# JUAN M. LORA

Department of Earth and Planetary Sciences, Yale University juan.lora@yale.edu
210 Whitney Avenue, New Haven, CT 06511 people.earth.yale.edu/profile/juan-lora/about

**Education**

**Ph.D., Planetary Sciences,** University of Arizona 2014
**B.S., Astronomy**, *magna cum laude*, University of Southern California 2009

**Appointments and Research Experience**

**Assistant Professor** 2019–present
Department of Earth and Planetary Sciences, Yale University

**Visiting Assistant Researcher** 2019
**Postdoctoral Fellow** 2014–2018
Department of Earth, Planetary, and Space Sciences,
University of California, Los Angeles

**Graduate Research and Teaching Assistant** 2009–2014
Department of Planetary Sciences, University of Arizona

**Research Associate**, NASA Academy, Goddard Space Flight Center 2008

**Undergraduate Researcher**, University of Southern California 2007–2009

**Additional Training**

Effectively Communicating Science: Expert Witness Training Academy, 2019
Mitchell Hamline School of Law, Saint Paul, MN

Urbino Summer School in Paleoclimatology, Urbino, Italy 2016

GFDL Summer School on Atmospheric Modeling, Princeton, NJ 2012

**Mission Involvement**

*Dragonfly* Co-Investigator, 2017–present
NASA's *Dragonfly* mission to Titan (New Frontiers 4)

**Honors and Awards**

Arthur Greer Memorial Prize for Outstanding Research, Yale University 2023
Harold C. Urey Prize in Planetary Science, AAS Division for Planetary Sciences 2022
NASA Planetary Science Early Career Award 2022
Ronald Greeley Early Career Award, American Geophysical Union 2020
NASA Planetary Science Early Career Fellowship 2017
Gerard P. Kuiper Memorial Award, University of Arizona 2014
College of Science Graduate Teaching/Mentoring Award, University of Arizona 2011
Golden Key International Honour Society 2010
Renaissance Scholar Award, USC 2009
Phi Beta Kappa Undergraduate Award 2009
Dean Joan M. Schaefer Scholarship 2007–2009
USC Provost's Undergraduate Research Fellowship 2007–2009
Albert Fisher Science Scholarship 2007–2008

**Refereed Publications**

† *Yale advisee*

**Book Chapters:**

1. **Lora, J.M.**, E.P. Turtle, and J.L. Mitchell (2025). Titan's weather, climate, and paleoclimate. In: *Titan After Cassini-Huygens* (COSPAR Book Series). R. Lopes, C. Elachi, I. Mueller-Wodarg, and A. Solomonidou, Eds. Elsevier, pp. 201–237. https://doi.org/10.1016/B978-0-323-99161-2.00002-4
2. †Battalio, J.M., M. Cohen, P. Read, **J.M. Lora**, T. McConnachie, and K. McGouldrick (2024). Oscillations in terrestrial planetary atmospheres. In: *Atmospheric Oscillations:*

*Sources of Subseasonal-to-Seasonal Variability and Predictability*. B. Guan, Ed. Elsevier, pp. 399–441. https://doi.org/10.1016/B978-0-443-15638-0.00019-8

**Journal Articles:**

3. Wright, L., N.A. Teanby, P.G.J. Irwin, C.A. Nixon, †N.A. Lombardo, **J.M. Lora**, and D. Mitchell (2025). Seasonal evolution of Titan's stratospheric tilt and temperature field at high resolution from Cassini/CIRS. *Planetary Science Journal*, in press.
4. Nixon, C., B. Bézard, T. Cornet, B. Coy, I. de Pater, M. Es-Sayeh, H. Hammel, E. Lellouch, †N. Lombardo, M. López-Puertas, **J.M. Lora**, and 34 co-authors (2025). Titan's atmosphere in late northern summer from JWST and Keck observations. *Nature Astronomy*, accepted.
5. †Battalio, J.M., **J.M. Lora**, S.W. Lubis, and P. Hassanzadeh (2025). Propagation and periodicity of Mars's northern annular mode modulates the dust cycle. *Geophysical Research Letters* 52, e2024GL112814. http://dx.doi.org/10.1029/2024GL112814
6. †Rush, W.D., **J.M. Lora**, C. Skinner, †S. Menemenlis, and 21 co-authors (2025). Atmospheric river detection under changing seasonality and mean-state climate: ARTMIP tier 2 paleoclimate experiments. *Journal of Geophysical Research: Atmospheres* 130, e2024JD042222. https://doi.org/10.1029/2024JD042222
7. †Olim, E., **J.M. Lora**, and †J.M. Battalio (2025). Methane storm characteristics and evolution in simulations of Titan's hydroclimate. *Icarus* 425, 116290. https://doi.org/10.1016/j.icarus.2024.116290
8. †Scholz, S.R. and **J.M. Lora** (2024). Atmospheric rivers cause warm winters and extreme heat events. *Nature* 636, 640–646. https://doi.org/10.1038/s41586-024-08238-7
9. **Lora, J.M.** (2024). Moisture transport and the methane cycle of Titan's lower atmosphere. *Icarus* 422, 116241 (Invited Contribution). https://doi.org/10.1016/j.icarus.2024.116241
10. †Battalio, J.M. and **J.M. Lora** (2024). Increases in the local eddy energetics of the extratropical atmosphere over the last four decades. *Journal of Climate* 37, 3283–3304. https://doi.org/10.1175/JCLI-D-22-0930.1
11. Williams⋆, D.A., X. Ji⋆, P. Corlies⋆, and **J.M. Lora** (2024). Clouds and seasonality on terrestrial planets with varying rotation rates. *Astrophysical Journal* 963, 36. https://doi.org/10.3847/1538-4357/ad192f
    ⋆*2022 Rossbypalooza summer school advisees*
12. Chatain, A., S.C.R. Rafkin, A. Soto, E. Moisan, **J.M. Lora**, A. Le Gall, R. Hueso, and A. Spiga (2024). The impact of lake shape and size on lake breezes and air–lake exchanges on Titan. *Icarus* 411, 115925. https://doi.org/10.1016/j.icarus.2023.115925
13. †Lombardo, N.A. and **J.M. Lora** (2023). The heat and momentum budgets of Titan's middle atmosphere. *Journal of Geophysical Research: Planets* 128, e2023JE008061. https://doi.org/10.1029/2023JE008061
14. Oster, J.L., S. Macarewich, M. Lofverstrom, C. de Wet, I. Montañez, **J.M. Lora**, C. Skinner, and C. Tabor (2023). North Atlantic meltwater during Heinrich Stadial 1 drives wetter climate with more atmospheric rivers in western North America. *Science Advances* 9, eadj222. https://doi.org/10.1126/sciadv.adj2225
15. **Lora, J.M.**, C.B. Skinner, †W.D. Rush, and †S.H. Baek (2023). The hydrologic cycle and atmospheric rivers in CESM2 simulations of the Last Glacial Maximum. *Geophysical Research Letters* 50, e2023GL104805. https://doi.org/10.1029/2023GL104805
16. Lewis, N.T., †N.A. Lombardo, P.L. Read, and **J.M. Lora** (2023). Equatorial waves and superrotation in the stratosphere of a Titan general circulation model. *Planetary Science Journal* 4, 149. https://doi.org/10.3847/PSJ/ace76f

17. †Baek, S.H., Y. Kanzaki, **J.M. Lora**, N. Planavsky, C.T. Reinhard, and S. Zhang (2023). Impact of climate on the global capacity for enhanced rock weathering on croplands. *Earth's Future* 11, e2023EF003698. http://dx.doi.org/10.1029/2023EF003698

