

KYLE FRANKEL DAVIS

Associate Professor

Department of Geography and Spatial Sciences

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EDUCATION

- May 2016 University of Virginia
PhD, Environmental Sciences (Concentration: Hydrology)
Advisor: Paolo D’Odorico
- May 2010 University of Delaware
BS, Biochemistry (honors)

APPOINTMENTS

- 2025- University of Delaware, Associate Professor of Environmental Data Science
- 2019-2025 University of Delaware, Assistant Professor of Environmental Data Science
- 2018-2019 Columbia University, Data Science Institute Fellow
Mentors: Ruth DeFries and Michael Puma
- 2016-2018 Columbia University, Earth Institute Postdoctoral Fellow
Mentor: Ruth DeFries
- 2016-2018 The Nature Conservancy, NatureNet Science Fellow
Mentors: Ruth DeFries, Brian Richter, and Joe Fargione

PUBLICATIONS

Peer-Reviewed Journal Articles

* indicates lab group member

- 2026 Faure JC, Bertassello L, Chiarelli DD, Eckert S, Castet A, **Davis KF**, Dell’Angelo J, D’Odorico P, **Khan B***, Rulli MC, Müller MF (2026) Heterogeneous impacts of large-scale land acquisitions on child nutrition in the Global South. *Proceedings of the National Academy of Sciences USA* (In Press)
- Sarwar A***, **Khan B***, **Davis KF** (2026) Entrenchment of cropping patterns reinforces climate exposure for certain crops in US. *Environmental Research Letters* **21**, 124046.
- Tuninetti M, **Davis KF** (2026) Addressing global hotspots of drought-related crop production losses. *Nature Communications* **17**, 6605.

- Olayide OE, Oyekunle O, Aderemi O, Odunola O, Adeigbe O, **Abou Ali H***, Alabi T, **Khan B***, **Upuni J***, **Davis KF** (2026) Factors influencing smallholder crop farmers' willingness to pay for weather-based index insurance in southwest Nigeria. *Environmental Research: Food Systems* **3**, 035004.
- Liu D, Cong W, **Davis KF**, Singh BK, Chen Q, Courty P-E, Ali T, Pan B, Siddique KHM, Zhang F (2026) Unlocking microbial potential to advance nutritious and sustainable food systems. *One Earth* (In Press).
- Kebede EA***, Hrozencik RA, Marston L, Van Meter K, **Wei D***, **Davis KF** (2026) Optimizing cropland conservation payments to minimize nitrogen surplus in the Mississippi River Basin. *Environmental Research Letters* **21**, 104006.
- Upuni JI***, **Alabi W***, Alabi T, **Khan B***, **Abou Ali H***, Adeluyi O, Olayide O, Adebayo AD, Nakalembe CL, **Davis KF** (2026) Assessing maize and cassava extent and intercropping in southwest Nigeria. *Environmental Research: Food Systems* **3**, 025002.
- 2025 Wang Q, Chinkaka E, Richaud R, Haghdadi M, Wolk C, Oromeng KV, **Davis KF**, Bianco F, Peng X, Klinger JM (2025) MO-SAM: Testing the reliability and limits of mine feature delineation using Segment Anything Model to democratize mine observation and research. *PLOS Sustainability and Transformation* **4**, e0000182.
- Mehta P***, Müller MF, Niles MT, **Davis KF** (2025) Nutritional outcomes of irrigation expansion. *Nature Sustainability* **8**, 853–854.
- Mehta P***, Müller MF, Niles MT, **Davis KF** (2025) Child diet diversity and irrigation expansion in the Global South. *Nature Sustainability* **8**, 905–913.
- Wang L, Guo S, Garland GM, Ge T, Zhang J, He C, Hijri M, **Kebede EA***, Plaza-Bonilla D, Stringer LC, **Davis KF**, Lee S-J, Feng S, Wang L, Wei Z, Cao H, Wang Z, Xu J, Siddique KHM, Gan GY, Zhao M (2025) Integrated strategies for enhancing agrifood productivity, lowering greenhouse gas emissions, and improving soil health. *The Innovation* **6**, 101006.
- Hadjikakou M, Bowles N, Geyik Ö, Conijn S, Mogollon J, Bodirsk By, Muller A, Weindl I, Moallemi E, Shaikh AS, Damerau K, **Davis KF**, Pfister S, Springmann M, Clark M, Metson G, Röös E, Bajzelj B, Graham NT, Wissler D, Doelman JC, Deppermann A, Theurl M, Pradhan P, Stevanovic M, Lauk C, Chang J, Heck V, Ercin E, Peng L, Springer N, Bouwman L, Morais T, Valin H, Mason-D'Croz D, Erb K, Popp A, Herrero M, Dumas P, Zhang X, Bryan B (2025) Ambitious food system interventions required to mitigate the risk of exceeding Earth's environmental limits. *One Earth* **8**, 101351.
- Liu W, Fu Z, van Vliet MTH, **Davis KF**, Ciais P, Bao Y, Bai Y, Du T, Kang S, Yin Z, Fang Y, Wada Y (2025) Global overlooked multidimensional water scarcity. *Proceedings of the National Academy of Sciences USA* **122**, e2413541122.

- Liang S, **Davis KF**, Rao ND, Singh D, Sun J, Wu W, Tang H, Yang P, DeFries R (2025) Conflicting stakeholder priorities produce sustainability tradeoffs for cereal production in Northeast China. *Environmental Research Communications* **7**, 051003.
- Lee D, Anderson W, Chen X, Davenport F, Shukla S, Sahajpal R, Budde M, Rowland J, Verdin J, You L, Ahouangbenon M, **Davis KF**, **Kebede E***, Ehrmann S, Justice C, Meyer C (2025) HarvestStat Africa – Harmonized Subnational Crop Statistics for Sub-Saharan Africa. *Scientific Data* **12**, 690.
- Davis KF**, Anderson W, Ehrmann S, Flach R, Meyer C, Proctor J, Ray D, You L, Foley M, Kerdiles H, Hultgren A, Huybers P, **Kebede E***, Meroni M, Park C, Lee D (2025) HarvestStat: A global effort towards open and standardized sub-national agricultural data. *Environmental Research Letters* **20**, 052001.
- Wei D***, Castro L, Chhatre A, Tuninetti M, **Davis KF** (2025) Swapping rice for alternative cereals can reduce climate-induced production losses and increase farmer incomes in India. *Nature Communications* **16**, 2108.
- Kebede EA***, Oluoch KO, Siebert S, **Mehta P***, Hartman S, Jägermeyr J, Ray D, Ali T, Brauman KA, Deng Q, Xie W, **Davis KF** (2025) A global open-source dataset of monthly irrigated and rainfed cropped areas (MIRCA-OS) for the 21st century. *Scientific Data* **12**, 208.
- Deng Q, **Sharretts T***, Ali T, Ao YZ, Chiarelli DD, Demeke B, Marston L, **Mehta P***, Mekonnen M, Rulli MC, Tuninetti M, Xie W, **Davis KF** (2025) Deepening water scarcity in breadbasket nations. *Nature Communications* **16**, 1110.
- Khan B***, **Mehta P***, **Wei D***, **Abou Ali H***, Adeluyi O, Alabi T, Olayide O, **Uponi J***, **Davis KF** (2025) Cropland expansion links climate extremes and diets in Nigeria. *Science Advances* **11**, eado5541.
- Guan Q, Tang J, **Davis KF**, Kong M, Feng L, Shi K, Schurgers G (2025) Improving future agricultural sustainability by optimizing crop distributions in China. *PNAS Nexus* **4**, pgae562.
- 2024 Gurazada M, McDermid S, DeFries R, **Davis KF**, Singh J, Singh D (2024) El Niño and positive Indian Ocean Dipole conditions simultaneously reduce the production of multiple cereals across India. *Environmental Research Letters* **19**, 104059.
- Sporchia F, Antonelli M, Aguilar-Martínez A, Bach-Faig A, Caro D, **Davis KF**, Sonnino R, Galli A (2024) Zero hunger: Future challenges and the way forward towards the achievement of Sustainable Development Goal 2. *Sustainable Earth Reviews* **7**, 10.
- Richter BD, Lamsal G, Marston L, Dhakal S, Sangha LS, Rushforth RS, **Wei D***, Ruddell BL, **Davis KF**, Hernandez-Cruz A, Sandoval-Solis S, Schmidt JC (2024) New water accounting reveals why the Colorado River no longer reaches the sea. *Communications Earth & Environment* **5**, 134.

