## Christopher M. Chini, Ph.D.


CONTACT INFORMATION

2950 Hobson Way, Bldg 640 Rm 113B
Department of Systems Engineering and Management
Air Force Institute of Technology
Wright-Patterson AFB, OH 45433

*Work:* 937-255-3636 x4568
*Cell:* 210-393-0074
*E-mail:* christopher.chini@afit.edu
*Website:* www.afit.edu


RESEARCH INTERESTS

Water resources systems, energy-water nexus, urban water systems, infrastructure resilience, climate adaptation, infrastructure asset management

EDUCATION

**University of Illinois at Urbana–Champaign**, Urbana, Illinois

Doctor of Philosophy, Civil Engineering, 2018
Sustainable and Resilient Infrastructure Systems Program

- Dissertation: "The Blue City: Urban Metabolism and the Energy-Water Nexus"
- Advisor: Ashlynn S. Stillwell

M.S., Civil Engineering, 2015
Sustainable and Resilient Infrastructure Systems Program

- Thesis: "An experimental method for visualizing undrained shearing failure in a transparent soft clay surrogate"
- Advisors: Joshua Peschel and Cassandra Rutherford

**Texas A&M University**, College Station, Texas

B.S., Civil Engineering, 2011
Foundation Honors

ACADEMIC EXPERIENCE

**Air Force Institute of Technology**, Wright-Patterson AFB, Ohio

*Assistant Professor* **Jun, 2019 – present**
Department of Systems Engineering and Management
*Research*: energy and water systems, infrastructure resilience, water security, energy policy
*Teaching*: geospatial information systems, infrastructure asset management, data analysis and visualization, infrastructure resilience

**University of Illinois at Urbana-Champaign**, Urbana, Illinois

*Adjunct Lecturer and Postdoctoral Researcher* **Jan 2019 - May 2019**
Department of Civil and Environmental Engineering
*Research*: data sources in urban energy-for-water, meter-level energy and water use in Chicago
*Teaching*: sustainable urban systems

*National Science Foundation Graduate Research Fellow* **May 2015 - Dec 2018**
Department of Civil and Environmental Engineering

*Research*: urban energy and water demand, urban water footprints, urban metabolism, virtual water trade, sociotechnical transitions
*Teaching*: water resources engineering (teaching assistant)

*Graduate Research Assistant* **Aug 2013 - May 2015**
Department of Civil and Environmental Engineering

*Research*: particle tracking, soil shear strength testing, failure plane analysis
*Teaching*: sustainable urban systems (teaching assistant)

## Professional Experience

**United States Army Corps of Engineers Fort Worth District**, Fort Worth, Texas

*Civil Engineer, Civil Engineering/Site Design Group* **Aug 2011 - Aug 2013**

- Major civil works projects included the execution and completion of the civil planning document for the remediation and improvement of the floodplain and levees in Dallas, Texas including environmental remediation, levee upgrades, and preliminary design of recreational facilities.
- Oversaw several acre facility with six buildings and two contractors for compliance as quality assurance officer
- Major military projects included the design of several sites on the U.S. Army installations Fort Hood, Fort Sam Houston, and Red River Army Depot.

## Submitted Manuscripts

*(Advised Students Noted By *)*

Baldwin, A.*, **Chini, C.M.**, Schuldt, S.J, and Delorit, J.D. (in revision). Modeling Potential Damages of Hurricanes at the Facility Scale: A Case Study of Eglin Air Force Base. *Journal of Infrastructure Systems.*

Sadowski, E.*, Mbonimpa, E., and **Chini, C.M.** (in revision). Benchmarks of Atmospheric Water Generators in the United States. *Journal of Water Resources Planning and Management.*

Hur, A.Y., Garfinkle, N.W., Ploschke, C.M., **Chini, C.M.**, and Guest, J.S. (submitted). Quantitative Analysis of Army Installation Water Price and Impact on Army Missions. *Journal American Water Works Association.*

Doyal, A.*, Mounir, A. and **Chini, C.M.** (in revision). Graph Theory Metrics for the Prioritization of Water Distribution Network Assets. *Journal of Infrastructure Systems.*