18. Birch, S.P.D., G. Parker, P. Corlies, J.M. Soderblom, J.W. Miller, R.V. Palermo, **J.M. Lora**, A.D. Ashton, A.G. Hayes, and J.T. Perron (2023). Reconstructing river flows remotely on Earth, Titan, and Mars. *Proceedings of the National Academy of Sciences* 120, e2206837120. https://doi.org/10.1073/pnas.2206837120

19. Shields, C.A., et al. (including **J.M. Lora**) (2023). Future atmospheric rivers and impacts on precipitation: Overview of the ARTMIP Tier 2 high-resolution global warming experiment. *Geophysical Research letters* 50, e2022GL102091. https://doi.org/10.1029/2022GL102091

20. †Baek, S.H., †J.M. Battalio, and **J.M. Lora** (2023). Atmospheric river variability over the last millennium driven by annular modes. *AGU Advances* 4, e2022AV000834. https://doi.org/10.1029/2022AV000834

21. Skinner, C.B., **J.M. Lora**, C. Tabor, J. Zhu (2023). Atmospheric river contributions to ice sheet hydroclimate at the Last Glacial Maximum. *Geophysical Research Letters* 50, e2022GL101750. https://doi.org/10.1029/2022GL101750

22. †Lombardo, N.A. and **J.M. Lora** (2023). Influence of observed seasonally varying composition on Titan's stratospheric circulation. *Icarus* 390, 115291. https://doi.org/10.1016/j.icarus.2022.115291

23. Lee, H.-I., J.L. Mitchell, **J.M. Lora**, and A. Tripati (2023). Influence of stationary waves on precipitation change in North American summer during the Last Glacial Maximum. *Journal of Climate* 36, 3165–3182. https://doi.org/10.1175/JCLI-D-21-0886.1

24. †Menemenlis, S., S.M. White, D.E. Ibarra, and **J.M. Lora** (2022). A proxy-model comparison for mid-Pliocene warm period hydroclimate in the Southwestern US. *Earth and Planetary Science Letters* 596, 117803. https://doi.org/10.1016/j.epsl.2022.117803

25. Lewis-Merrill, R.A., S. Moon, J.L. Mitchell, and **J.M. Lora** (2022). Assessing environmental factors of alluvial fan formation on Titan. *Planetary Science Journal* 3, 223. https://doi.org/10.3847/PSJ/ac8d09

26. **Lora, J.M.**, †J.M. Battalio, †M. Yap, and †C. Baciocco (2022). Topographic and orbital forcing of Titan's hydroclimate. *Icarus* 384, 115095. https://doi.org/10.1016/j.icarus.2022.115095

27. †Baek, S.H., Y. Kushnir, M. Ting, J.E. Smerdon, and **J.M. Lora** (2022). Regional signatures of forced North Atlantic SST variability: A limited role for aerosols and greenhouse gases. *Geophysical Research Letters* 49, e2022GL097794. https://doi.org/10.1029/2022GL097794

28. Marquardt Collow, A., C.A. Shields, B. Guan, S. Kim, **J.M. Lora**, and 15 co-authors (2022). An overview of ARTMIP's Tier 2 reanalysis intercomparison: Uncertainty in the detection of atmospheric rivers and their associated precipitation. *Journal of Geophysical Research: Atmospheres* 127, e2021JD036155. https://doi.org/10.1029/2021JD036155

29. Comola, F., J. Kok, **J.M. Lora**, K. Cohanim, X. Yu, C. He, P. McGuiggan, S. Hörst, and F. Turney (2022). Titan's prevailing circulation might drive highly intermittent, yet significant sediment transport. *Geophysical Research Letters* 49, e2022GL097913. https://doi.org/10.1029/2022GL097913

30. O'Brien, T.A., et al. (including **J.M. Lora**) (2022). Increases in future AR count and size: Overview of the ARTMIP Tier 2 CMIP5/6 experiment. *Journal of Geophysical Research: Atmospheres* 127, e2021JD036013. https://doi.org/10.1029/2021JD036013

31. Amaya, D.J., A.M. Seltzer, K.B. Karnauskas, **J.M. Lora**, X. Zhang, and P.N. DiNezio (2022). Air-sea coupling shapes North American hydroclimate response to ice sheets during the Last Glacial Maximum. *Earth and Planetary Science Letters* 578, 117271. https://doi.org/10.1016/j.epsl.2021.117271

32. Rafkin, S., **J.M. Lora**, A. Soto, and †J.M. Battalio (2022). The interaction of deep convection with the general circulation in Titan's atmosphere. Part 1: Cloud resolving simulations. *Icarus* 373, 114755. https://doi.org/10.1016/j.icarus.2021.114755

33. †Battalio, J.M., **J.M. Lora**, S. Rafkin, and A. Soto (2022). The interaction of deep convection with the general circulation in Titan's atmosphere. Part 2: Impacts on the climate. *Icarus* 373, 114623. https://doi.org/10.1016/j.icarus.2021.114623

34. Rodriguez, S., et al. (including **J.M. Lora**) (2022). Science goals and new mission concepts for a future exploration of Titan's atmosphere, geology and habitability: Titan POlar Scout/orbiteEr and In situ lake lander and DrONe explorer (POSEIDON). *Experimental Astronomy* 54, 911–973. https://doi.org/10.1007/s10686-021-09815-8

35. †Baek, S.H., Y. Kushnir, W.A. Robinson, **J.M. Lora**, D.E. Lee, M. Ting (2021). An atmospheric bridge between subpolar and tropical Atlantic regions: A perplexing asymmetric teleconnection. *Geophysical Research Letters* 48, e2021GL096602. https://doi.org/10.1029/2021GL096602

36. †Baek, S.H. and **J.M. Lora** (2021). Counterbalancing influences of aerosols and greenhouse gases on atmospheric rivers. *Nature Climate Change* 11, 958–965. https://doi.org/10.1038/s41558-021-01166-8

37. †Battalio, J.M. and **J.M. Lora** (2021). Global impacts from high-latitude storms on Titan. *Geophysical Research Letters* 48, e2021GL094244. https://doi.org/10.1029/2021GL094244

38. †Battalio, J.M. and **J.M. Lora** (2021). Annular modes of variability in the atmospheres of Mars and Titan. *Nature Astronomy* 5, 1139–1147. https://doi.org/10.1038/s41550-021-01447-4

39. †Menemenlis, S.A., **J.M. Lora**, M. Lofverstrom, and D. Chandan (2021). Influence of stationary waves on mid-Pliocene atmospheric rivers and hydroclimate. *Global and Planetary Change* 204, 103557. https://doi.org/10.1016/j.gloplacha.2021.103557

40. Nichols-Fleming, F., P. Corlies, A.G. Hayes, M. Ádámkovics, P. Rojo, S. Rodriguez, E.P. Turtle, **J.M. Lora**, and J.M. Soderblom (2021). Tracking short-term variations in the haze distribution of Titan's atmosphere with SINFONI VLT. *Planetary Science Journal* 2, 180. https://doi.org/10.3847/PSJ/abffd7

41. Barnes, J.W., et al. (including **J.M. Lora**) (2021). Science goals and objectives for the Dragonfly Titan rotorcraft relocatable lander. *Planetary Science Journal* 2, 130. https://doi.org/10.3847/PSJ/abfdcf

42. MacKenzie, S.M., S.P.D. Birch, S. Hörst, C. Sotin, E. Barth, **J.M. Lora**, and 27 co-authors (2021). Titan: Earth-like on the outside, Ocean World on the inside. *Planetary Science Journal* 2, 112. https://doi.org/10.3847/PSJ/abf7c9

