

Curriculum Vitae

Mary H. Hayden

Research Professor
Lyda Hill Institute for Human Resilience
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1. EDUCATION

- 2003: Ph.D., Health and Behavioral Sciences. University of Colorado, Denver. Dissertation Title: “The Potential for the Emergence of Dengue Fever Along the Arizona, U.S.-Sonora, Mexico Border.” Advisor: Craig R. Janes
- 1992: M.A., Geography, University of Colorado, Boulder. Advisor: Thomas Huber
- 1984: B.A., German, Meteorology, Metropolitan State College, Denver
- 1977: B.A. equivalent, Islamic Studies, University of Heidelberg, Germany

2. PROFESSIONAL EXPERIENCE

- 2018-present: Research Professor, Lyda Hill Institute for Human Resilience, University of Colorado, Colorado Springs, Colorado.
- 2018-present: Affiliate Scientist, Research Applications Laboratory, National Center for Atmospheric Research, Boulder, Colorado.
- 2017-2018: Scientist III, Research Applications Laboratory, National Center for Atmospheric Research, Boulder, Colorado.
- 2012–2017: Scientist II, Research Applications Laboratory, National Center for Atmospheric Research, Boulder, Colorado.
- 2010–present: Adjunct Faculty, Colorado School of Public Health, Denver, Colorado.
- 2007–2020: Guest Researcher, Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, Fort Collins, Colorado.
- 2006–2018: Center Affiliate, Trauma, Health and Hazards Center, University of Colorado.
- 2009–2012: Scientist I, Research Applications Laboratory, National Center for Atmospheric Research, Boulder, Colorado.
- 2006–2009: Advanced Study Program Postdoctoral Fellow/Visiting Scientist, Institute for the Study of Society and Environment, National Center for Atmospheric Research, Boulder, Colorado.
- 2003–2006 Postdoctoral Fellow, University of Colorado, CU Trauma, Health and Hazards Center, Colorado Springs, Colorado.

- 2003–2005 Senior Research Associate, University of Colorado, Health and Behavioral Sciences, Denver, Colorado.
- 1999–2003 Chair, Department of Geography, Geology, and Astronomy; Pikes Peak Community College, Colorado Springs, Colorado.
- 1996–2003 Faculty, Department of Geography, Pikes Peak Community College, Colorado Springs, Colorado.
- 1996–1999 Adjunct Assistant Professor, Department of Geography and Environmental Studies, University of Colorado, Colorado Springs, Colorado.

3. PUBLICATIONS

3.1 Dissertation

1. Ph.D. Dissertation, 2003, University of Colorado, Denver: “The potential for the emergence of dengue fever along the Arizona, U.S./Sonora, MX border.” Advisor: Craig R. Janes.

3.2 Refereed Journal Articles

- * denotes senior author
- ** denotes co-first author

1. Enriquez, A.J., K. Berry, M. del Pilar Fernandez, N. Gregory, K. C. Ernst, **M. H. Hayden**, M. Diuk-Wasser. 2024. Simple Stated Preference Questions Can Enhance Transdisciplinary Projects: Linking Perceived Risks With Willingness to Spray and Pay. *Environ Resource Econ*. <https://doi.org/10.1007/s10640-024-00923-5>
2. Tamari, N., K. C. Ernst, A. J. Enriquez, M. A. Diuk-Wasser, M. P. Fernandez, K. Berry, and **M. H. Hayden***. 2024. Urban tick exposure on Staten Island is higher in pet owners. *PLOS ONE* (In press)
3. Ernst, K. C., P. Fernandez, M. Diuk-Wasser, A. Enriquez, K. Berry, and **M. H. Hayden***. 2024. Contrasting perceptions, knowledge, and actions around Lyme disease in an emerging urban area and an endemic area for Lyme disease in the Northeastern United States. *American Journal of Tropical Medicine and Hygiene*. (in press)
4. Crank, P. J., C. R. O’Lenick, A. Banissadi, D. J. Sailor, O. Wilhelmi, **M. Hayden**. 2024. Socio-demographic determinants of extreme heat and ozone risk among older adults in three Sun Belt cities. *Journal of Gerontology: Medical Sciences*. <https://doi.org/10.1093/gerona/glae164>
5. Pérez-Guerra, C.L., C. Rosado-Santiago, S. A. Ramos, K. M. Marrero-Santos, G. González-Zeno, S. K. Partridge, V. Rivera-Amill, G. Paz-Bailey, L. Sánchez-González, and **M. H. Hayden***. 2024. Acceptability of emergent *Aedes aegypti* vector control methods in Ponce, Puerto Rico: A qualitative assessment. *PloS Global Public Health*. <https://doi.org/10.1371/journal.pgph.0002744>
6. **Hayden, M.H.**, P.J. Schramm, C.B. Beard, J.E. Bell, A.S. Bernstein, A. Bieniek-Tobasco, N. Cooley, M. Diuk-Wasser, Michael K. Dorsey, K.L. Ebi, K.C. Ernst,

- M.E. Gorris, P.D. Howe, A.S. Khan, C. Lefthand-Begay, J. Maldonado, S. Saha, F. Shafiei, A. Vaidyanathan, and O.V. Wilhelmi, 2023: Ch. 15. Human health. In: *Fifth National Climate Assessment*. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. <https://doi.org/10.7930/NCA5.2023.CH15>
7. Ernst, K.C., A.R. Crimmins, S. Anenberg, **M.H. Hayden**, B.O. Hoppe, L.J. Mickley, D.E. Peck, H.J. Tanana, and J.J. West, 2023: Focus on COVID-19 and climate change. In: *Fifth National Climate Assessment*. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. <https://doi.org/10.7930/NCA5.2023.F3>
 8. Apangu, T., G. Candini, J. Abaru, B. Candia, F. J. Okoth, L. A. Atiku, K. S. Griffith, **M. H. Hayden**, E. Zielinski-Gutierrez, A. M. Schwartz, D. W. McCormick, P. S. Mead, & K. J. Kugeler. 2023. Engagement with Traditional Healers for Early Detection of Plague in Uganda. *American Journal of Tropical Medicine and Hygiene*. <https://doi.org/10.4269/ajtmh.23-0101>
 9. Coalson, J.E., D.M. Richard. **M.H. Hayden**, J. Townsend, D. Damian, K. Smith, A. Monaghan, K.C. Ernst. 2023. *Aedes aegypti* abundance in urban neighborhoods of Maricopa County, Arizona is linked to increasing socioeconomic status and tree cover. *Parasites and Vectors* DOI: [10.1186/s13071-023-05966-z](https://doi.org/10.1186/s13071-023-05966-z)
 10. Ernst, K., K. Walker, L. Castro-Luque, C. Schmidt, T. Joy, M. Brophy, P. Reyes-Castro, R.E. Díaz-Caravantes, M. Gameros, **M. Hayden**, et al. 2023. Differences in Longevity and Temperature-Driven Extrinsic Incubation Period Correlate with Varying Dengue Risk in the Arizona–Sonora Desert Region. *Viruses*. <https://doi.org/10.3390/v15040851>
 11. Howe, P. D., O. V. Wilhelmi, **M. H. Hayden**, C. R. O’Lenick. 2023. Geographic and demographic variation in worry about extreme heat and COVID-19 risk in summer 2020. *Journal of Applied Geography*. <https://doi.org/10.1016/j.apgeog.2023.102876>
 12. Bandzuh J. T., K.C. Ernst, J. K. L. Gunn, S. Pandaranga, L. R. K. Yowi, S. Hobgen, K. R. Cavanaugh, R. Y. Kalaway, N. R. J. Kalunga, M. F. Killa, U. H. Ara, C. K. Uejio, and **M. H. Hayden***. 2022. Knowledge, attitudes, and practices of *Anopheles* mosquito control through insecticide treated nets and community-based health programs to prevent malaria in East Sumba Island, Indonesia. *PLOS Global Public Health* 2(9): e0000241. <https://doi.org/10.1371/journal.pgph.0000241>
 13. Fernandez, M. P., K. C. Ernst, M. B. Gebbiena, K. Berry, M. A. Diuk-Wasser, and **M. H. Hayden***. 2022. Outdoor activity associated with higher self-reported emotional well-being during COVID-19. *EcoHealth* DOI: [10.1007/s10393-022-01598-4](https://doi.org/10.1007/s10393-022-01598-4)
 14. Madera-Garcia, V., J. E.Coalson, M. Subelj, M. L. Bell, **M. H. Hayden**, M. Agawo, M, S. Munga, K. C. Ernst. 2022. Self-Reported Symptoms at Last Febrile Illness as a Predictor of Treatment-Seeking in Western Kenya: a cross-sectional study. *American Journal of Tropical Medicine and Hygiene* DOI: <https://doi.org/10.4269/ajtmh.21-0447>