## Peer-Reviewed Publications

*(Advised Students Noted By *)*

30. **Chini, C.M.**, Nugent, J., Stillwell, A.S., and Peer, R.A.M. (accepted). A Critical Review on the Accounting of Energy in Virtual Water Trade. *Journal of Cleaner Production.*
29. Weiss, S.*, Delorit, J.D., and **Chini, C.M.** (accepted). Energy Forecasting to Benchmark for Federal Net-Zero Objectives under Climate Uncertainty. *Environmental Research: Infrastructure and Sustainability.*
28. Moer, Z.*, **Chini, C.M.**, Feng, P., and Schuldt, S. (2022). Contested Agile Combat Employment A Site-Selection Methodology. *Air & Space Operations Review.* 1 (3), 62–74.
27. Hastie, A.G., **Chini, C.M.**, and Stillwell, A.S. (2022) A Mass Balance Approach to Urban Water Analysis Using Multi-resolution Data. *Journal of Industrial Ecology.* 26(1), 213–224. DOI: 10.1111/jiec.12995.
26. Ferry, T.*, Delorit, J.D., and **Chini, C.M.**. (2022). Modeling Cost Uncertainty and Climate Change for Centralized Heating: A Case Study of Wright-Patterson AFB, Ohio. *Journal of Infrastructure Systems.* 28(1), 05021011. DOI: 10.1061/(ASCE)IS.1943-555X.0000666.
25. Cunningham, S.*, Schuldt, S.J., **Chini, C.M.**, and Delorit, J.D. (2021). A simulation-optimization framework for post-disaster allocation of mental health resources. *Natural Hazards and Earth System Sciences.* 21, 3843–3862. DOI: 10.5194/nhess-21-3843-2021.
24. Zib, L.*, Byrne, D.M., Marston, L., and **Chini, C.M.**. (2021). Operational Carbon Footprint of the U.S. Water Sector's Energy Consumption. *Journal of Cleaner Production.* 321, 128815. DOI: 10.1016/j.clepro.2021.128815.
23. **Chini, C.M.** and Delorit, J.D. (2021). Opportunities for Robustness of Water Footprints in Electricity Generation. *Earth's Future.* 9(7), e2021EF002096. DOI: 10.1029/2021EF002096. (invited).

22. Peer, R.A.M. and **Chini, C.M.** (2021). Historical Tradeoffs of Water and Carbon Intensity of Global Electricity Production. *Environmental Research: Infrastructure and Sustainability.* 1(2), 025001. DOI: 10.1088/2634-4505/ac0a94.

21. **Chini, C.M.**, Excell, L.E., and Stillwell, A.S. (2021). A review of energy-for-water data in energy-water nexus publications. *Environmental Research Letters.* 15(12), 123011. DOI: 10.1088/1748-9326/abcc2a.

20. **Chini, C.M.** and Peer, R.A.M. (2021). The Water Footprint of Global Energy Trade from 2010–2018. *Scientific Data.* 8(7), 1-8. DOI: 10.1038/s41597-020-00795-6.

19. Taylor, W., Schuldt, S.J., Delorit, J.D., **Chini, C.M.**, Postolache, T., Lowry, C., Brenner, L., and Hoisington, A. (2021). A framework for estimating the United States depression burden attributable to indoor fine particulate matter exposure. *Science of the Total Environment.* 756, 143858. DOI: 10.1016/j.scitotenv.2020.143858.

18. Peer, R.A.M and **Chini, C.M.** (2020). An Integrated Assessment of the Global Virtual Water Trade Network of Energy. *Environmental Research Letters.* 15(11), 114015. DOI: 10.1088/1748-9326/abbbb0.

17. **Chini, C.M.**, Logan, L.H., and Stillwell, A.S. (2020). Grey Water Footprints of U.S. Thermoelectric Power Plants from 2010-2016. *Advances in Water Resources.* 145, 103733. DOI: 10.1016/j.advwatres.2020.103733.

16. Roidt, M., **Chini, C.M.**, Stillwell, A.S., and Cominola, A. (2020). Unlocking the Impacts of COVID-19 Lockdowns: Changes in Thermal Electricity Generation Water Footprint and Virtual Water Trade in Europe. *Environmental Science & Technology Letters.* 7(9), 683–689. DOI: 10.1021/acs.estlett.0c00381.

