

Evan Alexander Beirne Thomas

January 1, 2021

Evan Thomas is the Director of the Mortenson Center in Global Engineering and holds the Mortenson Endowed Chair in Global Engineering at the University of Colorado Boulder. He is a tenured Associate Professor jointly appointed in the Civil, Environmental and Architectural Engineering and the Aerospace Engineering Sciences Departments. Evan is currently a member of the NASA and USAID SERVIR Applied Sciences Team, linking NASA remote sensing data to challenges in low income settings globally. Evan is a member of the board of the Millennium Water Alliance, and Co-Chair of the ASME Engineering for Global Development Research Committee.

Evan has a PhD in Aerospace Engineering Sciences from the University of Colorado at Boulder, is a registered Professional Engineer, and has a Masters in Public Health from the Oregon Health and Science University.

Evan's technical background is in water and air testing and treatment applied in emerging economies to operational spacecraft. He founded SweetSense Inc. which is supported by USAID and the National Science Foundation to develop and apply satellite connected sensors monitoring drinking water systems. Daily, the team is monitoring millions of people's water supply across east Africa. This work was recognized as an inaugural member of the Million Lives Club in 2019.

Evan's research has been funded by NASA, the National Science Foundation, the World Bank, USAID, the Moore Foundation, the UN Foundation, the CDC, UNESCO, the United Kingdom Department for International Development, the Gates Foundation, and others.

Evan was previously an Associate Professor at Portland State University and Oregon Health & Science University and Founder of the SweetLab from 2010-2018. Evan was the Chief Operating Officer of DelAgua Health from 2012-2016. Evan was responsible for conceptualizing, designing and operating a \$25 million-dollar public health intervention in Rwanda in partnership with the Government of Rwanda. The program reached 350,000 households with cookstoves and 102,000 households with water filters, across over 7,500 villages and 1.6 million people.

Evan was a founding volunteer with Engineers Without Borders-USA in 2002, which led to co-founding Manna Energy Limited in 2007. Manna was acquired by DelAgua Health in 2013. In 2012, Evan founded SweetSense Inc.

Evan was previously a civil servant at the NASA-Johnson Space Center in Houston, Texas from 2004-2010. At NASA, Evan was a aerospace engineer in the Life Support and Habitability Systems Branch, working on microgravity fluid management technologies and water recovery systems spanning the range of technology readiness from research and concept development through operational spacecraft hardware flying on the Space Shuttle and International Space Station.

In 2017, Evan was a finalist for the Canadian Astronaut selection, finishing among the top 3 civilian candidates from nearly 4,000 applicants.

Education

MBA	(2022)	Masters in Global Business Administration, Fletcher Graduate School of Global Affairs, Tufts University
MPH	2014	Masters in Public Health, Oregon Health and Science University
PhD	2009	Aerospace Engineering Sciences (Bioastronautics), University of Colorado at Boulder <i>Sustainable Fouling Management for Spacecraft Fluid Handling Systems</i> <i>Piloted coursework in Mortenson Center in Engineering for Developing Communities</i>
MS	2006	Aerospace Engineering Sciences (Bioastronautics), University of Colorado at Boulder <i>Investigating the Feasibility of a Modulated Diode Laser for Crewed Spacecraft Fire Detection</i>
BS	2006	Aerospace Engineering Sciences, University of Colorado at Boulder <i>Editor in Chief 2002-2005: Colorado Engineer Magazine</i>
BS	2006	Broadcast Journalism (Honors), University of Colorado at Boulder

Student Supervision

Doctoral Academic Advisor

1.	Fabrice Basema (DRC)	USAID	PhD, Civil Systems Engineering	CU Boulder	(2025)
2.	Kathy Kirsch	USAID	PhD, Environmental Engineering	CU Boulder	(2025)
3.	Katie Fankhauser	NASA	PhD, Environmental Engineering	CU Boulder	(2024)
4.	Doris Kaberia (Kenya)	USAID	PHD, Environmental Studies	CU Boulder	(2025)
5.	Denis Macharia (Kenya)	(USAID PEER)	PhD, Environmental Studies	CU Boulder	(2023)
6.	Matthew Falcone	NSF GFRP	PhD, Environmental Engineering	CU Boulder	(2023)
7.	Abby Bradshaw	Wellspring	PhD, Environmental Engineering	CU Boulder	(2022)
8.	Anna Libey	USAID	PhD, Environmental Engineering	CU Boulder	(2022)
9.	Taylor Sharpe	Autodesk	PhD, Environmental Engineering	CU Boulder	(2022)
10.	Emily Bedell	Moore	PhD, Environmental Engineering	CU Boulder	(2022)
11.	Chantal Iribagiza (Rwanda)(FFTF)		PhD, Environmental Engineering	CU Boulder	(2022)
12.	Melanie Holland	Moore	PhD, Civil Engineering	CU Boulder	(2022)
13.	Pranav Chintalapati (Canada, w/ K. Linden), NSERC		PhD, Environmental Engineering	CU Boulder	(2021)
14.	Nick Turman-Bryant	NSF IGERT	PhD, Systems Science	Portland State	2019