15. Anderson, E. J., K. Ernst, D. O. Garcia, E. Lopez, K. Pogreba Brown, E. Austhof, D. Carr McCuin, **M. H. Hayden**, M. P. Koss. 2022. Knowledge of Sexual Transmission of Zika Virus Among Women Who Are Pregnant or Intend to Become Pregnant, Arizona, 2017. *Public Health Reports* 137 (3), 488-497
16. Anderson, E. J., J. E. Coalson, M. Agawo, S. Munga, **M. Hayden**, E. M. Santos, A. C. Little, N. Tamari, K. Ernst. 2022. Factors related to long-lasting insecticidal net (LLIN) use during travel in western Kenya: A descriptive analysis. *Travel Medicine and Infectious Disease*. <https://doi.org/10.1016/j.tmaid.2022.102291>
17. Wilhelmi, O. V., P. D. Howe, **M. H. Hayden**, C. R. O'Lenick. 2021. Compounding hazards and intersecting vulnerabilities: experiences and responses to extreme heat during COVID-19. *Environ. Res. Lett.* **16** 084060.
18. Coalson, J. E., E. J. Anderson, E. M. Santos, V. Madera Garcia, J. K. Romine, B. Dominguez, D. M. Richard, A. C. Little, **M. H. Hayden**, K. C. Ernst. 2021. The complex epidemiologic relationship between flooding events and human outbreaks of mosquito-borne diseases: a scoping review. *Environmental Health Perspectives* <https://doi.org/10.1289/EHP8887>
19. O'Lenick, C. R., A. Banjassadi, R. Michael, A. Monaghan, J. Boehnert, X. Yu, **M. H. Hayden**, C. Wiedinmyer, K. Zhang, P. J. Crank, J. Heusinger, P. Hoel, D. J. Sailor, O. V. Wilhelmi. 2020. A case-crossover analysis of indoor heat exposure on mortality and hospitalizations among the elderly in Houston, Texas. *Environmental Health Perspectives*. <https://doi.org/10.1289/EHP6340>
20. Reyes-Castro, P. A., K. C. Ernst, K. R. Walker, **M. H. Hayden**, G. Alvarez-Hernandez. 2020. Knowledge, attitudes, and practices related to Rocky Mountain spotted fever in Hermosillo, México. *American Journal of Tropical Medicine and Hygiene*. <https://doi.org/10.4269/ajtmh.20-0181>
21. Santos, E.M., J. E. Coalson, S. Munga, M. Agawo, E. T. Jacobs, Y. C. Klimentidis, **M. H. Hayden**, K. C. Ernst. 2020. "After those nets are torn, most people use them for other purposes": an examination of alternative bed net use in western Kenya. *Malaria Journal* **19**, 272. <https://doi.org/10.1186/s12936-020-03342-1>
22. Rohat, G., A. Monaghan, **M. H. Hayden**, S. J. Ryan, E. Charriere, & O. V. Wilhelmi, 2020. Intersecting vulnerabilities: Climatic and demographic contributions to future population exposure to Aedes-borne viruses in the United States. *Environmental Research Letters*. 15 084046
23. Buchwald, A. G., **M. H. Hayden**, S. K. Dadzie, S. H. Paull, E. J. Carlton. 2020. Aedes-borne disease outbreaks in West Africa: A call for enhanced surveillance. *Acta Tropica*. <https://doi.org/10.1016/j.actatropica.2020.105468>
24. Coalson, J.E., E. M. Santos, A. C. Little, E. J. Anderson, N. Stroup, M. Agawo, **M. Hayden**, S. Munga, K. C. Ernst. 2020. Insufficient Ratio of Long-Lasting Insecticidal Nets to Household Members Limited Universal Usage in Western Kenya: A 2015 Cross-Sectional Study. *American Journal of Tropical Medicine and Hygiene*. DOI: <https://doi.org/10.4269/ajtmh.19-0119>
25. Mohammed, H., **M. H. Hayden**, E. Lee, L. M. Santiago, R. C. Krecek, F. Revan, E. Hunsperger. 2019. Dengue in the Campus Community of an Overseas American

- University: A Cross-Sectional Study. *Journal of Infection in Developing Countries*. DOI: <https://doi.org/10.3855/jidc.10701>
26. O'Lenick, C. R., O. V. Wilhelmi, R. Michael, **M. H. Hayden**, A. Baniassadi, C. Wiedinmyer, A. Monaghan, P. J. Crank, D. J. Sailor. 2019. Urban heat and air pollution: a framework for integrating population vulnerability and indoor exposure in health risk analyses. *Science of the Total Environment*. DOI: <https://doi.org/10.1016/j.scitotenv.2019.01.002>
 27. **Hayden, M.**, 2019. "Plague: Return of an Old Foe". In: *Climate Information for Public Health Action*. Routledge, New York, N.Y.
 28. Monaghan, A. J., C. A. Schmidt, **M. H. Hayden**, K. A. Smith, M. H. Reiskind, R. Cabell, and K. C. Ernst, 2018. A simple model to predict the potential abundance of *Aedes aegypti* mosquitoes one month in advance. *American Journal of Tropical Medicine and Hygiene*. DOI: <https://doi.org/10.4269/ajtmh.17-0860>
 29. Michael, R., C. R. O'Lenick, A. Monaghan, O. Wilhelmi, C. Wiedinmyer, **M. Hayden**, and M. Estes. 2018. Application of geostatistical approaches to predict the spatio-temporal distribution of summer ozone in Houston, Texas. *Journal of Exposure Science and Environmental Epidemiology*. DOI: <https://doi.org/10.1038/s41370-018-0091-4>
 30. Ernst, K. C., E. Barrett, Accelerate to Equal Kenyan and Indonesian Working Groups, E. Hoswell, and **M. H. Hayden***. 2018. Increasing women's engagement in vector control: a report from the Accelerate To Equal project workshops. *Malaria Journal*. DOI: <https://doi.org/10.1186/s12936-018-2477-0>
 31. **Hayden, M. H.**, E. Barrett, G. Bernard, E. N. Toko, M. Agawo, A. M. Okello, J. K. L. Gunn, and K. C. Ernst. 2018. Barriers and Opportunities to Advancing Women in Leadership Roles in Vector Control: Perspectives from a Stakeholder Survey. *American Journal of Tropical Medicine and Hygiene*. DOI: <https://doi.org/10.4269/ajtmh.17-0693>
 32. Asaolu, I. O., H. Alaofè, J. K. L. Gunn, A. K. Adu, A. J. Monroy, J. E. Ehiri, **M. H. Hayden**, and K. C. Ernst. 2018. Measuring women's empowerment in Sub-Saharan Africa: Exploratory and Confirmatory Factor Analyses of the demographic and health surveys. *Frontiers in Psychology*, vol. 9, no. 994. DOI: 10.3389/fpsyg.2018.00994
 33. Gunn J. K. L., K. C. Ernst, K. E. Center, K. Bischoff, A. V. Nunez, M. Huynh, A. Okello, and **M. H. Hayden***. 2018. Current strategies and successes in engaging women in vector control: a systematic review. *British Medical Journal. Global Health* DOI: 3:e000366.
 34. Monaghan, A. J., K. M. Sampson, D. F. Steinhoff, K. C. Ernst, K. L. Ebi, B. Jones, and **M. H. Hayden***, 2018: The potential impacts of 21st century climatic and population changes on human exposure to the virus vector mosquito *Aedes aegypti*. *Climatic Change*, Vol. 146, Issue 3–4, pp 487–500.
 35. Johnson, T. L., U. Haque, A.J. Monaghan, L. Eisen, M.B. Hahn, **M.H. Hayden**, H.M. Savage, J. McAllister, J-P. Mutebi, and R. J. Eisen. 2017. Modeling the environmental suitability for *Aedes (Stegomyia) aegypti* and *Aedes (Stegomyia) albopictus* (Diptera: Culicidae) in the contiguous United States. *Journal of Medical Entomology*. DOI: <https://doi.org/10.1093/jme/tjx163>