15. Siddik, M., **Chini, C.M.**, and Marston, L.T. (2020). Urban water and carbon footprints of electricity are sensitive to geographical attribution method. *Environmental Science & Technology.* 54(12), 7533–7541. DOI: 10.1021/acs/est.0c00176

14. Delorit, J.D., Schuldt, S.J., and **Chini, C.M.** (2020) Evaluating an Adaptive Management Strategy for Organizational Energy Use under Climate Uncertainty. *Energy Policy*, 142, 111547. DOI: 10.1016/j.enpol.2020.111547

13. **Chini, C.M.**, and Stillwell, A.S. (2020) One model does not fit all: Bottom-up indicators of residential water use provide limited explanation of urban water fluxes. *Journal of Sustainable Water in the Built Environment*, 6(3), 04020011. DOI: 10.1061/JSWBAY.0000916 (Editor's Choice Selection).

12. **Chini, C.M.** and Stillwell, A.S. (2020). Envisioning Blue Cities: Urban Water Governance and Water Footprinting. *Journal of Water Resources Planning and Management*, 146(3), 04020001. DOI: 10.1061/(ASCE)WR.1943-5452.0001171

11. **Chini, C.M.**, and Stillwell, A.S. (2020) The changing virtual water trade network of the European electric grid. *Applied Energy.* 260, 114151. DOI: 10.1016/j.apenergy.2019.114151

10. **Chini, C.M.** and Stillwell, A.S. (2019). Metabolism of U.S. Cities 2.0. *Journal of Industrial Ecology.* 23(6), 1353-1362. DOI: 10.1111/jiec.12923.

9. Djehdian, L.A., **Chini, C.M.**, Marston, L., Konar, M., and Stillwell, A.S. (2019). Exposure of Urban Food-Energy-Water (FEW) Systems to Water Scarcity. *Sustainable Cities and Society.* 50(10), 101621. DOI: 10.1016/j.scs.2019.101621

8. Sowby, R.B, Burian, S.J., **Chini, C.M.**, and Stillwell A.S (2019) Data Challenges and Solutions in Energy-for-Water: Experience of Two Recent Studies. *Journal American Water Works Association.* 111(2), 28-33. DOI: 10.1002/awwa.1233

7. **Chini, C.M.**, Djehdian, L.A., Lubega, W.N., and Stillwell, A.S. (2018). Virtual Water Transfers of the U.S. Electric Grid. *Nature Energy.* 3, 1115-1123. DOI: 10.1038/s41560-018-0266-1

6. **Chini, C.M.** and Stillwell, A.S. (2017). The State of U.S. Urban Water: Data and the Energy-Water Nexus. *Water Resources Research.* 54(3), 1796-1811. DOI: 10.1002/2017WR022265

5. **Chini, C.M.**, Canning, J.F, Schreiber, K.L., Peschel, J.M., and Stillwell, A.S. (2017) The Green Experiment: Cities, Green Stormwater Infrastructure, and Sustainability. *Sustainability*, 9(1), 105. DOI: 10.3390/su9010105. (cover article)
4. **Chini, C.M.**, Konar, M., and Stillwell, A.S. (2017). Direct and indirect urban water footprints of the United States. *Water Resources Research*, 53(1), 316-327. DOI: 10.1002/2016WR019473
3. **Chini, C.M.**, and Stillwell, A.S. (2016). Where are all the data? The case for a comprehensive water and wastewater utility database. *Journal of Water Resources Planning and Management*, 143(3). DOI: 10.1061/(ASCE)WR.1943-5452.0000739
2. **Chini, C.M.**, Schreiber, K., Barker, Z., and Stillwell, A.S. (2016). Quantifying Energy and Water Savings in the U.S. Residential Sector. *Environmental Science & Technology*, 50(17), 9003–9012. DOI: 10.1021/acs.est.6b01559
1. **Chini, C.M.**, Wallace, J. F., Rutherford, C. J. and J. M. Peschel. (2015). Shearing Failure Visualization via Particle Tracking in Soft Clay Using a Transparent Soil. *Geotechnical Testing Journal*, 38(5), 1-17. DOI: 10.1520/GTJ20140210