43. Kageyama, M., S.P. Harrison, M.-L. Kapsch, M. Lofverstrom, **J.M. Lora**, and 24 co-authors (2021). The PMIP4 Last Glacial Maximum experiments: preliminary results and comparison with the PMIP3 simulations. *Climate of the Past* 17, 1065–1089. https://doi.org/10.5194/cp-17-1065-2021

44. **Lora, J.M.**, C.A. Shields, and J.J. Rutz (2020). Consensus and disagreement in atmospheric river detection: ARTMIP global catalogues. *Geophysical Research Letters* 47, e2020GL089302. https://doi.org/10.1029/2020GL089302

45. Skinner, C.B., **J.M. Lora**, A.E. Payne, and C.J. Poulsen (2020). Atmospheric river changes shaped mid-latitude hydroclimate since the mid-Holocene. *Earth and Planetary Science Letters* 541, 116293. https://doi.org/10.1016/j.epsl.2020.116293

46. Rehfeld, K., R. Hébert, **J.M. Lora**, M. Lofverstrom, and C.M. Brierley (2020). Variability of surface climate in simulations of past and future. *Earth System Dynamics* 11, 447–468. https://doi.org/10.5194/esd-11-447-2020

47. O'Brien, T.A., et al. (including **J.M. Lora**) (2020). Detection uncertainty matters for understanding atmospheric rivers. *Bulletin of the American Meteorological Society* 101, E790–E796. https://doi.org/10.1175/BAMS-D-19-0348.1

48. Dixit, Y., S. Toucanne, C. Fontanier, V. Pasquier, **J.M. Lora**, G. Jouet, and A. Tripati (2020). Enhanced western Mediterranean rainfall during past interglacials driven by North Atlantic pressure changes. *Quaternary International* 553, 1–13. https://doi.org/10.1016/j.quaint.2020.08.017

49. Santi, L.M., A.J. Arnold, D.E. Ibarra, C.A. Whicker, J.A. Mering, R.B. Lomarda, **J.M. Lora**, and A. Tripati (2020). Clumped isotope constraints on changes in latest Pleistocene hydroclimate in the northwestern Great Basin: Lake Surprise, California. *GSA Bulletin* 132, 2669–2683. https://doi.org/10.1130/B35484.1

50. Faulk$^\star$, S.P., **J.M. Lora**$^\star$, J.L. Mitchell, and P.C.D. Milly (2020). Titan's climate patterns and surface methane distribution due to the coupling of land hydrology and atmosphere. *Nature Astronomy* 4, 390–398. https://doi.org/10.1038/s41550-019-0963-0
$^\star$*equal-contribution authors*

51. Rutz, J.J., C.A. Shields, **J.M. Lora**, and 35 co-authors (2019). The Atmospheric River Tracking Method Intercomparison Project (ARTMIP): Quantifying uncertainties in atmospheric river climatology. *Journal of Geophysical Research: Atmospheres* 124, 13,777–13,802. https://doi.org/10.1029/2019JD030936

52. **Lora, J.M.** and D.E. Ibarra (2019). The North American hydrologic cycle through the last deglaciation. *Quaternary Science Reviews* 226, 105991 (Invited Contribution). https://doi.org/10.1016/j.quascirev.2019.105991

53. Lee, H.-I., J.L. Mitchell, A. Tripati, **J.M. Lora**, G. Chen, and Q. Ding (2019). North Atlantic and Pacific quasi-stationary parts of atmospheric rivers and their implications for East Asian monsoon onset. *Geophysical Research Letters* 46, 12311–12320. https://doi.org/10.1029/2019GL084272

54. **Lora, J.M.**, T. Tokano, J. Vatant d'Ollone, S. Lebonnois, and R.D. Lorenz (2019). A model intercomparison of Titan's climate and low-latitude environment. *Icarus* 333, 113–126. https://doi.org/10.1016/j.icarus.2019.05.031

55. MacKenzie, S.M., **J.M. Lora**, and R.D. Lorenz (2019). A thermal inertia map of Titan. *Journal of Geophysical Research: Planets* 124, 1728–1742. https://doi.org/10.1029/2019JE005930

56. Molaro, J.L., M. Choukroun, C. Phillips, E. Phelps, R. Hodyss, K. Mitchell, **J.M. Lora**, and G. Meirion-Griffith (2019). The microstructural evolution of water ice in the solar system through sintering. *Journal of Geophysical Research: Planets* 124, 243–277. https://doi.org/10.1029/2018JE005773

57. Hill, S.A., **J.M. Lora**, N. Khoo, S.P. Faulk, and J. Aurnou (2018). Affordable rotating fluid demonstrations for geoscience education: The DIYnamics project. *Bulletin of the American Meteorological Society* 99, 2529–2538. https://doi.org/10.1175/BAMS-D-17-0215.1

58. **Lora, J.M.** (2018). Components and mechanisms of hydrologic cycle changes over North America at the Last Glacial Maximum. *Journal of Climate* 31, 7035–7051. https://doi.org/10.1175/JCLI-D-17-0544.1

59. Shields, C.A., J.J. Rutz, L.R. Leung, F.M. Ralph, M. Wehner, B. Kawzenuk, **J.M. Lora**, and 32 co-authors (2018). Atmospheric River Tracking Method Intercomparison Project (ARTMIP): Experimental design and project goals. *Geoscientific Model Development* 11, 2455–2474. https://doi.org/10.5194/gmd-2017-295

60. Turtle, E.P., J.E. Perry, J.M. Barbara, A.D. Del Genio, S. Rodriguez, C. Sotin, **J.M. Lora**, S. Faulk, P. Corlies, J. Kelland, S.M. MacKenzie, R.A. West, A.S. McEwen, J.I. Lunine, J. Pitesky, T.L. Ray, and M. Roy (2018). Titan's meteorology over the Cassini mission: Evidence for extensive subsurface methane reservoirs. *Geophysical Research Letters* 45, 5320–5328. https://doi.org/10.1029/2018GL078170

61. **Lora, J.M.**, T. Kataria, and P. Gao (2018). Atmospheric circulation, chemistry, and infrared spectra of Titan-like exoplanets around different stellar types. *Astrophysical Journal* 853, 58–67. https://doi.org/10.3847/1538-4357/aaa132

62. Faulk, S.P., S. Moon, J.L. Mitchell, and **J.M. Lora** (2017). Regional patterns of extreme precipitation on Titan consistent with observed alluvial fan distribution. *Nature Geoscience* 10, 827–831. https://doi.org/10.1038/ngeo3043

63. Löfverström, M. and **J.M. Lora** (2017). Abrupt regime shifts in the North Atlantic atmospheric circulation over the last deglaciation. *Geophysical Research Letters* 44, 8047–8055. https://doi.org/10.1002/2017GL074274

64. **Lora, J.M.**, J.L. Mitchell, C. Risi, and A.E. Tripati (2017). North Pacific atmospheric rivers and their influence on North America at the Last Glacial Maximum. *Geophysical Research Letters* 44, 1051–1059. https://doi.org/10.1002/2016GL071541

65. **Lora, J.M.** and M. Ádámkovics (2017). The near-surface methane humidity on Titan. *Icarus* 286, 270–279. https://doi.org/10.1016/j.icarus.2016.10.012

66. **Lora, J.M.**, J.L. Mitchell, and A.E. Tripati (2016). Abrupt reorganization of North Pacific and western North American climate during the last deglaciation. *Geophysical Research Letters* 43, 11796–11804. https://doi.org/10.1002/2016GL071244

67. Mitchell, J.L. and **J.M. Lora** (2016). The climate of Titan. *Annual Reviews of Earth and Planetary Science* 44, 353–380 (Invited Contribution). https://doi.org/10.1146/annurev-earth-060115-012428