36. **Hayden, M.H.**, O.V. Wilhelmi, D. Banerjee, T. Greasby, J.L. Cavanaugh, V. Nepal, J. Boehnert, S. Sain, C. Burghardt, S. Gower, 2017. Adaptive Capacity to Extreme Heat: Results from a Household Survey in Houston, Texas. *Weather, Climate and Society*, DOI: <https://journals.ametsoc.org/doi/10.1175/WCAS-D-16-0125.1>
37. Walker, K. R., D. Williamson, Y. Carriere, P. Reyes Castro, S. Haenchen, **M. Hayden**, E. Jeffrey Gutierrez, K. C. Ernst, 2017. Socioeconomic and human behavioral factors associated with *Aedes aegypti* (Diptera: Culicidae) immature habitat in Tucson, AZ. *J Med. Ent.*, tjt011. doi: 10.1093/jme/tjt011.
38. Reyes-Castro, P. L. Castro-Luque, R. Diaz-Caravantes, K. Walker, **M. Hayden**, K. Ernst, 2017. Outdoor Spatial Spraying Against Dengue: A False Sense of Security Among Inhabitants of Hermosillo, Mexico. *PLOS Neglected Tropical Diseases*. DOI: 10.1371/journal.pntd.0005611
39. Hagar, Y., **M. Hayden**, C. Wiedinmyer, V. Dukic, 2017: Comparison of models analyzing a small number of observed meningitis cases in Navrongo, Ghana. *Journal of Agricultural, Biological, and Environmental Statistics*. DOI: 10.1007/s13253-016-0270-5
40. Bauman, A., K. Ernst, **M. Hayden**, D. J. Roe, R. Murray M. Agawo S. Munga, E. Schmahl D. Taren, 2017: Assessing community health: an innovative tool for measuring height and length. *Journal of Tropical Pediatrics*. fmx046. DOI: 10.1093/tropej/fmx046
41. Donner, A., A. Belemvire, B. Johns, K. Mangam, E. Fiekowsky, J. Gunn, **M. Hayden**, K. Ernst. 2017. Equal Opportunity, Equal Work: Increasing Women's Participation in the US President's Malaria Initiative Africa Indoor Residual Spraying Project. *Global Health: Science and Practice* 5 (4), 603-616
42. Zaitchik, B. F., **M. H. Hayden**, D. A. C. Villela, C. C. Lord, U. D. Kitron, J. J. Carvajal, D. C. P. Câmara, I. C. dos Reis, 2016: Climate information for arbovirus risk monitoring: opportunities and challenges. *BAMS*, DOI: <http://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-16-0016.1>
43. Springer Y.P., D. Hoekman, P. T. J. Johnson, P. A. Duffy, R. A. Hufft, D. T. Barnett, B. F. Allan, B. R. Amman, C. M. Barker, R. Barrera, C. B. Beard, L. Beati, M. Begon, M. S. Blackmore, W. E. Bradshaw, D. Brisson, C. H. Calisher, J. E. Childs, M. A. Diuk-Wasser, R. J. Douglass, R. J. Eisen, D. H. Foley, J. E. Foley, H. D. Gaff, S. L. Gardner, H. S. Ginsberg, G. E. Glass, S. A. Hamer, **M. H. Hayden**, B. Hjelle, C. M. Holzapfel, S. A. Juliano, L. D. Kramer, A. J. Kuenzi, S. L. LaDeau, T. P. Livdahl, J. N. Mills, C. G. Moore, S. Morand, R. S. Nasci, N. H. Ogden, R. S. Ostfeld, R. R. Parmenter, J. Piesman, W. K. Reisen, H. M. Savage, D. E. Sonenshine, A. Swei and M. J. Yabsley, 2016: Tick-, mosquito-, and rodent-borne parasite sampling designs for the *National Ecological Observatory Network*. *Ecosphere* 7(5):e01271. 10.1002/ecs2.1271
44. Dickinson K. L., **M. H. Hayden**, S. Haenchen, A. J. Monaghan, K. Walker, and K. Ernst, 2016: Willingness to pay for mosquito control in Key West, Florida and Tucson, Arizona. *Am. J. Trop. Med. Hyg.* **94**:775-779.
45. Wilhelmi, O. V. and **M. H. Hayden**, 2016: "Reducing Vulnerability to Extreme Heat through Interdisciplinary Research and Stakeholder Engagement". In: Extreme

Weather, Health and Communities: An Interdisciplinary Approach to Engagement Strategies. Springer International Publishing, Cham, Switzerland.

46. Conlon, K., A. Monaghan, **M. Hayden**, O. Wilhelmi, 2016: Potential Impacts of Future Warming and Land Use Changes on Intra-Urban Heat Exposure in Houston, Texas. *PLoS ONE* **11(2)**: e0148890. doi:10.1371/journal.pone.0148890.
47. Monaghan, A. J., C. W. Morin, D. F. Steinhoff, O. Wilhelmi, **M. Hayden**, D. A. Quattrochi, M. Reiskind, A. L. Lloyd, K. Smith, C. A. Schmidt, P. E. Scalf, K. Ernst, 2016: On the Seasonal Occurrence and Abundance of the Zika Virus Vector Mosquito *Aedes Aegypti* in the Contiguous United States. *PLOS Currents Outbreaks*. Edition 1. doi: 10.1371/currents.outbreaks.50dfc7f46798675fc63e7d7da563da76.
48. Haenchen, S. D., **M. H. Hayden**, K. L. Dickinson, K. Walker, E. E. Jacobs, H. E. Brown, J. K. L. Gunn, L. N. Kohler, K. C. Ernst, 2016: Mosquito Avoidance Practices and Knowledge of Arboviral Diseases in Cities with Differing Recent History of Disease. *American Journal of Tropical Medicine and Hygiene*. 95(4) pp. 945–953.
49. Ernst, K. C., **M. H. Hayden**, H. Olsen, J. Cavanaugh, I. Ruberto, M. O. Agawo, S. Munga, 2016: Comparing ownership and use of bed nets at two sites with differential malaria transmission in western Kenya. *Malaria Journal*. 15:217
50. Steinhoff, D.F., A.J. Monaghan, L. Eisen, M.J. Barlage, T.M. Hopson, I. Tarakidzwa, K. Ortiz-Rosario, S. Lozano-Fuentes, **M.H. Hayden**, P.E. Bieringer, and C.M. Welsh-Rodriguez, 2016: WATCH'EM: A Weather-Driven Energy Balance Model for Determining Water Height and Temperature in Container Habitats for *Aedes aegypti*. *Earth Interactions*, **20**, 1-31. doi:10.1175/EI-D-15-0048.1.
51. Ernst, K. C., K. R. Walker, P. Reyes-Castro, T. Joy, L. Castro, R. E. Diaz-Cervantes, M. Gameros, S. Haenchen, **M. H. Hayden**, A. Monaghan, E. Gutierrez-Jeffrey, Y. Carriere, and M. Riehle, 2017: *Aedes aegypti* longevity differences may partially explain differential emergence of dengue in two cities in Sonora, Mexico. *Journal of Medical Entomology*. Jan; 54(1): 204–211
52. **Hayden, M.H.**, A. J. Monaghan, T. Apangu, K. S. Griffith, P. S. Mead, C. B. Beard, J. N. Borchert, K. Boegler, E. Zielinski-Gutierrez, S. Acayo, R. Acidri, S. M. Moore, K. MacMillan, L. A. Atiku, J. T. Mpanga, R. E. Enscore, K. L. Gage, and R. J. Eisen, 2016: Mapping and modeling plague in Uganda to improve health outcomes. *WHO-WMO Climate Services for Health: Improving public health decision-making in a new climate*. Eds. J.Shumake-Guillemot and L.Fernandez-Montoya. Geneva, Switzerland.
53. Arellano, C., L. Castro, R. Diaz, K. Ernst, **M. Hayden**, P. Reyes-Castro, 2015: Knowledge and beliefs about dengue transmission and their relationship with prevention practices in Hermosillo, Sonora, Mexico: A qualitative assessment. *Frontiers in Public Health*. DOI: <https://www.frontiersin.org/articles/10.3389/fpubh.2015.00142>
54. Morin, C. W., A. J. Monaghan, **M. H. Hayden**, R. Barrera, and K. C. Ernst, 2015: Meteorologically Driven Simulations of Dengue Epidemics in San Juan, PR. *PLoS Neg. Trop. Dis.*, **9**, e0004002. doi:10.1371/journal.pntd.0004002.

55. **Hayden, M. H.**, J. L. Cavanaugh, C. Tittel, M. Butterworth, S. Haenchen, K. Dickinson, A. J. Monaghan, and K. C. Ernst, 2015: Post-outbreak review: dengue preparedness and response in Key West, Florida. *Am. J. Trop. Med. Hyg.*, **93**, 397-400.
56. Dickinson, K. L., E. Kanyomse, R. Piedrahita, E. Coffey, I. Rivera, J. Adoctor, R. Aligiria, D. Muvandimwe, M. Dove, V. Dukic, **M. Hayden**, D. Diaz-Sanchez, V. Adoctor, D. Anaseba, Y. Slichter, N. Masson, A.J. Monaghan, A. Titiati, D. Steinhoff, Y-Y. Hsu, R. Kaspar, B. Brooks, A. Hodgson, M. Hannigan, A.R. Oduro and C. Wiedinmyer, 2015: Research on Emissions, Air quality, Climate, and Cooking Technologies in Northern Ghana (REACCTING): Study Rationale and Protocol. *BMC Public Health*, 15, doi:10.1186/s12889-015-1414-1.
57. Ernst, K. C., S. Haenchen, K. Dickinson, M. S. Doyle, K. Walker, A. J. Monaghan, and **M. H. Hayden***, 2015: Awareness and support of release of genetically modified "sterile" mosquitoes, Key West, Florida, USA. *Emerg. Inf. Dis.*, **21**, doi:10.3201/eid2102.141035.
58. Hahn, M. B., A. J. Monaghan, **M. H. Hayden**, R. J. Eisen, M. J. Delorey, N. P. Lindsey, R. S. Nasci, and M. Fischer, 2015: Meteorological conditions associated with increased incidence of West Nile virus disease in the United States, 2004-2012. *Am. J. Trop. Med. Hyg.*, **92**, 1013-1022.
59. Heaton, M. J., S. R. Sain, A. J. Monaghan, O. V. Wilhelmi, and **M. H. Hayden**, 2015: An Analysis of an Incomplete Marked Point Pattern of Heat-Related 911 Calls. *J. Am. Statistical Assoc.*, **110**, 123-125. doi:10.1080/01621459.2014.983229.
60. Pandya, R., A. Hodgson, **M. Hayden**, P. Akweongo, T. Hopson, A. Adams Forgor, T. Yoksas, M. Dalaba, V. Dukic, R. Mera, A. Dumont, K. McCormack, D. Anaseba, T. Awine, J. Boehnert, G. Nyaaba, A. Laing, F. Semazzi, 2014: Using Weather Forecasts to Help Manage Meningitis. *Bull. Amer. Meteor. Society* **96(1)**:103-115.
61. Luber, G., K. Knowlton, J. Balbus, H. Frumkin, **M. Hayden**, J. Hess, M. McGeehin, N. Sheats, L. Backer, C. B. Beard, K. L. Ebi, E. Maibach, R. S. Ostfeld, C. Wiedinmyer, E. Zielinski-Gutiérrez, and L. Ziska, 2014: Ch. 9: Human Health. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 220–256. doi:10.7930/J0PN93H5
62. Uejio, C. K., **M. H. Hayden**, E. Zielinski-Gutierrez, J. L. Robles Lopez, R. Barrera, M. Amador, G. Thompson, and S. H. Waterman, 2014: Biological Control of Mosquitoes in Scrap Tires in Brownsville, TX US and Matamoros, TM MX. *Journal of American Mosquito Control Association*, **30(2)**, 130-135
63. Moreno-Madrinan, M. J., W. J. Crosson, L. Eisen, S. M. Estes, M. G. Estes Jr., **M. Hayden**, S. N. Hemmings, D. E. Irwin, S. Lozano-Fuentes, A.J. Monaghan, D. Quattrochi, C. M. Welsh-Rodriguez, and E. Zielinski-Gutierrez, 2014: Correlating Remote Sensing Data with Abundance of Pupae of the Dengue Virus Mosquito Vector, *Aedes aegypti*, in Central Mexico. *Int. J. Geo-Info.*, **3**, 732-749. doi:10.3390/ijgi3020732.