## Conference & Society Proceedings

*(Advised Students Noted By *)*

7. Robinson, N. and Chini, C.M. (2022). Modeling Wildfire Risk at Vandenberg SFB. *The Military Engineer*. 114 (176), 60–62.
6. Langlois, J.* and **Chini, C.M.** (2022). Modeling Sea Level Rise at Tyndall AFB. *The Military Engineer*. 114 (740), 59–61.
5. Amaddio, C.*, Thal, A., **Chini, C.M.**, Amaddio, P., and Howell, R. (2022). Hazard Mapping for Infrastructure Planning in the Arctic. *Western Decision Sciences Institute*. Waikoloa Beach, HI.
4. Baldwin, A.*, Weiss, S.*, Zib, L.*, Delorit, J.D., and **Chini, C.M.** (2021). Predicting Life-cycle Impacts of Climate Change on Air Force Infrastructure. *The Military Engineer*. 113 (175), 71-73.
3. DePalmer, D.*, Brown, S.*, Delorit, J.D., and **Chini, C.M.** (2021). Limitations and Opportunities for Air Force Risk Assessments. *The Military Engineer*. 113 (175), 57-58.
2. Wallace, J.F., **Chini, C.M.**, Rutherford, C.J. and Peschel, J.M. (2015). Visualizing the shallow failure mechanism of the T-bar penetrometer. *IFCEE 2015*, 330–338.
1. Wallace, J.F., **Chini, C.M.**, Rutherford, C.J. and Peschel, J.M. (2015). Visualizing the failure surface of a laboratory vane shear in soft clay using transparent surrogate soil. *Frontiers in Offshore Geotechnics III: Proceedings of the 3rd International Symposium on Frontiers in Offshore Geotechnics*, 1,1227–1232.

## Research Funding

*23M AFIT GEM Civil Engineer Research* **2022–2023**

*Funding Agency*: Air Force Civil Engineer Center
*Role*: Principle Investigator; Total Funding $218,000

*Tyndall PMO Research* **2020–2023**

*Funding Agency*: Tyndall Project Management Office
*Role*: Co-Principle Investigator; Total Funding $900,000
*PI*: Lt. Col. Steven Schuldt, Air Force Institute of Technology

*22M AFIT GEM Civil Engineer Research* **2021–2022**

*Funding Agency*: Air Force Civil Engineer Center
*Role*: Co-Principle Investigator; Total Funding $225,000 (Chini Portion $85,500)
*PI*: Lt. Col. Steven Schuldt, Air Force Institute of Technology

*EW21-5179 Coupled Modeling to Support Evaluation of Mission-Assurance Risk from Disruption of Water Infrastructure* **2021–2023**

*Funding Agency*: Dep. of Defense Environmental Security Technology Certification Program
*Role*: Co-Principle Investigator; Total Funding $886,097 (Chini Portion $85,000)
*PI*: Mr. Noah Garfinkle, USACE Engineering Research and Development Center

*21M AFIT GEM Civil Engineer Research* **2020–2021**

*Funding Agency*: Air Force Civil Engineer Center
*Role*: Co-Principle Investigator; Total Funding $200,000 (Chini Portion $60,000)
*PI*: Maj. Steven Schuldt, Air Force Institute of Technology

## Dataset Publications

Peer, R.A.M. and **Chini, C.M.**. (2021). Historic Water and Carbon Footprints of Electricity. *Zenodo*, DOI: 10.5281/zenodo.4560776.

**Chini, C.M.** and Peer, R.A.M. (2020). Global Energy Virtual Water Trade Network and Country Electricity Water Footprints. *Zenodo*, DOI: 10.5281/zenodo.3891722.

**Chini, C.M.** and Stillwell, A.S. (2018). The Urban Energy-Water Nexus: Utility-Level Water Flows and Embedded Energy, *HydroShare*, DOI: 10.4211/hs.df04c29d0ff64de0ace2d29145dd7680.

