

Min Gon Chung

Curriculum Vitae

Environmental Data Science Innovation & Inclusion Lab
University of Colorado, Boulder
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<https://mingonchung.github.io>

EDUCATION

- 2020 **Ph.D., Fisheries and Wildlife & Environmental Science and Policy**
Michigan State University, East Lansing, MI, USA
Dissertation: Complex Interactions among Ecosystem Services, Human Well-Being, and their Interlinkages to Telecoupling Processes
- 2013 **M.S., Civil and Environmental Engineering**
Yonsei University, Seoul, South Korea
Thesis: Mapping Ecosystem Services and Statistical Analysis for Ecosystem-Based Management of Coastal Areas
- 2011 **B.S., Civil Engineering**
Yonsei University, Seoul, South Korea

AREAS OF EXPERTISE: Open data science, coupled human and natural systems, ecosystem services, sustainability, nature-based solutions, climate mitigation and adaptation.

ACADEMIC APPOINTMENTS

- 2024–present Postdoctoral Scholar (NSF #2153040)
Environmental Data Science Innovation & Inclusion Lab, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO (PI: Dr. Jennifer Balch)
- 2024–present Research Associate (USGS Powell Center)
Department of Geography and Environmental Sciences,
University of Colorado, Denver, CO (PI: Dr. Ben Crawford)
- 2020–2023 Postdoctoral Scholar (California Climate Investments #CCR20021)
Center for Ecosystem Climate Solutions & Sierra Nevada Research Institute,
University of California, Merced & Irvine, CA (PIs: Dr. Roger Bales & Dr. Mike Goulden)
- 2014–2020 Research Assistant (NSF #1518518 & #1924111)
Center for Systems Integration and Sustainability,
Michigan State University, East Lansing, MI, USA (PI: Dr. Jianguo Liu)
- 2013–2014 Research Assistant, Korea Environment Institute, Seoul, South Korea.
- 2011–2013 Research Assistant, Ecological Engineering Laboratory, Yonsei University,
Seoul, South Korea (PI: Dr. Hojeong Kang)

RESEARCH GRANTS

Ilangakoon, G., C. Nagy, A. Post, C.H. do Amaral, K. Jay, **M.G. Chung (Co-Investigator)**. “Carbon Storage Shifts in Western US Drylands: Multi-Model Assessment of Climate and Land Use Drivers.” *NASA ROSES*. pending. (\$889K)

Crawford, B., P. Ibsen, **M.G. Chung (Co-PI)**. “Improving Air Quality Forecasting with Machine Learning-based Urban Heat Modeling.” *NSF CO-WY Engine*. pending. (\$400K)

TEACHING EXPERIENCE

University of Colorado Denver

October 2024 Guest lecturer, ENVS 6002 – Research Topics in Environmental Science

University of Colorado Boulder

May 2024 Facilitator, ESIIIL Innovation Summit

April 2024 Facilitator, Forest Carbon Codefest

University Corporation for Atmospheric Research

August 2023 Instructor, I-Guide Summer School – Advanced Network Analyses

University of California, Merced

Spring 2021 Course designer, ES 240 – Water Resources Plan and Management

Fall 2020 Course designer, ES 200 – Environmental Systems

PUBLICATIONS

Articles in Peer Review Journals:

Chung, M.G., H. Guo, C. Nyelele, B. Egoh, M. Goulden, C. Keske, R. Bales. 2024. Valuation of disturbance on water and carbon fluxes in mixed-conifer mountain forests. *Ecohydrology*. e2642. doi: 10.1002/eco.2642

Nyelele, C., C. Keske, **M.G. Chung**, H. Guo, and B. Egoh. 2023. Using social media data to estimate recreational travel costs: A case study from California. *Ecological Indicators*. 154: 110638. doi: 10.1016/j.ecolind.2023.110638

Nyelele, C., C. Keske, **M.G. Chung**, H. Guo, and B. Egoh. 2023. Using social media data and machine learning to map recreational ecosystem services. *Ecological indicators*. 154: 110606. doi: 10.1016/j.ecolind.2023.110606

Quesnel Seipp, K., T. Maurer, M. Elias, P. Saksa, C. Keske, K. Oleson, B. Egoh, R. Cleveland, C. Nyelele, N. Goncalves, K. Hemes, P. Wyrsh, D. Lewis, **M.G. Chung**, H. Guo, M. Conklin, and R. Bales. 2023. A multi-benefit framework for funding forest management in fire-driven ecosystems across the Western U.S. *Journal of Environmental Management*. 344: 118270. doi: 10.1016/j.jenvman.2023.118270

