CA** (2015, 2017) [Organizer / Instructor]
Research Objective: Ground truthing of remote sensing data and planetary analogs (Cornell Class A6577).
- **Namibia** (2013) [Researcher]
Research Objective: Titan analog studies at the Namib Sand Sea and Roter Kam Crater.
Organizers: Ralph Lorenz and Jani Radebaugh
- **Atacama Desert, Chile** (2012) [Researcher]
Research Objective: Mud Flows and Alluvial Fans (MSL Landing Site Analog Studies)
Organizers: Alan Howard and Bill Dietrich
- **Mojave Desert, CA** (2006-2011) [Teaching Assistant]
Research Objective: Field testing of remote sensing data and type-examples of surface processes.
Organizer: Oded Aharonson
- **Death Valley and Red Rock Canyon, CA** (2007) [Student]
Research Objective: Lower Johnny Formation Stratigraphy and Sedimentology
Organizer: John Grotzinger
- **New Mexico** (2006) [Student]
Research Objective: Investigation of Mars analog environments.
Organizer: John Grotzinger and John Southard

CUMULATIVE FUNDS (FY13-Present): \$4.8 M (PI: \$3.1 M / Co-I: \$1.7 M)

CP4SMPVC+	FY 17-21	Life on the Edge	Co-I	\$100K
JPL	FY 16-17	Ice Giants SDT Member Support	PI	\$18K
JPL	FY 16	Europa Ladner SDT Member Support	Co-I	\$24K
CDAP 2015	FY 16-18	Investigating Titan as a Sedimentary World	Co-I	\$118K
EUROPA	FY 16-18	Europa Imaging System: Phase A Co-I Support	Co-I	\$80K
NESSF 2015	FY 16-18	Geomorphology of Titan's polar terrains: Using landscape form to understand surface process	PI	\$90K
MDAP 2014	FY 16-18	Deciphering fine-scale surface properties from vis/nir spectrophotometry at recent martian landing sites	Co-I	\$65K

SSO 2014	FY 15-17	Analysis of Multi-Frequency VLA Data of Saturn and its Rings: Origin and Particle Properties	PI	\$455K
CDAP 2014	FY 15-17	Digging for Hydrocarbon Gold with the Cassini Altimeter	PI	\$358K
CDAP 2014	FY 15-17	Participating Scientist	PI	\$60K
JPL SURP	FY 15-17	Graduate Student Support for Co-Analysis of Cassini VIMS/RADAR data of Tita	PI	\$150K
JPL SURP	FY 15	Understanding Titan's Dune Composition with Cassini	PI	\$50 K
JPL SURP	FY 15	Does methane ice float?	Co-PI	\$25K
MARS2020	FY 15-23	MastcamZ Investigation: Co-I Support	Co-I	\$1.2M
NESSF 2014	FY 15-17	Understanding Titan's Hydrologic Cycle: A Combined Ground and Spacecraft-Based Approach	PI	\$90K
OPR 2013	FY 15-17	Understanding Titan's Methane Cycle Through Global Climate Models	Collaborator	N/A
OPR 2013	FY 15-17	Observing Saturn's Rings in the Microwave with Cassini	PI	\$404K
ECF 2013	FY 15-16	Sounding the Lakes and Seas of Titan: Postdoctoral Support in Planetary Remote Sensing at Cornell University	PI	\$100K
PGG 2013	FY14-18	Support for the Cornell/NASA Spacecraft Planetary Imaging Facility (SPF): A NASA Regional Planetary Imaging Facility	PI	\$484K
CDAPS 2013	FY 14-16	Characterizing Titan's dunes and dune-topography interactions: Implications for climate change in Titan's equatorial region	Co-I	\$110K
ICEE 2013	FY 14-15	Topographic and Reconnaissance Imaging for Europa Exploration	Collaborator	N/A
OPR 2012	FY 13-15	Physical Processes in Titan's Seas	Collaborator	N/A
CDAPS 2012	FY 13-15	Seas, Lakes, Channel Networks and Hillslopes: A Coupled Analysis to Explore the Evolution of Titan's Polar Landscapes	PI	\$437K
CDAPS 2012	FY 13-15	Participating Scientist	PI	\$100K
MSLPS 2011	FY 13-16	Aeolian System Source-to-Sink Analysis for MSL Landing Site and Basin (Participating Scientist Program)	Collaborator	N/A
Cassini	FY 13-15	Radar Science Team: Associate Team Member Support	PI	\$80K
PGG 2012	FY 13	Cornell/NASA Spacecraft Planetary Imaging Facility (SPIF)	PI	\$120K
Ramsden Fund	FY 12	Charles H. Ramsden Fund, UC Berkeley	PI	\$6K
CDAP 2011	FY 12-14	Modeling Titan Surface Backscatter From Fine-Resolution, Global Scatterometry Observations	Collaborator	N/A
Miller Fellow	FY 11-12	Miller Institute for Basic Research in Science (Berkeley)	PI	\$111K
GSRP 2008	FY 09-11	Understanding Titan's Methane Cycle	Co-I	\$120K