## Honors and Awards

| | |
|---|---|
| AFIT Graduate School of Engineering Management Teaching Award | **2021** |
| Dean's Distinguished Teaching Professor | **2021** |
| Instructor of the Year Sigma Beta Chapter of Sigma Iota Epsilon | **2021** |
| Outstanding Reviewer for 2020, Journal of Water Resources Planning and Management | **2021** |
| Graduate School of Engineering Management (EN) Civilian of the Quarter (Fall) | **2020** |
| Journal of Sustainable Water and the Built Environment<br>Publication selected for Editor's Choice, Vol 6 Issue 3 | **2020** |
| Water Resources Research Top Downloaded Paper of 2018-2019 Award | **2020** |
| UCOWR Ph.D. Dissertation Award in Water Policy and Socio-Economics | **2019** |
| ASCE EWRI Conference Student Sustainability Presentation Competition Winner | **2016** |
| National Science Foundation Graduate Research Fellowship (NSF-GRFP) | **2015** |
| Department of the Army Achievement Medal for Civilian Service | **2013** |
| Zachry Department of Civil Engineering, Texas A&M University<br>Award for Outstanding Academic Achievement | **2011** |
| Department of Defense SMART Scholarship Recipient | **2009** |

## Invited Presentations

**Chini, C.** (2020). "Energy Demands of Water Infrastructure: Understanding the changing energy demands for water at U.S. military installations." Energy-Exchange. August 2006, 2021. Virtual Presentation.

**Chini, C.** (2020). "Virtual Water Trade of Energy in the United States and Beyond." 2nd Workshop Water-Energy-Food Nexus. June 2020, Pamplona, Spain. Virtual Presentation.

**Chini, C.** (2019). "The Blue City: Urban Metabolism and the Energy-Water Nexus." University Council on Water Resources. June 2019, Snowbird, UT. Oral Presentation.

## Conference Presentations

*(Advised Students Noted By *, Presenter Underlined)* Bechen, D.*, Chini, C.. (2021) "Evaluating Hydrologic Trends at Coastal DoD Installations". American Geophysical Union Fall Meeting, 12-17 December 2021, New Orleans, LA.

Chini, C., Stillwell, A., Nugent, J., and Peer, R. (2021). "Global Studies of Energy Virtual Water Trade Networks". American Geophysical Union Fall Meeting, 12-17 December 2021, New Orleans, LA. Oral Presentation.

Howland, G.*, Chini, C. (2021) "A Critical Review of Climate Change on Coastal Infrastructure Systems". American Geophysical Union Fall Meeting, 12-17 December 2021, New Orleans, LA.

Langlois, J.*, Chini, C.. (2021) "Climate Change Risk to Coastal Airfield Stormwater Systems". American Geophysical Union Fall Meeting, 12-17 December 2021, New Orleans, LA.

Sadowski, E.*, Mbonimpa, E., Chini, C. (2021) "Efficiency Mapping and Determination of Reliability, Resiliency and Vulnerability of Atmospheric Water Generators in the US". American Geophysical Union Fall Meeting, 12-17 December 2021, New Orleans, LA.

Vance, K.*, Chini, C., Delorit, J. (2021) "Modeling Cost-Effective Natural Infrastructure Alternatives Against Intensified Hurricanes to Achieve Flood Vulnerability Reduction". American Geophysical Union Fall Meeting, 12-17 December 2021, New Orleans, LA.

Chini, C.. (2021). "Energy Demands of Water Infrastructure." Energy Exchange. August 2–6, 2021. Oral Presentation (invited).

Baldwin, A., Schuldt, S., Chini, C and Delorit, J. (2020) "Developing infrastructure adaptation pathways to combat hurricane intensification: A coupled storm generation and economic modeling framework." American Geophysical Union Fall Meeting, 1-17 December 2020, San Francisco, CA.

Chini, C and Peer, R. (2020) "Creating the Virtual Water Network for Global Energy Trade." American Geophysical Union Fall Meeting, 1-17 December 2020, San Francisco, CA.

Cominola, A., Roidt, M., Chini, C and Stillwell, A. (2020) "Picking up steam during the lockdown? Europe's thermoelectric water footprint during the COVID-19 pandemic." American Geophysical Union Fall Meeting, 1-17 December 2020, San Francisco, CA.

Cunningham, S., Schuldt, S., Chini, C and Delorit, J. (2020) "Extreme Event Recovery: Optimizing Mental Health Resource Allocation." American Geophysical Union Fall Meeting, 1-17 December 2020, San Francisco, CA.

Ferry, T.*, Delorit, J., and Chini, C (2020) "Centralized Heating Cost Uncertainty and Climate Change at Wright-Patterson AFB." American Geophysical Union Fall Meeting, 1-17 December 2020, San Francisco, CA.