68. McDonald, G.D., A.G. Hayes, R.C. Ewing, **J.M. Lora**, C.E. Newman, T. Tokano, A. Lucas, A. Soto, and G. Chen (2016). Variations in Titan's dune orientations as a result of orbital forcing. *Icarus* 270, 197–210. https://doi.org/10.1016/j.icarus.2015.11.036

69. Neish, C.D., J.L. Molaro., **J.M. Lora**, A.D. Howard, R.L. Kirk, P. Schenk, V.J. Bray, and R.D. Lorenz (2016). Fluvial erosion as a mechanism for crater modification on Titan. *Icarus* 270, 114–129. https://doi.org/10.1016/j.icarus.2015.07.022

70. **Lora, J.M.** and J.L. Mitchell (2015). Titan's asymmetric lake distribution mediated by methane transport due to atmospheric eddies. *Geophysical Research Letters* 42, 6213–6220. https://doi.org/10.1002/2015GL064912

71. **Lora, J.M.**, J.I. Lunine, and J.L. Russell (2015). GCM simulations of Titan's middle and lower atmosphere and comparison to observations. *Icarus* 250, 516–528. https://doi.org/10.1016/j.icarus.2014.12.030

72. **Lora, J.M.**, J.I. Lunine, J.L. Russell, and A.G. Hayes (2014). Simulations of Titan's paleoclimate. *Icarus* 243, 264–273. https://doi.org/10.1016/j.icarus.2014.08.042

73. Griffith, C.A., **J.M. Lora**, J. Turner, P.F. Penteado, R.H. Brown, M.G. Tomasko, L. Doose, and C. See (2012). Possible tropical lakes on Titan from observations of dark terrain. *Nature* 486, 237–239. https://doi.org/10.1038/nature11165

74. **Lora, J.M.**, P.J. Goodman, J.L. Russell, and J.I. Lunine (2011). Insolation in Titan's troposphere. *Icarus* 216, 116–119. https://doi.org/10.1016/j.icarus.2011.08.017

**Funded Grants and Fellowships**

**Current:**

| | |
|---|---|
| NSF Frontier Research in Earth Sciences: *Collaborative Research: Testing the impact of land plants on the Earth system* (Co-Principal Investigator) | 2024–2028 |
| NASA New Frontiers Program: *Dragonfly* mission to Titan, Phases B–D (Co-Investigator) | 2019–2028 |
| NASA Cassini Data Analysis Program: *Understanding the global structure and seasonal behavior of Titan's planetary boundary layer* (Principal Investigator) | 2025–2027 |
| NASA FINESST: *Investigating the atmospheric circulation of Uranus with global climate modeling* (Principal Investigator*)<br>*Future Investigator is C. Keaveney, student advisee | 2025–2027 |
| NASA Solar System Observations: *Winds of change: a multi-decade study of Titan's middle atmosphere across seasons* (Co-Investigator) | 2024–2027 |
| NASA Planetary Science Early Career Award: *Disseminating the science of planetary atmospheres and climates* (Principal Investigator) | 2022–2027 |
| NASA Cassini Data Analysis Program: *Climate change on Titan due to Saturn's billion-year obliquity evolution* (Co-Investigator) | 2024–2026 |
| DOE Earthshots: Carbon Negative Shot: *Carbon dioxide removal and high-performance computing: Planetary boundaries of Earth shots* (Co-Principal Investigator) | 2023–2026 |
| NASA Interdisciplinary Consortia for Astrobiology Research: *Alternative Earths – how to build and sustain a detectable biosphere* (Co-Investigator) | 2020–2025 |

**Previous:**

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| NSF P2C2: *Collaborative Research: An integrated model-proxy approach to understanding Western US hydroclimate change since the last glacial period* (Co-Principal Investigator) | 2021–2024 |
| NASA Mars Data Analysis Program: *Annular modes of variability in the Martian atmosphere* (Co-Investigator*)<br>*Principal Investigator is J.M. Battalio, postdoctoral advisee | 2021–2024 |
| Yale Planetary Solutions Project Seed Grants: *Simulating Pliocene climate as a blueprint for future warming: From cloud physics and ocean circulation to extreme precipitation and droughts* (Co-Investigator) | 2022–2023 |
| NASA Cassini Data Analysis Program: *The dynamics and seasonal evolution of Titan's polar vortex* (Principal Investigator) | 2020–2022 |
| NASA Cassini Data Analysis Program: *DeltaT: Dynamics and detectability of deltas on Titan* (Co-Investigator) | 2020–2022 |
| NSF P2C2: *Collaborative Research: Elucidating the drivers and consequences of changes in atmospheric rivers from the Last Glacial Maximum to the present day* (Co-Principal Investigator) | 2019–2022 |
| NASA Solar System Workings: *The role of moist convection in Titan's hydrologic cycle and general circulation* (Principal Investigator) | 2017–2020 |
| University of California Chancellor's Postdoctoral Fellowship | 2017–2019 |
| California Alliance (NSF-AGEP) Postdoctoral Fellowship | 2017–2019 |
| NASA Cassini Data Analysis and Participating Scientist Program: *Understanding the controlling factors of Titan's climate, weather and* | 2016–2019 |

*methane hydrology in space and time* (Co-Investigator)

NSF AGS Postdoctoral Fellowship: *Impacts of large-scale dynamics on regional climate sensitivity: Model-paleodata comparisons in three mid-latitude regions* (Principal Investigator) 2015–2017

NASA Earth and Space Science Fellowship: *Modeling Titan's atmospheric dynamics and interaction with methane* (Student Investigator) 2012–2014

**Advising and Mentoring**

**Yale Research Scientists:**

J. Michael Battalio 2022–present

**Yale Postdoctoral Advisees:**

Seung Hun Baek (now Researcher at LLNL) 2020–2023
William Rush (now Assistant Professor at Santa Clara University) 2022–2023
J. Michael Battalio (now Associate Research Scientist at Yale) 2019–2022

**Yale Graduate Students:**

Caleb Keaveney 2023–present
Sooman Han 2022–present
Serena Yang (née Scholz) 2022–present
Nicholas Lombardo 2019–present
Demetra Yancopoulos (minor discourse) 2024–present
Annika Margevich (minor discourse) 2021–present
Ashley Arroyo (minor discourse) 2020–present
Zhiyuan Li (minor discourse) 2019–present
Guillaume Delaviel (minor discourse; MSc 2022) 2019–2021

**Other Yale Doctoral Committees**:

Suhani Dalal 2024–present
Jennifer Kosty 2023–present
Paul Curtis 2021–present
Elizabeth Bailey 2020–present
Jingjun Liu 2020–present
Sam De Abreu 2023–2024
Manpreet Singh (MSc 2023) 2019–2023
Yu Liang (PhD 2023) 2019–2022
Ulla Heede (PhD 2022) 2019–2022

**External Graduate Students**:

Jan Vatant d'Ollone (PhD 2020, Sorbonne Université; doctoral committee) 2020
Hung-I Lee (PhD 2019, UCLA; research collaborator and advisor) 2015–2019
Sean Faulk (PhD 2018, UCLA; research collaborator and advisor) 2014–2018

**Yale Postgraduate Advisees**:

Sofia Menemenlis (now PhD candidate at Princeton) 2020–2021

**Yale Undergraduate Senior Theses Supervised**:

Sophia Getz (Physics) 2023–2024
Alyse Olcott (EPS) 2023–2024
Kunsang Dorjee (Physics) 2022
Nicholas Archambault (Physics) 2020–2021
Colin Baciocco (EPS) 2020–2021
Mary Yap (EPS) 2020–2021
Sofia Menemenlis (EPS) 2019–2020
Michael Machado (Physics) 2019

**Other Undergraduate Research Advisees**:

Ethan Olim, Yale 2022–2024

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|---|---|
| Jaden Uram, Yale | 2023–2024 |
| Alyse Olcott, Yale | 2023–2024 |
| Kunsang Dorjee, Yale | 2019–2022 |
| Juliana Surprenant, Yale | 2020–2021 |
| Nicholas Archambault, Yale | 2019–2021 |
| Chloe Whicker, UCLA | 2017–2019 |
| Alexandrea Arnold, UCLA | 2016–2017 |
| Shelley Cheng, UCLA | 2016–2017 |
| Raul Reyes, UCLA | 2016–2017 |
| Tyler Vollmer, UCLA | 2015–2016 |

**Teaching**

**Yale Courses**:

EPS 140: *Atmosphere, Ocean, and Climate Change*, 16 students. Spring 2025
Course Director/Instructor; 36 lectures.