- Mehta P***, Siebert S, Kummu M, Deng Q, Ali T, Marston L, Xie W, **Davis KF** (2024) Half of 21st century global irrigation expansion has been in water stressed regions. *Nature Water* **2**, 254-261.
- Kebede E***, **Abou Ali H***, Clavelle T, Froehlich HE, Gephart JA, Hartman S, Herrero M, Kerner H, **Mehta P***, Nakalembe C, Ray DK, Siebert S, Thornton P, **Davis KF** (2024) Assessing and addressing the global state of food production data scarcity. *Nature Reviews Earth & Environment* **5**, 295–311.
- Davis KF**, **Abou Ali H***, **Kebede E***, **Khan B***, **Sarwar A*** (2024) Where global crop yields may falter next. *Nature Food* **5**, 98–99.
- Eruaga MD***, **Davis KF** (2024) Evaluation of household water treatment technologies for cholera eradication in Sub-Saharan Africa: Epidemiological and economic perspectives *Sustainability* **16**, 1422.
- Peterson CA, **Davis KF**, Dybala K, Fernández FJ, Ghimire R, Uday Nidumolu U, Roche R (2024) Focus on the future of water-limited agricultural landscapes. *Environmental Research Letters* **19**, 020201.
- 2023 Richter BD, Ao Y, Lamsal G, **Wei D***, Amaya M, Marston L, **Davis KF** (2023) Alleviating water scarcity by optimizing crop mixtures. *Nature Water* **1**, 1035–1047.
- Ali SH, LeBillon P, **Davis KF**, **Oromeng K***, Diallo P, Kamení AB, Carr ER (2023) "Climate-smart" conservation must be coupled with development in Africa. *Proceedings of the National Academy of Sciences USA* **120**, e2309279120.
- Chinkaka E, Klinger JM, **Davis KF**, Bianco F (2023) Unexpected Expansion of Rare Earth Elements Mining Activities in Myanmar-China Border Region. *Remote Sensing* **15**, 4597.
- Richter BD, Prunes E, Liu N, Caldwell P, **Wei D***, **Davis KF**, Samuel Sandoval-Solis S, Herrera GR, Rodriguez RS, Ao Y, Lamsal G, Amaya M, Shahbol N, Marston LT (2023) Opportunities for restoring environmental flows in the Rio Grande-Rio Bravo. *Journal of Water Resources Planning and Management* **150**, 04023079.
- Chakraborti R, **Davis KF**, DeFries R, Rao ND, Joseph J, Ghosh S (2023) Crop switching for water sustainability in India's food bowl yields co-benefits for food security and farmers' profits. *Nature Water* **1**, 864–878.
- DeFries R, Liang S, Chhatre A, **Davis KF**, Ghosh S, Rao ND, Singh D (2023) Climate resilience of dry season cereals in India. *Scientific Reports* **13**, 9960.
- Wei D***, Gephart JA, Iizumi T, Ramankutty N, **Davis KF** (2023) Key role of planted and harvested area fluctuations in US crop production shocks. *Nature Sustainability* **6**, 1177–1185.

- Xie W, Zhu A, Ali T, Zhang Z, Chen X, Wu F, Huang J, **Davis KF** (2023) Crop switching can enhance environmental sustainability and farmer incomes in China. *Nature* **616**, 300–305.
- Choski P, Agrawal A, Bialy I, Chaturvedi R, **Davis KF**, Dhyani S, Fleischman F, Lechner J, Nagendra H, Srinivasan V, DeFries R (2023) Combining socioeconomic and biophysical data to identify people-centric restoration opportunities. *npj Biodiversity* **2**, 7.
- Davis KF**, Müller MF, Rulli MC, Tatthege M, Ali S, Baggio JA, Dell'Angelo J, Jung S, Kehoe L, Niles MT, Eckert S (2023) Transnational agricultural land acquisitions threaten biodiversity in the Global South. *Environmental Research Letters* **18**, 024014.
- 2022 Lesk C, Anderson W, Rigden A, Coast O, Jägermeyr J, McDermid S, **Davis KF**, Konar M (2022) Compound heat and moisture extreme impacts on global crop yields under climate change. *Nature Reviews Earth & Environment* **3**, 872–889.
- Davis KF**, Dalin C, Kummu M, Marston L, Pingali P, Tuninetti M (2022) Beyond the Green Revolution: A roadmap for sustainable food systems research and action. *Environmental Research Letters* **17**, 100401.
- Oluoch KO***, De Groote H, Gitonga Z, Jin Z, **Davis KF** (2022) A suite of agronomic factors can offset the effects of climate variability on rainfed maize production in Kenya. *Scientific Reports* **12**, 16043.
- Ray DK, Sloat L, Garcia A, **Davis KF**, Ali T, Xie W (2022) Crop harvests for direct food use insufficient to meet the UN's food security goal. *Nature Food* **3**, 367–374.
- Chiarelli DD, D'Odorico P, Müller M, Mueller N, **Davis KF**, Dell'Angelo J, Penny G, Rulli MC (2022) Competition for water induced by transnational land acquisitions for agriculture. *Nature Communications* **13**, 505.
- 2021 **Wei D***, **Davis KF** (2021) Culturally appropriate shifts in staple grain consumption can improve multiple sustainability outcomes. *Environmental Research Letters* **16**, 125006.
- Singh D, Karambelas A, Chhatre A, DeFries R, Kinney P, **Davis KF** (2021) A systems lens to evaluate the compound human health impacts of anthropogenic activities. *One Earth* **4**, 1233–1247.
- Zhang X, Yao G, Vishwakarma S, Dalin C, Komarek AM, Kanter DR, **Davis KF**, Pfeifer K, Zhao J, Zou T, D'Odorico P, Folberth C, Rodriguez FG, Fanzo J, Rosa L, Dennison W, Musumba M, Heyman A, Davidson EA (2021) Quantitative assessment of agricultural sustainability reveals divergent priorities among nations. *One Earth* **4**, 1262–1277.
- Yang X, Steenhuis TS, **Davis KF**, Van der Werf W, Ritsema CJ, Pacenka S, Zhang F, Siddique K, Du T (2021) Diversified crop rotations enhance groundwater and economic sustainability of food production. *Food and Energy Security* **10**, e311.

- Srinivasan U, Velho N, Lee JSH, Chiarelli DD, **Davis KF**, Wilcove DS (2021) Expanding oil palm cultivation in India while sparing biodiversity. *Nature Food* **2**, 442-447.
- Ali T, Xie W, Zhu A, **Davis KF** (2021) Accounting for re-exports substantially reduces China's virtual water demand through agricultural trade. *Environmental Research Letters* **16**, 045002.
- Müller MF, Penny G, Niles MT, Ricciardi V, Chiarelli DD, **Davis KF**, Dell'Angelo J, D'Odorico P, Rosa L, Rulli MC, Mueller ND (2021) Impact of transnational land acquisitions on local food security and dietary diversity. *Proceedings of the National Academy of Sciences USA* **118**, e2020535118.
- Davis KF**, Downs S, Gephart JA (2021) Towards food supply chain resilience to environmental shocks. *Nature Food* **2**, 54–65.
- 2020 Chiarelli DD, D'Odorico P, **Davis KF**, Rosso R, Rulli MC (2020) Large-scale land acquisition as a potential driver of slope instability. *Land Degradation and Development* **32**, 1773-1785.
- Kehoe K, dos Reis TNP, Meyfroidt P, Bager S, Seppelt R, Kuemmerle T, Berenguer E, Clark M, **Davis KF**, zu Ermgassen EKHJ, Farrell KN, Friis C, Haberl H, Kastner T, Murtough KL, Persson UM, Romero-Muñoz A, O'Connell C, Schäfer VV, Virah-Sawmy M, le Polain de Waroux Y, Kiesecker J (2020) Inclusion, transparency, and enforcement: How the EU-Mercosur Trade Agreement fails the sustainability test. *One Earth* **3**, 268-272.
- Damerau K, **Davis KF**, Godde C, Herrero M, Springmann M, Bhupathiraju S, Myers S, Willett W (2020) India has natural resource capacity to achieve nutrition security, reduce health risks and improve environmental sustainability. *Nature Food* **1**, 631-639.
- Chiarelli DD, Passera C, Rosa L, **Davis KF**, D'Odorico P, Rulli MC (2020) The green and blue crop water requirement WATNEEDS model and its global gridded outputs. *Scientific Data* **7**, 273.
- Marston L, Lamsal G, Ancona Z, Caldwell P, Richter B, Ruddell B, Rushforth R, **Davis KF** (2020) Reducing water scarcity by improving water productivity in the United States. *Environmental Research Letters* **15**, 094033.
- Davis KF**, **Koo HI***, Dell'Angelo J, D'Odorico P, Estes L, Kehoe LJ, Kharratzadeh M, Kuemmerle T, Machava D, Pais AJR, Ribeiro N, Rulli MC, Tatlhago M (2020) Tropical forest loss enhanced by large-scale land acquisitions. *Nature Geoscience* **13**, 482–488.
- Richter BD, Bartak D, Caldwell P, **Davis KF**, Debaere P, Hoekstra AY, Li T, Marston L, McManamay R, Mekonnen MM, Ruddell B, Rushforth RR, Troy TJ (2020) Water scarcity and fish imperilment driven by beef production. *Nature Sustainability* **3**, 319-328.

