

## ***Education***

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- 2014 – 2019      **California Institute of Technology**  
PhD in Geology, *Mechanics of river avulsions on lowland river deltas*  
Defended October 21, 2019; Received at Graduation Ceremony June 12, 2020  
Thesis Advisor: Michael Lamb
- 2010 – 2014      **University of California, Los Angeles**  
BS in Applied Geophysics, Departmental Highest Honors  
Undergraduate Research Advisors: Jonathan Aurnou, Gilles Peltzer

## ***Positions Held***

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- 2023 – Current      **Postdoctoral Research Scientist**  
Lamont-Doherty Earth Observatory, Columbia University  
Advisors: Suzana Camargo, Michael Steckler
- 2022 – 2023      **Postdoctoral Scholar**  
UC Santa Barbara Earth Research Institute  
Advisors: Vamsi Ganti
- 2022      **Scientist**  
Exponent Engineering and Scientific Consulting  
Practice: Environmental & Earth Sciences
- 2019 – 2021      **Postdoctoral Associate**  
University of Minnesota St. Anthony Falls Laboratory  
Advisors: Chris Paola, Elisabeth Steel
- 2014      **Research Scientist**  
Caltech Earth Surface Dynamics Laboratory  
Advisor: Michael Lamb
- 2012 – 2014      **Undergraduate Research Assistant**  
UCLA Department of Earth & Space Sciences  
Advisors: Gilles Peltzer, Jonathan Aurnou
- 2012      **Undergraduate Research Intern**  
United States Geological Survey (USGS) Menlo Park  
Advisor: Walter Mooney

## ***Honors & Awards***

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- 2023–2025      **Lamont Postdoctoral Fellowship in Earth, Environmental, and Climate Sciences**  
Lamont-Doherty Earth Observatory, Columbia University
- 2023–2025      **Funded Proposal: NASA Commercial Smallsat Data Acquisition Program**  
River response to climate change: Insights from  
high-resolution remote sensing data in High-Mountain Asia  
Collaborators: Vamsi Ganti, Efi-Foufoula Georgiou, Evan Greenberg
- 2023–2026      **Funded Proposal: National Science Foundation, Division of Earth Sciences**  
NSF EAR-Climate: Global Survey of Multiscale River Mobility and its Response to  
Climate Change and Human Interference (NSF EAR-2310740)  
Collaborators: Vamsi Ganti, Evan Greenberg

- 2016 – 2020      **Graduate Fellowship in Sustainability Science**  
Resnick Sustainability Institute at the California Institute of Technology
- 2018              **Best Poster Award**  
Community Surface Dynamics Modeling System Meeting
- 2018              **Early Career Spotlight**  
American Geophysical Union Earth and Planetary Surface Processes (AGU EPSP)  
<https://connect.agu.org/epsp/spotlight>
- 2015              **George & Virginia Eaton Fellowship**  
California Institute of Technology
- 2015              **Graduate Research Fellowship Honorable Mention**  
National Science Foundation
- 2014              **John & Frances Handin Scholarship**  
University of California, Los Angeles
- 2013              **Clarence A. Hall Summer Field Scholarship**  
University of California, Los Angeles
- 2012              **USGS Internship Certificate of Outstanding Achievement**  
United States Geological Survey, Menlo Park, CA

## ***Publications***

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*Research Mentees are denoted by \**

- In Review*      Greenberg E, **Chadwick AJ**, Li GK, & Ganti V. Planform Morphology Control on River Mobility and Floodplain Reworking. In Review at *Geophysical Research Letters*.
- In Review*      Wang Y, Limaye AB, & **Chadwick AJ**. Topography-based particle image velocimetry of braided channel initiation. In Review at *Water Resources Research*.
- 2023              Greenberg E, **Chadwick AJ**, & Ganti V. A generalized area-based framework to quantify river mobility from remotely sensed imagery. *Journal of Geophysical Research: Earth Surface* 128 (e2023JF007189).
- 2023              **Chadwick AJ**, Greenberg E, & Ganti V. Remote sensing of riverbank migration using particle image velocimetry. *Journal of Geophysical Research: Earth Surface* 128 (e2023JF007177).
- 2023              Rowland JC, Schwenk JP, Shelef E, Muss J, Ahrens D, Stauffer S, Piliouras A, Crosby B, **Chadwick AJ**, Douglas MM, Kemeny PC, Lamb MP, Li GK, & Vulis L. Scale-dependent influence of permafrost on riverbank erosion rates. *Journal of Geophysical Research: Earth Surface* 128 (e2023JF007101).
- 2023              Xu Z, Khan MR, Ahmed KM, Zahid A, Hariharan J, Passalacqua P, Steel E, **Chadwick AJ**, Paola C, Paldor A, & Michael HA. Predicting Subsurface Architecture from Surface Channel Networks in The Bengal Delta. *Journal of Geophysical Research: Earth Surface* 128 (e2022JF006775).