Masters Academic Advisor

1.	Sally Gerster	Wellspring	MS, Civil Engineering	CU Boulder	(2020)
2.	Kathy Junglen	Sanergy	MS, Civil Engineering	CU Boulder	(2020)
3.	Chantal Iribagiza	Autodesk	MS, Environmental Engineering	Portland State	2018
4.	Emily Bedell	Autodesk	MS, Mechanical Engineering	Portland State	2018
5.	Katie Fankhauser	EPA STAR	MPH, Biostatistics	OHSU	2017
6.	Taylor Sharpe	NSF	MS, Mechanical Engineering	Portland State	2017
7.	Kwasi Boateng		MS, Eng. Tech Management	Portland State	2017
8.	Sarita Sanchez	DelAgua	MS, Electrical and Comp. Eng.	Portland State	2016
9.	Stephen Forner		MS, Mechanical Engineering	Portland State	2011

Committee Member

1.	Kelsey Reeves		PhD, Civil Engineering	CU Boulder	(2022)
2.	Ronnie Abolafiarosenzweig		PhD, Civil Engineering	CU Boulder	2021
3.	Miles Kirby (and Co-PI on research)		PhD, Epidemiology	LSHTM	2017
4.	Christina Barstow (and prof. supervisor)		PhD, Environmental Engineering	UC Boulder	2016
5.	Jack Beach (and prof. supervisor)		MS, Industrial Engineering	U Tennessee	2015
6.	Zdenek Zumr (and prof. supervisor)		MS, Electrical and Com. Eng.	Portland State	2014

Course Development and Teaching

Global Engineering Methods	CU Boulder	2019, 2020
Introduction to Global Engineering	CU Boulder	2019, 2020
Introduction to Global Health for Engineers	CU Boulder	2019
Development Engineering	Portland State	2012, 2013, 2014, 2015, 2016, 2017
Instrumentation and Measurement	Portland State	2015
Engineering Problem Solving	Portland State	2011, 2012, 2013, 2014
Mechanical Engineering Profession	Portland State	2012, 2013, 2014

Employment

1. Mortenson Endowed Chair in Global Engineering; Associate Professor with Tenure, Civil, Environmental and Architectural Engineering Department, Aerospace Engineering Sciences Department; Director, Mortenson Center in Global Engineering, University of Colorado at Boulder ,2018-Present.
2. Associate Professor with Tenure, Mechanical and Materials Eng. Dept., Portland State University, 2016-2018 (Asst. Professor 2010-2016).
3. Director, Sustainable Water, Energy and Environmental Technologies Laboratory, 2010 – 2018
4. Faculty Fellow, Institute for Sustainable Solutions, Portland State University, 2011 – 2018
5. Chief Executive Officer, SweetSense Inc., 2013 – Present
6. Chief Operating Officer, DelAgua Health, 2012 – 2016
7. Executive Vice President, Manna Energy Limited, 2007 – 2013
8. Aerospace Engineer, NASA Johnson Space Center, 2004 – 2010

Licensure

PE Environmental Engineering, license number 106345, State of Texas, 2010

General Aviation – Private Pilot License #3499015

Patents

1. **Thomas, E.**, Sharpe, T., Bedell, E., Alarm Threshold Microbial Fluorimeter and Methods, US Patent Pending US Serial No. 62/843,860.
2. Wilson, D., Coyle, J., **Thomas., E.**, Machine Learning Techniques for Improved Water Service Delivery, US Patent Pending US Serial No. 62/843,836.
3. Fleming, M., Spiller, K., **Thomas, E.**, System and Methods for Operating a Microcomputer in Sleep-Mode and Awake-Mode with Low Power Event Processing, United States Patent US 10,564,701. Issued Feb. 18, 2020.
4. **Thomas, E.**, Fleming, M., Distributed low-power monitoring system, United States Patent US 9,077,783 B2, Issued July 7, 2015.
5. Weislogel, M., **Thomas, E.**, Graf, J., Systems and Methods for Separating a Multiphase Fluid, United States Patent US 7,905,946 B1, issued March 15,2011.
6. Gold, M., **Thomas, E.**, Bring Your Own Water Treatment System United States Patent US 8,002,993 B2, issued August 23, 2011.

Books

1. **Thomas, E.**, The Global Engineers – Building a Shared World Together, Springer, 2020.
2. Amadei, B., **Thomas, E.**, (Editors), UNESCO Decadal Global Engineering Report – Engineering the Sustainable Development Goals, 2020 (in press).
 - a. Executive Summary
 - b. Global Engineering for a Small Planet
 - c. Measuring Progress toward the SDGs
3. **Thomas, E.**, (Editor) - Innovations in WASH Impact Measures - Water and Sanitation Measurement Technologies and Practices to Inform the Sustainable Development Goals, The World Bank, 2018
 - a. **Thomas, E.**, Executive Summary
 - b. **Thomas, E.**, Chapter 5: Sensing WASH: in-situ and remote sensing technologies

4. **Thomas, E., (Editor), Broken Pumps and Promises: Incentivizing Impact in Environmental Health** Springer, 2016.
 - a. **Thomas, E.**, Chapter 1: Introduction
 - b. Yuthas, K., **Thomas, E.**, Chapter 2: Performance Over Promises
 - c. **Thomas, E.**, Barstow, C., Clasen T., Chapter 8: Incentivizing Impact: Privately Financed Public Health in Rwanda
 - d. O'Reilly, K., Louis, E., **Thomas, E.**, Sinah, A., Chapter 13: Combining Sensors and Ethnography to Evaluate Latrine Use in India

Legislation

1. Expert consultant and co-author, "HB20-1072 Study Emerging Technologies For Water Management," Colorado State Legislature (Pending), 2020.