- 2019 **Davis KF**, Chhatre A, Rao ND, Singh D, Ghosh-Jerath S, Mridul A, Poblete-Cazenave M, Pradhan N, DeFries R (2019) Assessing the sustainability of post-Green Revolution cereals in India. *Proceedings of the National Academy of Sciences USA* **116**, 25034-25041.
- Davis KF**, Chhatre A, Rao ND, Singh D, DeFries RS (2019) Sensitivity of grain yields to historical climate variability in India. *Environmental Research Letters* **14**, 064013.
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- Rao ND, Poblete-Cazenave M, Bhalerao R, **Davis KF**, Parkinson S (2019) Spatial analysis of energy use and GHG emissions from cereal production in India. *Science of the Total Environment* **654**, 841-849.
- 2018 Rosa L, Rulli MC, **Davis KF**, Chiarelli DD, Passera C, D'Odorico P (2018) Closing the yield gap while ensuring water sustainability. *Environmental Research Letters* **13**, 104002.
- DeFries R, Chhatre A, **Davis KF**, Dutta A, Fanzo J, Ghosh-Jerath S, Myers S, Rao N, Smith M (2018) Impact of historical changes in coarse cereals consumption in India on micronutrient intake and anemia prevalence. *Food and Nutrition Bulletin* **39**, 377-392.
- Davis KF**, Chiarelli DD, Rulli MC, Chhatre A, Richter B, Singh D, DeFries R (2018) Alternative cereals can improve water use and nutrient supply in India. *Science Advances* **4**, eaao1108.
- Davis KF**, Bhattachan A, Suweis S, D'Odorico P (2018) A universal model for predicting human migration under climate change: Examining future sea level rise in Bangladesh. *Environmental Research Letters* **13**, 064030.
- D'Odorico P, **Davis KF**, Rosa L, Carr JA, Chiarelli DD, Dell'Angelo J, Gephart JA, MacDonald GK, Seekell DA, Suweis S, Rulli MC (2018) The global food-energy-water nexus. *Reviews of Geophysics* **56**, 456-531.
- Rosa L, Rulli MC, **Davis KF**, D'Odorico P (2018) The water-energy nexus of hydraulic fracturing: a global hydrologic analysis for shale oil and gas extraction. *Earth's Future* **6**, 745-756.
- Chang X, DeFries RS, **Davis KF**, Liu L (2018) Understanding dietary and staple food transitions in China from multiple scales. *PLoS ONE* **13**, e0195775.
- 2017 **Davis KF**, Rulli MC, Seveso A, D'Odorico P (2017) Increased food production and reduced water use through optimized crop distribution. *Nature Geoscience* **10**, 919-924.

- D’Odorico P, Rulli MC, Dell’Angelo J, **Davis KF** (2017) New frontiers of land and water commodification: socio-environmental controversies of large-scale land acquisitions. *Land Degradation and Development* **28**, 2234-2244.
- Laso-Bayas J-C, *et al.* including **Davis KF** (2017) A global reference database of crowdsourced cropland data collected using the Geo-Wiki platform. *Scientific Data* **4**, 170136.
- D’Odorico P, Natyzak JL, Castner EA, **Davis KF**, Emery K, Gephart JA, Leach AM, Pace ML, Galloway JN (2017) Ancient water supports today’s energy needs. *Earth’s Future* **5**, 515-519.
- Davis KF**, Seveso A, Rulli MC, D’Odorico P (2017) Water savings of crop redistribution in the United States. *Water* **9**, 83.
- Rosa L, **Davis KF**, Rulli MC, D’Odorico P (2017) Environmental consequences of oil production from oil sands. *Earth’s Future* **5**, 158-170.
- Davis KF**, Rulli MC, Garrassino F, Chiarelli D, Seveso A, D’Odorico P (2017) Water limits to closing yield gaps. *Advances in Water Resources* **99**, 67-75.
- 2016 Chiarelli DD, **Davis KF**, Rulli MC, D’Odorico P (2016) Climate change and Large-Scale Land Acquisitions in Africa: Quantifying the future impact on acquired water resources. *Advances in Water Resources* **94**, 231-237.
- Davis KF**, Gephart JA, Emery K, Leach A, Galloway JN, D’Odorico P (2016) Meeting future food demand with current agricultural resources. *Global Environmental Change* **39**, 125-132.
- Chiarelli DD, **Davis KF**, Rulli MC, D’Odorico P (2016) Global change in Africa: Climate change and large scale land acquisition. *Rivista Internazionale di Scienze Sociali* **131**, 463-472.
- Leach AM, Emery KA, **Davis KF**, Gephart JA, Carr JA, Pace ML, D’Odorico P, Galloway JN (2016) Environmental impact food labels combining carbon, nitrogen, and water footprints. *Food Policy* **61**, 213-223.
- Gephart JA, **Davis KF**, Emery K, Leach A, Galloway JN, D’Odorico P, Pace ML (2016) The environmental cost of subsistence: Optimizing diets to minimize footprints. *Science of the Total Environment* **553**, 120-127.
- 2015 **Davis KF**, Gephart JA, Gunda T (2015) Sustaining the food self-sufficiency of a nation: the case of Sri Lankan rice production and its environmental impacts. *Ambio* **45**, 302-312.
- Davis KF**, Yu K, D’Odorico P, Carr JA, Herrero M, Havlik P (2015) Historical trade-offs of livestock’s environmental impacts. *Environmental Research Letters* **10**, 125013.
- Davis KF**, Yu K, Rulli MC, Pichdara L, D’Odorico P (2015) Accelerated deforestation driven by large-scale land acquisitions in Cambodia. *Nature Geoscience* **8**, 772–775.

- Davis KF**, D’Odorico P (2015) Livestock intensification and the influence of dietary change: A calorie-based assessment of competition for crop production. *Science of the Total Environment* **538**, 817-823.
- Davis KF**, Rulli MC, D’Odorico P (2015) The global land rush and climate change. *Earth’s Future* **3**, 298-311.
- 2014 **Davis KF**, D’Odorico P, Rulli MC (2014) Moderating diets to feed the future. *Earth’s Future* **2**, 559-565.
- Davis KF**, D’Odorico P, Rulli MC (2014) Land grabbing: A preliminary quantification of economic impacts on rural livelihoods. *Population and Environment* **36**, 180-192.
- Debaere P, Richter BD, **Davis KF**, Duvall MS, Gephart JA, O’Bannan CE, Pelnik C, Powell EM, Smith TW (2014) Water markets as a response to scarcity. *Water Policy* **16**, 625-649.
- 2013 **Davis KF**, D’Odorico P, Laio F, Ridolfi L (2013) Global spatio-temporal patterns in human migration: A complex network perspective. *PLOS ONE* **8**, e53723.
- D’Odorico P, Bhattachan A, **Davis KF**, Ravi S, Runyan CW (2013) Global desertification: Drivers and feedbacks. *Advances in Water Resources* **51**, 326–344.

Book Chapters

- 2019 Vico G, **Davis KF** (2019) Ecohydrology of Agroecosystems: Interactions Between Global and Local Processes. In D’Odorico P, Porporato A, Runyan C (Eds.) *Dryland Ecohydrology (2019 Revision)* (Springer, Dordrecht).
- Davis KF**, Olayide OE (2019) A Multidimensional Framework for Achieving Sustainable and Resilient Food Systems in Nigeria. In Filho WL, Ayala D (Eds.) *Handbook of Climate Change Resilience* (Springer, Dordrecht).
- 2018 **Davis KF**, Dalin C, DeFries R, Galloway JN, Leach AM, Mueller ND (2018) Sustainable Pathways for Meeting Future Food Demand. In Anderson J, Berry E, Birner R, Ferranti P, Galli A, Grace D, Heffernan KL, Serra-Majem L, Singer P (Eds.) *Encyclopedia of Food Security and Sustainability* (Elsevier, Amsterdam).