- 2023                   Kemeny PC, Li GK, Douglas MM, Berelson W, **Chadwick AJ**, Dalleska NF, Lamb MP, Larsen W, Magyar JS, Rollins NE, Rowland J, Smith I, Torres MA, Webb SM, Fischer WW, & West AJ. Arctic Permafrost Thawing Enhances Sulfide Oxidation. *Global Biogeochemical Cycles* 37 (e2022GB007644).
- 2022                   **Chadwick AJ**, Steele S\*, Silvestre J\*, & Lamb MP. More extensive land loss expected on coastal deltas due to rivers jumping course during sea-level rise. *Proceedings of the National Academy of Sciences* 119(31).
- 2022                   **Chadwick AJ**, Steel E, Passalacqua P, & Paola C. Differential bank migration limits the lifespan and width of braided river threads. *Water Resources Research* 58(8).
- 2022                   **Chadwick AJ**, Steele S\*, Silvestre J\*, & Lamb MP. Effect of sea-level change on river avulsions and stratigraphy for an experimental lowland delta. *Journal of Geophysical Research: Earth Surface* 127(7).
- 2022                   **Chadwick AJ**, Steel E, Williams-Schaetzel RA\*, Passalacqua P, & Paola C. Channel migration in experimental river networks mapped by particle image velocimetry. *Journal of Geophysical Research: Earth Surface* 127.
- 2022                   Brooke S, **Chadwick AJ**, Silvestre J\*, Lamb MP, Edmonds DA, & Ganti V. Where rivers jump course. *Science* 376(6596).
- 2022                   Edmonds DA, **Chadwick AJ**, Lamb, MP, Lorenzo-Trueba J, Murray AB, Nardin W, Salter G, & Shaw JB. Morphodynamic Modeling of River-Dominated Deltas: A Review and Future Perspectives. in *Treatise on Geomorphology* 110–140.
- 2022                   Steel E, Paola C, **Chadwick AJ**, Hariharan J, Passalacqua P, Xu Z, Michael HA, Brommecker H, & Hajek EA. Reconstructing subsurface sandbody connectivity from temporal evolution of surface networks. *Basin Research* 34, 1486–1506.
- 2022                   Xu Z, Hariharan J, Passalacqua P, Steel E, **Chadwick AJ**, Paola C, Paldor A, & Michael HA. Effects of geologic setting on contaminant transport in deltaic aquifers. *Water Resources Research* 58.
- 2022                   Hariharan J, Passalacqua P, Xu Z, Michael HA, Steel E, **Chadwick AJ**, Paola C, & Moodie AJ. Modeling the dynamic response of river deltas to sea-level rise acceleration. *Journal of Geophysical Research: Earth Surface* 127.
- 2022                   Douglas MM, Li GK, Fischer WW, Rowland JC , Kemeny PC, West AJ, Schwenk J, Piliouras AP, **Chadwick AJ**, & Lamb MP. Organic carbon burial by river meandering partially offsets bank-erosion carbon fluxes in a discontinuous permafrost floodplain. *Earth Surface Dynamics* 10(3).
- 2021                   **Chadwick AJ** & Lamb MP. Climate-change controls on river delta avulsion location and frequency. *Journal of Geophysical Research: Earth Surface* 126(6).
- 2021                   Douglas MM, Lingappa UF, Lamb MP, Rowland JC, West AJ, Li G, Kemeny PC, **Chadwick AJ**, Piliouras AP, Schwenk J, & Fischer WW. Impact of river channel lateral migration on microbial communities across a discontinuous permafrost floodplain. *Applied and Environmental Microbiology* 87(20).
- 2020                   **Chadwick AJ**, Lamb MP, Ganti V. Accelerated river avulsion frequency on lowland deltas due to sea-level rise. *Proceedings of the National Academy of Sciences* 117(30).