64. Jancloes, M., M. Thomson, M. Manez, C. Hewitt, C. Corvalan, T. Dinku, R. Lowe, and **M. Hayden**, 2014: Climate Services to Improve Public Health. *Int. J. Environ. Res. Public Health*, **11(5)**, 4555-4559; doi:[10.3390/ijerph110504555](https://doi.org/10.3390/ijerph110504555)
65. Lozano-Fuentes, S., C. Welsh-Rodriguez, A. J. Monaghan, D.F. Steinhoff, C. Ochoa-Martinez, B. Tapia Santos, **M. H. Hayden**, and L. Eisen, 2014: Temporal Changes in Abundance of *Aedes (Stegomyia) aegypti* and *Aedes (Ochlerotatus) epactius* in High-Elevation Communities in México. *J. Med. Entomol.*, doi:10.1603/ME14015.
66. Abdussalam, A.F., A. J. Monaghan, D. H. Steinhoff, V. M. Dukic, **M. H. Hayden**, T. M. Hopson, J. Thornes, and G. C. Leckebusch, 2014: The impact of climate change on meningitis in northwest Nigeria: an assessment using CMIP5 climate model simulations. *Wea. Clim. Soc.*, **6**, doi:10.1175/WCAS-D-13-00068.1.
67. Eisen, L. S., A. J. Monaghan, S. Lozano-Fuentes, D. F. Steinhoff, **M. H. Hayden**, and P. E. Bieringer, 2014: The Impact of Temperature on the Bionomics of the Vector Mosquito *Aedes (Stegomyia) aegypti*, With Special Reference to the Cool Geographic Range Margins. *J. Med. Entomol.*, **41**, doi:10.1603/ME13214.
68. Heaton, M. J., S. R. Sain, T. A. Greasby, C. K. Uejio, **M. H. Hayden**, A. J. Monaghan, J. Boehnert, K. Sampson, D. Banerjee, V. Nepal, and O. V. Wilhelmi, 2014: Characterizing Urban Vulnerability to Heat Stress using a Spatially Varying Coefficient Model. *Spatio-temporal Epidemiology*, **8**, 23-33, doi:10.1016/j.sste.2014.01.002.
69. Abdussalam, A. F., A. J. Monaghan, V. M. Dukic, **M. H. Hayden**, T. M. Hopson, G. C. Leckebusch, and J. Thornes, 2014: Climate influences on interannual variability of meningitis incidence in northwest Nigeria. *Wea. Clim. Soc.*, **6**, 62-76. DOI:10.1175/WCAS-D-13-00004.1
70. Akweongo, P., M. A. Dalaba, **M. H. Hayden**, T. Awine, G. N. Nyaaba, D. Anaseba, A. Hodgson, and R. Pandya, 2013: The economic burden of Meningitis to households in the Kassena-Nankana District of Northern Ghana. *PLOS ONE* <http://dx.plos.org/10.1371/journal.pone.0079880>
71. **Hayden, M. H.**, M. Dalaba, P. Akweongo, T. Awine, G. Nyaaba, D. Anaseba, J. Pelzman, A. Hodgson, and R. Pandya, 2013: Knowledge, Attitudes and Practices Related to Meningitis in Northern Ghana. *American Journal of Tropical Medicine and Hygiene* **89**:265-270.
72. de Sherbinin, A., Wilhelmi, O and **Hayden, M.**, 2013: Exposure to Heat Stress in Urban Environments: Current Status and Future Prospects in a Changing Climate. In: *Ecologies and Politics of Health*, edited by Brian King and Kelley Crews, Routledge Press Chapter 12:219-238.
73. Dukic, V., and **M.H. Hayden ****, A. Forgor-Adams, T. Hopson, P. Akweongo, A. Hodgson, A. Monaghan, C. Weidinmyer, T. Yoksas, M. Thomson, S. Tratska, and R. Pandya, 2012: The role of weather in meningitis outbreaks in Navrongo, Ghana: A Generalized Additive Modeling approach. *Journal of Agricultural, Biological and Environmental Statistics* **17(3)**: 442-460.
74. Monaghan, A. J., K. MacMillan, S. M. Moore, P. S. Mead, **M. H. Hayden**, and R. J. Eisen, 2012: A regional climatology of West Nile, Uganda, to support human plague modeling. *J. Appl. Meteor. Climatol.*, **51**, 1201-1221.

75. Lozano-Fuentes, S., **M. H. Hayden**, C. Welsh-Rodriguez, C. Ochoa-Martinez, B. Tapia-Santos, K. C. Kobylinski, C. K. Uejio, E. Zielinski-Gutierrez, L. Delle-Monache, A. J. Monaghan, D. F. Steinhoff, and L. Eisen, 2012: Dengue virus mosquito vectors at high elevation in Mexico. *Am. J. Trop. Med. Hyg.*, **87**, 902-909.
76. Lozano-Fuentes, S., C. Welsh-Rodriguez, **M. H. Hayden**, B. Tapia-Santos, C. Ochoa-Martinez, K. C. Kobylinski, C. K. Uejio, E. Zielinski-Gutierrez, L. Delle-Monache, A. J. Monaghan, D. F. Steinhoff, and L. Eisen, 2012: *Aedes (Ochlerotatus) epactius* Dyar & Knab along an elevation and climate gradient in Veracruz and Puebla States, México. *J. Medical Entomology*, **49**, 1244-1253.
77. **Hayden, M.H.**, H. Brenkert-Smith, O. Wilhelmi, 2011: Differential adaptive capacity to extreme heat: A Phoenix, AZ. case study. *Weather, Climate and Society* **3(4)**: 269-280.
78. **Hayden, M.H.**, C. Uejio, K. Walker, F. Ramberg, R. Moreno-Sanchez, C. Rosales, M. Gameros, L. O. Mearns, E. Zielinski-Gutierrez, and C. R. Janes, 2010: Microclimate and Human Ecological Factors in the Divergent Ecology of *Aedes aegypti* along the Arizona, U.S./Sonora, MX Border. *EcoHealth* **7(1)**: 64-77. doi: 0.1007/s10393-010-0288-z
79. Wilhelmi, O. V. and **M. H. Hayden**, 2010: Connecting people and place: a new framework for reducing urban vulnerability to extreme heat. *Environ. Res. Lett.* **5** 014021. doi: 10.1088/1748-9326/5/1/014021
80. Morss, R. E., and **M. H. Hayden**, 2010: Storm surge and “certain death”: Interviews with Texas coastal residents following Hurricane Ike. *Weather, Climate and Society* **2(3)**:172-187
81. Schultz, D. M., E. C. Gruntfest, **M. H. Hayden**, C. C. Benight, S. Drobot, and L. R. Barnes, 2010: Decision Making by Austin, Texas Residents in Hypothetical Tornado Scenarios. *Weather, Climate and Society*. **2(3)**: 247-252
82. Barnes, L. R., D. M. Schultz, E. C. Gruntfest, **M. H. Hayden**, C. C. Benight, 2009: Corrigendum: False Alarm Rate or False Alarm Ratio? *Weather and Forecasting*. **22(5)**:1140-1147
83. Ramos, M., H. Mohammad, E. Zielinski-Gutierrez, **M. H. Hayden**, J. L. Robles Lopez, M. Fournier, A. Rodríguez Trujillo, R. Burton, J. Brunkard, L. Anaya-Lopez, A. Abell, P. Kuri-Morales, B. Smith, J. Munoz, S. Waterman, and the Dengue Serosurvey Working Group, 2008: Epidemic Dengue and Dengue Hemorrhagic Fever at the Texas-Mexico Border: Results of a household-based seroepidemiological survey, December 2005. *American Journal of Tropical Medicine and Hygiene* **78(3)**: 364-369.
84. Benight, C., E. Gruntfest, **M. H. Hayden**, S. Drobot, 2007: Trauma and Short-Fuse Weather Warning Perceptions. *Environmental Hazards* **7(3)**: 220-226.
85. **Hayden, M. H.**, S. Drobot, S. Radil, C. Benight, E. C. Gruntfest, and L. R. Barnes LR, 2007: Information Sources for Flash Flood Warnings in Denver, CO and Austin, TX. *Environmental Hazards* **7(3)**: 211-219.
86. Moreno-Sanchez, R., G. Anderson, J. Cruz, and **M. H. Hayden**, 2007: The potential for the use of Open Source Software and Open Specifications in creating web-based