Reports and Policy Briefs

- 2025 **Davis KF** (2025) ‘Tapped Out’. In: Linda Schneider L, Kristin Funke K, Eds. *Water Atlas 2025* (Heinrich-Böll-Stiftung, Berlin).
- Müller MF, **Mehta P***, Niles MT, Madani K, **Davis KF** (2025) Expanding Irrigation Could Enhance Child Nutrition but Risks Unsustainable Water Use (UNU Institute for Water, Environment and Health (UNU-INWEH), Ontario).

- 2023 Ali SH, Kniveton D, Djalante R, Ayeb-Karlsson S, Brottrager M, Brown O, Cuaresma JC, Clifford M, **Davis KF**, Hayward G, Levin N, **Oromeng K***, Van Den Hoek J, Zickgraf C, Bergmann J, Escibano P, Kelman I, Schulz C, Skinner S (2023) Human Migration and Natural Resources: Global assessment of an adaptive complex system (United Nations Environment Programme, Nairobi).
- 2019 Herrick JE, Abrahamse T, Abhilash PC, Ali SH, Alvarez-Torres P, Barau AS, Branquinho C, Chhatre A, Chotte JL, Cowie AL, **Davis KF**, Edrisi SA, Fennessy MS, Fletcher S, Flores-Díaz AC, Franco IB, Ganguli AC, Speranza CI, Kamar MJ, Kaudia AA, Kimiti DW, Luz AC, Matos P, Metternicht G, Neff J, Nunes A, Olaniyi AO, Pinho P, Primmer E, Quandt A, Sarkar P, Scherr SJ, Singh A, Sudoi V, von Maltitz GP, Wertz L, Zeleke G (2019) Land Restoration for Achieving the Sustainable Development Goals: An International Resource Panel Think Piece. (United Nations Environment Programme, Nairobi).

Conference Proceedings

- 2015 D'Odorico P, Rulli MC, Casirati S, **Davis KF**, Dell'Angelo J. Land use change induced by large scale land acquisitions. World Bank Conference on Land and Poverty, Washington DC, 23-27 March 2015.
- 2014 **Davis KF**, D'Odorico P. Does development dictate vulnerability? A global study of international migration and environmental change. Virginia Space Grant Consortium Annual Symposium, Norfolk, VA, 14 April 2014.

AWARDS AND HONORS

- 2026 University of Delaware, Presidential Academic Leadership Program
- 2025 US National Science Foundation CAREER Award
- 2025 American Geophysical Union, Impactful Datasets Project Selection
- 2025 University of Delaware, Open Data Impact Award
- 2024 University of Delaware, Gerard J. Mangone Young Scholars Award
- 2023 American Geophysical Union, Global Environmental Change Early Career Award
- 2023 University of Delaware, College of Earth, Ocean, and Environment, Junior Faculty Award for Scholarly Excellence
- 2022 USDA National Institute of Food and Agriculture New Investigator
- 2020 *IOP Publishing* Outstanding Reviewer Award
- 2019 *Water* Young Investigator Award
- 2018 American Geophysical Union, Science for Solutions Award

2018-2019	Columbia University, Data Science Institute, Data Science Institute Fellow
2017	Columbia University, The Earth Institute, Earth Institute Research Assistant Program: Deforestation and Large-Scale Land Acquisitions
2016-2018	Columbia University, The Earth Institute, Earth Institute Fellow
2016-2018	The Nature Conservancy, NatureNet Science Fellow
2016	University of Virginia, Department of Environmental Sciences, Maury Environmental Prize for outstanding graduate student
2015	University of Virginia, Environmental Resilience and Sustainability Fellow (Mozambique)
2015	USAID Research and Innovation Fellowship (Bihar, India)
2013-2016	National Science Foundation Graduate Research Fellowship
2013-2015	Virginia Space Grant Consortium Graduate Research Fellowship
2011	University of Virginia, President's Fellowship
2010-2011	Center for Sustainable Development (CESDEV) Intern, Univ. of Ibadan (Nigeria)
2010	Elizabeth Dyer Award for Excellence in Biochemistry
2009	ESPN the Magazine/CoSIDA Academic All-America team, Men's Soccer
2007-2009	ESPN the Magazine/CoSIDA Academic All-District team, Men's Soccer

FUNDED PROJECTS

2026	HarvestStat: Turning Open Agricultural Data into Action for Food System Equity and Resilience – Bellagio Convening – Rockefeller Foundation – Lead PI
2026-2027	Next-generation Global Maps of Irrigated Area (GMIA-NEXT) for the 21st century – University of Alabama Global Water Security Center (\$150,000) – Lead PI
2026-2027	Identifying irrigation sourcing through differential land surface temperature – Delaware EPSCoR (\$50,000) – Lead PI
2025-2030	CAREER: Advancing climate resilience of food supply chains through research and education – US National Science Foundation (\$598,516) – Lead PI
2024	Status and Opportunities of Irrigation in Central Asia – The World Bank (\$66,000) – Lead PI
2024	Flexible AI for mapping agriculture in Africa – University of Delaware AI Center of Excellence (\$24,500) – Lead PI

2024-2026	Mapping and addressing Delaware's food waste – Delaware Department of Natural Resources & Environmental Control (\$50,000) – Lead PI
2022-2026	Targeted conservation: A coupled hydro-economic modeling approach to maximizing water availability across the Mississippi River Basin – United States Department of Agriculture National Institute of Food and Agriculture (\$749,572) – Lead PI
2021-2023	Mapping global irrigated and rainfed croplands – University of Alabama Global Water Security Center (\$33,000) – Lead PI
2021-2022	Global mapping of crop climate resilience – Univ. of Delaware (\$15,000) – Lead PI
2021-2026	D-ISON: TRACK 1: Characterizing the Global Illicit Trade in Energy-Critical Materials using Machine Learning, Remote Sensing, and Qualitative Research – US National Science Foundation (\$999,984) – Co-PI (Lead PI: Dr. Julie Klinger)
2021-2022	Crop field delineation in Nigeria through deep learning – Oracle for Research (\$60,000) – Lead PI
2018-2019	Resilience and Fragility of Interstate Grain Trade in India – Data Science Institute, Columbia University (\$160,000) – Lead PI
2016-2018	Crop optimizations to improve food supply and reduce water scarcity – The Nature Conservancy (\$150,000) – Lead PI
2013-2015	Impacts of a Changing Climate on Modern International Human Migrations – Virginia Space Grant Consortium (\$10,000) – Lead PI
2013-2016	Quantifying Environmental Drivers of International Human Migration – National Science Foundation Graduate Research Fellowship (\$150,000) – Lead PI

MENTORING

2026-	Yiqing Zhang (University of Delaware, PhD)
2026-	Dominic DelRosso (University of Delaware, MS)
2026-	Anfeng Zhu (University of Delaware, Postdoctoral Researcher)
2026-	Paige Angermaier (University of Delaware, BS)
2025-	Aarti Arora (University of Delaware, PhD) – <i>Breaking Barriers Fellow</i>
2024-	Amaja' Mack (University of Delaware, PhD) – <i>Breaking Barriers Fellow</i>
2024-	John Uponi (University of Delaware, PhD) – <i>DENIN Environmental Fellow</i>

2023-	Afia Sarwar (University of Delaware, PhD) – <i>Pakistan Higher Education Commission (HEC) Scholarship; UD Climate Hub Policy Internship</i>
2022-2026	Endalkachew Kebede (University of Delaware, PhD) – <i>CUAHSI Hydroinformatics Innovation Fellowship</i>
2021-2023	Carissa Johnson (University of Delaware, BS) – <i>UD Summer Research Fellow</i>
2021-2022	Alexander Checchi (University of Delaware, BS) – <i>DENIN Environmental Scholar</i>
2021-2023	Michael Eruaga (University of Delaware, MS)
2021-2022	Spencer Hanggodo (Univ. of Delaware, BS) – <i>CENFOODS Internship Awardee</i>
2021-2026	Bhoktear Khan (University of Delaware, PhD) – <i>UD Climate Chance Hub Graduate Research Enhancement Grant; UD DSI Fellow; University Doctoral Fellowship for Excellence</i>
2021-2024	Kevin Ong'are Oluoch (University of Delaware, MS) – <i>Borel Global Fellow; Foundation for Food and Agriculture Research (FFAR) Fellow</i>
2020	Sam Becton (University of Delaware, BS) – <i>UD Summer Scholar</i>
2020-2023	Kopo Oromeng (Uni. of Delaware, PhD) – <i>Schlumberger Faculty for the Future Fellow</i>
2020-	Hanan Abou Ali (University of Delaware, PhD) – <i>DENIN Envir. Fellow; UD DSI Fellow</i>
2019-2021	Tyler Sharretts (University of Delaware, MS)
2019-2024	Dongyang Wei (University of Delaware, PhD) – <i>UD Doctoral Fellowship; University Doctoral Fellowship for Excellence; UD Climate Chance Hub Graduate Research Enhancement Grant; UD DSI Fellow</i>
2019-2024	Piyush Mehta (University of Delaware, PhD) – <i>University Doctoral Fellowship for Excellence</i>
2018-2022	Leslie Castro (Columbia University, BS)
2017-2018	Anvi Mridul (Columbia University, MPA)
2017-2019	Hee Jin Koo (Columbia University, BS)
2017-2018	Sage Max (Columbia University, BA) (Senior thesis mentor)
2016-2019	Lorenzo Rosa (University of California, Berkeley, PhD)
2015	Antonio Seveso (Politecnico di Milano (Italy), MS)
2015	Domingos Machava (Universidade Eduardo Mondlane (Mozambique), MS)
2015-2018	Davide Danilo Chiarelli (Politecnico di Milano (Italy), MS/PhD)

