

# Zachary D. Tessler

CUNY Advanced Science Research Center  
Environmental Sciences Initiative  
85 St. Nicholas Terrace  
New York, NY 10031

Cell: (646) 727-0667  
Office: (212) 413-3149  
Fax: (212) 650-7064  
Email: zachary.tessler@asrc.cuny.edu  
Web: <http://www.zacharytessler.com>

## Professional Experience

- 2015-present:**      **Research Assistant Professor, Environmental Sciences Initiative, CUNY Advanced Science Research Center**
- 2012-2015:          Postdoctoral Research Associate, CUNY Environmental CrossRoads Initiative, City College of New York
- 2011:                  Part-time Faculty, Milano School of International Affairs at The New School
- 2006-2012:          Graduate Research Assistant, Lamont-Doherty Earth Observatory, Columbia University

## Education

Ph.D., *Physical Oceanography*, Columbia University, 2012

*Dissertation:* Sill Overflow Processes in the Philippine Archipelago

*Committee:* Dr. Arnold Gordon (chair), Dr. Doug Martinson, and Dr. Andreas Thurnherr

*Department of Earth and Environmental Sciences*

M.Phil, *Physical Oceanography*, Columbia University, 2010

M.A., *Physical Oceanography*, Columbia University, 2008

*Thesis:* Panay Sill Overflow Dynamics and Sulu Sea Ventilation

M. Education, *Curriculum and Instruction*, Arizona State University, 2006

B.S., *Geological Sciences*, Brown University, 2004.

*Graduated with Honors*

## Publications

1. Vörösmarty CJ , Rodríguez Osuna V, Cak AD, Bhaduri A, Bunn S, Corsi F, Gastelumendi J, Green P, Harrison I, Lawford R, Marcotullio PJ, McClain M, McDonald R, McIntyre P,

- Palmer M, Robarts R, Szöllösi-Nagy A, **Tessler ZD**, and Uhlenbrook S. (2018). Ecosystem-based water security and the sustainable development goals. *Ecohydrology and Hydrobiology*, in review.
2. Vörösmarty CJ, Rodríguez Osuna V, Koehler DA, Klop P, Spengler JD, Buonocore JJ, Cak AD, **Tessler ZD**, Corsi F, Green PA, Sánchez R. (2018). Scientifically assess impacts of sustainable investments. *Science*, 359, 523-525. doi:10.1126/science.aao3895.
  3. **Tessler ZD**, Vörösmarty CJ, Overeem I, Syvitski J. (2018). A model of water and sediment balance as determinants of relative sea level rise in contemporary and future deltas. *Geomorphology*, 305, 209-220. doi:10.1016/j.geomorph.2017.09.040.
  4. Hajra R, Szabo S, **Tessler ZD**, Ghosh T, Matthews Z, Foufoula-Georgiou E. (2016). Unravelling the association between the impacts of natural hazards and household poverty: evidence from the Indian Sundarban delta. *Sustainability Science*, doi: 10.1007/s11625-016-0420-2.
  5. Sebesvari Z, Renaud FG, Hass S, **Tessler ZD**, Kloos J, Szabo S, Vogt N, Tejedor A, Brondizio E, Kuenzer C. (2016). A review of vulnerability indicators for deltaic social-ecological systems. *Sustainability Science*, doi: 10.1007/s11625-016-0366-4.
  6. Brondizio ES, Foufoula-Georgiou E, Szabo S, Vogt N, Sebesvari Z, Renaud FG, Newton A, Anthony E, Mansur AV, Matthews Z, Hetrick S, Costa SM, **Tessler ZD**, Tejedor A, Longjas A. (2016). The BF-Deltas project - Catalyzing Action Towards the Sustainability of Deltas: coupling disciplinary expertise and interdisciplinary collaboration. *Current Opinion in Environmental Sustainability*, 19, 182-194, doi: 10.1016/j.cosust.2016.05.001.
  7. Szabo S, Brondizio E, Hetrick S, Renaud FG, Nicholls RJ, Matthews Z, **Tessler ZD**, Tejedor A, Sebesvari Z, Foufoula-Georgiou E, Costa S, Dearing JA. (2016). Population dynamics, delta vulnerability and environmental change: Comparison of the Mekong, Ganges-Brahmaputra and Amazon delta regions. *Sustainability Science*, doi: 10.1007/s11625-016-0372-6.
  8. **Tessler ZD**, Vörösmarty CJ, Grossberg M, Gladkova I, Aizenmann H. (2016). A global empirical typology of anthropogenic drivers of environmental change in deltas. *Sustainability Science*, doi: 10.1007/s11625-016-0357-5.
  9. Schroeder R, McDonald KC, Chapman B, Jensen K, Podest E, **Tessler ZD**, Bohn TJ, and Zimmermann R. (2015). Development and Evaluation of a Multi-year Fractional Surface Water Data Set Derived from Active/Passive Microwave Remote Sensing Data. *Remote Sensing*, 7, 16688-16732, doi:10.3390/rs71215843.
  10. **Tessler ZD**, Vörösmarty CJ, Grossberg M, Gladkova I, Aizenmann H, Syvitski J, Foufoula-Georgiou E. (2015). Profiling risk and sustainability in coastal deltas of the world. *Science*, 349 (6248), 638-643, doi:10.1126/science.aab3574.
  11. Ehsani N, Fekete BM, Vörösmarty CJ, and **Tessler ZD**. (2015). A neural network based general reservoir operation scheme. *Stochastic Environmental Research and Risk Assessment*, doi:10.1007/s00477-015-1147-9.

