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Education

Ph.D. Planetary Science, California Inst. of Technology, 2014, Adviser: Michael P. Lamb, Dissertation: Valley evolution by meandering rivers
B.A. Geophysics (honors), Univ. of California, Berkeley, 2007

Appointments

Assistant Professor, Dept. of Environmental Sciences, Univ. of Virginia, 2019-present
Postdoctoral Fellow, School of Earth and Space Exploration, Arizona St. Univ., 2018-2019
Postdoctoral Associate / Research Associate, St. Anthony Falls Laboratory, Univ. of Minnesota, Advisor: Chris Paola, 2014-2018
Intern and Contractor, US Geological Survey Astrogeology Team, Flagstaff, Arizona, Advisor: Kenneth Tanaka, 2006-2007

Honors

National Science Foundation Faculty Early Career Development (CAREER) Award, 2023-2028
Exploration Postdoctoral Fellowship, Arizona State University, 2018-2019
American Geophysical Union (AGU) *Eos* Research Spotlight, *Journal of Geophysical Research: Earth Surface*, 2015 and 2016
National Center for Earth-surface Dynamics 2 Postdoctoral Fellowship, 2015-2016
Honorable Mention, Outstanding Oral Presentation, SEPM Society for Sedimentary Geology Research Symposium, 2015
Community Surface Dynamics Modeling System (CSDMS) Student Modeler Award, 2014
National Defense Science and Engineering Graduate Fellowship, 2010-2013
NASA Student Travel Grant, Mars Polar Science and Exploration Conference, 2011
NASA Student Travel Grant, Mars Sedimentology and Stratigraphy Conference, 2010
Keck Institute for Space Studies Graduate Fellowship, 2009-2010
NSF Research Experiences for Undergraduates Fellowship, 2006
UC Berkeley Library Prize for Undergraduate Research, 2005
National Merit Scholar, 2003

Publications

*****UVA student or postdoctoral researcher

In review/revision

Lai, S. Y. J., Liu, H.-Y., Foreman, B. Z., and Limaye, A. B., submitted, Response of submarine braided channels to varying inflow hydrographs: Geomorphic experiments and stratigraphic implications.

Articles

27. Zhao, F., Ganti, V., and Limaye, A. B.**,** accepted, Scour depth variability controls channel-scale stratigraphy in experimental braided rivers, *Journal of Sedimentary Research.*

26. *Wang, Y., Limaye, A. B., and Chadwick, A. J., in press, Topography-based particle image velocimetry of braided channel initiation, *Water Resources Research.*
25. *Li, Y., and Limaye, A. B., 2024, Timescale of the morphodynamic feedback between planform geometry and lateral migration of meandering rivers, *Journal of Geophysical Research: Earth Surface* 129(2), doi:10.1029/2023JF007413.
24. Huang, S. Y. J., Lai, S. Y. J., Limaye, A. B., Foreman, B. Z., and Paola, C., 2023, Confinement width controls the morphology and braiding intensity of submarine braided channels: Insights from physical experiments, *Earth Surface Dynamics*, doi:10.5194/esurf-2023-6.
23. Khosronejad, A., Limaye, A. B., Zhang, Z., Kang, S., Yang, X., and Sotiropoulos, F., 2023, On the morphodynamics of a wide class of large-scale meandering rivers: Insights gained by coupling LES with sediment-dynamics, *Journal of Advances in Modeling Earth Systems* 15(3), doi:10.1029/2022MS003257.
22. Kozarek, J. L., Limaye, A. B., and Arpin, E., 2023, Linking turbulent flow and bank erosion with controlled experiments in a field-scale meandering channel, *Geological Society of London Special Publication* 540(1), doi:10.1144/SP540-2023-17.
21. Limaye, A. B., Adler, J. B., Moodie, A. J., Whipple, K. X., and Howard, A. D., 2023, Effect of standing water on formation of fan-shaped sedimentary deposits at Hypanis Valles, Mars, *Geophysical Research Letters* 50(4), doi:10.1029/2022GL102367.
20. *Li, Y., and Limaye, A. B., 2022, Testing predictions for migration of meandering rivers: Fit for a curvature-based model depends on streamwise location and timescale, *Journal of Geophysical Research: Earth Surface* 127, doi:10.1029/2022JF006776.
19. Tejedor, A., Schwenk, J., Kleinhans, M., Limaye, A. B., Vulis, L., Carling, P., Kantz, H., and Foufoula-Georgiou, E., 2022, The Entropic Braiding Index (eBI): a robust metric to account for the diversity of channel scales in multi-thread rivers, *Geophysical Research Letters* 49 (16), doi:10.1029/2022GL099681.
18. Zhang, X., Limaye, A. B., and Khosronejad, A., 2022, Three-dimensional realizations of flood flow in large-scale rivers using the neural fuzzy-based machine-learning algorithm, *Computers and Fluids* 246, doi:10.1016/j.compfluid.2022.105611.
17. Zhang, X., Flora, K., Kang, S., Limaye, A. B., and Khosronejad, A., 2022, Data-driven prediction of turbulent flow statistics past bridge piers in large-scale rivers using convolutional neural networks, *Water Resources Research* 58, doi:10.1029/2021WR030163.
16. Li*, Y., Wang, Y. P., Zhu, Q., Limaye, A. B., and Wu, H., 2021, Roles of sediment advection and resuspension in the turbidity maximum zone of the Changjiang Estuary,China, *Continental Shelf Research* 229, doi:10.1016/j.csr.2021.104559.
15. Limaye, A. B., Lazarus, E. D., Li*, Y., and Schwenk, J., 2021, River sinuosity describes a continuum between randomness and ordered growth, *Geology* 49 (12), 1506–1510, doi:10.1130/G49153.1.
14. Scheingross, J. S., Limaye, A. B., McCoy, S. W., and Whittaker, A. C., 2020, The shaping of bedrock landscapes by internal dynamics, *Nature Reviews Earth and Environment*, doi:10.1038/s43017-020-0096-0.
13. Limaye, A. B., 2020, How do braided rivers grow channel belts?, *Journal of Geophysical Research: Earth Surface* 125(8), doi:10.1029/2020JF005570.
12. Limaye, A. B., Grimaud, J.-L., Lai, S. Y. J., Foreman, B. Z., Komatsu, Y., and Paola, C., 2018, Geometry and dynamics of braided channels and bars under experimental density currents, *Sedimentology*, doi:10.1111/sed.12453.