- cross-border health spatial information systems. *The International Journal of Geographical Information Science* 21(10): 1135-1163.
87. Barnes, L.R., E. C. Grunfest, **M. H. Hayden**, D. M. Schultz, and C. Benight, 2007: False Alarms and Close Calls: A Conceptual Model of Warning Accuracy. *Weather and Forecasting*, 22(5):1140-1147.
 88. Moreno, R., **M. H. Hayden**, C. Janes, and G. Anderson, 2006: A web-based multimedia spatial information system to document *Aedes aegypti* breeding sites and dengue fever risk along the US-Mexico border. *Health and Place* 12(4):715-27.
 89. Zielinski-Gutierrez, E.C., and **M. H. Hayden**, 2006: A model for defining West Nile virus risk perception based on ecology and proximity. *EcoHealth* 3(1): 28-34.
 90. Spiegel, J., S. Bennett, L. Hattersley, **M. H. Hayden**, P. Kittayapong, S. Nalim, D. Wang, E. Zielinski-Gutierrez, and D. Gubler, 2005: Barriers and bridges to prevention and control of dengue: the need for a social-ecological approach. *EcoHealth* 2(4): 273-290.

3.3 Other Refereed Publications

1. Beard, C.B., R. J. Eisen, C. M. Barker, J. F. Garofalo, M. Hahn, **M. H. Hayden**, A. J. Monaghan, N. H. Ogden, P. J. Schramm, 2016: Vectorborne Diseases. In, USGCRP Climate and Health Assessment. DOI: <https://health2016.globalchange.gov/downloads>
2. Jones, J.M., B. Lopez, L. Adams, et al., 2014: Binational Dengue Outbreak Along the United States–Mexico Border — Yuma County, Arizona, and Sonora, Mexico, *Morbidity and Mortality Weekly Report*. 2016;65:495–499. DOI: <http://dx.doi.org/10.15585/mmwr.mm6519a3>
3. Abell, A., B. Smith, M. Fournier, et al., 2007: Dengue Hemorrhagic Fever - U.S. - Mexico Border, *Morbidity and Mortality Weekly Report*. Centers for Disease Control and Prevention. August 10, 56(31);785-78

4. PRESENTATIONS

Invited Talks

1. **Hayden, M. US Department of the Treasury.** Invited speaker. April 2024. “The 5th National Climate Assessment; Ch.15: Human Health”.
2. **Hayden, M. University of Colorado.** Invited speaker. Denver, CO. March 2024. “The 5th National Climate Assessment; Ch.15: Human Health”.
3. **Hayden M. U.S. Senate Environment and Public Works Committee.** Invited briefing. January 2024. “The 5th National Climate Assessment; Ch.15: Human Health”.
4. **Hayden M. University of Arizona. Resilience Informatics Workshop.** Invited speaker. Tucson, AZ. November 2023. “The 5th National Climate Assessment; Ch.15: Human Health”.
5. **Hayden M. The White House Fifth National Climate Assessment Rollout.** Invited panelist. Washington, D.C. November 2023.

6. **Hayden M. American Meteorological Society.** Invited speaker. Denver, CO. January 2023. “Meningitis in Ghana: From Early Warning to Intervention”.
7. **Hayden M. University of Arizona.** Invited webinar. April 2022. “Climate and Health”.
8. **Hayden M. Florida State University.** Invited webinar. March 2022. “Climate and Health”.
9. **Hayden M. Lancet Planetary Health.** Invited webinar. October 2021. “The 5th National Climate Assessment”.
10. **Hayden M. Children’s Hospital Colorado.** Invited webinar. May 2021. “Climate Change and Human Health”.
11. **Hayden M. American Geophysical Union.** Invited webinar. Thriving Earth Exchange. April 2020. “COVID-19”.
12. **Hayden, M. World Health Organization.** Invited Keynote Speaker. Geneva, Switzerland. Roll Back Malaria Vector Control Working Group. January 2019. “Accelerate to Equal: Increasing the Involvement of Women in Vector Control”.
13. **Hayden M. American Geophysical Union.** Invited. Washington, D.C. December 2018. “Women in Vector Control: Propelling Communities to Action”.
14. **Hayden M. World Health Organization.** Invited. Geneva, Switzerland. June 2018. “Arboviruses and Risk of Urbanization”.
15. **Hayden M. Noguchi Medical Research Institute.** Invited. Accra, Ghana. October 2017. “Arboviruses in the Americas”.
16. **Hayden M. Ministry of Health.** Invited. Antananarivo, Madagascar. September 2017. “Enhancing Surveillance for Plague through Collaboration with Traditional Healers”.
17. **Hayden M. Escuela Superior Politecnica del Litoral (ESPOL).** Invited. Guayaquil, Ecuador. May 2017. “Emergence of Zika and Other Climate Sensitive Viruses in the Americas.”
18. **Hayden M. National Center for Atmospheric Research Explorer Series.** Invited. Boulder, CO. April 2017. “Emergence of Zika and Other Climate Sensitive Viruses in the Americas.”
19. **Hayden M. International Congress of Entomology.** Invited. Orlando, FL. September 2016. “Entomologist without Borders: Enhancing Surveillance for Plague in NW Uganda”.
20. **Hayden M. Aspen Global Change Institute.** Invited. Aspen, CO. September 2016. “Community Engagement at the Forefront of Vector Management in Puerto Rico.”
21. **Hayden M. IRI Health and Climate Meeting, Columbia University.** Invited. New York, NY. June 2016. “Enhancing Surveillance for Plague in NW Uganda”.
22. **Hayden M. GLOBE Annual Meeting.** Invited. Estes Park, CO July 2016. “Vector-borne Diseases”.

23. **Hayden M. Liverpool School of Tropical Medicine.** Invited. Liverpool, England. February 2016. “Weather, Climate and Health Research at the National Center for Atmospheric Research”.
24. **Hayden M. NIH-Fiocruz Climate and Arboviruses.** Invited. Manaus, Brazil. December 2015. “*Aedes aegypti* at the margins of transmission”.
25. **Hayden M. NIH-Fiocruz Climate and Arboviruses.** Invited. Manaus, Brazil. December 2015. “Knowledge, Attitudes and Practices Regarding Dengue in Four Communities in the Southern United States and Northern Mexico.”
26. **Hayden M. University of Florida.** Invited. Gainesville, FL. October 2015. “Enhancing Surveillance for Plague in NW Uganda”.
27. **Hayden M. University of Colorado School of Public Health Research Seminar.** Invited. Denver, Colorado. “Dengue Fever along the U.S.-MX Border”.
28. **Hayden M. ESPOL.** Invited. Guayaquil, Ecuador. August 2015. “Weather, Climate and Health Research at NCAR”.
29. **Hayden M. Rotary International Annual Meeting** Invited. Keystone, CO. April 2015. “Collaboration with Traditional Healers to Enhance Surveillance for Plague in NW Uganda”.
30. **Hayden M. Colorado State University Africa Center.** Invited. Fort Collins, CO. April 2015. “Collaboration with Traditional Healers to Enhance Surveillance for Plague in NW Uganda”.
31. **Hayden, M. University of Colorado School of Public Health.** Invited. Denver, Colorado. April 2015. “A Tale of Three Cities: Factors Related to Dengue Transmission in Different Ecological Settings”.
32. **Hayden, M and Wilhelmi O. University of Colorado at Denver. Department of Geography.** Invited. Denver, Colorado. March 2015. “Weather, Climate and Health Research at NCAR”.
33. **Hayden M. National Academy of Sciences.** Invited Panelist. Washington, DC. November 2014. Workshop on Modeling the Health Risks of Climate Change.
34. **Hayden M. Florida State University. Department of Geography.** Invited. Tallahassee, FL. September 2014. “Enhancing Surveillance for Plague in NW Uganda”.
35. **Hayden M. University of Colorado. Department of Health and Behavioral Sciences.** Invited. Denver, CO. September 2014. “Weather, Climate and Health Research at NCAR.”
36. **Hayden M. University of Colorado School of Public Health.** Invited. Denver, CO. May 2014. “Weather, Climate and Health Research at NCAR.”
37. **Hayden M. University of Colorado School of Public Health.** Invited. Denver, CO. April 2014. “Weather and Climate Related Health Impacts.”
38. **Hayden, M and O. Wilhelmi. University of Colorado at Denver. Department of Geography.** Invited. Denver, CO. March 2014. “Knowledge Integration at the Science-Policy Interface”.