2014 Jennifer Ren (University of Virginia, BS)
2012 Jerrika Frazier (University of Virginia, BS)

TEACHING

University of Delaware (2020-)

Humans and Environmental Sustainability, GEOG236/PLSC236 (instructor of record)
Earth System Science and Policy, ENSC300/ENVR300 (instructor of record)
GIS for Environmental Research, GEOG604 (instructor of record)
Geographic Information Systems and Science, GEOG670 (instructor of record)

Columbia University (2016-2019)

Ecological and Social Systems for Sustainable Development, The Earth Institute (guest lecturer)

University of Virginia (2011-2016)

Forest Hydrology, Department of Environmental Sciences (guest lecturer)
Dryland Ecohydrology, Department of Environmental Sciences (guest lecturer)

University of Delaware (2006-2010)

Introduction to Chemistry, Department of Chemistry and Biochemistry (teaching assistant)

LECTURES AND PRESENTATIONS

* indicates lab group member

2026 Ray D, **Davis KF**, Anderson W, Lee D (2026) “HarvestStat: Tackling the agricultural production data challenge”, HarvestStat Webinar Series, Virtual.

Davis KF (2026) “Towards sustainability and resilience in the food-water-climate nexus”, Department of Environmental, Land, and Infrastructure Engineering (DIATI), Politecnico di Torino, Italy (*Invited*).

Davis KF (2026) “AI-enabled pathways for fine-scale irrigation mapping and monitoring”, Global Water Informatics Group, The World Bank, Washington, D.C. (*Invited*).

Davis KF, Adeluyi O (2026) “Fine-scale irrigation mapping in data-scarce settings”, Gates Foundation, London. (*Invited*).

Davis KF (2026) “Sustainable Food Systems and Global Change”, Mangone Young Scholars Award, University of Delaware, Newark, DE. (*Invited*).

Davis KF, Cuellar TA, **Khan BM***, **Uponi J*** (2026) “AI-Enabled Mapping of the Nigerian Food System”, National Space Research and Development Agency, Abuja, Nigeria. (*Invited*).

- 2025 **Uponi J***, Klinger J, Murphy G, **Davis KF** (2025) “Overlooked potential for Energy Transition Mineral resources and research in Above-Ground Sources”, Oral Presentation, American Geophysical Union Annual Meeting, New Orleans.
- NG K, Marquez J, Laboy G, **Kebede EA***, Michael HA, **Davis KF**, Taufer M (2025) “An Interface for Data Curation and Mapping of Irrigated Areas Using Active Learning”, Poster Presentation, American Geophysical Union Annual Meeting, New Orleans.
- Arora A***, DeFries RS, McDermid SS, Mondal P, **Davis KF** (2025) “Rural labor out-migration’s impact on agriculture and the environment in the Global South”, Oral Presentation, American Geophysical Union Annual Meeting, New Orleans.
- Anderson WB, Becker-Reshef I, **Davis KF**, Ehrmann S, Flach R, Lee D, Meyer C, Proctor J, Ray DK, You L (2025) “Observational estimates of increasing maize yield variance due to climate change”, Oral Presentation, American Geophysical Union Annual Meeting, New Orleans.
- Uponi J***, **Khan BM***, **Abou Ali H***, Alabi T, Adeluyi O, Olayide O, **Davis KF** (2025) “The Role of Resilient Crops in Influencing Climate-Driven Deforestation in Nigeria”, Poster Presentation, American Geophysical Union Annual Meeting, New Orleans.
- Mack A***, **Khan BM***, **Davis KF** (2025) “Linkages Between Climate Extremes, Cropland Expansion, and Deforestation in Sub-Saharan Africa”, Poster Presentation, American Geophysical Union Annual Meeting, New Orleans.
- Kebede EA***, Ali T, Chiarelli DD, Hartman S, Kummu M, **Mehta P***, Richter BD, Rulli MC, Tuninetti M, Brauman KA, Deng Q, Jägermeyr J, Marston L, Mekonnen MM, Ray DK, Rosa L, Siebert S, Xie W, **Davis KF** (2025) “Global and Local Risks of Rising Water Scarcity to Food Production and Supply”, Oral Presentation, American Geophysical Union Annual Meeting, New Orleans.
- Sarwar A***, **Khan BM***, **Davis KF** (2025) “The Role of Climate in Shaping US Cropland Shifting and Crop Switching”, Oral Presentation, American Geophysical Union Annual Meeting, New Orleans.
- Davis KF**, Abedi R, **Abou Ali H***, Adeluyi O, Alabi T, Chakraborty T, **Khan BM***, Olayide O, **Uponi J***, Wasik A, Yin H, Estes LD (2025) “Assessing transitions between smallholder and commercial agriculture in Nigeria through automated field boundary segmentation”, Poster Presentation, American Geophysical Union Annual Meeting, New Orleans.
- Khan BM***, **Uponi J***, **Abou Ali H***, Adeluyi O, Alabi T, Olayide O, **Davis KF** (2025) “Assessing Economic Water Scarcity and Sustainable Irrigation Potential in Nigeria”, Oral Presentation, American Geophysical Union Annual Meeting, New Orleans.

Kebede EA*, Laboy G, Paula Olaya P, Michela Taufer M, Holly A Michael HA, Kevin Bhimani K, **Davis KF** (2025) “High-Resolution Global Mapping of Irrigated Areas Using Remote Sensing and Machine Learning”, Oral Presentation, American Geophysical Union Annual Meeting, New Orleans.

Davis KF (2025) “Understanding food-water-climate linkages in data-scarce contexts”, Oral Presentation. Agriculture, Water, and Nutrition Workshop. Daughtery Water for Food Institute. University of Nebraska, Omaha, Nebraska (*Invited*).

Davis KF (2025) “Towards sustainable and resilient food-water systems in a changing climate”, Oral Presentation. Water-Energy-Food Nexus Talks. Zhengzhou University. Virtual (*Invited*).

Davis KF (2025) “Towards water sustainability in the face of rising scarcity”, Oral Presentation. Symposium on Efficient Utilization of Agricultural Water Resources. China Agricultural University, Beijing, China (*Invited*).

Davis KF (2025) “Food systems in a changing climate”, Oral Presentation. ClimArts Organization. Virtual (*Invited*).

Davis KF (2025) “Towards food system sustainability in a changing climate”, Oral Presentation. Climate School. Columbia University, New York, New York (*Invited*).

Davis KF, Kebede EA* (2025) “The role of irrigation for sustainable and resilient food systems”, Oral Presentation. Global Water Security Center. University of Alabama. Virtual (*Invited*).

Davis KF, Kebede EA* (2025) “The role of irrigation for sustainable and resilient food systems”, Oral Presentation. Land and Carbon Lab. World Resources Institute. Virtual (*Invited*).

2024 **Kebede EA***, Oluoch KO, Siebert S, **Mehta P***, Hartman S, Jägermeyr J, Ray DK, Ali T, Brauman KA, Deng Q, Xie W, **Davis KF** (2024) “A global open-source dataset of monthly irrigated and rainfed cropped areas (MIRCA-OS) for the 21st century”, Oral Presentation. American Geophysical Union Annual Meeting, Washington, D.C.

Anderson WB, Lee D, Davenport IV F, Chen X, Shukla S, Sahajpal R, Budde ME, Rowland J, Verdin J, You L, Ahouangbenon M, **Davis KF, Kebede EA***, Steffen Ehrmann S, Justice CJ, Meyer C (2024) “An open-access subnational crop statistics dataset for climate-smart analyses in Africa”, Oral Presentation. American Geophysical Union Annual Meeting, Washington, D.C.