11. Torres, M. A., Limaye, A. B., Ganti, V., Lamb, M. P., West, A. J., and Fischer, W. W., 2017, Model predictions of long-lived storage of organic carbon in river deposits, *Earth Surface Dynamics* 5, 711-730, doi:10.5194/esurf-5-711-2017.
10. Limaye, A. B., 2017, Extraction of multi-thread channel networks with a reduced complexity flow model, *Journal of Geophysical Research: Earth Surface* 122, doi:10.1002/2016JF004175.
9. Clubb, F. J., Mudd, S. M., Milodowski, D. T., Valters, D. A., Slater, L J., Hurst, M. D., and Limaye, A. B., 2017, Geomorphometric delineation of floodplains and terraces from objectively defined topographic thresholds, *Earth Surface Dynamics*, doi:10.5194/esurf-2017-21.
8. Lai, S. Y. J., Hung, S. S. C., Foreman, B. Z., Limaye, A. B., Grimaud, J. L., and Paola, C., 2017, Stream power controls the braiding intensity of submarine channels similarly to rivers, *Geophysical Research Letters* 44, doi:10.1002/2017GL072964.
7. Limaye, A. B. S., and Lamb, M. P., 2016, Numerical model predictions of autogenic fluvial terraces and comparison to climate change expectations, *Journal of Geophysical Research: Earth Surface* 121, doi:10.1002/2014JF003392.
6. Limaye, A. B. S., and Lamb, M. P., 2014, Numerical simulations of bedrock valley evolution by meandering rivers with variable bank materials, *Journal of Geophysical Research: Earth Surface* 119, doi:10.1002/2013JF002997.
5. Limaye, A. B. S., and Lamb, M. P., 2013, A vector-based approach to bank-material tracking in coupled models of meandering and landscape evolution, *Journal of Geophysical Research: Earth Surface* 118, doi:10.1002/2013JF002854.
4. DiBiase, R. A., Limaye, A. B., Scheingross, J. S., Fischer, W. W. and Lamb, M. P., 2013, Deltaic deposits at Aeolis Dorsa: Sedimentary evidence for a large body of water in the northern plains of Mars, *Journal of Geophysical Research: Planets* 118, 1285-1302, doi:10.1002/jgre.20100.
3. Limaye, A. B. S., Aharonson, O., and Perron, J. T., 2012, Detailed stratigraphy and bed thickness of the Mars north and south polar layered deposits, *Journal of Geophysical Research: Planets* 117 (E06009), doi:10.1029/2011JE003961.
2. Lamb, M. P., Scheingross, J. S., Amidon, W. H., Swanson, E., and Limaye, A., 2011, A model for fire-induced sediment yield by dry ravel in steep landscapes, *Journal of Geophysical Research: Earth Surface* 116 (F03006), doi:10.1029/2010JF001878.
1. Hubbard, B., Milliken, R. E., Kargel, J. S., Limaye, A., and Souness, C., 2011, Geomorphological characterisation and interpretation of a mid-latitude glacier-like form: Hellas Planitia, Mars, *Icarus* 21, 330-346, doi:10.1016/j.icarus.2010.10.021.