39. **Hayden M. Ministerio de Salud Publica.** Invited. Quito, Ecuador. March 2014. “Weather, Climate and Health Research at the National Center for Atmospheric Research”.
40. **Hayden M. Instituto Nacional de Meteorologia e Hidrologia (INAMHI).** Invited. Guayaquil, Ecuador. March 2014. “Weather, Climate and Health Research at the Science-Policy Interface at NCAR”.
41. **Hayden M. Pontificia Universidad Catolica Ecuador (PUCE).** Invited. Quito, Ecuador. March 2014. “Weather, Climate and Health Research at the National Center for Atmospheric Research”.
42. **Hayden M. San Antonio Environmental Challenges: Opportunities in Resilience.** Invited. San Antonio, TX February 2014. “Reducing urban vulnerability to extreme heat: an integrated approach”.
43. **Hayden M. Mosquito and Vector Control Association of California.** Invited. San Diego, CA February 2014. “A Tale of Two Cities: Comparing Social and Behavioral Factors Related to Dengue Transmission: One With and One Without Recent Transmission”.
44. **Hayden M. NOAA Science on a Sphere webinar.** Invited. Boulder, CO. December 2013. “The dengue fever mosquito, *Ae. aegypti*, at high altitudes in Mexico”.
45. **Hayden M. International Conference on Climate Services 3.** Invited. Montego Bay, Jamaica, December 2013. “An Integrated Approach to Understanding Knowledge, Attitudes and Practices Surrounding Dengue in Emergent and Endemic Areas”.
46. **Hayden M. National Center for Atmospheric Research Adaptation Day.** Boulder, CO, November 2013. “The dengue vector mosquito *Aedes aegypti* at the margins: sensitivity of a coupled natural and human system to climate change.”
47. **Hayden, M. NASA GPM workshop.** Invited. Greenbelt, MD. November 2013. Panelist on Ecological Forecasting and Public Health. “The Weather, Climate and Health Program at NCAR: Using NASA Products for Public Health Applications.”
48. **Hayden M. American Public Health Association 141st annual meeting.** Invited. Boston, MA. November 2013. “The dengue vector mosquito *Aedes aegypti* at the margins: sensitivity of a coupled natural and human system to climate change.”
49. **Hayden M. Kenya Medical Research Institute.** Invited. Kisumu, Kenya. June 2013. “Weather, Climate and Health Research at the National Center for Atmospheric Research.”
50. **Hayden M. IAI Colloquium.** Quito, Ecuador. April 2013. Invited. “Understanding stakeholder knowledge, attitudes and practices surrounding mosquito control and dengue in emergent areas in the southern United States: a case study from Key West, FL”.
51. **Hayden M. University of Colorado at Boulder.** Invited. Boulder, CO April 2013. Collaboration with Traditional Healers to Enhance Surveillance for Plague in NW Uganda”.
52. **Hayden, M and O. Wilhelmi. University of Colorado at Denver.** Invited. Denver, CO. March 2013. “Knowledge Integration at the Science-Policy Interface”.

53. **Hayden M, A. Monaghan, O. Wilhelmi. Forum on the Integration of Climate Science and Infectious Disease.** Invited. Yale University, New Haven, CT. Jan. 2013. “Weather, Climate and Health Research at the National Center for Atmospheric Research”.
54. **Hayden, M. IAI Colloquium.** Invited. Santo Domingo, Dominican Republic. November 2012. “Critical Issues and Challenges in Integrated Assessments”.
55. **Hayden, M. IAI Colloquium.** Invited. Santo Domingo, Dominican Republic. November 2012. “Knowledge Integration in Climate and Health: Enhancing Surveillance for Plague in NW Uganda”.
56. **Hayden M. Science on Tap.** Colorado Springs, CO. Sept. 2012. “Weather and Witchdoctors: Enhancing Surveillance for Plague in NW Uganda.”
57. **Hayden M. Emory University.** Atlanta, GA. Sept. 2012. Invited. “Weather and Climate Related Health Impacts.”
58. **Hayden M. NCAR TOY workshop - Uncertainty in Climate Change Research: An Integrated Approach.** Boulder, CO. August 2012. “Challenges in Addressing Weather and Climate Sensitive Health Impacts”.
59. **Hayden M, A. Monaghan, and O. Wilhemi. Colorado State University School of Public Health.** Fort Collins, CO. April 201A.2. Invited. “Weather, climate and health research at the National Center for Atmospheric Research”.
60. **Hayden, M and A. Monaghan A. Universidad Veracruzana – NASA workshop.** Invited. Xalapa, MX. March 2012. “The dengue vector mosquito *Aedes aegypti* at the margins: sensitivity of a coupled natural and human system to climate change”.
61. **Hayden M. and O. Wilhelmi. University of Colorado at Denver.** Invited. Denver, CO. February 2012. “Weather related linkages to climate and health”.
62. **Hayden M. Universidad de San Francisco.** Quito, Ecuador. February 2012. Invited. “Weather, climate and health research at the National Center for Atmospheric Research”.
63. **Hayden M. National Academy of Sciences Panel on Assessing the Impact of Climate Change on Political and Social Stresses.** Washington, DC. January 2012. Invited. “The dengue vector mosquito *Aedes aegypti* at the margins: sensitivity of a coupled natural and human system to climate change”.
64. **Hayden M., A. Monaghan, and O. Wilhemi. University of Arizona School of Public Health.** Tucson, AZ. October, 13, 2011. Invited. “Weather, Climate and Human Health”.
65. **Hayden, M., O. Wilhelmi, and J. Boehnert, Haskell Indian Nations University.** Lawrence, KS. June 2011. “Introduction to Climate Change: Qualitative and Quantitative Research Methods for Assessing Population Vulnerability”.
66. **Hayden, M., Monaghan A, and Wilhemi O. Colorado State University.** Fort Collins, CO. April 20, 2011. Invited. “Weather, Climate and Human Health”.
67. **Hayden, M., and Wilhelmi O. University of Colorado at Denver.** Denver, CO. March 14, 2011. Invited. “Risk and vulnerability assessments: Knowledge integration from physical and social sciences”.

68. **Hayden, M.,** R. Pandya, T. Hopson, and V. Dukic. **MERIT meeting.** Addis Ababa, Ethiopia. November 18, 2010. Invited. “The Weather-Meningitis Project”.
69. **Hayden, M., NASA Public Health Program Review – Partner Address.** San Antonio, Texas. September 28, 2010. Invited Keynote speaker. “Weather, Climate and Health: Integrating Physical and Social Science”.
70. **Hayden, M., Joint Center for Political and Economic Studies.** Invited. Washington, DC. July 27, 2010. Invited Keynote Speaker. “Climate Change, Human Health and the Well-Being of Vulnerable Communities”.
71. **Hayden, M.,** and O. Wilhelmi. **Maricopa County Department of Health.** Invited. Phoenix, AZ. May 12, 2010. “Assessment of local level vulnerability and adaptive capacity to extreme heat.”
72. **Hayden, M.,** and O. Wilhelmi. **University of Colorado.** Invited. Denver, CO. May 5, 2010. “Risk and vulnerability assessments: Knowledge integration from physical and social sciences”.
73. **Hayden, M.,** and O. Wilhelmi. **IAI-NCAR Colloquium - Science-Policy Interface: challenges and opportunities.** Invited. San Jose, Costa Rica. April 12-22, 2010. “Risk and vulnerability assessments: Knowledge integration from physical and social sciences”.
74. **Hayden, M. NASA.** Invited. Huntsville, Alabama. March 15, 2010. “Weather, Climate and Health”.
75. **Hayden, M. American Association for the Advancement of Science.** Invited. Congressional Briefing. Washington, D.C. November 16, 2009. “Climate Change and Vector-borne Diseases”.
76. **Hayden, M. NOAA/NCAR Seminar Series.** Invited. November 10, 2008. Boulder, CO. “Weather, Climate and Dengue Fever”.
77. **Hayden, M. Inter-America Institute Water Resources Workshop.** Invited. October 6-16, 2008. Mendoza, Argentina. “Weather, Climate and Vector-borne Diseases”.
78. **Hayden, M.,** and R. Pulwarty. **Gordon Research Conference. Oceans and Human Health.** Invited. June 29-July 4, 2008. Tilton, NH. ” Climate Change and Health: Linking Qualitative and Quantitative Approaches to Inform Adaptation”.
79. **Hayden, M. Tulane University School of Public Health.** Invited. January 2008. New Orleans, LA. “Weather, Climate and Health”.
80. **Hayden, M.,** and J. L. Robles. **US-MX Border Health Association Annual Meeting.** Invited. May 20-22, 2007. South Padre Island, TX. “Dengue Fever Outbreak in Brownsville, TX and Matamoros, Tamaulipas”.
81. **Hayden, M.,** E. Zielinski-Gutierrez, M. Fonseca-Ford, and S. Waterman. **Conference of Latin American Geographers.** Invited. May 31- June 2, 2007. Colorado Springs, CO. “WNV Educational Materials for Low Literacy Audiences”.
82. **Hayden, M.,** and J. L. Robles. **US-MX Border Health Association Annual Meeting.** Invited. May 20-22, 2007. South Padre Island, TX. “Dengue Fever Outbreak in Brownsville, TX and Matamoros, Tamaulipas”.