- 2020 Brooke S, Ganti V, **Chadwick AJ**, Lamb MP. Flood variability determines the location of lobe-scale avulsions on Deltas: Madagascar. *Geophysical Research Letters* 47(20).
- 2019 **Chadwick AJ**, Lamb MP, Moodie AJ, Parker G, Nittrouer J. Origin of a preferential avulsion node on lowland river deltas. *Geophysical Research Letters* 46(8).
- 2019 Ganti V, Lamb MP, **Chadwick AJ**. Autogenic erosional surfaces in fluvio-deltaic stratigraphy from floods, avulsions, and backwater hydrodynamics. *Journal of Sedimentary Research* 89(8).
- 2019 Moodie AJ, Nittrouer JA, Ma H, Carlson BN, **Chadwick AJ**, Lamb MP, Parker G. Modeling deltaic lobe-building cycles and channel avulsions for the Yellow River delta, China. *Journal of Geophysical Research: Earth Surface* 124(11).
- 2016 Ganti V, **Chadwick AJ**, Hassenruck-Gudipati HJ, Lamb MP. Avulsion cycles and their stratigraphic signature on an experimental backwater-controlled delta. *Journal of Geophysical Research: Earth Surface* 121(9).
- 2016 Ganti V, **Chadwick AJ**, Hassenruck-Gudipati HJ, Fuller BM, Lamb MP. Experimental river delta size set by multiple floods and backwater hydrodynamics. *Science Advances* 2(5).
- 2016 Shaw JB, Ayoub F, Jones CE, Lamb MP, Holt B, Wagner RW, Coffey T, **Chadwick AJ**, Mohrig D. Airborne radar imaging of subaqueous channel evolution in Wax Lake Delta, Louisiana, USA. *Geophysical Research Letters* 43(10).

### ***Selected Conference Proceedings***

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- 2023 JO-CREWSnet Team. Reinventing climate-change adaptation with the Jameel Observatory Climate Resilience Early Warning System Network (JO-CREWSnet). Highlight segment, *2023 United Nations Climate Change Conference (COP28)*, Expo City, Dubai.
- 2023 **Chadwick AJ**, Greenberg E, Ganti V. River channel patterns are driven by width (in)stability. Oral presentation, *American Geophysical Union Fall Meeting*, San Francisco, CA.
- 2023 **Chadwick AJ**, Greenberg E, Ganti V. Multi-thread channel morphologies driven by runaway widening. Oral presentation, *Southern California Geobiology & Geomorphology Symposium*, Santa Barbara, CA.
- 2022 **Chadwick AJ**, Steel E, Passalacqua P, Paola C. Differential bank migration limits the lifespan and width of braided river threads. Poster presentation, *4<sup>th</sup> Annual Southern California Geomorphology Symposium*, Irvine, CA.
- 2021 **Chadwick AJ**, Steel E, Passalacqua P, Paola C. Differential bank migration limits the lifespan and width of braided river threads. Poster presentation, *American Geophysical Union Fall Meeting*, New Orleans, LA.
- 2019 **Chadwick AJ**, Lamb MP. Climate-change controls on river delta avulsion location and frequency. Oral presentation, *American Geophysical Union Fall Meeting*, San Francisco, CA.

- 2018 **Chadwick AJ**, Silvestre J, Steele S, Lamb MP. How well is sea-level fall preserved in fluvio-deltaic stratigraphy? Oral presentation, *American Geophysical Union Fall Meeting*, Washington DC.
- 2018 **Chadwick AJ**, Steele S, Silvestre J, Lamb MP. How does river-channel shifting mediate land sustainability on drowning river deltas? Oral presentation, *Resnick Sustainability Institute Seminar Day*, Pasadena, CA.
- 2018 **Chadwick AJ**, Lamb MP. Prediction the location of avulsion hazards in the face of changing flood regimes. Poster presentation, *Community Surface Dynamics Modeling System (CSDMS) Meeting*, Boulder, CO.
- 2017 **Chadwick AJ**, Steele S, Silvestre J, Lamb MP. The role of channel avulsion in mediating transient land loss on drowning river deltas. Poster presentation, *American Geophysical Union Fall Meeting*, New Orleans, LA.
- 2017 **Chadwick AJ**, Lamb MP. The roles of backwater and relative sea-level rise in setting deltaic avulsion frequency. Oral presentation, *2<sup>nd</sup> International Science Workshop of Morphodynamics and Socioeconomic Sustainability of Large River Deltas*, Qingdao, China.
- 2017 **Chadwick AJ**, Lamb MP. The roles of backwater and relative sea-level rise in setting deltaic avulsion frequency. Oral presentation, *Japan Geophysical Union and American Geophysical Union Joint Meeting (AGU-JpGU)*, Chiba, Japan.
- 2016 **Chadwick AJ**, Ganti V, Hassenruck-Gudipati HJ, Lamb MP. How does delta shoreline sinuosity respond to changes in river discharge variability? Poster presentation, *Community Surface Dynamics Modeling System (CSDMS) Meeting*, Boulder, CO.
- 2016 **Chadwick AJ**, Lamb MP. The roles of sea-level rise and hydrodynamic backwater in setting deltaic avulsion patterns. Poster presentation, *American Geophysical Union Fall Meeting*, San Francisco, CA.
- 2015 **Chadwick AJ**, Ganti V, Hassenruck-Gudipati HJ, Lamb MP. The role of backwater hydraulics in mediating shoreline rugosity. Oral presentation, *American Geophysical Union Fall Meeting*, San Francisco, CA.
- 2014 **Chadwick AJ**, Ganti V, Hassenruck-Gudipati HJ, Lamb MP. Experimental investigation of the morphodynamic controls on delta-lobe formation and shoreline rugosity. Poster presentation, *American Geophysical Union Fall Meeting*, San Francisco, CA.
- 2013 **Chadwick AJ**, Capaldi T, Aurnou J. Developing interactive classroom projects: in-class robot flyby of an endoplanet. Poster presentation, *American Geophysical Union Fall Meeting*, San Francisco, CA.