EPS 750: *Seminar on Planetary Atmospheric Dynamics*, 3 students, Fall 2024
Course Director; weekly 2-hour sessions.

EPS 620: *Essentials of Earth and Planetary Sciences*, 11 students. Fall 2024
Co-instructor, 2 lectures.

EPS 140: *Atmosphere, Ocean, and Climate Change*, 37 students. Spring 2023
Course Director/Instructor; 36 lectures.

EPS 750: *Seminar on Planetary Atmospheric Dynamics*, 2 students, Fall 2022
3 guest students. Course Director; weekly 2-hour sessions.

EPS 620: *Essentials of Earth and Planetary Sciences*, 25 students. Fall 2022
Co-instructor, 2 lectures.

EPS 322/522: *Physics of Weather and Climate*, 12 students. Spring 2022
Course Director/Instructor; 25 lectures.

EPS 756: *Seminar in Earth System Science*, 8 students. Spring 2022
Co-Instructor; weekly 2-hour sessions.

EPS 140: *Atmosphere, Ocean, and Climate Change*, 19 students. Spring 2021
Course Director/Instructor; 36 lectures.

EPS 756: *Seminar in Earth System Science*, 6 students, 10 guest students. Spring 2021
Co-Instructor; weekly 2-hour sessions.

EPS 750: *Seminar on Planetary Atmospheric Dynamics*, 5 students, Fall 2020
2 guest students. Course Director; weekly 2-hour sessions.

EPS 755: *Seminar in Earth System Science*, 10 students, 3 guest students. Fall 2020
Co-Instructor; weekly 2-hour sessions.

G&G 322/522: *Physics of Weather and Climate*, 13 students. Spring 2020
Course Director/Instructor; 25 lectures.

G&G 140: *Atmosphere, Ocean, and Climate Change*, 27 students. Fall 2019
Co-Director/Co-Instructor; 15 of 35 lectures.

**Additional Teaching**:

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|---|---|
| EPS 362/562: *Observing Earth from Space*, Yale (1 lecture/year) | 2020–present |
| GLBL 7165: *Earth System Science for Public Policy*, Yale (1 lecture/year) | 2023–present |
| *Rossbypalooza* Summer School, University of Chicago | Summer 2022 |
| *Earth, Resources, Energy and the Environment*, Yale (1 lecture) | 2019 |
| *The Process of Change in Science: Discovery of Global Warming*, USC (1 lecture) | 2018 |
| *Oceans and Atmospheres*, UCLA (several lectures) | 2015, 2016 |

*Blue Planet: Introduction to Oceanography*, UCLA (1 lecture) 2016
*The Universe and Humanity: Origin and Destiny, Honors*, U. Arizona (4 lectures) 2012

## Professional Service

**Editor**: *Icarus* 2018–2024

**Referee**:
*Astrobiology*, *Astrophysical Journal Letters*, *Bulletin of the American Meteorological Society*, *Climate Dynamics*, *Climate of the Past*, *CRC Press*, *Geophysical Research Letters*, *Icarus*, *IOP eBooks*, *Journal of the Atmospheric Sciences*, *Journal of Climate*, *Journal of Geophysical Research: Atmospheres*, *Journal of Hydrometeorology*, *Nature Astronomy*, *Nature Communications*, *Nature Geoscience*, *Oxford University Press*, *Planetary Science Journal*, *Planetary and Space Science*, *Proceedings of the National Academy of Sciences*, *Science Advances*, *Scientific Reports*

**Proposal Reviewer**:
Group Chief, Panelist, and External Reviewer for NASA Planetary Science Division
Reviewer for NSF Geosciences Directorate
Reviewer for Agence Nationale de la Recherche (French National Research Agency)
Reviewer for Chilean National Research and Development Agency
Reviewer for Deutsche Forschungsgemeinschaft (German Research Foundation)
Reviewer for UK Science and Technology Facilities Council
Reviewer for US–Israel Binational Science Foundation

**Service to Societies and Agencies**:
Prize Subcommittee Member, AAS Division for Planetary Sciences 2024–present
Member Representative for Yale University, University Corporation for Atmospheric Research (UCAR) 2019–present
Steering Committee Member, NASA Network for Ocean Worlds 2020–2023
Invited panelist, National Academies Workshop: *Identifying New Community-Driven Science Themes for NSF's Support of Paleoclimate Research* 2021

**Conference Activities and External Committees**:
Primary/Session Convener, *Atmospheric Rivers: Processes, Impacts, and Uncertainties* Session, AGU Fall Meeting 2022, 2023, 2024
Invited panelist, *Ice-Ocean Interactions on Icy Moons in the Solar System* Workshop, Princeton, NJ 2022
Outstanding Student Paper Award Judge, AGU Fall Meeting 2016
Co-chair, *Titan: Upper Atmosphere* Session, DPS/EPSC Joint Meeting 2016
Local Organizing Committee Member, *Exoplanets, Biosignatures and Instruments* Conference, Tucson, AZ 2013–2014
Curriculum Committee Member, Lunar and Planetary Laboratory 2011–2013
Co-chair, *Titan 3* Session, DPS Meeting 2013
Director Search Committee Member, Lunar and Planetary Laboratory 2011

## University Service

**University**:
Steering Committee, Yale Hub for WCRP *My Climate Risk* Activity 2025–present
Heising-Simons 51 Peg b Fellowship Internal Review Committee 2019–present
Yale College Postgraduate Fellowships Committee 2019–2021

**Department**:
Chair, Earth System Modeling Search Committee Fall 2024–present
Flint Postdoctoral Fellowship Committee Fall 2024–present
Ad Hoc Committee on Qualifying Exams Fall 2024–present
Planetary Science Search Committee Fall 2023–Spring 2024

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|---|---|
| Climate Search Committee | Fall 2022–Spring 2023 |
| YCNCC Cluster Search EPS Committee | Spring 2022 |
| Program Review and Exam Committee | Fall 2019, 2022, Spring 2021, 2022 |
| Graduate Admissions and Recruiting Committee | 2020–2021, Spring 2022 |
| Colloquium Committee | 2019–2021 |
| Computer Facilities & Users Committee | 2019–2020 |
| New Departmental Name Ad Hoc Committee | Spring 2020 |

**Berkeley College Adviser**:

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|---|---|
| Victoria Cantú Rodríguez | 2024–present |
| Dylan Corey | 2024–present |
| Avni Kabra | 2024–present |
| Kenny Tung | 2022–2023 |
| Nava Minsky-Primus | 2022–2023 |
| Kevin Zhou | 2020–2021 |
| Jason Lee (2 semesters) | 2020–2021 |
| Edward Seol (3 semesters) | 2019–2020 |
| Samuel Tigistu (3 semesters) | 2019–2020 |

