

Stephanie Higgins

University of Colorado Boulder/INSTAAR
Campus Box 450 · Boulder, CO 80309
☎ +1 (503) 522-0291 • 📠 +1 (303) 492-2841
✉ stephanie.higgins@colorado.edu

Education

- University of Colorado Boulder** **Boulder, CO**
Ph.D. Geological Sciences, Certificate in Geophysics 2014
Thesis title: *River delta subsidence measured with interferometric synthetic aperture radar (InSAR)*
Advisor: James P. M. Syvitski
Area of study: Land surface elevation change in river deltas
- Bates College** **Lewiston, ME**
B.S. Geology 2008
Thesis title: *Quantifying and interpreting the variable alignment of a mineral lineation in the Presidential Range, NH*
Advisor: J. Dykstra Eusden
Area of study: Structural geology of orogenic belts

Professional appointments

- Postdoctoral Researcher** **Boulder, CO**
Institute of Arctic and Alpine Research, University of Colorado Boulder 2014-present
Areas of focus: Graph database generation; machine learning; water usage in India and Bangladesh; sediment transport in Asian rivers
- Graduate Research Assistant** **Boulder, CO**
Department of Geological Sciences, University of Colorado Boulder 2010-2014
Areas of focus: Interferometric Synthetic Aperture Radar (InSAR); groundwater and hydrocarbon extraction; field studies in Bangladesh
- Graduate Research Assistant** **Boulder, CO**
Department of Atmospheric and Oceanic Sciences, University of Colorado Boulder 2008-2010
Areas of focus: Supercell thunderstorms and tornadogenesis; raindrop size distributions in landfalling hurricanes; field studies in the American Great Plains

Peer-reviewed articles

- Higgins, S.** (2015) Review: advances in delta-subsidence research using satellite methods. *Hydrogeology Journal: Theme Issue on Land Subsidence Processes*, 14 pp, doi: 10.1007/s10040-015-1330-6.
- Higgins, S., Overeem, I., Steckler, M. S., Syvitski, J. P. M. & Akhter, S. H.** (2014) InSAR measurements of compaction and subsidence in the Ganges-Brahmaputra Delta, Bangladesh. *Journal of Geophysical Research: Earth Surface* 119(8):1768–1781.
- Higgins, S., Overeem, I., Tanaka, A. & Syvitski, J. P. M.** (2013) Land subsidence at aquaculture facilities in the Yellow River Delta, China. *Geophysical Research Letters* 40(15):3898–3902.

Rogers, K. G., Overeem, I., **Higgins, S.**, Gilligan, J. & Syvitski, J. P. M. (2013) Farming practices and anthropogenic delta dynamics. In: Proceedings of IAHS-IAPSO-IASPEI Assembly, Gothenburg, Sweden, July 2013.

Friedrich, K., **Higgins, S.**, Lopez, C. & Masters, F. (2013) Articulating and stationary PARSIVEL disdrometer measurements in conditions with strong winds and heavy rainfall. *Journal of Atmospheric and Oceanic Technology* 30:2063–2080.

Brakenridge, G. R., Syvitski, J. P. M., Overeem, I., **Higgins, S.**, Kettner, A. J., Stewart-Moore, J. A. & Westerhoff, R. (2013) Global mapping of storm surges and the assessment of coastal vulnerability. *Natural Hazards* 66:1295–1312.

Theses

Higgins, S. (2014) River delta subsidence measured with interferometric synthetic aperture radar (InSAR). Ph.D. Dissertation, University of Colorado Boulder. Ann Arbor: ProQuest/UMI, May 2014.

Higgins, S. (2008) Quantifying and interpreting the variable alignment of a mineral lineation in the Presidential Range, NH. Honors Thesis in Geology, Bates College, May 2008.

Magazine articles & manuals

Higgins, S. (2014) InSAR processing in flat and humid study areas: a student guide, 27 pp.

Higgins, S. & Syvitski, J. P. M. (2012) Going Under: The World's Sinking Cities. *New Scientist Magazine* 2893:40-44.