12. Haddeland I, Heinke J, Biemans H, Eisner S, Flörke M, Hanasaki N, Konzmann M, Ludwig F, Masaki Y, Schewe J, Stacke T, **Tessler ZD**, Wada Y, and Wisser D. (2014). Global water resources affected by human interventions and climate change. *Proceedings of the National Academy of Sciences*, 111 (9), 3251-3256, doi:10.1073/pnas.1222475110.
13. Wada Y, Wisser D, Eisner S, Flörke M, Gerten D, Haddeland I, Hanasaki N, Masaki Y, Stacke T, **Tessler ZD**, and Schewe J. (2013). Multi-model projections and uncertainties of irrigation water demand under climate change. *Geophysical Research Letters*, 40, 4626-4632. doi:10.1002/grl.50686.
14. Davie JCS, Falloon PD, Kahana R, Dankers R, Betts R, Portmann FT, Wisser D, Clark DB, Ito A, Masaki Y, Nishina K, Fekete B, **Tessler ZD**, Lui X, Tang Q, Hagemann S, Stacke T, Pavlick R, Schaphoff S, Gosling S, Franssen W, and Arnell N. (2013). Comparing projections of future changes in runoff and water resources from hydrological and biome models in ISI-MIP. *Earth System Dynamics*, 4, 359-374, doi:10.5194/esd-4-359-2013, 2013.
15. Piontek F, Müller C, Pugh TAM, Clark DB, Deryng D, Elliott J, Colón-González F, Flörke M, Folberth C, Franssen W, Frieler K, Friend AD, Gosling SN, Hemming D, Khabarov N, Kim H, Lomas M, Masaki Y, Mengel M, Morse A, Neumann K, Nishina K, Ostberg S, Pavlick R, Ruane AC, Schewe J, Schmid E, Stacke T, Tang Q, **Tessler ZD**, Tompkins AM, Warszawski L, Wisser D, and Schellnhuber HJ. (2013). Multisectoral climate impact hotspots in a warming world. *Proceedings of the National Academy of Sciences*, 111 (9), 3233-3238, doi:10.1073/pnas.1222471110.
16. **Tessler ZD**, Gordon AL, and Jackson CR. (2012). Early Stage Soliton Observations in the Sulu Sea. *Journal of Physical Oceanography*, 42, 1327-1336, doi:10.1175/JPO-D-11-0165.1.
17. Gordon AL, **Tessler ZD**, and Villanoy C. (2011). Dual Overflows into the Deep Sulu Sea. *Geophysical Research Letters*, 38, L18606, doi: 10.1029/2011GLO48878.
18. **Tessler ZD**, Gordon AL, Pratt LJ, and Sprintall J. (2010). Transport and Dynamics of the Panay Sill Overflow in the Philippine Seas. *Journal of Physical Oceanography*, 40, 2679-2695, doi:10.1175/2010JPO4395.1.