PROFESSIONAL MEMBERSHIPS

-
- Society of Photo-Optical Instrum. Engineers (SPIE)
 - American Inst. of Aeronautics & Astronautics (AIAA)
 - American Geophysical Union (AGU)
 - European Geophysical Union (EGU)
 - Geological Society of America (GSA)
 - AAS Division of Planetary Science (DPS)
 - Committee on Space Research (COSPAR)
 - USA Hockey [*Volunteer Coach*]
 - American Red Cross [*First Responder*]
 - PADI Dive Association [*Rescue Diver*]
 - Private Pilots Association [*80 hrs. PIC*]
 - Ryuku Kempo Kobudo [*3rd Deg. Black Belt*]
 - Sigma Alpha Epsilon Fraternity

REFERENCES

- Professor Oded Aharonson, Weizmann Institute
Relationship: Collaborator,
Previously Graduate Thesis Advisor
Email: Oded.Aharonson@weizmann.ac.il
Phone: +972-8-934-6961
Address: 121Su; Weizmann Institute for
Science, Rehovot 76100 Israel
- Dr. Charles Elachi, JPL Director Emeritus
Relationship: Graduate Co-Advisor
Email: Charles.Elachi@jpl.nasa.gov
Phone: 818-354-5673
Address: Director, Jet Propulsion Laboratory;
4800 Oak Grove Dr., Pasadena CA 91109
- Professor John P. Grotzinger, Caltech
Relationship: Collaborator,
Previously Graduate Co-Advisor
Email: grotz@gps.caltech.edu
Phone: 626-395-6785
Address: MC 170-25 Caltech; 1200 E.
California Blvd., Pasadena CA 91125
- Professor George R. Rossman, Caltech
Relationship: Collaborator, Previously
Graduate Proposition Advisor
Email: grr@gps.caltech.edu
Phone: 626-395-6471
Address: MC 170-25 Caltech; 1200 E.
California Blvd., Pasadena CA 91125
- Professor Jonathan I. Lunine, Cornell University
Relationship: Collaborator
Email: jlunine@astro.cornell.edu
Phone: 607-255-5911
Address: 402 Space Sciences Building; Cornell
University, Ithaca NY 14853
- Professor Steven W. Squyres, Cornell University
Relationship: Collaborator, Previously
Undergraduate Advisor / Employer
Email: squyres@astro.cornell.edu
Phone: 607-255-3508
Address: 428 Space Sciences Building; Cornell
University, Ithaca NY 14853
- Professor James F. Bell, Arizona State Univ.
Relationship: Collaborator, Previously
Undergraduate Advisor / Employer
Email: Jim.Bell@asu.edu
Phone: 480-965-5081
Address: 686 Bateman Physical Sciences
Center F-wing; SESE, Tempe AZ 85287
- Dr. Stephen D. Wall, JPL
Relationship: Collaborator,
Acting Cassini RADAR Team Leader
Email: stephen.d.wall@jpl.nasa.gov
Phone: 818-354-7424
Address: MS 202-204 JPL; 4800 Oak Grove
Dr, Pasadena CA 91109
- Dr. Israel Soibelman, Division Head,
MIT Lincoln Laboratory
Relationship: Past Supervisor
Email: isoibelman@ll.mit.edu
Phone: 781-981-5500
Address: Division 4, MIT Lincoln Laboratory;
244 Wood St.
Lexington, MA 02420
- Mr. David C. Harrison, Senior Staff,
MIT Lincoln Laboratory
Relationship: Past Supervisor
Email: dchtravel38@yahoo.com
Phone: 781-981-5500
Address: Group 38, MIT Lincoln Laboratory;
244 Wood St.
Lexington, MA 02420
- Additional References Available Upon Request