Other publications and datasets

9. Wang, Y., Limaye, A. B., and Chadwick, A. J., 2023, Binary images and Particle Image Velocimetry data and code for mapping channel thread migration in laboratory braided rivers, https://doi.org/10.18130/V3/EIBDZC, University of Virginia Dataverse, V1.
8. Li, Y., and Limaye, A. B., 2023, Numerical model and natural river data for the timescale analysis of meandering channel migration (1.0.0) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.8222638
7. Limaye, A. B., Adler, J. B., Moodie, A. J., Whipple, K. X., and Howard, A. D., 2023, Numerical model and geospatial data for fan-shaped deposits at Hypanis Valles, Mars, University of Virginia Dataverse, V2, doi:10.18130/V3/E0EGOC.

6. Li, Y.* and Limaye, A. B., 2022, Geospatial data for natural channel centerlines across the continental US, Univ. of Virginia Dataverse, doi:10.18130/V3/IUMGS7.
5. Limaye, A. B., 2021, Sinuosity data for numerically modeled and natural channels, Univ. of Virginia Dataverse, doi:10.18130/V3/TRTTIS.
4. Limaye, A. B., 2020, Geospatial data for experimental and natural channel belts, Univ. of Virginia Dataverse, doi:10.18130/V3/XBYWYO.
3. Limaye, A. B., Grimaud, J.-L., Lai, S. Y. J., Foreman, B. Z., Komatsu, Y., and Paola, C., 2018, Topography, image, and flow model data for experimental density currents, St. Anthony Falls Laboratory, 2015-2017, Data Repository for the University of Minnesota, doi:10.13020/D6R088.
2. Limaye, A. B., 2017, Topography and flow model files for the Platte River, Nebraska, 2016-2017, Data Repository for the University of Minnesota, doi:10.13020/D6Z39J.
1. Limaye, A. B. S., 2015, Valley evolution by meandering rivers, Ph.D. thesis, California Inst. of Technology, 254 pp., doi:10.7907/Z9MG7MFJ.

An updated list is available at www.ajaylimaye.com/publications/
Citation metrics: https://bit.ly/2wE03se

Invited Talks

2024 College of William & Mary, Geology
2023 City College of New York; Los Alamos National Laboratory, Earth and Environmental Sciences
2022 Am. Quaternary Assoc. Biennial Meeting
2021 EGU Geomorphology section, Landscapes Live; University of Delaware; Johns Hopkins Univ., Bromery Lecture
2020 Univ. of Engineering and Technology, Peru; Virginia Tech, CEE Environmental and Water Resources
2019 American Association of Petroleum Geologists (AAPG) Annual Meeting
2018 Univ. of Michigan; Univ. of Virginia; German Research Center for Geosciences (GFZ)
2017 National Taiwan Univ.
2016 Sediment Experimentalists Network – Community Surface Dynamics Modeling System Annual Meeting (poster); Geological Society of America Annual Meeting
2015 AAPG Annual Meeting; Minnesota Geological Survey; AGU Fall Meeting
2014 California Inst. of Technology, The Associates; Community Surface Dynamics Modeling System Annual Meeting; Univ. of Southern California, Lithospheric Dynamics

Teaching

EVGE 5820, Geomorphology	Fall 2019, 2021, 2023
ASTR 3880 / EVSC 4890, Planetary Astronomy/Geology	Fall 2020; Spring 2022, 2024
ASTR 3881 / EVSC 4891, Planetary Astronomy/Geology Lab	Spring 2022, 2024
EVSC 2800/2801, Fundamentals of Geology and Laboratory	Spring 2021, 2023
EVSC 4559/7559, Geoscience in the Field	Spring 2022
EVSC 4542/7542, Topics in Landscape Evolution:	
Debris flows in Virginia (as EVSC 4559/7559)	Spring 2021
The Appalachians	Spring 2023

Selected Advising

Environmental Sciences Distinguished Major Program (Undergraduate)

Medha Prakash	2021-2023
Victoria Thompson	2022-2024

Graduate students

Yuan Li	Ph.D. candidate, 2019-present
Jacob Smith	M.S., 2020-2022
Vidushi Sharma	Graduate student, 2022-present
Ariana Flournoy	M.S. candidate, 2022-present
Abigail Ackerman	Graduate student, 2023-present

Ph.D. thesis committees

Matthew Pryal (Astronomy)	2020
Brenden Marshall	2020
Marion McKenzie	2021-2023
Kelsey Schoenemann	2021-present
Santiago Munevar Garcia	2021-present
Tyler Barnes	2021-present
Renato Mazzei (Astronomy)	2024

Postdoctoral researchers

Hongbo Ma	2021
Youwei Wang	2022-present
Dimitri Bandou	2023-present

External Service

Journal reviews	Nature Communications, Geophysical Research Letters, Geology, Geological Society of America Bulletin, Journal of Geophysical Research: Earth Surface, Journal of Geophysical Research: Planets, Icarus, Earth and Planetary Science Letters, Water Resources Research, Earth Surface Dynamics, Earth Surface Processes and Landforms, Geological Society of London
Proposal reviews and panels	National Science Foundation, NASA
Committees	Fall Meeting Program Committee, Earth and Planetary Surface Processes Section, American Geophysical Union (2024-present)

Professional Society Memberships

American Geophysical Union