**Invited Colloquia and Seminars**

| | |
|---|---|
| ClimaTea Seminar, Harvard University (forthcoming) | 2025 |
| Department of Earth Sciences Seminar, University of Connecticut | 2024 |
| Department of Mathematics and Statistics Seminar, University of Exeter | 2024 |
| Earth System Science Interdisciplinary Center Seminar, University of Maryland | 2024 |
| Department of Physics Colloquium, Boise State University | 2023 |
| Geophysical Sciences Seminar, University of Chicago | 2023 |
| Atmosphere Ocean Science Colloquium, NYU Courant | 2022 |
| *Rossbypalooza*, University of Chicago | 2022 |
| Atmospheric Science Seminar, University of California, Davis | 2022 |
| Geological Sciences Department Seminar, University of Alaska, Anchorage | 2022 |
| Atmospheres and Oceans Seminar, Johns Hopkins University | 2021 |
| Earth and Atmospheric Sciences Colloquium, Indiana University, Bloomington | 2021 |
| Atmospheric Oceanic and Planetary Physics Seminar, University of Oxford | 2021 |
| DEEPS Colloquium, Brown University | 2021 |
| NASA Network for Ocean Worlds Lecture | 2021 |
| DEEPS Colloquium, Brown University | 2020 |
| Lamont-Doherty Earth Observatory Seminar, Columbia University | 2020 |
| Earth and Planetary Sciences Department Seminar, University of California, Davis | 2020 |
| Physical Oceanography Seminar, University of Rhode Island | 2020 |
| Paleoclimate Seminar, Woods Hole Oceanographic Institution | 2020 |
| Earth Section Seminar, Scripps Institution of Oceanography | 2019 |
| *Origin and Evolution of Planet Earth* Symposium, Yale University | 2019 |
| Departmental Seminar, Geological Sciences, Stanford University | 2018 |
| Earth/Planetary Science Special Seminar, California Institute of Technology | 2018 |
| Earth System Science Seminar, UC Irvine | 2018 |
| CLaSP Seminar, University of Michigan | 2018 |
| Department of Geology and Geophysics Colloquium, Yale University | 2018 |
| Department of Astronomy Colloquium, Cornell University | 2018 |
| Planetary Science Seminar, UCLA | 2018 |
| Whole Earth Seminar, Earth and Planetary Sciences, UCSC | 2018 |
| Atmospheric and Oceanic Sciences Department Seminar, UCLA | 2017 |
| Planetary Science Seminar, California Institute of Technology | 2017 |
| Atmospheric Oceanic and Planetary Physics Seminar, University of Oxford | 2017 |
| Physics Department Lecture, Westmont College | 2016 |
| Planetary Science Seminar, Jet Propulsion Laboratory | 2016 |

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| Planetary Science Seminar, UCLA | 2016 |
| Laboratoire de Météorologie Dynamique Seminar, IPSL, Paris | 2015 |
| Planetary Seminar, Georgia Institute of Technology | 2015 |
| Planetary Science Seminar, UCLA | 2014 |
| Planetary Science Seminar, NASA Goddard Space Flight Center | 2014 |

**Invited Conference Talks**

**Lora, J.M.** (2025). "Global variability and impacts of atmospheric rivers in a changing climate" (Keynote Talk). 5th Climate, Weather and Water Forum (*forthcoming*).

**Lora, J.M.** (2023). "The influence of orbital forcing on the distribution of Titan's surface liquids" (Plenary Talk). 54th Lunar and Planetary Science Conference.

**Lora, J.M.** (2022). "Understanding Titan's weather, climate, and paleoclimate." *Urey Prize Lecture* (Plenary Talk). 54th Division for Planetary Sciences Annual Meeting.

**Lora, J.M.**, D.E. Ibarra, C.B. Skinner (2020). "Components and Mechanisms of the North American hydrologic cycle since the Last Glacial Maximum." American Geophysical Union Fall Meeting.

**Lora, J.M.**, C.B. Skinner (2020). "Atmospheric river shifts in response to Holocene forcings and their impact on millennial-scale hydroclimate changes." American Geophysical Union Fall Meeting.

**Lora, J.M.** (2018). "The circulation and volatile cycles of Solar System atmospheres" (Invited Review). Comparative Climatology of Terrestrial Planets III.

**Lora, J.M.** (2018). "Atmospheric rivers and the changing climate of western North America since the Last Glacial Maximum." 2018 International Atmospheric Rivers Conference.

**Lora, J.M.**, J.L. Mitchell, C. Risi, and A.E. Tripati (2017). "North Pacific atmospheric rivers and their influence on North America since the Last Glacial Maximum." American Geophysical Union Fall Meeting.

**Lora, J.M.** (2017). "The climate of Titan" (Invited Review). Titan Through Time 4.

**Lora, J.M.**, J.L. Mitchell, C. Risi, and A.E. Tripati (2016). "Atmospheric moisture transport to western North America during the Last Glacial Maximum and deglaciation." Geological Society of America Annual Meeting.

**Selected Contributed Conference Presentations**

† *Yale advisee*

**First Author and Advisee Only:**

1. **Lora, J.M.** and †N.A. Lombardo (2024). "Understanding the transport of methane into Titan's stratosphere." Poster. AGU Fall Meeting, abstract #P43D-3039.
2. †Rush, W.R., **J.M. Lora**, C. Skinner, †S. Menemenlis, and 24 co-authors (2024). "Atmospheric river detection under changing seasonality and mean-state climate: ARTMIP tier 2 paleoclimate experiments." Talk. AGU Fall Meeting, abstract #A51C-07.
3. †Scholz, S.R. and **J.M. Lora** (2024). "Global trends in atmospheric river temperatures, snowfall, and precipitation." Talk. AGU Fall Meeting, abstract #A52B-01.
4. **Lora, J.M.**, †E. Olim, and †J. Battalio (2024). "Distribution, characteristics, and evolution of methane storms on Titan." Talk. DPS Meeting, abstract #408.03.
5. †Battalio, M. Cohen, P. Read, J.M. and **J.M. Lora**, T. McConnochie, and K. McGouldrick (2024). "Terrestrial climate variability at seasonal to subseasonal timescales." Talk. DPS Meeting, abstract #406.04.
6. †Lombardo, N. and **J.M. Lora** (2024). "Feedbacks between idealized chemical tracers and dynamics through radiative heating in Titan's middle atmosphere." Talk. DPS Meeting, abstract #309.06D.