### ***Community Leadership & Affiliations***

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- 2023 **Lead Organizer, Lamont Postdoc Symposium**  
Hosted by: Lamont-Doherty Earth Observatory, Columbia University
- 2023 **Lead Organizer, Southern California Geobiology & Geomorphology Symposium**  
Hosted by: UC Santa Barbara

- 2022 **Climate-Change Business Development Team Member**  
Exponent Engineering and Scientific Consulting
- 2019 – 2020 **Graduate Student Representative & Organizer of *Early Career Spotlight***  
American Geophysical Union Earth and Planetary Surface Processes (AGU EPSP)
- 2018 **Lead Organizer, 1<sup>st</sup> Annual Southern California Geomorphology Symposium**  
Hosted by: California Institute of Technology
- 2017 – 2018 **Session Convener, Sediment Dynamics Across Landscapes**  
American Geophysical Union Fall Meeting  
Earth and Planetary Surface Processes Section
- 2017 – 2018 **Seminar Series Organizer**  
GeoClub Seminar Series, California Institute of Technology
- 2016 – present **Peer Reviewer**  
*Geology*  
*Science Advances*  
*Journal of Sedimentology*  
*Water Resources Research*  
*Geophysical Research Letters*  
*The Geological Society Special Publications*  
*Journal of Geophysical Research: Earth Surface*  
*International Journal of Environmental Research and Public Health*  
*Remote Sensing*
- 2014 – present **Member**  
American Geophysical Union (AGU)  
Community Surface Dynamics Modeling System (CSDMS)  
Sediment Experimentalist Network (SEN)

### **Teaching & Mentorship**

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- 2021 – 2024 **Graduate Research Co-Mentor**  
Mentee: Geila Volga Uzeda Orellana. *Now at GEO Morphix.*  
Primary Advisor: Elisabeth Steel  
Geological Sciences & Geological Engineering MSc program, Queens University
- 2022 **Teacher & Course Developer**  
GEOG288VG Special Topics in Geography: *Quantifying Global River Kinematics from Remote Sensing Observations*  
UC Santa Barbara Department of Geography
- 2020 – 2022 **Undergraduate Research Mentor**  
Mentee: Rashel Williams-Schaetzl. *Now at Minnesota Health Fairview.*  
University of Minnesota, St. Anthony Falls Laboratory
- 2019 **Teaching Assistant**  
Ge121C Advanced Field Geology: *The Grand Canyon & Wheeler Ridge*  
California Institute of Technology SP 2018-19
- 2018 **Climate-School Seminar Series for Undergraduates**  
Volunteer  
Resnick Sustainability Institute at Caltech  
Caltech Summer Undergraduate Research Fellowship (SURF)