Pending Publications

1. Engineering environmental resilience: A matched cohort study of the community benefits of trailbridges in rural Rwanda, *Science of The Total Environment*, (in revision), 2021.
2. Integration of household water filters with community based sanitation and hygiene promotion - A process evaluation and assessment of use among households in Rwanda, *Sustainability* (in revision), 2021
3. A contribution to drought resilience in East Africa through groundwater pump management informed by ensemble machine learning, in-situ instrumentation and remote sensing, *Science of The Total Environment* (in review), 2021

Refereed Publications

1. **Thomas, E.**, Brown, J., "[Using Feedback to Improve Accountability in Global Environmental Health and Engineering](#)," *Environmental Science and Technology*, 2020.
2. Thomas, E., et al., "[The Drought Resilience Impact Platform \(DRIP\): Improving Water Security Through Actionable Water Management Insights](#)," *Frontiers in Climate*, V2. A6. 2020.
3. Iribagiza, C., Sharpe, T., Wilson, D. **Thomas, E.**, User-centered design of an air quality feedback technology to promote adoption of clean cookstoves. *J Expo Sci Environ Epidemiol* 30, 925–936 (2020).
<https://doi.org/10.1038/s41370-020-0250-2>
4. Anna Libey, Marieke Adank, **Evan Thomas**, [Who pays for water? Comparing life cycle costs of water services among several low, medium and high-income utilities](#), *World Development*, Volume 136, 2020, 105155, ISSN 0305-750X, <https://doi.org/10.1016/j.worlddev.2020.105155>.
5. Bedell, E.; Sharpe, T.; Purvis, T.; Brown, J.; **Thomas, E.** [Demonstration of Tryptophan-Like Fluorescence Sensor Concepts for Fecal Exposure Detection in Drinking Water in Remote and Resource Constrained Settings](#). *Sustainability* **2020**, *12*, 3768.
6. Junglen, K.; Rhodes-Dicker, L.; Ward, B.J.; Gitau, E.; Mwalugongo, W.; Stradley, L.; **Thomas, E.** [Characterization and Prediction of Fecal Sludge Parameters and Settling Behavior in Informal Settlements in Nairobi, Kenya](#). *Sustainability* **2020**, *12*, 9040.
7. Hollander, D.; Ajroud, B.; **Thomas, E.**; Peabody, S.; Jordan, E.; Javernick-Will, A.; Linden, K. [Monitoring Methods for Systems-Strengthening Activities Toward Sustainable Water and Sanitation Services in Low-Income Settings](#). *Sustainability* **2020**, *12*, 7044.