Weiss, S., Schuldt, S., Chini, C and Delorit, J. (2020) "An Unbiased Climate-Informed Tool for Organizational Energy Policy Development and Budget Forecasting." American Geophysical Union Fall Meeting, 1-17 December 2020, San Francisco, CA.

Zib, L.*, Byrne, D., Marston, L., and Chini, C. (2020) "A U.S. National Level Study of Operational GHG Emissions Generated in the Water Sector." American Geophysical Union Fall Meeting, 1-17 December 2020, San Francisco, CA.

Roidt, M., Chini, C., Stillwell, Stillwell, S, and Cominola, A. (2020). "Too many data–too little data. How data reporting needs to change to reliably calculate electricity-related virtual water in Europe." International Congress on Environmental Modelling and Software, 5-9 July 2020, Brussels, Belgium. Oral Presentation.

Ferry, T.*, Delorit, J.D., Schuldt, S.J., and Chini, C.M. (2020). "Direct and Indirect Water Savings

from Switching Fuels: A Case Study of Wright-Patterson AFB." World Environmental and Water Resources Congress, May 2020, Henderson, NV. Oral Presentation. (cancelled due to COVID)

Marston, L., Chini, C.M., and Siddik, M.A.B. (2019). "Evaluating attribution methods of water and carbon footprints to electric energy consumers." American Geophysical Union Fall Meeting, 9-13 December 2019, San Francisco, CA. Poster Presentation.

Chini, C., Excell, L., and Stillwell, A. (2019). "Availability and Prevalence of Energy-for-Water Data: A critical Review of the Urban Energy-Water Nexus." American Geophysical Union Fall Meeting, 9-13 December 2019, San Francisco, CA. Poster Presentation.

Chini, C., Djehdian, L., Lubega, W., and Stillwell, A. (2019). "Electrified Water: Virtual Water Transfers of Electricity." World Environmental and Water Resources Congress, 20-24 May 2019, Pittsburgh, PA. Oral Presentation.

Chini, C. and Stillwell A. (2018). "Challenges and Opportunities of Multi-Scale Urban Energy and Water Data." American Geophysical Union Fall Meeting, 10-14 December 2018, Washington, DC. Oral Presentation.

Chini, C. (2018). "Data Challenges of the Energy-Water Nexus." Hydrosystems Seminar Series, 19 January 2018, University of Illinois at Urbana Champaign. Oral Presentation.

Chini, C. and Stillwell, A. (2017). "Measure for Measure: Urban Water and Energy." American Geophysical Union Fall Meeting, 11-15 December 2017, New Orleans, LA. Oral Presentation.

Chini, C. and Stillwell, A. (2017). "Much Ado about Data: A need for a Water Utility Database." World Environmental and Water Resources Congress, 21-25 May 2017, Sacramento, CA. Oral Presentation.

Chini, C. and Stillwell, A. (2016). "Social Indicators and Embedded Energy in Urban Water." American Water Works Association: Annual Conference and Exhibition, 19-22 June 2016, Chicago, IL. Poster Presentation.

Chini, C., Schreiber, K., Barker, Z., and Stillwell, A. (2016). "The Residential Energy-Water Nexus: A Cost Abatement Curve Analysis." World Environmental and Water Resources Congress, 21-26 May 2016, West Palm Beach, FL. Oral Presentation.

Chini, C., Peschel, J., and Stillwell, A. (2015). "An Analysis of the Green Infrastructure Policy and Feedback Cycle." World Environmental and Water Resources Congress, 17-21 May 2015, Austin, TX. Oral Presentation.

## Teaching

**Air Force Institute of Technology**

*10-week Quarter System*

Instructor, *EMGT 590 Data Analysis and Visualization* **2020 - present**

Lecture-laboratory course for graduate students. Course content focuses on computational methods for modeling through the R platform.

Instructor, *EMGT 622 Asset Management II* **2020 - present**

Lecture-discussion course for graduate students. Course content focuses on computational methods for assessing and managing civil infrastructure. Topics include climate change, network theory, risk, and optimization.

Instructor, *EMGT 621 Asset Management I* **2020 - present**

Lecture-discussion course for graduate students. Course content focuses on computational methods for assessing and managing civil infrastructure. Topics include value of information, simulation, sensitivity, and asset deterioration modeling.

Instructor, *EMGT 643 Introduction to Geospatial Information Systems* **2019 - present**

Lecture-laboratory course for graduate students. Course content focuses on geospatial analysis and visualization. The course utilizes the latest version of ArcGIS Pro.