83. **Hayden, M., C. and Uejio. Arizona Vector-borne and Zoonotic Diseases Conference.** Invited. May 1-2, 2007. Mesa, AZ. “The Re-Invasion of *Aedes aegypti* in southern Arizona/northern Mexico”.
84. **Hayden, M., M. Ramos, H. Mohammad, E. Zielinski-Gutierrez, and S. Waterman. Arizona Vector-borne and Zoonotic Diseases Conference.** Invited. May 1-2, 2007. Mesa, AZ “Dengue and Dengue Hemorrhagic Fever on the Texas/Mexico Border—Brownsville and Matamoros, 2005”.
85. **Hayden, M., E. Zielinski-Gutierrez, M. Fonseca-Ford, E. Gleckler, and S. Waterman. Arizona Vector-borne and Zoonotic Diseases Conference.** Invited. May 1-2, 2007. Mesa, AZ “West Nile Virus Prevention, Education and Outreach to Migrant Workers”.

Other Significant Talks

1. **Hayden, M. University of Arizona.** Tucson, AZ. February 2019. “Enhancing Surveillance for Plague through Collaboration with Traditional Healers”.
2. **Hayden, M., K. Dickinson, et al. American Meteorological Society.** Phoenix Arizona. January 2015. “Understanding household and stakeholder knowledge, attitudes and practices surrounding mosquito control and dengue in emergent areas in the southern United States: a case study from Key West, FL”.
3. **Hayden, M., and K. C. Ernst. Fourth PanAmerican Dengue Meeting.** Belem, Brazil. October 2014. Peer-reviewed poster presentation. “Community awareness and support of the controversial release of OX513A *Ae. aegypti* in Key West, FL.”
4. **Hayden, M., American Society of Tropical Medicine and Hygiene** annual meeting. Washington, D.C. November 2013. Peer-reviewed poster presentation. “Improving understanding and surveillance of human plague in northern Uganda through modeling and collaboration with traditional healers”.
5. **Hayden, M., and A. Monaghan. American Society of Tropical Medicine and Hygiene** annual meeting. Washington, D.C. November 2013. Symposium chairs. “Changing the Climate III: Predicting and Preventing Weather and Climate-sensitive Disease Transmission through Transformative Research”.
6. **Hayden, M., Society for Applied Anthropology.** Denver, CO. March 2013. “Enhancing Surveillance for Plague in Northwest Uganda”.
7. **Hayden, M., AMS Annual Meeting.** Austin, TX. January 2013. “Enhancing Surveillance for Plague in Northwestern Uganda.”
8. **Hayden, M., American Meteorological Society.** New Orleans, LA. January 2012. “A socio-economic study of the impact of meningitis in northern Ghana”.
9. **Hayden M. American Society of Tropical Medicine and Hygiene.** Philadelphia, PA. December 2011. Symposium chair. “Changing the Climate: Predicting and Preventing Disease Transmission through Translational Research”.
10. **Hayden, M., and E. Zielinski-Gutierrez. Climate and Health Workshop.** NCAR, Boulder, CO. July 2011. “Health communication and risk perception under (potentially) changing vector-borne disease scenarios.”

11. **Hayden, M.,** and R. Morss. **American Meteorological Society.** Seattle, WA. January 25, 2011. Invited. “Storm Surge and “Certain Death”.
12. **Hayden, M., American Society of Tropical Medicine and Hygiene.** Philadelphia, PA. December 2011. “Investigating the Potential Range Expansion of the Vector Mosquito *Aedes aegypti* in Mexico with NASA Earth Science Remote Sensing Results”.
13. **Hayden, M., American Public Health Association.** Denver, CO. November 9, 2010. “Weather, Climate and Dengue at the U.S.-Mexico Border”.
14. **Hayden, M.,** and W. Thomas. **American Meteorological Society.** Atlanta, GA. January 18-22, 2010. Co-chair: 1st Environment and Health Symposium.
15. **Hayden, M.,** and Zielinski-Gutierrez E. **American Society of Tropical Medicine and Hygiene.** Washington, D.C. November 19, 2009. Symposium chair. “Changing the climate: a data driven discussion about climate sensitive diseases”.
16. **Hayden, M., Climate and Health Colloquium.** Boulder, CO July 13-17, 2009. “Other (Human) Dimensions to Climate Change Research” Transdisciplinarity – what exactly are we talking about?”
17. **Hayden, M.,** E. Zielinski-Gutierrez, C. Uejio, R. Barrera, *et al.* **American Society of Tropical Medicine and Hygiene.** New Orleans, LA, December 2008. “Waste Tires and Risk for Dengue Fever Infection in Brownsville, TX and Matamoros, MX.”
18. **Hayden, M.,** and E. Zielinski-Gutierrez. **Disasters and Behavioral Health Conference.** July 8-10, 2008. Colorado Springs, CO. “An Ecological Model for Examining Population/Community Resilience”.
19. **Hayden, M., American Meteorological Society Annual Meeting.** January 20-24, 2008. New Orleans, LA. Symposium chair. “Connecting Research and Applications for the Benefit of Society”.
20. **Hayden, M.,** and E. Zielinski-Gutierrez. **American Society of Tropical Medicine and Hygiene.** Atlanta GA November 11-16, 2006. Symposium co-chair: “Walking the Line: Emerging Infectious Diseases along the US-Mexico Border”.
21. **Hayden, M.,** E. Gruntfest, C. Benight, L. Barnes, E. Williams, C. Jenkins, S. Drobot and D. Schultz. **Association of American Geographers.** Chicago, IL, March 7-11, 2006. “The Warning Project: Sources of Information for Flash Flood and Tornado Warnings”.
22. **Hayden, M.H.,** and C.K. Uejio. **American Meteorological Society.** Atlanta, GA, Jan 29-Feb 3, 2006. “The Re-invasion of *Aedes aegypti* in southern Arizona/northern Mexico”.

5. COMMUNITY SERVICE

Advisory Activities

Panel reviewer for the National Science Foundation (NSF) HEGS program, April 2024.

Chapter Lead for Human Health Chapter, 5th National Climate Assessment, September 2021-November 2023.

External reviewer for Singapore Ministry of Health. 2022.

Panel reviewer for the NSF Coupled Natural and Human Systems Program, March 2009

External reviewer for NOAA Oceans and Human Health Program, 2011

External reviewer for NSF Partnerships for Enhanced Engagement in Research, 2011

External reviewer for Wellcome Trust, 2013

External reviewer for Meningitis Foundation, 2014

External reviewer for National Institutes of Health, Special Section on Zika, 2016

Search committee for CDC/NCAR postdoctoral program (2010, 2013, 2016)

Steering Committee for SOARS (2013-present)

Commissions/Boards

1. Board on Environmental Change and Society. National Academies of Sciences. 2023 to 2026.
2. Scientific Advisory Board – Border Infectious Disease Surveillance (CDC) – 2005 to present
3. Scientific Program Committee for Global Health – American Society for Tropical Medicine and Hygiene – 2012 to 2020
4. National Ecological Observing Network (NEON) Mosquito Technical Working Group - 2013 to present
5. Pilgrim Africa Project Advisory Committee – 2017 to present
6. Significant Opportunities in Atmospheric Research and Science (SOARS) Advisory Board – 2012 to 2018
7. Commission to Engage African Americans on Climate Change: Research Chair – Joint Center for Political and Economic Studies – 2010 to 2013
8. Board on Environment and Health – AMS – 2012 to 2015. Founding member; Program co-chair (2014)
9. Board on Societal Impacts – AMS – 2009-2012
10. Board on Enterprise Economic Development – AMS – 2011-2012

Editorial Activities

1. Reviewer for American Journal of Tropical Medicine and Hygiene; Bulletin of the American Meteorological Society; EcoHealth; Environmental Health Perspectives; Health and Place; PLoS Neglected Tropical Diseases; PLoS ONE, Interdisciplinary Perspectives on Infectious Diseases; International Journal of Biometeorology; International Journal of GIS; International Journal of Environment and Public Health; Journal of Climate; Journal of Medical Entomology; Lancet, New England Journal of Medicine, Vector-borne and Zoonotic Diseases; Weather, Climate and Society.
2. Academic Editor for PLoS Neglected Tropical Diseases

Mentoring Activities

1. Mentored 4 early-career faculty through NSF-funded Next Generation of Hazards Researchers (2014-2016): H. Grover, S. Broomell, E. Markowitz, P. Howe.
2. Mentored/co-mentored ASP postdocs. (H. Brenkert-Smith, K. Dickinson, L. Hu, S. Paull).
3. Mentored/co-mentored SIMMER postdocs. (T. Greasby, M. Heaton).
4. Mentored CDC-NCAR postdocs. (S. Moore, C. Uejio, M. Hahn, K. Conlon, U. Haque, R. Michael).
5. Hosted NCAR visitor C. Gibbes (U. Colorado, Colorado Springs) 2014.
6. SOARS mentor (2009-2011: N. Ngo, J. Wang, I. Carlos).
7. Mentor to high school student for UCAR HIRO Program (2012: K. McCormack).