8. **Evan Thomas**, Elizabeth Jordan, Karl Linden, Beshah Mogesse, Tamene Hailu, Hussein Jirma, Patrick Thomson, Johanna Koehler, Greg Collins, [Reducing drought emergencies in the Horn of Africa](#), *Science of The Total Environment*, Volume 727, 2020, 138772, ISSN 0048-9697, <https://doi.org/10.1016/j.scitotenv.2020.138772>.
9. Nick Turman-Bryant, Taylor Sharpe, Corey Nagel, Lauren Stover, **Evan A. Thomas**, [Toilet alarms: A novel application of latrine sensors and machine learning for optimizing sanitation services in informal settlements](#), *Development Engineering*, Volume 5, 2020, 100052, ISSN 2352-7285, <https://doi.org/10.1016/j.deveng.2020.100052>.
10. Rasheed, R. M., **Thomas, E. A.**, Gardner, P., Rogers, T., Verduzco, R., & Weislogel, M. M. (2020). Omni-Gravity Nanophotonic Heating and Leidenfrost-Driven Water Recovery System, *Gravitational and Space Research*, 8(1), 31-44. doi: <https://doi.org/10.2478/gsr-2020-0004>
11. **Thomas E**, Gerster S, Mugabo L, Jean H, Oates T (2020) Computer vision supported pedestrian tracking: A demonstration on trail bridges in rural Rwanda. *PLOS ONE* 15(10): e0241379. <https://doi.org/10.1371/journal.pone.0241379>
12. Frederick G. B. Goddard, Radu Ban, Dana Boyd Barr, Joe Brown, Jennifer Cannon, John M. Colford, Joseph N. S. Eisenberg, Ayse Ercumen, Helen Petach, Matthew C. Freeman, Karen Levy, Stephen P. Luby, Christine Moe, Amy J. Pickering, Jeremy A. Sarnat, Jill Stewart, **Evan Thomas**, Mami Taniuchi, and Thomas Clasen, "Measuring Environmental Exposure to Enteric Pathogens in Low-Income Settings: Review and Recommendations of an Interdisciplinary Working Group", *Environmental Science & Technology* 2020 54 (19), 11673-11691 DOI: 10.1021/acs.est.0c02421
13. **Thomas, E.**, ["Toward a New Field of Global Engineering."](#) *Sustainability* 2019, 11, 3789.
14. Fankhauser, K., Nagel, C., Barstow, C., Kirby, M., **Thomas, E.**, "Geospatial-temporal, demographic, and programmatic adoption characteristics of a large-scale water filter and improved cookstove intervention in Western Province, Rwanda," *Cogent Environmental Science*, 2019.
15. Sharpe, T., Muragimana, C., **Thomas, E.**, "Product Design Supporting Improved Water, Sanitation, and Energy Services Delivery in Low-Income Settings," *Sustainability*, 2019.
16. Barstow, C., Bluffstone, R., Silon, K., Linden, K., **Thomas, E.**, "A cost-benefit analysis of livelihood, environmental and health benefits of a large scale water filter and cookstove distribution in Rwanda," *Journal of Development Engineering*, 2019.
17. **Thomas, E.**, Needoba, J., Kaberia, D., Butterworth, J., Adams, E., Oduor, P., Macharia, D., Mitheu, F., Mugo, R., Nagel, C. "Quantifying increased groundwater demand from prolonged drought in the East African Rift Valley," *Science of the Total Environment*, v. 666, p 1265-1272. <https://www.sciencedirect.com/science/article/pii/S0048969719306941?via%...> 2019
18. Kirby, M., Nagel, C., Rosa, G., Zambrano, L., , S., Ngirabega, J., Condo, J., **Thomas, E.**, Clasen, T., "Effects of a large-scale distribution of water filters and rocket stoves on diarrhoea and ARI: a cluster randomised controlled trial in Western Province, Rwanda," *Plos Med*, 2019.
19. Turman-Bryant, N., Nagel, C., Stover, L., Muragijimana, C., **Thomas, E.**, "Improved Drought Resilience Through Continuous Water Service Monitoring and Specialized Institutions—A Longitudinal Analysis of Water Service Delivery Across Motorized Boreholes in Northern Kenya," *Sustainability*, 11(11), <https://www.mdpi.com/2071-1050/11/11/3046/htm>. 2019.
20. Martinsen, A., Hulland, E., Phillips, R., Darius, J., Felker-Kantor E., Simpson, D., Stephens, M., **Thomas, E.**, Quick, R., Handzel, T., " Alternative Water Transport and Storage Containers: Assessing Sustained Use of the PackH2O in Rural Haiti", *American Journal of Tropical Medicine and Hygiene*. DOI: <https://doi.org/10.4269/ajtmh.18-0228>. 2019.

21. Anderson, D., **Thomas, E.**, Clasen, T., "Quantifying averted disability adjusted life years as a performance indicator for water quality interventions: A review of current methodologies and challenges," *Water*, 2018.
22. Turman-Bryant, N., Fankhauser, K., Clasen, T., **Thomas, E.**, "Measuring Progress Toward Sanitation and Hygiene Targets," *Waterlines*, 2018.
23. Andres, L., Borja-Vega, C., **Thomas, E.**, "Using On-site and Remote Sensing Technologies to Monitor Water and Sanitation Use and Interventions", *Water*, 2018.
24. Barstow, C., Kirby, M., Clasen, T., **Thomas, E.**, "Health, livelihood, and environmental impacts of the distribution of a carbon-credit-financed, large-scale water filter and improved cookstove programme in Rwanda," *Case Report, Lancet Planetary Health*, DOI: 10.1016/S2542-5196(18)30116-5, 2018.
25. Wilson, D., Coyle, J., **Thomas, E.**, "Ensemble Machine Learning and Forecasting Can Achieve 99% Uptime for Rural Handpumps," *PloS ONE*, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0188808>, 2017.
26. Kirby, M., Nagel, C., Rosa, G., Umupfasoni M., Iyakareyme, L., **Thomas, E.**, Clasen, T., "Use, microbiological effectiveness and health impact of a household water filter intervention in rural Rwanda—A matched cohort study," *International Journal of Hygiene and Environmental Health*, 2017.
27. Delea, M., Nagel, C., **Thomas E.**, Halder, A., Amin, N., Shoab, A., Freeman, M., Unicomb, L., Clasen, T., "Comparison of respondent-reported and sensor-recorded latrine utilization measures in rural Bangladesh: a cross-sectional study," *Transactions of The Royal Society of Tropical Medicine and Hygiene*, 2017.
28. Bedell, E., Leslie, M., Fankhauser, K., Burnett, J., Wing, M., **Thomas, E.**, "'Unmanned Aerial Vehicle Based Structure from Motion Biomass Inventory Estimates.'" *Journal of Applied Remote Sensing* 11(2), 2017.
29. **Thomas, E.**, Beyond Broken Pumps and Promises: Rethinking Intent and Impact in Environmental Health, *Journal of Energy Research and Social Science*, v25 pp 33-36, 2017. <http://dx.doi.org/10.1016/j.erss.2016.12.006>.
30. Snoad, C., Nagel, C., Bhattacharya, A., **Thomas, E.** "The effectiveness of sanitary inspections as a risk assessment tool for faecal contamination of rural drinking water: A review of data from West Bengal India," *American Journal of Tropical Medicine and Hygiene*, doi: 10.4269/ajtmh.16-0322, 2017.
31. Clasen, T., Zambrano, L., Rosa, G., Kirby, M., Barstow, C., **Thomas, E.**, Nagel, C., "Study design of a cluster-randomized controlled trial to evaluate a large-scale distribution of cook stoves and water filters in Western Province, Rwanda," *Contemporary Clinical Trials*, (4) <http://dx.doi.org/10.1016/j.conctc.2016.07.003>, 2016.
32. Barstow, C., Nagel, C., Clasen, T., **Thomas, E.**, "Process Evaluation and Assessment of Use of a Large Scale Water Filter and Cookstove Program in Rwanda," *BMC Public Health* BMC Public Health 16:584 DOI 10.1186/s12889-016-3237-0, 2016.
33. **Thomas, E.**, Tellez-Sanchez, S., Wick, C., Kirby, M., Zambrano, L., Rosa, G., Clasen, T., Nagel, C., "Behavioral Reactivity Associated with Electronic Monitoring of Environmental Health Interventions - A Cluster Randomized Trial with Water Filters and Cookstoves," *Environmental Science and Technology*, DOI: 10.1021/acs.est.6b00161, 2016.
34. Bohnert, K., Chard, A., Mwaki, A., Kirby, A., Muga, R., Nagel, C., **Thomas, E.**, Freeman, M., Comparing Sanitation Delivery Modalities in Urban Informal Settlement Schools: A Randomized Trial in Nairobi, Kenya, *International Journal of Environmental Research and Public Health*, 13(12), 1189; doi:10.3390/ijerph13121189, 2016.
35. Sinha, A., Nagel, C., **Thomas, E.**, Schmidt, W., Torondel, B., Boisson, S., Clasen, T., "Assessing Latrine Use in Rural India: A Cross-Sectional Study Comparing Reported Use and Passive Latrine Use Monitors," *American Journal of Tropical Medicine and Hygiene*, 95(3), doi:10.4269/ajtmh.16-0102. 2016.