Abou Ali H*, Davis KF (2024) “Assessing Crop Climate Adaptation and Diet Diversity in Oyo State, Nigeria”, Oral Presentation. American Geophysical Union Annual Meeting, Washington, D.C.

Khan B*, **Abou Ali H***, Adeluyi O, Alabi T, Olayide O, **Upuni J***, Deliberty TL, Mondal P, **Davis KF** (2024) “Assessing Economic Water Scarcity and Potential for Sustainable Irrigation Expansion in Nigeria”, Poster Presentation. American Geophysical Union Annual Meeting, Washington, D.C.

Cuellar TA, Ayinde R, **Khan B***, Adeluyi O, Alabi T, Olayide O, Gephart J, Mishra R, Bianco F, **Davis KF** (2024) “Automatic Delineation of Fish Ponds across Nigeria with Machine Learning Image Segmentation Models”, Poster Presentation. American Geophysical Union Annual Meeting, Washington, D.C.

Kebede EA*, Ali T, Brauman KA, Chiarelli DD, Deng Q, Hartman S, Jägermeyr J, Kummu M, Marston L, **Mehta P***, Mekonnen MM, Oluoch KO, Ray DK, Richter BD, Rosa L, Rulli MC, Siebert S, Tuninetti M, Xie W, **Davis KF** (2024) “Global and Local Risks of Rising Water Scarcity to Food Production and Supply”, Poster Presentation. American Geophysical Union Annual Meeting, Washington, D.C.

Laboy G, **Kebede EA***, Taufer M, Olaya P, Michael HA, **Davis KF** (2024) “High-resolution (30m) Mapping of Irrigated Areas Using Machine Learning”, Poster Presentation. American Geophysical Union Annual Meeting, Washington, D.C.

Yin L, Ghosh R, Hale D, Wilson N, Diatta A, **Abou Ali H***, Fenton S, Richter J, Schneider M, Masolele R, Min A, Serena Lin S, Carcedo AJP, Goldman L, **Davis KF**, Ciampitti IA, Liu L, Kumar V, Jin Z (2024) “Mapping the world’s half cashew across the West Africa: spatial dynamics and environmental implications”, Poster Presentation. American Geophysical Union Annual Meeting, Washington, D.C.

Sarwar A*, **Khan B***, **Wei D***, **Davis KF** (2024) “The Role of Climate in Shaping US Crop Shifting and Switching”, Oral Presentation. American Geophysical Union Annual Meeting, Washington, D.C.

Davis KF, **Kebede EA***, **Khan B***, **Mehta P***, **Sarwar A*** (2024) “Towards sustainable and resilient food-water systems”, Oral Presentation. AGU Global Environmental Change Early Career Award Webinar Series. Virtual (*Invited*).

Davis KF (2024) “Pathways for achieving sustainable and resilient food-water systems”, Oral Presentation. Peking University. Beijing, China (*Invited*).

Davis KF (2024) “Pathways for achieving sustainable and resilient food-water systems”, Oral Presentation. China Agricultural University. Beijing, China (*Invited*).

Mehta P*, Muller M, Niles MT, **Davis KF** (2024) “Tradeoffs between nutrition and irrigation sustainability in the Global South”, Oral Presentation. World Water Week. Stockholm, Sweden.

Davis KF (2024) “AI-enabled Mapping Nigeria’s Croplands”, Oral Presentation. National Space Research and Development Agency. Abuja, Nigeria (*Invited*).

- Davis KF** (2024) “AI Approaches for Achieving Sustainable and Resilient Food Systems”, Oral Presentation. DARWIN Computing Symposium. University of Delaware, Newark, Delaware (*Invited*).
- 2023 **Kebede EA***, Hrozencik RA, Marston L, Van Meter KJ, **Davis KF** (2023) “Optimizing cropland conservation payments to minimize nitrogen surplus in the Mississippi River Basin”, Poster Presentation, American Geophysical Union Annual Meeting, San Francisco.
- Kebede EA***, **Oluoch KO***, Hartman S, **Mehta P***, Ali T, Jägermeyr J, Ray DK, Siebert S, Xie W, **Davis KF** (2023) “A global open-source dataset of monthly irrigated and rainfed cropped areas (MIRCA-OS) for the 21st century”, Poster Presentation, American Geophysical Union Annual Meeting, San Francisco.
- Mehta P***, Muller M, **Davis KF** (2023) “Estimating the future global expansion of irrigation dam command areas and its implications for food security”, Poster Presentation, American Geophysical Union Annual Meeting, San Francisco.
- Abou Ali H***, **Khan B***, Nakalembe CL, Kerner HR, Estes LD, Yin L, Jin Z, Traore PCSC, Alabi T, Adewopo JB, Adeluyi O, Olayide O, Mondal P, Uponi J, Saito K, Ajeigbe H, **Davis KF** (2023) “Machine Learning for Cassava/Maize Intercropping Mapping in Nigeria”, Poster Presentation, American Geophysical Union Annual Meeting, San Francisco.
- Muller M, Bertassello LE, **Davis KF**, **Khan B***, **Mehta P***, Chiarelli DD, Dell'Angelo J, D'Odorico P, Mueller N, Rulli MC (2023) “Inter-sectoral dependencies of the global land rush and implications for household health and livelihoods”, Poster Presentation, American Geophysical Union Annual Meeting, San Francisco.
- Yin L, Ghosh R, **Abou Ali H***, Hale D, **Davis KF**, Kumar V, Jin Z (2023) “Mapping smallholder tree crops in Côte d'Ivoire and Nigeria with spatiotemporal transferable domain adversarial deep learning”, Poster Presentation, American Geophysical Union Annual Meeting, San Francisco.
- Wei D***, Gephart JA, Downs S, **Davis KF** (2023) “Propagation of Production Shocks through Domestic and International Food Supply Chains”, Poster Presentation, American Geophysical Union Annual Meeting, San Francisco.
- Khan B***, **Wei D***, **Mehta P***, **Davis KF** (2023) “Cropland Expansion Connects Climate Extremes and Dietary Diversity in Nigeria”, Poster Presentation, American Geophysical Union Annual Meeting, San Francisco.
- Davis KF**, **Kebede EA***, **Abou Ali H***, Clavelle T, Froehlich H, Gephart J, Hartman S, Herrero M, Kerner HR, **Mehta P***, Nakalembe CL, Ray DK, Siebert S, Thornton P (2023) “Assessing the global state of food production data scarcity”, Poster Presentation, American Geophysical Union Annual Meeting, San Francisco.

- Davis KF, Wei D***, Downs S, Gephart JA, Iizumi T, Ramankutty N, Tuninetti M (2023) “Assessing and improving the resilience of food supply chains”, Oral Presentation, American Geophysical Union Annual Meeting, San Francisco (*Invited*).
- Davis KF** (2023) “Challenges and solutions for sustainable and resilient food-water systems”, Oral Presentation. Department of Biosphere Engineering. Carnegie Institution for Science, Palo Alto, California (*Invited*).
- Davis KF** (2023) “The global interconnections between water and food”, Panelist. Nature Water Talks: Water and Food. *Nature Water*, Virtual (*Invited*).
- 2022 **Abou Ali H*, Davis KF** (2022) “Remote Sensing and Machine Learning for Crop Mapping and Classification in Nigeria”, Poster Presentation, American Geophysical Union Annual Meeting, Chicago.
- Khan B*, Wei D*, Davis KF** (2022) “Exploring Links Between Climate Extremes, Cropland Expansion, and Nutrition in Nigeria”, Poster Presentation, American Geophysical Union Annual Meeting, Chicago.
- Mehta P***, Niles M, **Davis KF** (2022) “Evaluating Linkages between Irrigation and Nutrition in Children across Thirty Countries”, Oral Presentation, American Geophysical Union Annual Meeting, Chicago.
- Wei D***, Gephart J, Ramankutty N, **Davis KF** (2022) “Majority of Crop Production Shocks Explained by Fluctuations in Planted and Harvested Area in the US”, Oral Presentation, American Geophysical Union Annual Meeting, Chicago.
- Wei D*, Davis KF** (2022) “Projected Dietary Trends are Unlikely to Meet Nutritious and Sustainable Dietary Goals in the World”, Oral Presentation, American Geophysical Union Annual Meeting, Chicago.
- Davis KF**, Tuninetti M (2022) “Identifying and addressing global hotspots of climate-related crop production losses”, Oral Presentation, American Geophysical Union Annual Meeting, Chicago.
- Davis KF** (2022) “Global hotspots of climate-related crop production instability”, Oral Presentation. Inclusive Diets within Planetary Boundaries. Cell Press LabLinks, Virtual (*Invited*).
- Davis KF** (2022) “Measuring the sustainability of food production systems: Exploring the solution space”, Oral Presentation. Perspectives in Global Development. Cornell University, New York (*Invited*).
- Davis KF** (2022) “Mapping Nigeria’s croplands”, Oral Presentation. National Space Research and Development Agency. Abuja, Nigeria (*Invited*).