Educational Activities

1. Served on PhD committee for University of Colorado public health student, Lyndsay Krisher (2020-2023).
2. Served on PhD committee for Florida State University geography student, John T. Bandzuh (2016-2023).
3. Served on PhD committees for University of Veracruz meteorology student, Carolina Ochoa (2013-2016).
4. Served on PhD committee of Monash University geography student, Margaret Loughnan (2011-2013).
5. Served on M.A. committee for University of Arizona public health student, Daniel Williamson (2014-2016).
6. Served on M.S. committee of Marigny Klaber, University of Colorado biology student (2012).
7. Participated as a NCAR representative for Geosciences Congressional Visit Days in Washington, DC in September 2009 to discuss the importance of strong and sustained federal funding for the geosciences.
8. Lead author for the Human Health chapter (vector-borne diseases) of the 4th National Climate Assessment.
9. Contributing author for the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report - Human Health chapter and Africa chapter.
10. Contributing author to Chapter 4 (vector-borne diseases) of the U.S. Global Change Research Program (USGCRP) report on Climate and Health in the U.S.
11. Sector-expert reviewer for Colorado Climate Change Vulnerability Study, 2015.
12. Co-organizer IAI-NCAR workshops in San Jose, DR (2010) and Quito, Ecuador (2011).
13. Organizer of Climate and Health colloquia, Boulder, CO July 2011, 2013, 2015 and 2017.
14. Co-organizer of the WRF Health Workshop, Boulder, CO, September 2010.

15. Chair of Symposium titled “Changing the Climate: Predicting and Preventing Weather and Climate-Sensitive Disease Transmission through Transformative Research,” at the American Society of Tropical Medicine and Hygiene 92nd Annual Meeting, Washington, DC, November 2013.
16. Non-technical educational presentations given for Ted Scripps Fellows in Environmental Journalism (2010, 2011, 2012), Colorado College visitors from Environmental Studies Seminar (2011), ISP Summer Colloquium on African Weather and Climate (2011), NCAR Advisory Panel (2013), Government Accountability Office (2012), Science on Tap (2014), NOAA Science on a Sphere (2014).
17. University of Colorado School of Public Health – guest lectures at CSU and Anschutz campuses every semester for Global Health and/or Climate and Health courses. (2011-present).
18. Human Subjects Committee at NCAR. Served as reviewer for protocols submitted within NCAR. (2012-2018)

6. HONORS/AWARDS

1. University of Colorado, Denver, Outstanding PhD Student; Letters, Arts and Sciences (2003)
2. Gorgas Memorial Institute Research Award; American Society of Tropical Medicine and Hygiene (2006)
3. American Public Health Association (APHA), National APHA Public Health Promotion Contest: Best Print Materials (2007)

7. RESEARCH GRANTS

Current & Submitted

1. Project Title: “The geography of responses to heat risk in the US: linking decision maker and public perceptions.”; Source of Support: National Science Foundation/HEGS. Award Amount: \$481,187. Period Covered: 08/2023-07/2025. Affiliation: Institutional PI; Lead Institution: National Center for Atmospheric Research.
2. Project Title: “Collaborative Research: IHBEM: Three-way coupling of water, behavior, and disease in the dynamics of mosquito-borne disease systems”. Award Amount: \$77,000. Period Covered: 09/2023-08/2027. Affiliation: PI; Lead Institution: University of Notre Dame.
3. Project Title: Measuring Lyme disease risk along two urbanization gradients in New York City and Boston.” Source of Support: Columbia University/Pfizer. Period covered: 6/30/2023-7/15/2025. Affiliation: Institutional PI; Lead Institution: Columbia University.

Previous:

4. Project Title: “Eco-social Interactions Influencing Human Exposure to Ticks and Lyme Disease;” Source of Support: National Science Foundation/CNH. Award

- Amount: \$1,600,000; Period Covered: 09/01/2019-02/29/2024. Affiliation: Institutional PI; Lead Institution: Columbia University.
5. Project Title: “Responding to extreme heat in the time of Coronavirus;” Source of Support: National Science Foundation, RAPID. Award: \$199,923; Period Covered: 05/15/2020-05/14/2021. Affiliation: Institutional PI; Lead Institution: National Center for Atmospheric Research.
 6. Project Title: “Accelerate to Equal: How to Open Doors for Women in Global Health;” Source of Support: Bill and Melinda Gates Foundation; Award Amount: \$450,000; Period Covered: 8/1/15-6/30/19 Affiliation: PI. Status: Awarded. Supplement Awarded on 9/30/2017. Award amount: \$116,000. Period Covered: 9/30/17-6/30/19.
 7. Project Title: “Multidisciplinary research and training to address complex relationships among weather, climate, human health and ecosystems” (Year 4 of 5 Research); Source of Support: Department of Health and Human Services - CDC: \$440,000; Period Covered: 9/1/2017-8/31/2018; Affiliation: PI. Status: Awarded.
 8. Project Title: “SMAP-informed modeling of dengue and chikungunya risk along the U.S./Mexico border;” Source of Support: NASA ROSES – Soil Moisture Active Passive (SMAP): \$388,639; Period Covered: 1/1/2016-12/31/2018; Affiliation: co-PI (lead institution, PI Monaghan). University Collaborators are from U. Arizona. Status: Awarded.
 9. Project Title: “The Vector Mosquito *Aedes aegypti* at the Margins: Sensitivity of a Coupled Natural and Human System to Climate Change;” Source of Support: NSF-Dynamics of Coupled Natural and Human Systems (CNH); Award Amount: \$1,235,000; Period Covered: 10/1/10-9/30/14; Affiliation: co-PI (lead institution). University collaborators included Colorado State University and Universidad Veracruzana.
 10. Project Title: “Disease Vector Mapping via Environmental/Climatological/Sociological Factors;” Source of Support: Defense Threat Reduction Agency via Science and Technology in Atmospheric Research (STAR) LLC; Award Amount: \$147,116; Period Covered: 6/17/13-6/16/14; Affiliation: co-PI (subaward). STAR LLC was the lead institution. University collaborators included Colorado State University.
 11. Project Title: “On the Edge: The Impact of Climate Change on *Aedes Aegypti* and Dengue Risk in the Southwest US-Northwest Mexico;” Source of Support: National Institutes of Health (NIH) (via U. Arizona); Award Amount: \$285,286; Period Covered: 9/1/12-8/31/15; Affiliation: PI (subaward). University collaborators included the University of Arizona (they were also the lead institution on the grant).
 12. Project Title: “System for Integrated Modeling of Metropolitan Extreme Heat Risk (SIMMER);” Source of Support: NASA; Award Amount: \$1,490,038; Period Covered: 7/1/10-6/30/14; Affiliation: Co-PI. University collaborators included the University of Kansas and Ryerson University.
 13. Project Title: “Modeling Plague in Uganda;” Source of Support: Department of Health and Human Services - CDC; Award Amount: \$46,298; Period Covered: 7/1/09-06/30/10; Affiliation: co-PI.

14. Project Title: "Modeling Plague in Uganda FY11;" Source of Support: Department of Health and Human Services - CDC; Award Amount: \$45,000; Period Covered: 12/1/10-09/30/11; Affiliation: co-PI.
15. Project Title: "On the Edge: Development of Predictive Risk Models for Tick Borne Diseases Based on Meteorological Descriptors;" Source of Support: Department of Health and Human Services - CDC; Award Amount: \$68,288; Period Covered: 8/30/13-8/29/14; Affiliation: PI.
16. Project Title: "Investigating the potential range expansion of the vector mosquito *Aedes aegypti* in Mexico with NASA Earth Science remote sensing results." Source of support: NASA. Award amount: \$150,000. Period covered: 3/11-3/12. Affiliation: PI
17. Project Title: "A prototype Earth-gauging system integrating weather and health data to manage meningitis." Source of support: Google, Inc. Award amount: \$900,000. Period covered: 10/08-9/11. Affiliation: Investigator (PI Pandya)
18. Project Title "Human-Environmental Interaction and the Effect of Waste Tire Removal on Risk for Dengue Fever Infection in Brownsville, TX and Matamoros, MX." Source of support: Pan American Health Organization. Award amount: \$81,489. Period covered: 4/07-4/08. Affiliation: PI
19. Project Title: "Dry season investigation of *Aedes aegypti* abundance in neighborhoods with high and low dengue incidence and persistence in metropolitan San Juan, Puerto Rico." Source of support: Gorgas Memorial Institute Award through American Society of Tropical Medicine and Hygiene. Award amount: \$25,000. Period covered: 11/06-11/07. Affiliation: PI.