Guo, H., M. Goulden, **M.G. Chung**, C. Nyelele, B. Egoh, C. Keske, M. Conklin, and R. Bales. 2023. Valuing the benefits of forest restoration on enhancing hydropower and water supply in California’s Sierra Nevada. *Science of the Total Environment*. 876: 162836.

doi: 10.1016/j.scitotenv.2023.162836

- Chung, M.G.** and J. Liu. 2022. International food trade benefits biodiversity and food security in low-income countries. *Nature Food*. 3: 349-355. doi: 10.1038/s43016-022-00499-7
- Chung, M.G.**, K. Frank, Y. Pokhrel, T. Dietz, and J. Liu. 2021. Natural infrastructure in sustaining global urban freshwater ecosystem services. *Nature Sustainability*. 4: 1068-1075. doi: 10.1038/s41893-021-00786-4
- Chung, M.G.**, Y. Li, and J. Liu. 2021. Global red and processed meat trade and non-communicable diseases. *BMJ Global Health*. 6:e006394. doi: 10.1136/bmjgh-2021-006394
- Yang, H., A. Lingmann-Zielinska, Y. Dou, **M.G. Chung**, J. Zhang, J. Liu. 2021. Complex effects of telecouplings on forest dynamics: an agent-based modeling approach. *Earth Interactions*. 26: 15-27. doi: 10.1175/EI-D-20-0029.1
- Yang, H., A. Viña, J.A. Winkler, **M.G. Chung**, Q. Huang, Y. Dou, J. Zhang, W. McShea, M. Songer, and J. Liu. 2021. A global assessment of the impact of individual protected areas on preventing forest loss. *Science of the Total Environment*. 777: 145995. doi: 10.1016/j.scitotenv.2021.145995
- Chung, M.G.**, K. Kapsar, K. Frank, and J. Liu. 2020. The spatial and temporal dynamics of global meat trade networks. *Scientific Reports*, 10: 16657. doi: 10.1038/s41598-020-73591-2
- Xu, Z., Y. Li, S.N. Chau, T. Dietz, C. Li, L. Wan, J. Zhang, L. Zhang, Y. Li, **M.G. Chung**, and J. Liu. 2020. Impacts of international trade on achieving global sustainable development goals. *Nature Sustainability*. 3: 946-971. doi: 10.1038/s41893-020-0572-z
- Zhao, Z., M. Cai, T. Connor, **M.G. Chung**, and J. Liu. 2020. Metacoupled tourism and wildlife translocations affect synergies and trade-offs among Sustainable Development Goals across spillover systems. *Sustainability*, 12: 7677. doi: 10.3390/su12187677
- Zhao, Z., M. Cai, F. Wang, J.A. Winkler, T. Connor, **M.G. Chung**, J. Zhang, H. Yang, Z. Xu, Y. Tang, Z. Ouyang, H. Zhang, and J. Liu. 2020. Synergies and tradeoffs among sustainable development goals across boundaries in a metacoupled world. *Science of the Total Environment*, 751: 141749. doi: 10.1016/j.scitotenv.2020.141749
- Chung, M.G.**, A. Herzberger, K. Frank, and J. Liu. 2019. International tourism dynamics in a globalized world: A social network analysis approach. *Journal of Travel Research*, 59: 387-403. doi: 10.1177/0047287519844834
- Chung, M.G.** and J. Liu. 2019. Telecoupled impacts of livestock trade on non-communicable diseases. *Globalization and Health*, 15: 43. doi: 10.1186/s12992-019-0481-y
- Chung, M.G.**, H. Kang, T. Dietz, P. Jaimes, and J. Liu. 2019. Activating values for encouraging pro-environmental behavior: The role of religious fundamentalism and willingness to sacrifice. *Journal of Environmental Studies and Sciences*, 9: 371-385. doi: 10.1007/s13412-019-00562-z