- Davis, KF** (2022) “Supply Chain Challenges to Our Food System”, Oral Presentation. UD Ocean Currents Lecture Series. University of Delaware, Newark, Delaware (*Invited*).
- Davis KF** (2022) “Informing solutions for sustainable and resilient food production systems”, Oral Presentation. Food Climate Partnership. Columbia University, New York, New York (*Invited*).
- 2021 **Abou Ali H***, Estes L, Traore P, Adewopo J, **Davis KF** (2021) “A Deep Learning Approach to Agricultural Field Delineation in Nigeria”, Poster Presentation, American Geophys. Union Annual Meeting, New Orleans.
- Mehta P***, Kumm M, Siebert S, Ali T, Marston L, Xie W, **Davis KF** (2021) “Mapping changes in global area equipped for irrigation”, Poster Presentation, American Geophys. Union Annual Meeting, New Orleans.
- Wei D***, **Davis KF** (2021) “Majority of production shocks for major US crops explained by fluctuations in planted and harvested area”, Oral Presentation, American Geophys. Union Annual Meeting, New Orleans.
- Oromeng K***, Levin N, Muller M, Van Den Hoek J, Ayeb-Karlsson S, Ali S, **Davis KF** (2021) “Temporal dynamics of refugee camp establishment and tree cover change”, Oral Presentation, American Geophys. Union Annual Meeting, New Orleans.
- Sharretts T***, **Davis KF** (2021) “Spatio-temporal evolution of annual and seasonal water scarcity in China, India, and the United States”, Oral Presentation, American Geophys. Union Annual Meeting, New Orleans.
- Davis KF** (2021) “Large-scale land investments and their socio-environmental effects”, Oral Presentation. Earth and Environmental Science department. Temple University, Philadelphia, Pennsylvania (*Invited*).
- Davis KF** (2021) “Assessing and improving the sustainability of food production systems”, Oral Presentation. China Agricultural University, Beijing, China (*Invited*).
- Davis KF** (2021) “Forests and the influence of the global land rush”, Grabbing the Forest Commons: From Diagnosis to Prescription, International Association for the Study of the Commons (IASC) 2021 Forest Commons Virtual Conference. Arizona State University, Tempe, Arizona (*Invited Panelist*).
- Davis KF** (2021) “Large-scale land investments and their socio-environmental effects”, Oral Presentation. Northern Illinois University, DeKalb, Illinois (*Invited*).
- Davis KF** (2021) “Large-scale land investments and their socio-environmental effects”, Oral Presentation. Ecological Soc. of America Annual Meeting, Long Beach, California (*Invited*).

- Davis KF** (2021) “Assessing and improving the sustainability of food production systems”, Oral Presentation. Environmental Engineering seminar, University of California, Berkeley, Berkeley, California (*Invited*).
- Davis KF** (2021) “Large-scale land investments and their socio-environmental effects in the tropics”, Oral Presentation. Environmental Systems seminar, University of California, Merced, Merced, California (*Invited*).
- 2020 **Wei D***, **Davis KF** (2020) “Dietary Transitions Can Overcome the Nutritional Threat of Increasing CO₂”, Oral Presentation, American Geophys. Union Annual Meeting, virtual.
- Mehta P***, Kummu M, Siebert S, Ali T, Marston L, Xie W, **Davis KF** (2020) “Mapping Changes in Global Irrigated Areas”, Poster Presentation, American Geophys. Union Annual Meeting, virtual.
- Sharretts T***, **Davis KF** (2020) “Spatio-temporal Evolution of Annual and Seasonal Water Scarcity in China, India, and the United States”, Oral Presentation, American Geophys. Union Annual Meeting, virtual.
- Marston L, Lamsal G, Ancona Z, Caldwell P, Richter B, Ruddell B, Rushforth R, **Davis KF** (2020) “Reducing Water Scarcity by Improving Water Productivity”, European Geophys. Union Annual Meeting, virtual.
- Davis KF** (2020) “Circularity and COVID-19 in the US: A Food Supply Chain Perspective”, Oral Presentation, *Online Discourse on Circularity and COVID-19*. Interconnections for Making Africa Great Empowered and Sustainable (IMAGES) Initiative, Ibadan, Nigeria (*Invited Panelist*).
- 2019 **Davis KF** (2019) “Beyond the Green Revolution: Using data science to balance multiple objectives for sustainable agriculture”, Oral Presentation, Data and Society Council, Data Science Institute, Columbia University, New York, New York (*Invited*).
- Zhang X, Davidson EA, Pfeifer K, Yao G, Dalin C, Komarek A, Kanter D, **Davis KF**, Folberth C, Rodriguez FG, Fanzo J, Vishwakarma S, Zhao J, Zou T (2019) “A Sustainable Agriculture Matrix of environmental and socioeconomic indicators for protecting Earth’s climate”, Oral Presentation, American Geophys. Union Annual Meeting, Washington, D. C.
- Davis KF**, Marston L, Rushforth R (2019) “Aligning the multiple goals of food production, environmental flow provision, and nutrition in US watersheds”, Poster, American Geophysical Union Annual Meeting, Washington, D. C.
- 2018 **Davis KF** (2018) “Transdisciplinary approaches to food system sustainability”, Oral Presentation, American Geophysical Union Annual Meeting, Washington, D. C. (*Invited*).

- Davis KF**, Downs SM, Gephart JA (2018) “Propagation of environmental variability through global food supply chains: Current knowledge and future priorities”, Poster, American Geophysical Union Annual Meeting, Washington, D. C.
- Marston L, **Davis KF**, Rushforth R, Ruddell BL, Ancona Z, Bagstad K (2018) “Water footprint benchmarks for the United States”, Poster, American Geophysical Union Annual Meeting, Washington, D. C.
- Davis KF** (2018) “Data-driven decision support for sustainable food systems”, Oral Presentation, Delaware Envir. Institute, University of Delaware, Newark, Delaware (*Invited*).
- Davis KF**, Rulli MC, Olayide OE (2018) “Water footprints and nutritional yields of staple crops in Nigeria”, Oral Presentation, Ibadan Sustainable Devel. Summit, Ibadan, Nigeria.
- Davis KF** (2018) “Holistic pathways for achieving food security and water sustainability”, Oral Presentation, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) Biennial Colloquium, Shepherdstown, West Virginia (*Invited*).
- Davis KF** (2018) “A multidimensional framework for identifying actionable and sustainable food security solutions”, Oral Presentation, Department of Geography, University of Delaware, Newark, Delaware (*Invited*).
- Davis KF**, DeFries R, Richter B, Singh D, Rao N, Chhatre A, Fargione J (2018) “Assessing the climate resilience of grain production in India”, Oral Presentation, Earth Institute Postdoctoral Symposium, New York, New York.
- Davis KF** (2018) “A multidimensional framework for identifying actionable and sustainable food security solutions”, Oral Presentation, Earth System Science, Stanford University, Palo Alto, California (*Invited*).
- Davis KF**, Olayide OE (2018) “Assessing climate-resilient and nutritious staple crops in Nigeria”, Oral Presentation, Centre for Sustainable Development, University of Ibadan, Nigeria (*Invited*).
- 2017 **Davis KF**, DeFries R, Richter B, D’Odorico P, Singh D, Rao N, Chiarelli DD, Rulli MC, Chhatre A, Seveso A, Fargione J (2017) “A multidimensional approach to food production decision making”, Oral Presentation, American Geophysical Union Annual Meeting, New Orleans, Louisiana.
- Davis KF**, Rosa L, Rulli MC, D’Odorico P (2017) “The water-energy-food nexus of unconventional fossil fuels”, Poster, American Geophysical Union Annual Meeting, New Orleans, Louisiana.