7. **Lora, J.M.** and C. Skinner (2024). "The global response of atmospheric rivers to glacial conditions and their influence on ice sheets at the Last Glacial Maximum." Talk. International Atmospheric Rivers Conference 2024, abstract #110.
8. †Scholz, S. and **J.M. Lora** (2024). "Global impacts of atmospheric rivers on surface temperatures and heat fluxes." Talk. International Atmospheric Rivers Conference 2024, abstract #82.
9. †Baek, S.H., †J.M. Battalio, and **J.M. Lora** (2024). "Atmospheric river variability over the last millennium driven by annular modes." Poster. International Atmospheric Rivers Conference 2024, abstract #93.
10. †Battalio, J.M. and **J.M. Lora** (2024). "Identification of coupling between the baroclinic and barotropic annular modes using transient eddy energetics." Talk. AMS AOFD Meeting, abstract #8.2.
11. †Battalio, J.M. and **J.M. Lora** (2024). "Annular modes on Mars explain large portions of climate variability and propagate in the northern hemisphere." Poster. AMS AOFD Meeting, abstract #P13.
12. †Battalio, J.M. and **J.M. Lora** (2024). "Increases in the local eddy energetics of the extratropical atmosphere over the last four decades." Poster. AMS AOFD Meeting, abstract #P111.
13. †Lombardo, N.A. and **J.M. Lora** (2024). "Seasonal-scale transport of heat and momentum in Titan's middle atmosphere." Poster. AMS AOFD Meeting, abstract #P11.
14. †Lombardo, N.A. and **J.M. Lora** (2024). "Transport of trace species by Titan's middle atmospheric circulation." Poster. AMS AOFD Meeting, abstract #P64.
15. Williams⋆, D.A., X. Ji⋆, P. Corlies⋆, and **J.M. Lora** (2024). "Clouds and seasonality on terrestrial planets with varying rotation rates." Talk. AMS AOFD Meeting, abstract #14.4.
⋆*2022 Rossbypalooza summer school advisees*
16. †Battalio, J.M. and **J.M. Lora** (2024). "Changes in local eddy energetics of extratropical storm tracks." Talk. AMS Annual Meeting, abstract #4A.2.
17. †Baek, S.H., Y. Kanzaki, **J.M. Lora**, N. Planavsky, C.T. Reinhard and S. Zhang (2023). "Impact of climate on the global capacity for enhanced rock weathering on croplands." Poster. AGU Fall Meeting, abstract #B43K-2707.
18. †Lombardo, N.A., **J.M. Lora**, C.A. Nixon, T. Greathouse, K. Willacy, M. Cordiner, A.E. Thelen, N.A. Teanby and P.G.J. Irwin (2023). "Measurement of hydrogen isocyanide (HNC) in Titan's lower stratosphere and simulating its distribution with a general circulation model." Talk. AGU Fall Meeting, abstract #P41D-02.
19. **Lora, J.M.**, C.B Skinner, W. Rush and S.H. Baek (2023). "The hydrologic cycle and atmospheric rivers in simulations of the Last Glacial Maximum." eLightning Talk/Poster. AGU Fall Meeting, abstract #PP23E-08.
20. **Lora, J.M.**, D. Williams, X. Ji and P. Corlies (2023). "Clouds and seasonality on terrestrial planets with varying rotation rates." Poster. AGU Fall Meeting, abstract #P21B-3002.
21. †Rush, W., **J.M. Lora**, et al. (2023). "Atmospheric river detection under changing mean-state climate and seasonality: ARTMIP Tier 2 single-forcing paleoclimate experiments." Poster. AGU Fall Meeting, abstract #A53M-2440.
22. †Scholz, S.R. and **J.M. Lora** (2023). "Atmospheric rivers cause extreme heat excursions and anomalously warm temperatures." Talk. AGU Fall Meeting, abstract #A51B-05.

23. †Lombardo, N.A. and **J.M. Lora** (2023). "Simulating the production of stratospheric ice clouds over Titan's winter pole with the Titan Atmospheric Model." Talk. DPS/EPSC Joint Meeting, abstract #208.06.
24. †Lombardo, N.A. and **J.M. Lora** (2023). "The heat and momentum budgets of Titan's stratosphere." Talk. Titan Through Time VI.
25. **Lora, J.M.**, †E. Olim and †J.M. Battalio (2023). "Methane storm distribution and evolution in simulations of Titan's climate." Talk. Titan Through Time VI.
26. †Han, S. and **J.M. Lora** (2023). "Titan's planetary boundary layer structure modulated by moisture processes in a climate model." Poster. Titan Through Time VI.
27. †Lombardo, N.A., C.A. Nixon, **J.M. Lora**, T.K. Greathouse, K. Willacy, M. Cordiner, A. Thelen, N.A. Teanby and P.G.J. Irwin (2023). "Measurement of hydrogen isocyanide (HNC) in Titan's lower stratosphere." Poster. Titan Through Time VI.
28. †Baek, S.H., †J.M. Battalio and **J.M. Lora** (2022). "Atmospheric river variability over the Last Millennium driven by annular modes." Talk. AGU Fall Meeting, abstract #A52C-03.
29. †Battalio, J.M. and **J.M. Lora** (2022). "Impact of extratropical eddy kinetic energy energetics on atmospheric rivers." Poster. AGU Fall Meeting, abstract #A55M-1277.
30. †Lombardo, N.A. and **J.M. Lora** (2022). "Interaction of chemical tracers with Titan's general circulation." Talk. AGU Fall Meeting, abstract #P46B-04.
31. †Lombardo, N.A. and **J.M. Lora** (2022). "The energy and momentum budget of Titan's stratospheric polar vortex." Talk. DPS Meeting, abstract #401.04.
32. †Baek, S.H., †J.M. Battalio, and **J.M. Lora** (2022). "Atmospheric river variability over the last millennium driven by annular modes." Talk. International Atmospheric Rivers Conference 2022.
33. †Lombardo, N.A. and **J.M. Lora** (2022). "The energy and momentum balance of Titan's stratospheric polar vortex as simulated in a general circulation model." Talk. Europlanet Science Congress, abstract #655.
34. **Lora, J.M.** and †J.M. Battalio (2022). "Global impacts from convective polar storms on Titan." Talk. AMS AOFD Meeting, abstract #12.2.
35. †Baek, S.H. and **J.M. Lora** (2022). "Counterbalancing influences of aerosols and greenhouse gases on atmospheric rivers." Poster. AMS AOFD Meeting, abstract #V11.
36. †Baek, S.H., Y. Kushnir, W.A. Robinson, **J.M. Lora**, D.E. Lee, and M. Ting (2022). "An atmospheric bridge between the subpolar and tropical Atlantic regions: a perplexing asymmetric teleconnection." Talk. EGU General Assembly, abstract #8888.
37. †Baek, S.H. and **J.M. Lora** (2022). "Counterbalancing influences of aerosols and GHGs on atmospheric rivers." Talk. AMS Annual Meeting, abstract #10A.1.
38. †Battalio, J.M. and **J.M. Lora** (2022). "Trends in transient wave eddy kinetic energetics in ERA5." Talk. AMS Annual Meeting, abstract #J6A.3.
39. †Battalio, J.M. and **J.M. Lora** (2022). "Annular modes on Mars and Titan." Poster. AMS Annual Meeting, abstract #294.
40. †Battalio, J.M. and **J.M. Lora** (2021). "Annular modes of climate variability and their relationship to dust storms on Mars." Talk. AGU Fall Meeting, abstract #P31B-02.
41. **Lora, J.M.**, †J. M. Battalio, †M. Yap, and †C. Baciocco (2021). "Understanding the influences of topography and orbital forcing on Titan's surface methane." Talk. AGU Fall Meeting, abstract #P43B-06.
42. †Battalio, J.M. and **J.M. Lora** (2021). "Titan's annular modes of climate variability compared to Earth and Mars." Talk. Titan Through Time V.

43. †Lombardo, N.A., and **J.M. Lora** (2021). "Dynamical simulations of Titan's stratosphere using observationally derived molecular abundance and aerosol opacity." Poster. Titan Through Time V.

44. **Lora, J.M.** and †J.M. Battalio (2021). "Global influences of polar storms in simulations of Titan's climate." Talk. Titan Through Time V.

45. †Battalio, J.M. and **J.M. Lora** (2020). "Barotropic and baroclinic annular modes of variability in the atmospheres of Mars and Titan." Talk. AGU Fall Meeting, abstract #A170-02.

46. †Menemenlis, S., **J.M. Lora**, M. Lofverstrom, D. Chandan, D.E. Ibarra (2020). "Regional precipitation influenced by stationary wave changes in model of mid-Pliocene climate." Poster. AGU Fall Meeting, abstract #PP024-0015.

47. †Menemenlis, S., **J.M. Lora**, M. Löfverström, D. Chandan (2020). "Atmospheric rivers influenced by stationary wave changes in model of mid-Pliocene climate." IARC-Sponsored Symposium, abstract #041.