- Herzberger, A., **M.G. Chung**, K. Kapsar, K. Frank, and J. Liu. 2019. Telecoupled food trade affects pericoupled trade and intracoupled production. *Sustainability*, 11: 2908. doi: 10.3390/su11102908
- Yang, H., A. Vina, J.A. Winkler, **M.G. Chung**, Y. Dou, F. Wang, J. Zhang, Y. Tang, T. Connor, Z. Zhao, and J. Liu. 2019. Effectiveness of China's protected areas in reducing deforestation. *Environmental Science and Pollution Research*, 26: 18651-18661. doi: 10.1007/s11356-019-05232-9
- Chung, M.G.**, T. Pan, X. Zou, and J. Liu. 2018. Complex interrelationships between ecosystem services supply and tourism demand: General framework and evidence from the origin of three Asian rivers. *Sustainability*, 10: 4576. doi: 10.3390/su10124576
- Chung, M.G.**, T. Dietz, and J. Liu. 2018. Global relationships between biodiversity and nature-based tourism in protected areas. *Ecosystem Services*, 34: 11-23. doi: 10.1016/j.ecoser.2018.09.004. (Featured in the news media).
- Liu, J., V. Hull, H.C.J. Godfray, D. Tilman, P. Gleick, H. Hoff, C. Pahl-Wostl, Z. Xu, **M.G. Chung**, J. Sun, and S. Li. 2018. Nexus approaches to global sustainable development. *Nature Sustainability*, 1: 466-476. doi: 10.1038/s41893-018-0135-8
- Liu, J., Y. Dou, M. Batistella, E. Challies, T. Connor, C. Friis, J.D.A. Millington, E. Parish, C.L. Romulo, R.F.B. Silva, H. Triezenberg, H. Yang, Z. Zhao, K.S. Zimmerer, F. Huettmann, M.L. Treglia, Z. Basher, **M.G. Chung**, A. Herzberger, A. Lenschow, A. Mechiche-Alami, J. Newig, J. Roche, and J. Sun. 2018. Spillover systems in a telecoupled Anthropocene: typology, methods, and governance for global sustainability. *Current Opinion in Environmental Sustainability*, 33: 58-69. doi: 10.1016/j.cosust.2018.04.009
- Carlson, A., J. Zaehring, R. Garrett, R. Felipe, B. Silva, P. Furumo, A.R. Rey, A. Torres, **M.G. Chung**, Y. Li, and J. Liu. 2018. Toward rigorous telecoupling causal attribution: A systematic review and typology. *Sustainability*, 10: 4426. doi: 10.3390/su10124426
- Chung, M.G.**, H. Kang, and S.U. Choi. 2015. Assessment of coastal ecosystem services for conservation strategies in South Korea. *PLoS ONE*, 10: e0133856. doi: 10.1371/journal.pone.0133856
- Chung, M.G.** and H. Kang. 2013. A review of ecosystem service studies: Concept, approach and future work in Korea. *Journal of Ecology and Environment*, 36: 1-9. doi: 10.5141/ecoenv.2013.001

Book Chapters:

- Kang, H., H. Chang, and **M.G. Chung**. 2015. Rapid land use change impacts on coastal ecosystem services: A South Korean case study. *In Water Ecosystem Services: A Global Perspective*, J. Martin-Ortega, R.C. Ferrier, I.J. Gordon, and S. Khan (eds.), Cambridge University Press, Cambridge, UK. pp.119-126.

In Progress, Review, or Revision:

- Chung, M.G.**, M. Goulden, H. Guo, S. Khan, G. Cui, and R. Bales. (internal review). Evapotranspiration management for sustaining water diversion during droughts.
- Chung, M.G.** and J. Liu. (internal review). Uncovering a complex metacoupled world: Spatio-temporal dynamics of international flows before and during the COVID-19 pandemic.
- Chung, M.G.**, H. Yang, M. Goulden, J. Balch, J. Sanovia, C. Nagy, C. Amaral, G. Ilangakoon, H. Guo, and R. Bales (internal review). Nature-based solutions for carbon management in fire-prone forests.
- Chung, M.G.**, C. Hovis, V. Frans, K. Kapsar, A. Torres, Y. Zhang, Y. Li, R. Chen, E. Dean, A. Herzberger, M. Lei, X. Xu, Y. Xing, and J. Liu. (internal review). Integration of distant human-nature interactions into biodiversity conservation.
- Li, Y., M. Li, M. Lenzen, A. Malik, B.D. Fath, R. Chen, P. Havlik, **M.G. Chung**, J. Gephart, Z. Xu, J. Gómez-Paredes, O. Azusa, A. Alsamawi, K. Niu, and J. Liu. (under review). Transnational impacts on achieving SDGs at the national and global scales. *Nature Communications*.
- Guo, H., M. Goulden, **M.G. Chung**, Q. Xu, C. Nyelele, W. Guo, B. Egoh, M. Conklin, C. Keske, M. Safeeq, and R. Bales. (under review). Valuing co-benefits of fire regulation through forest restoration in wildfire-vulnerable forests. *Science of the Total Environment*.
- Lee, H., E. Choi, O. Ju, C.O. Hong, Y. Kwak, J. Yun, J. Lee, **M.G. Chung**, S.M. Moon, A. Ho, and H. Kang (under review). N fertilization can increase the global sustainability of rice production by suppressing CH₄ emissions. *Nature Communications*.