36. Nagel, C., Beach, J., Iribagiza, C., **Thomas, E.**, "Evaluating Cellular Instrumentation on Rural Handpumps to Improve Service Delivery – A Longitudinal Cohort Study in Rural Rwanda," *Environmental Science and Technology* (49) 24 DOI: 10.1021/acs.est.5b04077, 2015.
37. Kipf, A., Brunette, W., Kellerstrass, J., Podolsky, M., Rosa, J., Sundt, M., Wilson, D., Borriello, G., Brewer, E., **Thomas, E.**, "A Proposed Integrated Data Collection, Analysis and Sharing Platform for Global Development," *Journal of Development Engineering*, doi:10.1016/j.deveng.2015.12.002, 2015.
38. O'Reilly, K., Louis, E., **Thomas, E.**, Sinha, A., "Combining Remote Monitoring and Ethnography to Estimate Household Latrine Usage in Rural India," *Journal of Water, Sanitation and Hygiene for Development*, (5), 3, doi: 10.2166/washdev.2015.155, 2015.
39. Barstow, C., Ngabo, F., Rosa, G., Majorin, F., Boisson, S., Clasen, T., **Thomas, E.**, "Designing and Piloting a Large-Scale Project to Provide Water Filters and Improved Cookstoves in Rwanda," *PLoS One*, 2014.
40. **Thomas, E.**, Barstow, C., Rosa, G., Majorin, F., Clasen, T., "Use of Remotely Reporting Electronic Sensors for Assessing Use of Water Filters and Cookstoves in Rwanda," *Environmental Science and Technology*, 2013. DOI: 10.1021/es403412x.
41. Rosa, G., Majorin, F., Boisson, S., Barstow, C., Johnson, M., Kirby, M., Ngabo, F., Binagwaho, A., **Thomas, E.**, Clasen, T., "Assessing the Impact of Water Filters and Improved Cookstoves on Drinking Water Quality and Household Air Pollution: A Randomised Controlled Trial in Rwanda," *PLoS One*, 2014. DOI: 10.1371/journal.pone.0091011
42. **Thomas, E.**, Zumr, Z., Barstow, C., Fleming, M., Spiller, K., *Remotely accessible and reconfigurable in-situ instrumentation to improve monitoring of global development interventions*, Sustainability, August 2, 2013.
43. **Thomas, E.**, *Measuring Sustainability*, Solutions Journal, Volume 3, Issue 4, pp. 41-44, 2012
44. **Thomas, E.**, Weislogel, M., Klaus, D., *Design Strategies for Sustainable Spacecraft Fluid Management Systems*, Advances in Space Research, 46, p. 761-767, doi: 10.1016/j.asr.2010.04.005, 2010
45. **Thomas, E.**, Amadei, B., *Accounting for Human Behavior, Local Conditions and Organizational Constraints in Humanitarian Development Models*, Journal of Environment, Development and Sustainability, DOI 10.107/s10668-009-9196-1, V, 12(3), p. 313-327, 2010
46. **Thomas, E.**, Klaus, D., *Developing Sustainable Spacecraft Water Management Systems*, 2009-2010 Decadal Survey on Biological and Physical Sciences in Space, National Research Council of The National Academies, 2009
47. Amadei, B., Sandekian, R., **Thomas, E.**, *A Model for Sustainable Humanitarian Engineering Projects*, Sustainability, 1(4), 1087-1105; doi:10.3390/su1041087, 2009
48. **Thomas, E.**, Poritz, D., Muirhead, D., *Urine Advancing Contact Angle on Several Surfaces*, Journal of Adhesion Science and Technology, 2009. V. 23 p. 1917-1923.
49. **Thomas, E.**, Muirhead, D., *Impact of Wastewater Fouling on Contact Angle*, Journal of Biofouling, V. 25. N. 5. Pp. 445-454, 2009
50. Weislogel, M., **Thomas, E.**, Graf, J., *A Novel Device Addressing Design Challenges for Passive Fluid Phase Separations Aboard Spacecraft* Microgravity Science and Technology, 2009. 21(3) p. 257-268.
51. Gold, M., **Thomas, E.**, Byyny, R., Habanabakize, J., *Development and Implementation of the Bring Your Own Water Treatment System in Dense, Rural, and Mountainous Rwandan Communities*, Journal of Engineering for Sustainable Development, V2.N1, 2007