48. **Lora, J.M.** (2020). "On the consensus and disagreement in atmospheric river detection in ARTMIP global catalogues." IARC-Sponsored Symposium, abstract #052.

49. **Lora, J.M.** and C.B. Skinner (2019). "Tier XX: Paleo Atmospheric River Tracking Method Intercomparison Project." Talk. 3rd ARTMIP Workshop, Lawrence Berkeley National Laboratory.

50. **Lora, J.M.**, T. Tokano, J. Vatant d'Ollone, S. Lebonnois, R.D. Lorenz (2019). "A model intercomparison of Titan's climate." Talk. Titan after Cassini-Huygens Workshop, Madrid.

51. **Lora, J.M.**, S.P. Faulk, J.L. Mitchell, P.C.D. Milly (2019). "The influence of surface and subsurface hydrology on Titan's climate system." Poster. EPSC-DPS Joint Meeting, abstract #1027.

52. **Lora, J.M.**, T. Kataria, and P. Gao (2018). "Understanding Titan and Titan-like exoplanets around different stellar types." Talk. AGU Fall Meeting, abstract #P52A-04.

53. **Lora, J.M.**, S.P. Faulk, J.L Mitchell, and C.P.D. Milly (2018). "Uncovering the influence of surface and subsurface hydrology on Titan's climate system." Talk. Cassini Science Symposium 2018.

54. **Lora, J.M.**, J. Mitchell, and A. Tripati (2017). "The North American hydrologic cycle at the Last Glacial Maximum." Talk. AGU Fall Meeting, abstract #PP33D-04.

55. **Lora, J.M.**, S. Faulk, and J. Mitchell (2017). "The influence of topography on Titan's atmospheric circulation and hydrologic cycle." Talk. DPS Meeting, abstract #304.02.

56. **Lora, J.M.**, J.L. Mitchell, C. Risi, and A. Tripati (2017). "North Pacific atmospheric rivers at the Last Glacial Maximum." PMIP4 Conference, Stockholm.

57. **Lora, J.M.**, J.L. Mitchell, M. Ádámkovics, and S. Faulk (2017). "Surface-atmosphere coupling in Titan's hydrologic cycle." Poster. Outer Planets Assessment Group Meeting, Atlanta, GA.

58. **Lora, J.M.**, J.L Mitchell, C. Risi, and A.E. Tripati (2016). "Atmospheric moisture transport to western North America during the Last Glacial Maximum and deglaciation." Talk. AGU Fall Meeting, abstract #PP51F-02.

59. **Lora, J.M.**, J.L. Mitchell, C. Risi, and A.E. Tripati (2016). "Exploring changes in the hydroclimate of western North America since the Last Glacial Maximum." Model Hierarchies Workshop, Princeton University.

60. **Lora, J.M.**, M. Ádámkovics, and J.L. Mitchell (2016). "Constraining the distribution of methane on the surface and in the troposphere of Titan." Talk. DPS/EPSC Joint Meeting, abstract #520.01.
61. **Lora, J.M.**, M. Ádámkovics, and J.L. Mitchell (2016). "Constraining and interpreting Titan's methane hydrologic cycle." Talk. Titan Aeronomy and Climate Workshop, Reims, France.
62. **Lora, J.M.**, J.L. Mitchell, C. Risi, and A.E. Tripati (2015). "Atmospheric rivers enhanced water delivery to southwestern North America at the Last Glacial Maximum." Poster. AGU Fall Meeting, abstract #PP43B-2272.
63. **Lora, J.M.** and J.L. Mitchell (2015). "Asymmetric lake distribution on Titan mediated by methane transport due to atmospheric eddies." Talk. DPS Meeting, abstract #300.04.
64. **Lora, J.M.**, J.L. Mitchell, C. Risi, and A.K. Tripati (2015). "Atmospheric moisture transport on Earth and Titan." Poster. Comparative Climatology of Terrestrial Planets II, abstract #2.
65. **Lora, J.M.** and J.L. Mitchell (2015). "The influence of baroclinic eddies on moisture transport in Titan's atmosphere." Talk. AMS AOFD Meeting, abstract #9.4.
66. **Lora, J.M.** and J.L. Mitchell, C. Risi, and A.K. Tripati (2015). "Evaluating the role of the jet stream and atmospheric rivers in the moisture budget of glacial western North America." Poster. AMS AOFD Meeting, abstract #12.
67. **Lora, J.M.** and J.L. Mitchell (2014). "The impact of 'wetlands' on Titan's mid-latitude cloudiness." Poster. AGU Fall Meeting, abstract #P23D-4015.
68. **Lora, J.M.**, J. Lunine, J. Russell, and A. Hayes (2014). "GCM simulations of Titan's paleoclimate." Talk. DPS Meeting, abstract #115.05D.
69. **Lora, J.M.**, J. Lunine, J. Russell, and A. Hayes (2014). "Simulations of Titan's paleoclimate with a new GCM." Talk. Titan Through Time 3.
70. **Lora, J.M.**, J. Russell, and J. Lunine (2013). "Titan's methane cycle and the surface energy budget." Poster. AGU Fall Meeting, abstract #P53D-1901.
71. **Lora, J.M.**, J. Russell, and J. Lunine (2013). "Surface energy budget from a Titan GCM with realistic radiative transfer." Poster. DPS Meeting, abstract #309.04.
72. **Lora, J.M.**, J. Russell, and J. Lunine (2012). "Distribution of radiative heating rates in Titan's lower atmosphere." Poster. AGU Fall Meeting, abstract #P21E-1889.
73. **Lora, J.M.**, J. Russell, and J. Lunine (2012). "Insolation distribution in Titan's lower atmosphere." Talk. Titan Through Time 2.
74. **Lora, J.M.**, P. Goodman, J. Russell, and J. Lunine (2011). "Insolation and Titan's tropospheric circulation." Poster. EPSC-DPS Joint Meeting, abstract #176.
75. **Lora, J.M.**, C.A. Griffith, J. Turner, and P. Penteado (2010). "Evidence for ethane (or lack thereof) on Titan's tropical surface." Talk. DPS Meeting, abstract #55.09.

**Selected Outreach Activities**

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|---|---|
| Project Co-lead and Member, *DIYnamics* Outreach Program (*diynamics.github.io*) | 2016–present |
| First Friday Astronomy Public Lecture, Boise State University | 2023 |
| Workshop Co-Convener, Earth Educators' Rendezvous, *"Teaching atmosphere, ocean, and planetary fluid dynamic fundamentals vividly with rotating tanks"* | 2022 |
| Lecturer, *"Weather across the Solar System"* Virtual Lecture, *Adventure in Science* Program | 2021 |
| Presenter, *Climate Change Professional Development Virtual Workshop* for middle and high school teachers, U. Mass. Lowell | 2020, 2021 |

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|---|---|
| Panelist, *"Storms of the Solar System,"* NASA CCTP3 Livestream (∼20,000 views) | 2018 |
| Guest, *"Moons and Exoplanets: The same or different species?"*, *AAS Afternoon Astronomy Coffee Hangout* Podcast | 2018 |
| Featured Scientist, *Windfall Films* segment for TV Series on the Cosmos | 2016 |
| Volunteer, *Exploring Your Universe*, UCLA | 2014–2017 |
| Presenter, UCLA and Santa Monica College paleoclimate research workshops | 2015–2016 |
| Presenter, UCLA iPLEX K-12 classroom visits and workshops | 2014–2016 |
| Artist, DPS/EPSC Meeting Art Shows | 2010–2012, 2016 |
| Artist/Volunteer, LPL Art of Planetary Science | 2013–2015 |
| Organizing Committee Member, *Exploring Your Universe*, UCLA | 2015 |
| Presenter, Telescope Nights, University of Arizona | 2010–2012 |

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