- 2017 – 2020      **Undergraduate Research Mentor**  
Mentee: Sarah Steele. *Now at Harvard University.*  
Caltech Summer Undergraduate Research Fellowship
- 2017 – 2018      **Undergraduate Research Mentor**  
Mentee: Jose Silvestre. *Now at Tulane University.*  
UNAVCO Research Experiences in Solid Earth Sciences for Students (RESESS)  
Caltech WAVE Undergraduate Research Fellowship
- 2017              **Teaching Assistant**  
Ge121A Advanced Field Geology: *The Role of Vegetation in Shaping Rivers*  
California Institute of Technology FA 2016-17
- 2017              **Teaching Assistant**  
Ge126 Special Topics in Geomorphology: *River Morphodynamics*  
California Institute of Technology SP 2016-17
- 2017              **Teaching Assistant**  
Ge121B Advanced Field Geology: *Southeast Death Valley*  
California Institute of Technology WI 2016-17
- 2016              **Teaching Assistant**  
Ge 120A Introduction to Field Geology: *Rainbow Basin & the Mitchell Range*  
California Institute of Technology SP 2015-16
- 2015 – 2017      **Undergraduate Research Mentor**  
Mentee: Kirby Sikes. *Now at the Massachusetts Public Interest Research Group.*  
Caltech Summer Undergraduate Research Fellowship (SURF)
- 2014              **Annual Teaching Conference Attendee**  
Caltech Center for Teaching, Learning, & Outreach (CTLO)
- 2013              **Course Developer & Reader**  
ESS71: Introduction to Computing For Geo- and Space Scientists  
University of California, Los Angeles SP 2012-13

## ***Outreach***

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- 2023              **Presenter & Coordinator, 2023 Lamont-Doherty Open House**  
Exhibit: *Sea-level Rise and Tectonics in Bangladesh*  
<https://openhouse.ldeo.columbia.edu/content/exhibits>
- 2023              **Science consultant for press feature in *Eos: Science News by AGU***  
*Forecasting Earthquake-Induced Floods*  
<https://eos.org/articles/forecasting-earthquake-induced-floods>
- 2023              **High-School Outreach Developer**  
Short Course: *The Secret Lives of Moving Rivers*  
UC Santa Barbara School for Scientific Thought
- 2022              **Press feature for *Eos: Science News by AGU***  
*Estimating Land Loss in River Deltas*  
<https://eos.org/articles/estimating-land-loss-in-river-deltas>

- 2022 **Press feature for *Hakai Magazine: Coastal science and societies***  
*River Deltas are Running Out of Land*  
<https://hakaimagazine.com/news/river-deltas-are-running-out-of-land/>
- 2022 **Press feature for *The Current: UC Santa Barbara News***  
*Where Rivers Jump Course*  
<https://www.news.ucsb.edu/2022/020645/where-rivers-jump-course>
- 2020 **Press feature for the *Climate Connections* radio program**  
Yale Center for Environmental Communication
- 2020 **Press feature for *The Current: UC Santa Barbara News***  
*Jumping Course*  
<https://www.news.ucsb.edu/2020/019953/jumping-course>
- 2020 **Press feature for Caltech News**  
*Sea-Level Rise Could Make Rivers More Likely To Jump Course*  
<https://www.caltech.edu/about/news/sea-level-rise-could-make-rivers-more-likely-jump-course>
- 2020 **Press feature for NSF Research News**  
*Sea level rise could make rivers more likely to jump course*  
[https://www.nsf.gov/discoveries/disc\\_summ.jsp?cntn\\_id=301071](https://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=301071)
- 2018 **Press Feature on BBC World Service Television and Radio News**  
*A laboratory dedicated to understanding how rivers function in nature*  
<https://www.bbc.com/arabic/tv-and-radio-45527141>
- 2014 **Guest Lecturer for 6<sup>th</sup> grade Earth Science**  
McKinley Middle School, Pasadena CA
- 2013 – 2014 **Public Outreach Coordinator & Organization Co-Founder**  
Bruin Geological Survey (BGS)  
University of California, Los Angeles

## ***Technical Skills***

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### **Field & laboratory techniques**

- Particle image velocimetry
- Laboratory flume engineering
- Hydroacoustic profiling (Massa, ADCP)
- Laser altimetry (Keyence, LRF)
- Geophysical surveys (Gravity, GPR, Resistivity, Seismics)
- Shallow subsurface surveys (RSET, MH)
- GPS surveys (GNSS, Differential, RTK)
- UAV surveys (Airborne, Aquatic)
- Sediment transport surveys
- Geologic mapping

### **Consulting Experience**

- Flood risk assessment
- Erosion risk assessment
- Floodplain restoration
- Dam & levee management
- Evaluation of surface-water and sediment contamination risks
- Groundwater extraction and water-table drawdown

### **Programming & software**

- MATLAB
- PIVlab
- Python
- R
- GeoClaw
- QGIS
- ENVI
- LabVIEW
- Adobe Illustrator
- Adobe Photoshop
- Adobe Premier Pro
- Adobe Animate