Non-Refereed Publications

1. **Thomas, E.**, "Groundwater can prevent drought emergencies in the Horn of Africa. Here's how," The Conversation, November 2019.
2. **Thomas, E.**, "Measured Impact, Not Promised Intent," Mechanical Engineering Magazine, August 2016.
3. **Thomas, E.**, "The Internet of Broken Things," Mechanical Engineering Magazine, April, 2016.
4. **Thomas, E.**, "Disruptive Drones," Tech Buzz – Global Development, Mechanical Engineering Magazine, November 2015.
5. **Thomas, E.**, "What Is a Mechanical Engineer?," Tech Buzz – Global Development, Mechanical Engineering Magazine, July 2015.
6. **Thomas, E.**, "Making Gains in Rwanda," Tech Buzz – Global Development, Mechanical Engineering Magazine, March 2015.
7. **Thomas, E.**, "Maintenance Matters," Tech Buzz – Global Development, Mechanical Engineering Magazine, December 2014.
8. **Thomas, E.**, "How Appropriate?," Tech Buzz – Global Development, Mechanical Engineering Magazine, August 2014.
9. Delea, M., Freeman, M., Halder, A., White, Z., **Thomas, E.**, Clasen T., "An Assessment of Latrine Coverage and Use Under BRAC's WASH II Project in Bangladesh," Report to the Gates Foundation, 2015.
10. Holyard, J., Barry, B., **Thomas, E.**, "WASH Emergency Innovations Assessment Syria Crisis," Mercy Corps Report to Gates Foundation, May, 2014.
11. **Thomas, E.**, "Im/Proving Global Impact: Feedback on Program Outcomes," The Freshwater Trust, December 2013. <http://www.thefreshwatertrust.org/main/freshwater-9-contents-2/freshwater-9-back-talk/>
12. **Thomas, E.**, "(Im)Proving Global Impact: How the Integration of remotely reporting sensors in water projects may demonstrate and enhance positive change," UNESCO Global Water Forum, December 1, 2013.
13. **Thomas, E.**, Mattson, K., "Counting Heads," DEMAND: ASME Global Development Review, 2013.
14. **Thomas, E.**, Mattson, K., *Integration of Instrumented Behavior Monitoring with Public Health Evaluation Tools: An Application to a Water and Sanitation Program in Per-urban Jakarta, Indonesia*, Mercy Corps, 2013
15. **Thomas, E.**, *Leveraging carbon financing to enable accountable water treatment programs*, Global Water Forum, 2012
16. **Thomas, E.**, Yowell, L., *NASA's Social Innovation Concept: Human Development and Space Exploration*, Center for a Better Life LiveBetter Magazine, 2012
17. **Thomas, E.**, Zumr, Z., Barstow, C., Linden, K., *Proving Sustainability: The International Development Monitoring Initiative* IEEE Global Health and Technology Conference, 2011
18. Yowell, L., **Thomas, E.**, *Social Innovation Concepts at NASA: Integrating International Development Challenges and Hand-On Prototyping with Spacecraft Design Training*, International Conference on Environmental Systems 2011
19. Huff, A., Rhead, E., Zumr, Z., **Thomas, E.**, *Sustainable Oxygen: A low power approach for providing emergency medical oxygen for spacecraft and hospitals in developing countries*, International Conference on Environmental Systems 2011