## Selected Presentations

### \* *Invited*

1. **Tessler ZD**, Vörösmarty CJ, Overeem I, Syvitski J. Modeling Anthropogenic Impact on Sediment Balance and Relative Sea-Level Rise in Contemporary and Future Deltas. *AGU Fall Meeting*, New Orleans, LA, December 11, 2017.
2. Rodríguez Osuna V, Vörösmarty CJ, Koehler D, Klop P, Spengler J, Buonocore J, Cak AD, **Tessler ZD**, Corsi F, Green PA, Sánchez R. Science Shaping Sustainable Finance. *AGU Fall Meeting*, New Orleans, LA, December 13, 2017.

3. \***Tessler ZD**. The Geophysical, Anthropogenic, and Social Dimensions of Coastal Risk: Assessment of Change in Populated River Deltas. East Carolina University, *Five Fridays: Early Career Contributions in Coastal and Climate Science Seminar Series*. Greenville, NC, October 27, 2017.
4. \***Tessler ZD**. Geomorphic, Anthropogenic, and Social Dimensions of Risk in Global River Deltas. *48th Annual Binghamton Geomorphology Symposium*. San Marcos, TX, October 15, 2017.
5. \***Tessler ZD**. The Geophysical, Anthropogenic, and Social Dimensions of Coastal Risk: Assessment of Change in Populated River Deltas. New York City College of Technology *Scholar on Campus Geophysics Lecture Series*. New York, NY, February 28, 2017.
6. Jensen K, McDonald KC, Schroeder R, **Tessler ZD**. Bridging the Past with Today's Microwave Remote Sensing: A Case Study of Long Term Inundation Patterns in Two River Deltas. *AGU Fall Meeting*, San Francisco, CA, December 16, 2016.
7. \*Foufoula-Georgiou E, **Tessler ZD** (presenting author), Brondizio E, Overeem I, Renaud F, Sebesvari Z, Nicholls RJ, Anthony E. Catalyzing action towards the sustainability of deltas: deltas as integrated socio-ecological systems and sentinels of regional and global change. *AGU Fall Meeting*, San Francisco, CA, December 14, 2016.
8. **Tessler ZD**, Vörösmarty CJ. Sea-Level Rise and Land Subsidence in Deltas: Estimating Future Flood Risk Through Integrated Natural and Human System Modeling. *AGU Fall Meeting*, San Francisco, CA, December 13, 2016.
9. \***Tessler ZD**. Generalizing ESPA lessons for deltas: Ranking the vulnerability of global deltas. *ESPA Deltas Final Event*, London, UK, November 23, 2016.
10. \***Tessler ZD**, Vörösmarty CJ, Grossberg M, Gladkova I, Aizenmann H, Syvitski J, Foufoula-Georgiou E. From relative sea level rise to coastal risk: Estimating contemporary and future flood risk in deltas. *CSDMS Annual Meeting*, Boulder, CO, May 19, 2016.
11. \***Tessler ZD**, Vörösmarty CJ, Grossberg M, Gladkova I, Aizenmann H, Syvitski J, Foufoula-Georgiou E. The geophysical, anthropogenic, and social dimensions of delta risk: Estimating contemporary and future risks at the global scale. *AGU Fall Meeting*, San Francisco, CA, December 17, 2015.
12. Jensen K, McDonald KC, Schroeder R, **Tessler ZD**. Bridging the past with today's microwaves remote sensing: A case study of long term inundation patterns in the Mekong River Delta. *AGU Fall Meeting*, San Francisco, CA, December 18, 2015.
13. **Tessler ZD**, Vörösmarty CJ, Cohen S, and Tang H. River network uncertainty and morphodynamics in the Mekong Delta: Model validation and sensitivity to fluvial flux distribution. *AGU Fall Meeting*, San Francisco, CA, December 2014.
14. **Tessler ZD**, Vörösmarty CJ, Foufoula-Georgiou E, and Ebtehaj AM. Spatial and temporal patterns of rainfall and inundation in the Amazon, Ganges, and Mekong Deltas. *Deltas in Times of Climate Change II*, Rotterdam, The Netherlands, September 2014.