PRESENTATIONS

- Chung, M.G.** Machine learning to predict changes in water diversion under a changing climate. EAS Annual Meeting, Long Beach, CA, USA, August 6th, 2024.
- Chung, M.G.** Valuation of historical forest management and disturbance on water and carbon fluxes in a productive mixed-conifer mountain forest. AGU Fall Meeting, Chicago, IL, USA, December 16th, 2022.
- Chung, M.G.** A social network analysis for global flows of ecosystem services. The Interdisciplinary Ph.D. Workshop in Sustainable Development at Columbia University, New York, NY, USA, April 13th, 2019.
- Chung, M.G.** and J. Liu. Global impacts of meat trade on non-communicable diseases. The Sustainability and Development Conference, Ann Arbor, MI, USA, November 11th, 2018.
- Chung, M.G.**, K. Frank, and J. Liu. Balancing built and natural infrastructure for sustainable freshwater supply to the World's cities. The 2018 IALE Annual Meeting, Chicago, IL, USA, April 9th, 2018.

- Chung, M.G.** and J. Liu. Global impacts of international food trade on biodiversity: Application of the telecoupling framework. The 20th Annual Conference on Global Economic Analysis, West Lafayette, IN, USA, June 8th, 2017.
- Chung, M.G.**, T. Dietz, and J. Liu. Complex relationships between biodiversity and cultural ecosystem services. The 2017 IALE Annual Meeting, Baltimore, MD, USA, April 10th, 2017. (*poster*).
- Chung, M.G.**, T. Pan, Y. Yao, and J. Liu. Telecoupled interactions among tourism, ecosystem services, and human well-being. The 2016 IALE Annual Meeting, Asheville, NC, USA, April 4th, 2016.
- Chung, M.G.** and J. Liu. International food trade among biodiversity hotspot and non-hotspot countries. The 9th IALE World Congress, Portland, OR, USA, July 6th, 2015. (*poster*).
- Chung, M.G.** Mapping ecosystem services and spatial statistical analysis of coastal areas for ecosystem-based management. The 4th Korea-Japan Exchange Seminar for Wetland Ecology and Biogeochemistry, Seoul, South Korea, March 5th, 2013.
- Chung, M.G.** Mapping ecosystem services and spatial statistical analysis of coastal areas. Annual Conference of the Ecological Society of Korea, Chuncheon, South Korea, February 14-15th, 2013. (*in Korean*).
- Chung, M.G.** Valuing ecosystem services of Korea coastal wetlands. The 3rd Seminar for Wetland Ecology and Biogeochemistry, Kitakyushu, Japan, May 10th, 2012.
- Chung, M.G.** and H. Kang. Mapping and valuing ecosystem services in Korea coastal wetlands. The 67th Annual Meeting of the Korean Association of Biological Sciences, Daejeon, South Korea, August 16-17th, 2012. (*poster*).
- Chung, M.G.** The study of coastal wetlands using the concept of ecosystem services. Annual Conference of the Ecological Society of Korea, Chuncheon, Korea, February 16-17th, 2012. (*in Korean*).

SERVICE & AFFILIATIONS

Reviewer:

Nature Cities; Nature Communications; One Earth; PLoS ONE; Ecological Engineering; Sustainable Cities and Society; Ecology and Society; Global Ecology and Conservation; Tourism and Hospitality Management

Workshop Organizer:

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| 2018 | Telecoupling framework: Concepts, applications, and hands-on exercise with the new cloud-based telecoupling toolbox. The 2018 IALE Annual Meeting, Chicago, IL, USA. |
| 2017 | Network theory workshop: Visualizations of natural resource flows. The 13th Annual Andes Community of Practice Meeting, Sucre, Bolivia. |

Invited Speaker:

- 2024 Advancing environmental data science for nature-based solutions. Department of Geography and Environmental Sciences Colloquium, University of Colorado, Denver, USA.
- 2016 Global impacts of international food trade on biodiversity. Telecoupling Framework for the Landscape Ecology Community, The 2016 IALE Annual Meeting, Asheville, NC, USA.
- 2016 Ecosystem services in a coupled human and natural system. National Institute of Ecology. Seochon, South Korea.
- 2015 International food trade among biodiversity hotspot and non-hotspot countries. Telecoupling Framework for Studying Cross-Border and Cross-Scale Interactions Workshop, The 9th IALE World Congress, Portland, OR, USA.