20. **Thomas, E.,** *Developing Sustainable Life Support System Concepts*, International Conference on Environmental Systems 2010
21. **Thomas, E.,** *Development of a Contingency Capillary Wastewater Management Device*, International Conference on Environmental Systems 2010
22. Bentley, N., **Thomas, E.,** Van Wie, M., Morrison, C., Stinson, R., *Second Generation International Space Station (ISS) Total Organic Carbon Analyzzer (TOCA) Verification Testing and On-Orbit Performance Results*, International Conference on Environmental Systems 2010
23. **Thomas, E.,** Leidich, J., Klaus, D., *A Sustainable Regolith-Based Water Recovery Concept for the Lunar Outpost*, International Conference on Environmental Systems 2009
24. Leidich, J., **Thomas, E.,** Klaus, D., *A Novel Testing Protocol for Evaluating Particle Behavior in Fluid Flow Under Simulated Reduced Gravity Conditions*, International Conference on Environmental Systems 2009
25. **Thomas, E.,** *2008-01-2054 Wastewater Brine Dewatering Technology Assessment and Development Roadmap* International Conference on Environmental Systems 2008
26. Amadei, B., Sandekian, R., **Thomas, E.,** *A model for sustainable international humanitarian engineering trips*, Journal of Engineering Education (submitted 2009)
27. **Thomas, E.,** Graf, J., Sweterlitsch, J., Weislogel, M., *2008-01-2041 Development of the Static Phase Separator* International Conference on Environmental Systems 2008
28. Callahan, M., Lubman, A., MacKnight, A., Rifert, V., Barabash, P., **Thomas, E.,** Pickering, K. *2008-01-2195 Cascade Distillation Subsystem Development Testing* International Conference on Environmental Systems 2008.
29. Cibuzar, B., **Thomas, E.,** Peterson, L., Goforth, J. *2008-01-2144 Development of Urine Receptacle Assembly for the Crew Exploration Vehicle* International Conference on Environmental Systems 2008.
30. Azman, A., **Thomas, E.,** *Engineering Education Through Service Learning in Developing Communities: Two Case Studies* American Society for Engineering Education Annual Conference and Exposition 2006.
31. **Thomas, E.,** Klaus, D., *Technology Readiness of a Modulated Laser Analyzer of Combustion Products for the Manned Spacecraft Environment*, ASCE Earth and Space Conference, 2006

Invited Presentations

- GlobalPDX Podcast, 2020
- Impact Engineered Speaker, 2020
- University of Toronto Center for Global Engineering Speaker, 2020
- CU Engineering Alumni Event Keynote - Seattle - May 2019
- Aerospace Engineering Graduation Speaker, May 2019
- Invited lecture at IBM Think Conco, San Francisco, February 2019
- Invited lecture at Posner Center, Denver Colorado, February 2019
- Invited panel facilitation at CU WASH Symposium, Boulder, Colorado, March 2019
- Invited lecture at IRC WASH All Systems Go Conference, The Hague, March 2019
- Invited speaker by the World Bank for World Water Day (Declined for scheduling conflicts).
Activity Comments: Declined for scheduling conflicts
- Invited panel speaker at Boulder Startup Week, May 2019
- Invited keynote speaker for ASCE Fundamentals of Professional Practice, Denver, March 2019
- Speaker for Colorado Water Congress Webinar, September 2019
- Plenary speaker at Colorado Water Congress, Steamboat Springs, August 2019
- Invited Testimony to Natural Resources Committee on emerging technologies for water management, Colorado State Legislature, Denver, September 2019
- Webinar presentation for the Catholic Relief Services ICT4D series, June 2019
- Speaker at Engineers Without Borders-CU Engineering Exploration event. April 2019.
- Invited seminar speaker at Colorado School of Public Health Environmental Health department, University of Colorado Anschutz.
- Webinar speaker, USAID Sustainable WASH Systems Learning Partnership, June 2019.

- Invited panel speaker at Stockholm World Water Week, September 2019.
- Invited speaker at CU Boulder Research and Innovation Week, Remote Sensing for Climate Change Panel, October 2019.
- Invited seminar speaker, Water Resources Group, CVEN Department, October 2019.
- Invited speaker at American Geophysical Union event hosted by NASA Chief Scientist, December 2019.
- Invited Keynote speaker for ASME / IEEE / EWB Engineering for Global Development annual conference (declined due to scheduling conflict).
- Invited presentation at IBM THINK conference, San Francisco, February 2019.
- Invited participant for Gates Foundation funded workshop on health exposure monitoring technologies, Emory University, Atlanta, September 2019.
- Invited participant for Environmental Law Institute workshop on "Digital Technologies for Colorado River Basin", Denver, October 2019.
- Invited Speaker, GSMA Mobile for Development, Dar es Salaam, 2017
- Invited Speaker, Impact Engineered, New York City, 2017
- Invited Speaker, Impact Design Summit, Washington, DC 2017
- Guest Speaker, TechChange, 2017
- Keynote Speaker, International Congress of Electronics, Controls and Telecommunications, Bogota, Columbia 2017
- Invited Featured Speaker, World Bank Joint Energy & Water Knowledge Event, Innovations in Measuring Health Impact in Water, Sanitation & Household Energy Interventions, 2017
- Engineer's Week Keynote, Portland, Oregon March 2017
- Measured Symposium, School for the Visual Arts, New York City, January 2017
- World Bank Development Impact Metrics and Evaluation, Plenary Presentation, Berkeley, CA November 2016
- Development Impact Lab, Plenary Presentation, Berkeley, California, October 2016
- WASH Symposium, Plenary Speaker, Boulder, Colorado March 2016
- NetHope Keynote Presentation, Atlanta, Georgia November 2016
- Gates Foundation / University of Washington Nutrition Think Tank Technical Symposium, November 2015.
- Intel Sustainability Leaders Seminar Series, Hillsboro, Oregon, October 2015
- Rockefeller Foundation Bellagio Center, Bellagio, Italy, July 2015
- Posner Center for Development, Denver Colorado, March 2015
- USAID TechCon Plenary Lecture, November 2014
- Stockholm World Water Week, September 2014
- Stockholm Environmental Institute, September 2014
- World Bank Development Impact Metrics and Evaluation, June 2014
- TedX Santa Cruz, March 2014
- Emory University Rollins School of Public Health, February 2014
- Ashoka University, San Diego, March 2013
- International Space University, Graz Austria, March 2011
- Commonwealth Club, San Francisco, CA, 2012
- Stanford University Engineering Seminar Series, CA, 2012
- International Space University, Graz, Austria, 2011
- Economist Social Business Summit, London, UK 2011
- United Nations High Level Conference on Water and Global Health, NYC, 2010
- Unite for Sight Global Health and Innovation Conference, Yale University, 2010
- American Astronautical Society Imagine 09 Conference, NASA-Johnson Space Center, 2009
- World Energy Justice Conference, University of Colorado at Boulder, 2009
- Clinton Global Initiative Environment and Public Health Panel Invited Panelist, University of Texas at Austin, 2009
- United Nations Youth Assembly, Keynote Speaker, United Nations, New York City, 2009, 2006
- University of Colorado at Boulder Water and Sanitation and Sustainable Development class lectures, 2009
- University of Colorado at Boulder Engineering for Developing Communities class lectures, 2009
- University of Colorado at Denver, Sustainability in Resource Management class lecture, 2009
- Health of Refugees and Displaced Populations, UT-School of Public Health, Houston, 2008
- International Conference of Engineers Sustainable Engineering Development in Africa Conference, Yaoundé, Cameroon June 2006
- Association of Soil and Foundation Engineers Fundamentals of Professional Practice, 2005, 2006, 2007, 2008, 2009, 2010, 2012, 2015
- World Affairs Council of Houston (2007), Orange County (2006)
- StormCon Annual Meeting Keynote, 2006
- Maine Engineers Week Keynote Speaker, 2006
- Rotary District Conferences in Colorado, Texas, Michigan, Iowa, Wisconsin, Ontario