15. **Tessler ZD**, Vörösmarty CJ. A global deltas typology of environmental stress and its relation to terrestrial hydrology, *AGU Fall Meeting*, San Francisco, CA, December 2013.
16. **Tessler ZD**, Vörösmarty CJ. Environmental stress and relative sea level rise in river delta systems, *NOAA-CREST Symposium: Climate and Extreme Weather Impacts on Urban Coastal Communities*. New York, NY, June 5-6, 2013.
17. **Tessler ZD**, Vörösmarty CJ. Empirical Estimates of the Dominant Environmental Forcings on the Relative Sea Level Change of River Delta Systems, *AGU Fall Meeting*, San Francisco, CA, December 2012.
18. **Tessler ZD**, Gordon AL. ENSO Modulated Variability of the Panay Sill Overflow, *AGU Ocean Sciences Meeting*, Portland, OR, February 2010
19. **Tessler ZD**, Gordon AL, Pratt LJ, Sprintall J. Panay Sill Overflow Dynamics and Sulu Sea Ventilation, *MOCA-09*, Montréal, Canada, July 2009

## Other Publications

1. Sebesvari Z, Foufoula-Georgiou E, Harrison I, Brondizio ES, Bucx T, Dearing JA, Ganguly D, Ghosh T, Goodbred SL, Hagenlocher M, Hajra R, Kuenzer C, Mansur AV, Matthews Z, Nicholls RJ, Nielsen K, Overeem I, Purvaja R, Rahman MdM, Ramesh R, Renaud FG, Robin RS, Subba Reddy B, Singh G, Szabo S, **Tessler ZD**, van de Guchte C, Vogt N, Wilson CA. (2016) Imperatives for sustainable delta futures. Global Sustainable Development Report (GSDR) 2016 Science Brief. Available from: [https://sustainabledevelopment.un.org/content/documents/972032\\_Sebesvari\\_Imperatives%20for%20sustainable%20delta%20futures.pdf](https://sustainabledevelopment.un.org/content/documents/972032_Sebesvari_Imperatives%20for%20sustainable%20delta%20futures.pdf)
2. Szabo S, Brondizio E, Hetrick S, Matthews Z, Renaud FG, Nicholls RJ, Sebesvari Z, Costa S, Dearing JA, Foufoula-Gergiou E, Tejedor A, **Tessler Z**. Population dynamics in the context of environmental vulnerability: Comparison of the Mekong, Ganges-Brahmaputra and Amazon Delta regions. ESRC Centre for Population Change, Working Paper 74, January 2016. ISSN 2042-4116.
3. **Tessler Z**. Delta cities, wealthy or not, face rising risk from sinking land. The Conversation. August 6, 2015. <http://theconversation.com/delta-cities-wealthy-or-not-face-rising-risk-from-sinking-land-45640>

## Grants and Funding Awards

1. *[SUBMITTED]* Co-PI: "CHRP 2018: Multi-Scale Hypoxia Assessment in an Urban Estuary: Implications for Managing Water Quality and the Economically-Important Eastern Oyster, *Crassostrea virginica*," National Oceanic and Atmospheric Administration, Coastal Hypoxia Research Program, 9/1/2018-8/31/2021, Lead PI D. Greenfield, \$275,000.

2. [SUBMITTED] Co-PI: "CNH-L: Risk and Vulnerability in Highly Urbanized River Deltas: Coupled Dynamics of Urban Growth and Deltaic Change," National Science Foundation, Dynamics of Coupled Natural and Human Systems, 7/1/2018-6/30/2021, Lead PI C. Vörösmarty, \$1,600,000.
3. [SUBMITTED] PI: "Assessment of coastal delta change and management through remote sensing of river plume structure and dynamics," National Aeronautics and Space Administration, New Investigator Program, 4/1/2018-3/31/2021, \$261,507.
4. Co-I: "Coastal Hypoxia Analysis and Risk Tracking (CHART) through Remote Sensing and Process-based Modeling in South and Southeast Asia," National Aeronautics and Space Administration, Interdisciplinary Science Program, 80NSSC17K0413, 8/7/2017-8/6/2020, Lead PI C. Vörösmarty, \$1,717,074.
5. PI: Amazon Web Services Research Grant: 8/11/2015 - 8/10/2017, \$20,000.