Papers in preparation

Higgins, S., Overeem, I., & Syvitski, J. P. M. (2016) Impacts of the Indian Rivers Inter-link Project on Sediment Transport to River Deltas. *in prep.*

Brakenridge, G. R., **Higgins, S.**, Syvitski, J. P. M., Kettner, A., Overeem, I., Adler, R., Prades, L., Niebuhr, E., & Green, D. S. (2016) Risk and Avoidance of Future Catastrophic Flooding, Myanmar. *in prep.*

Conference presentations

Higgins, S., Overeem, I., and Syvitski, J. P. M. (2016) Impacts of the Indian Rivers Inter-link Project on sediment transport to river deltas. 2nd International Workshop on Coastal Subsidence, 28-30 May 2016, Venice, Italy

Higgins, S., Overeem, I., and Syvitski, J. P. M. (2016) Indian rivers interlinking: a comprehensive database. Capturing Climate Change: Annual Meeting of the Community Surface Dynamics Modeling System (CSDMS), 17-19 May 2016, Boulder, CO, USA.

Higgins, S., Overeem, I., and Syvitski, J. P. M. (2015) Impacts of the Indian Rivers Inter-link Project on sediment transport to river deltas. Annual Meeting of the American Geophysical Union (AGU), 14-18 Dec 2015, San Francisco, CA, USA

Higgins, S., Overeem, I., and Syvitski, J. P. M. (2015) Potential impacts of Indian Rivers Inter-links on sediment transport to the Ganges-Brahmaputra Delta. Models Meet Data, Data Meet Models:

Annual Meeting of the Community Surface Dynamics Modeling System (CSDMS), 26-28 May 2015, Boulder, CO, USA.

Syvitski, J. P. M. and **Higgins, S.** (2015) Challenges in deltas under pressure. 36th IAHR World Congress, 28 June - 3 July 2015, The Hague, Netherlands.

Higgins, S., Overeem, I., and Syvitski, J. P. M. (2014) Monitoring subsidence with Interferometric Synthetic Aperture radar (InSAR). Annual Meeting of the American Geophysical Union (AGU), 15-19 Dec 2014, San Francisco, CA, USA.

Syvitski, J. P. M. and **Higgins, S.** (2014) Subsidence and relative sea-level rise in threatened deltas. Annual Meeting of the American Geophysical Union (AGU), 15-19 Dec 2014, San Francisco, CA, USA.

Overeem, I., **Higgins, S.**, Syvitski, J. P. M., Kettner, A., and Brakenridge, R. (2014) The impacts of armoring our deltas: mapping and modeling large-scale deltaplain aggradation. Annual Meeting of the American Geophysical Union (AGU), 15-19 Dec 2014, San Francisco, CA, USA.

Higgins, S. (2014) Measuring land subsidence at the coastal zone. 39th Annual Natural Hazards Research and Applications Workshop, 22-25 June 2014, Broomfield, CO, USA.

Higgins, S., Overeem, I., Syvitski, J.P.M., Steckler, M., Seeber, L. A., and Akhter, H. (2014) InSAR measurements of compaction and subsidence in the Ganges-Brahmaputra Delta, Bangladesh Uncertainty and sensitivity in Surface Dynamics Modeling: Annual Meeting of the Community Surface Dynamics Modeling System (CSDMS), 20-22 May 2014, Boulder, CO, USA.

Higgins, S., Overeem I., Tanaka, A., and Syvitski, J. P. M. (2013) Sinking Coastlines: Land subsidence at aquaculture facilities in the Yellow River Delta, China, measured with Differential Synthetic Aperture Radar (D-InSAR) Annual Meeting of the American Geophysical Union (AGU), 9-13 Dec 2013, San Francisco, CA, USA.

Higgins, S., Overeem I., Tanaka, A., and Syvitski, J. P. M. (2013) Land subsidence at aquaculture facilities in the Yellow River Delta, China 1st International Workshop on Coastal Subsidence, 19-21 Nov 2013, New Orleans, LA, USA.