GRANTS, FELLOWSHIPS & AWARDS

- 2020 Innovation in Sustainability Science Award, The Ecological Society of America
- 2019 The Graduate School Dissertation Completion Fellowship, Michigan State University (\$7,000)
- 2018 Environmental Science and Policy Program (ESPP) Travel Grant Award, Michigan State University (\$500)
- 2018 The Graduate School Travel Funding, Michigan State University (\$650)
- 2018 Travel Funding from the College of Agricultural and Natural Resource, Michigan State University (\$400)
- 2017 ESPP Urban Environment Research Fellowship, Michigan State University (\$7,000)
- 2016–2017 The William W. and Evelyn M. Taylor Endowed Fellowship for International Engagement in Coupled Human and Natural Systems (\$2,500)
- 2016–2017 Sustainable Michigan Endowed Project (SMEP) Scholars, The W.K. Kellogg Foundation (\$25,000)
- 2016 ESPP Travel Grant Award, Michigan State University (\$500)
- 2015 NASA–MSU Professional Enhancement Award (\$780)
- 2014–2015 ESPP Fellowship, Michigan State University (\$28,000)

MEDIA COVERAGE

“Red and processed meat trade linked to diet-related NCDs in Europe.” By Flora Southey, Food Navigator, December 23, 2021. Available at: <https://www.foodnavigator.com/Article/2021/12/23/Red-and-processed-meat-trade-linked-to-diet-related-NCDs-in-Europe>

“The health impact of the global meat trade.” By James Kingsland, Medical News Today, November 23, 2021. Available at: <https://www.medicalnewstoday.com/articles/the-health-impact-of-the-global-meat-trade>

“Increased meat consumption leads to higher rates of serious disease, study finds.” By Matthew Rozsa, Salon, November 22, 2021. Available at: <https://www.salon.com/2021/11/22/increased-meat-consumption-leads-to-higher-rates-of-serious-disease-study-finds>

“Global rise in red and processed meat trade contributes to diet-related non-communicable disease.” By Emily Henderson, The Medical News, November 21, 2021. Available at: <https://www.news-medical.net/news/20211121/Global-rise-in-red-and-processed-meat-trade-contributes-to-diet-related-non-communicable-disease.aspx>

"Global spread of red meat consumption is bringing health concerns with it." By Sue Nichols, Technology Networks, November 17, 2021. Available at: <https://www.technologynetworks.com/applied-sciences/news/global-spread-of-red-meat-consumption-is-bringing-health-concerns-with-it-355929>

"Thirsty cities need a human/nature infrastructure combo." By Sue Nichols, SCIENMAG, October 21, 2021. Available at: <https://scienmag.com/thirsty-cities-need-a-human-nature-infrastructure-combo>

"What would Jesus do? Quite possibly, recycle." By Sue Nichols, phys.org, September 23, 2019. Available at: <https://phys.org/news/2019-09-jesus-possibly-recycle.html>

“More biodiversity equals more tourists.” By Virginia Gewin, ESA Dispatches of Frontiers in Ecology and the Environment, January 28, 2019. Available at: <https://esajournals.onlinelibrary.wiley.com/doi/10.1002/fee.1995>

“More biodiversity means more ecotourism.” By Dana Kobilinsky, the Wildlife Society, December 14, 2018. Available at: <https://wildlife.org/more-biodiversity-means-more-ecotourism>

"Biodiversity draws the ecotourism crowd." By Sue Nichols, Phys.org, November 8, 2018. Available at: <https://phys.org/news/2018-11-biodiversity-ecotourism-crowd.html>

SKILLSETS

Programming Skills:

R, Python, STATA, Mplus, SAS, ArcGIS, QGIS, EARDAS, GeoDa.

Language Skills:

Fluent in English and Native in Korean.