- Davis KF**, DeFries R, Richter B, D’Odorico P, Singh D, Chiarelli DD, Rulli MC, Chhatre A, Seveso A, Fargione J (2017) “A multidimensional approach to food production decision making”, Oral Presentation, Earth Institute Postdoctoral Symposium, New York, New York.
- Davis KF**, Chiarelli DD, Richter B, Chhatre A, Singh D, DeFries R (2017) “Towards climate resilient and nutritious cereal crops in India”, Oral Presentation, American Association of Geographers Annual Meeting, Boston, Massachusetts.
- 2016 **Davis KF**, Seveso A, Rulli MC, D’Odorico P (2016) “Towards a globally optimized crop distribution: Integrating water use, nutrition, and economic value”, Oral Presentation, American Geophysical Union Annual Meeting, San Francisco, California.
- Davis KF** (2016) “Environmental costs of achieving global water and food security: Moving towards a sustainable water-food nexus of agriculture”, Oral Presentation, Earth System Science, University of California Irvine, Irvine, California (*Invited*).
- Davis KF**, Seveso A, Rulli MC, D’Odorico P (2016) “Water savings of redistributing global crop production”, Oral Presentation, EGU Annual Meeting, Vienna, Austria.
- Davis KF**, Yu K, Rulli MC, Pichdara L, D’Odorico P (2016) “Human and environmental impacts of land acquisitions in Cambodia”, Poster, Public Days, Charlottesville, Virginia.
- 2015 Rulli MC, D’Odorico P, Chiarelli D, **Davis KF** (2015) “Water limited agriculture in Africa: Climate change sensitivity of large scale land acquisitions”, Oral Presentation, American Geophysical Union Annual Fall Meeting, San Francisco, California.
- D’Odorico P, Rulli MC, Casirati S, **Davis KF**, Dell’Angelo J (2015) “Land use change induced by large scale land acquisitions”, Oral Presentation, Land and Poverty Conference, World Bank, Washington, D. C.
- 2014 **Davis KF**, Yu K, D’Odorico P (2014) “Global livestock production: The importance of efficiency changes”, Poster, AGU Annual Fall Meeting, San Francisco, California.
- Davis KF**, D’Odorico P (2014) “Does development dictate vulnerability? A global study of international migration and environmental change”, Oral Presentation, Virginia Space Grant Consortium Student Research Conference, Hampton, Virginia.
- 2013 **Davis KF**, D’Odorico P, Rulli MC (2013) “Food security in the 21st century: Global yield projections and agricultural expansion”, Poster, American Geophysical Union Annual Fall Meeting, San Francisco, California.
- Davis KF**, D’Odorico P, Rulli MC (2013) “Global carrying capacity and sustainable development”, Oral Presentation, 4th Ibadan Sustainable Devel. Summit, Ibadan, Nigeria.

- Davis KF**, D’Odorico P, Rulli MC (2013) “Potential impacts of land grabbing on agricultural employment (and rural-urban migrations) in Africa”, Oral Presentation, 4th Ibadan Sustainable Development Summit, Ibadan, Nigeria.
- Davis KF**, D’Odorico P (2013) “Vulnerability indices for environmental human migration”, Poster, University of Virginia Dept. of Environmental Sciences EnviroDay 2013, Charlottesville, Virginia.
- 2012 **Davis KF**, D’Odorico P (2012) “Lines of evidence for environmentally driven human migration”, Oral Presentation, Amer. Geophysical Union Fall Meeting, San Francisco, CA.
- D’Odorico P, Carr JA, **Davis KF**, Laio F, Ridolfi L, Rulli MC, Suweis S (2012) “Water, people, and the environment “, Oral Presentation, AGU Annual Fall Meeting, San Francisco, CA.
- Davis KF**. “Human migrations, the environment and GIS” (2012) Oral Presentation, University of Virginia Scholars’ Lab GIS Day 2012, Charlottesville, Virginia.
- 2009 **Davis KF**, Lee A, Zondlo NJ (2009) “Characterization of HIV-1 gp41 mimic six-helix bundle formation”, Poster, Undergraduate Summer Research Symposium, Newark, DE.
- 2008 **Davis KF**, Bhor S, Zondlo NJ (2008) “Alpha–Helix mimics to inhibit HIV-1 membrane fusion”, Poster, Undergraduate Summer Research Symposium, Newark, Delaware.

ACADEMIC AND PUBLIC SERVICE

- 2026- Interim Associate Director, Delaware Environmental Institute, UD
- 2026- Presidential Committee on Sustainability, UD
- 2025- American Geophysical Union, Macelwane Medal Selection Committee
- 2025- [Food Systems Countdown Initiative](#). Working Group Lead. Environment, Natural Resources, & Production Working Group. Columbia University/ Cornell University/ Food and Agriculture Organization of the United Nations (FAO)/ Global Alliance for Improved Nutrition (GAIN).
- 2024- [HarvestStat Consortium](#). Leadership Team. IFPRI/ FEWS NET/ University of Delaware/ Harvard University/ University of Minnesota/ University of British Columbia/ Stockholm Environment Institute
- 2024 Sustainability Advisory Committee, Office of Sustainability, UD
- 2023- [Sustainability Analytics, Informatics, and Data \(AID\) Programme](#). Food Security Team Lead. *United Nations University*
- 2023- Research Working Group, Data Science Institute, UD

2023-	Graduate Program Director, Dept. of Geography and Spatial Sciences, UD
2023-2026	Honors Faculty Board, Honors College, UD
2023-	Academic Council, Dept. of Geography and Spatial Sciences, UD
2022-	Director, GIS Certificate Program, Dept. of Geography and Spatial Sciences, UD
2021-2023	Expert Advisory Board, Ullens Education Foundation (Nepal)
2021-	Editorial Board Member, <i>Environmental Research Letters</i>
2021-2023	Editorial Board Member, <i>Land</i>
2021	Planning Committee, <i>UD Data Science Symposium</i>
2021-2025	Scientific Committee, IMAGES Initiative (Nigeria)
2019-2021	Editorial Board Member, <i>Environmental Research Communications</i>
2019-2022	Guest Editor, <i>Environmental Research Letters</i>
2019-2021	Guest Editor, <i>Frontiers in Big Data</i>
2016-	Session Convener, <i>American Geophysical Union Fall Meeting</i>
2017-2023	Editor, <i>Frontiers in Sustainable Food Systems</i>
2012	Editor, <i>African Journal of Sustainable Development</i>
Ongoing	Reviewer: <i>Advances in Water Resources</i> ; <i>Agricultural and Forest Meteorology</i> ; <i>Ambio</i> ; <i>The BMJ (British Medical Journal)</i> ; <i>BMJ Open</i> ; <i>Climatic Change</i> ; <i>Conservation Letters</i> ; <i>Earth's Future</i> ; <i>Environmental Development</i> ; <i>Environmental Research Letters</i> ; <i>Environmental Science and Policy</i> ; <i>Frontiers in Ecology and the Environment</i> ; <i>Frontiers in Sustainable Food Systems</i> ; <i>Geophysical Research Letters</i> ; <i>Global Biogeochemical Cycles</i> ; <i>Global Environmental Change</i> ; <i>Journal of Rural Studies</i> ; <i>Lancet Planetary Health</i> ; <i>Livestock Science</i> ; <i>Nature</i> ; <i>Nature Climate Change</i> ; <i>Nature Communications</i> ; <i>Nature Food</i> ; <i>Nature Sustainability</i> ; <i>Nature Water</i> ; <i>Oxford Research Encyclopedia of Environmental Science</i> ; <i>PLoS ONE</i> ; <i>PNAS</i> ; <i>Royal Society Open Science</i> ; <i>Science</i> ; <i>Science Advances</i> ; <i>Science of the Total Environment</i> ; <i>Sustainability</i> ; <i>Sustainability: The Journal of Record</i> ; <i>Trends in Food Science and Technology</i> ; <i>Water Resources Research</i> ; <i>World Development</i>

MEDIA

Coverage in: *New York Times*, *National Geographic*, *CNN*, *Daily Mail*, *The Guardian*, *MSN News*, *ABC News*, *New Scientist*, *Medium*, *Carbon Brief*, *Times of India*, *Hindu Business Line*, *The Week*, *Outlook*, *New Food Magazine*, *ScienceDaily*, *PreventionWeb (UN)*, *Business Standard*, *Eurasia Review*, *Zee News*, *The Financial Express*, *Firstpost*, *Deccan Chronicle*, *New Kerala*, *Reuters*,

Voice of America, The Hindu, Hindustan Times, Financial Express (India), World Economic Forum, BBC Radio, Yahoo News, IOP Publishing, PhysicsWorld, PreventionWeb (UN), The Telegraph (India), The Independent (UK), Green Report, WIRED, MIT Technology Review, Environmental Research Web, Arstechnica, Technology Review, Environmental News Network, SeedQuest, Nature Asia, Zimbabwe Star, Lab Manager, Food Navigator, Climate News Network

PROFESSIONAL AFFILIATIONS

2025- American Association for the Advancement of Science
2012- American Geophysical Union