Higgins, S., Overeem I., and Syvitski, J. P. M. (2013) Groundwater extraction at aquaculture facilities in the Yellow River Delta, China. University of Colorado Graduate Hydrological Symposium, 18-19 Mar 2013, Boulder, CO, USA.

Higgins, S., Overeem I., and Syvitski, J. P. M. (2013) Fish farms and the sinking delta. CSDMS 2.0: Moving Forward: Annual Meeting of the Community Surface Dynamics Modeling System (CSDMS), 23-25 Mar 2013, Boulder, CO, USA.

Higgins, S., Overeem I., Tanaka, A., and Syvitski, J. P. M. (2013) Land subsidence in the Yellow River Delta, China: Results from Interferometric Synthetic Aperture Radar (InSAR). IEEE International Geoscience and Remote Sensing Symposium (IGARSS-2012), Munich, Germany.

Higgins, S., Overeem I., and Syvitski, J. P. M. (2011) Mapping delta subsidence with Interferometric Synthetic Aperture Radar (InSAR). Impact of time and process scales: Annual Meeting of the Community Surface Dynamics Modeling System (CSDMS), 28-30 Oct 2011, Boulder, CO, USA.

Higgins, S., Overeem I., and Syvitski, J. P. M. (2011) Mapping delta subsidence NCED Summer Institute on Earth Surface Dynamics, 10-19 Aug 2011, Minneapolis, MN, USA.

Higgins, S. and Eusden, D. (2008) Quantifying the development of an early Acadian lineation, Presidential Range, NH. 43rd Annual Section Meeting of the Northeastern Geological Society of America (NE GSA), 27-29 Mar 2008, Buffalo, NY, USA.

Awards & fellowships

- **IEEE (Institute of Electrical and Electronics Engineers) Student Travel Grant**, 2012
- **Shell Oil Company Student Research Grant**, 2011
- **National Science Foundation Graduate Research Fellowship**, 2009
- **Bates College Louis Jordan Jr. '49 Award for Outstanding Thesis in Geology**, 2008
- **American Institute of Professional Geologists (AIPG) Angelo Tagliocozzo Memorial Geologic Scholarship**, 2008
- **American Chemical Society (ACS) Petroleum Research Fund Student Research Grant**, 2007
- **Bruce Bouley Student Research Grant, Bates College**, 2007

Mentorship and service

- **Reviewer** for *Geophysical Research Letters*, *Science of the Total Environment*, *Hydrogeology Journal*, *Remote Sensing*, and *Nature*.
- **Portal to the Public ("PoP") Scientist/CU Science Ambassador**
Generate activities and demos to present to K-5 students at the Boulder Public Library
- **UNAVCO RESESS Communications Mentor**
Mentor undergraduates through their three-month research projects with the NSF Research Experiences in Solid Earth Sciences for Students (RESESS) Programs at UNAVCO; focus on writing, presenting and developing a professional network.
- **NSF Graduate Research Fellowship Program (GRFP) Resource Volunteer**, 2009-present
Assist graduate students with preparing NSF GRFP fellowship applications in all disciplines.
- **University of Colorado Boulder Workshop Coordinator**, 2015
Organized and hosted a 3-day "bootcamp" to teach scientific computing skill to graduate students from five CU Boulder departments.
- **INSTAAR Graduate Student Representative to the Directorate** 2012-2013
Served for two years as the graduate student representative to the governing body of our institute.
- **State of Colorado Practicum Teacher**, 2010-2011
100+ classroom hours as volunteer in three Colorado school districts.

Professional memberships

- American Geophysical Union (AGU), 2013-present
- Community Surface Dynamics Modeling System (CSDMS), 2010-present
- Institute of Electrical and Electronics Engineers (IEEE), 2011-2012
- American Association of Petroleum Geologists (AAPG), 2008-2009
- Association of Women in Mathematics (AWM), 2006-2007