## Professional Activities

### Conferences, Workshops, and Seminars

Session Convenor and Co-Chair: *Tides and Rivers: Estuaries and Deltas*. AGU Fall Meeting 2017, New Orleans, LA, December 13, 2017.

Session Convenor and Co-Chair: *Deltas and Sea-Level Rise: Geological and Social-Ecological Perspectives*. AGU Fall Meeting 2016, San Francisco, CA, December 13, 2016.

Session Convenor and Co-Chair: *Deltas in Times of Change: Scientific Advances in Support of Socio-Ecological Resilience*. AGU Fall Meeting 2014, San Francisco, CA, December 2014.

Workshop Co-Chair and Organizer: *Science-to-Action: Aligning science with stakeholder and community needs in the Mekong Delta system*. *Deltas in Times of Climate Change II* Conference, Rotterdam, The Netherlands, 24-26 September, 2014.

Seminar Series Organizer, Department of Ocean and Climate Physics, Lamont-Doherty Earth Observatory, 2007-8

### Journal and Grant Review Service

Associate Editor, 2017-present: *Anthropocene Coasts*

Reviewer: *Environmental Development and Sustainability*; *Estuaries and Coasts*; *Estuarine, Coastal and Shelf Science*; *Geology*; *International Journal of Disaster Risk Reduction*; *Progress in Physical Geography*; *Science*; *Science of the Total Environment*; *Scientific Reports*; *Stochastic Environmental Research and Risk Assessment*; *Sustainability*; *Journal of Coastal Research*; *Journal of Geophysical Research - Oceans*; *Journal of Marine Systems*; *Deep Sea Research*; *Oceanography*; and ad-hoc reviewer for NSF.

Panel Reviewer for NSF.

### Professional Organizations

American Geophysical Union

## Fellowship Awards

Faculty Fellowship, Department of Earth and Environmental Sciences, Columbia University, 2006-2012

National Defense Science and Engineering Graduate Fellowship, 2006-2009

## Student Advising

Sean Thatcher, Summer 2016, CUNY Summer Undergraduate Research Program

## Teaching Activities

Workshop: Getting Started in Undergraduate Research, AGU Fall Meeting 2014

Presented by the *Council on Undergraduate Research* (CUR)

Part-time Faculty, Milano School of International Affairs at The New School, Spring 2011

*Principles of Environmental Science*, full course development and teaching, 15 undergraduate and graduate students

Coursework: Fundamentals of College and University Teaching, Columbia University, Summer 2010

Teaching Assistant, Columbia University, Fall 2007, Fall 2008

*The Climate System*, assisted in the development of and led laboratory and data analysis sessions for undergraduate students

Middle School Math and Science Teacher, P.H. Gonzales Elementary School, Tolleson, AZ, 2004-2006

## Field Research

Hudson River Surface Dynamics Experiment, Areté Associates, August 2010, November 2010

*Infrared Camera System Operator and Analyst*

PhilEx Regional Observation Program 2 Research Cruise, March 2009

*Lowered Acoustic Doppler Current Profiler Operator*

PhilEx Regional Observation Program 1 Research Cruise, February 2008

*Lowered Acoustic Doppler Current Profiler Operator*

PhilEx Exploratory Research Cruise, June 2007

*Lowered Acoustic Doppler Current Profiler Operator*

## Technical Skills

### Scientific Computing

Operating systems: Linux/Unix, Mac OSX, Microsoft Windows

Programming Languages: Python/NumPy, Matlab, C, FORTRAN, Java

### Numerical Models

ROMS, COAWST: Regional ocean hydrodynamics models

SWAN: Nearshore ocean waves model

WBM, WBMplus: Macroscale hydrological and river network model

### Geographical Information Systems

Geographic Resources Analysis Support System (GRASS) GIS suite

Generic Mapping Tools (GMT) analysis and mapping suite

### Oceanographic Observing Equipment

Configuration, deployment, recovery, and maintenance of moored, lowered, and hull-mounted Acoustic Doppler Current Profiler systems

Deployment of Conductivity/Temperature/Depth (CTD) instruments

Last updated: February 21, 2018