Honors, Grants and Fellowships

Fellowships

- Rockefeller Foundation Bellagio Center Residency Fellowship, 2015
- NASA Johnson Space Center Fellowship, 2008-2009

Honors

- Million Lives Club, Vanguard, 2021 (for Drought Resilience Impact Platform)
- San Francisco Design Week, Internet of Things First Prize, 2021 (for Drought Resilience Impact Platform)
- Mortenson Endowed Chair in Global Engineering, University of Colorado Boulder, 2018-Present
- Finalist, Canadian Astronaut Selection, 2017
- University of Colorado at Boulder Kalpana Chawla Outstanding Recent Alumni Award, 2015
- University of Colorado at Boulder College of Engineering Recent Alumni Award, 2015
- Portland State Impact Entrepreneurs Entrepreneurship Award, 2014
- Named one of 25 Global Game Changers, Portland Monthly, 2013
- Civic Engagement Award, Excellence in Community-Based Research, Portland State, 2011
- Engineering News-Record Newsmaker Award, 2010
- Purdue/NCIIA Invention to Product Competition, First Place, 2009
- NASA Technical Brief Award, 2008
- NASA-JSC Engineering Achievement Medal, September 2007
- International EnergyGlobe Awards, European Union, Brussels, Third Place Water Category 2007
- International EnergyGlobe Awards, Rwanda National Award, 2007, 2008, 2009
- Environmental Protection Agency P3 Award, accepted as Rwanda project manager, 2006
- UNESCO Mondialogo Engineering Award (as Rwanda project manager), 2005
- Engineers Without Borders-USA Humanitarian Award, (as Rwanda project manager), 2004

Professionally Related Service

- Co-Chair, American Society of Mechanical Engineering – Engineering for Change Research Committee, 2019-Present
- Guest Editor, Special Issue on *Global Engineering and Sustainable Development*, Sustainability, 2019 - Present
- Guest Editor, Special Issue on "Internet of Things, Remote Sensing and Analytics to Support Distributed Monitoring and Management of Water, Sanitation, Agricultural and Energy Resources in Remote and Low Income Regions," Sustainability, 2019 - Present
- Topic Editor, special issue, International Journal of Environmental Research and Public Health, 2019 - Present
- Associate Editor, Journal of Development Engineering, Elsevier Journals, 2014-Present
- Lead, Graduate Certificate in Global Health Proposal, Oregon Health and Science University, Portland State University School of Public Health, 2017-2018
- Grand Challenges Canada Review Panel, 2017
- Presidential Search Committee Member, Portland State University, 2016-2017
- Co-Chair, Internationalization Topic, Portland State Strategic Plan Development, 2016
- School of Public Health Dean Search Committee Member, OHSU/PSU, 2016
- National Science Foundation SBIR Panel, 2016
- NASA SBIR Panel, 2015
- Founding Member, Engineering for Change Workforce Development Committee, American Society of Mechanical Engineers, 2011 – Present
- Founding Member, Appropriate Solutions Evaluation Program Steering Committee, American Society of Mechanical Engineers, 2011 - Present
- Founding Member, Ashoka Changemakers Campus Committee, 2012 - 2014
- Member, Research Advisory Committee, Portland State University, 2013 - Present
- Member, AIAA Life Sciences and Systems Technical Committee, 2009 – 2013
- Member, American Society of Mechanical Engineers, 2015 – Present
- Member, American Society of Environmental Engineering Professors, 2019-Present