Instructor, *EMGT 662 Resilient Infrastructure Engineering II* **2021**

Lecture-discussion course for graduate students. Course content focuses on infrastructure resilience assessment and application to a course project case study.

Instructor, *EMGT 723 Advanced Topics in Asset Management* **2020**

Lecture-discussion course for graduate students. Course content focuses on infrastructure management under uncertainty with a focus on decision-making and communication.

**University of Illinois at Urbana-Champaign**

*16-week Semester System*

Instructor, *CEE 592 Sustainable Urban Systems* **2019**

Lecture-project course for graduate students. Course content focuses on various facets of sustainability in the context of urban infrastructure and socioeconomic systems.

## Research Advising

*(Co-advised students denoted by *)*

**Current M.S. Students**

1 Lt James Anderson; anticipated graduation March 2023

2 Lt Caleb Boone; anticipated graduation March 2023

Capt Anthony Brenes; anticipated graduation March 2023

1 Lt Payten Connally; anticipated graduation March 2023

1 Lt Douglas Jaks; anticipated graduation March 2023

Capt Zachary Schumann; anticipated graduation March 2023

1 Lt Danielle Van Lanen; anticipated graduation March 2023

1 Lt David S. Robinson; anticipated graduation March 2023

**Graduated M.S. Students**

Capt Dylan Bechen, 2022, "Hydrologic Profiles and Geospatial Trend Analysis Evaluating Recurrent Flooding at Coastal U.S. Air Force Installations."

1 Lt Ashton Doyal, 2022, "Prioritizing Water Distribution Network Asset Maintenance Using Graph Theory Methods."

2 Lt Kevin Hansen, 2022, "Developing Water Security Plans for Air Force Installations to Address Water Scarcity."

Capt Gregory Howland, 2022, "A Critical Review of Climate Change on Coastal Infrastructure Systems."

Capt Jedediah Langlois, 2022, "Climate Change Risk to Coastal Airfield Stormwater Systems."

Capt Zachary Moer*, 2022, "A United States Air Force Site Selection Methodology in a Contested Agile Combat Employment Environment."

1 Lt David N. Robinson, 2022, "Burn Probability and Climate Change: A Quantitative Evaluation of the Temporal Alterations of Wildfire."

Capt Erica Sadowski*, 2022, "Efficiency Mapping and Determination of Reliability, Resiliency and Vulnerability of Atmospheric Water Generators in the United States."

1 Lt. Kelsie Crouch, 2021, "Evaluation of efficient water reuse technologies for sustainable forward operating bases."

Capt. Tyler Ferry, 2021, "Conversion from coal to natural gas at Wright-Patterson Air Force Base: An analysis and case study."

2 Lt. Jacob Hyman, 2021, "An Analysis of the Air Force Installation Development Plan and Its Energy Benchmarking Effectiveness."

1 Lt John Pollock, 2021, "Water Security at United States Air Force Installations."

1 Lt. Louis Zib, 2021, "Operational carbon footprint of the U.S. water sector's energy consumption."

### M.S. Thesis Committee Service

*Count: 12*

Capt. Kelly Minor, 2022; Capt. Kiara Vance, 2022; 2 Lt Kristen Roberts, 2022; Capt Jacob Franke, 2022; Capt Blake Gawlik, 2022; 1 Lt Christopher Amaddio, 2021; Capt. Alex Baldwin, 2021; Capt. Stephen Cunningham, 2021; Capt. Daniel Ress, 2021; 1 Lt Kyle Rodriguez, 2021; 1 Lt Scott Weiss, 2021; Capt. Sam Harriger, 2020.

## Professional Service

### Professional Society Service

*American Society of Civil Engineers; Environmental & Water Resources Institute*
Chair (2022-2023), Vice Chair (2021-2022), Secretary (2020-2021), Sustainability Committee (Interdisciplinary Council).
Member (since 2020), Environmental Water Resources Systems Committee (Planning and Management Council).

*American Geophysical Union; Fall Meeting*
Water and Society: Big Data session chair/co-chair (2020–present)

### AFIT/Department Service

AFIT ArcGIS software license manager (2019–present)
Department (ENV) Matlab license manager (2022–present)