

Assistant Professor and PI of the [Hydroclimate Impact Lab \(HydroCLIMP\)](#) at the Department of Geography & Sustainability, University of Tennessee–Knoxville, TN, USA.

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Adjunct Associate Professor, Department of Geography, Universidad Autónoma de Santo Domingo (UASD), Santo Domingo, Dominican Republic.

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## Research interests

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- Tropical hydroclimate variability & atmospheric dynamics
- Climate change & food security
- Global and regional climate modeling
- Human-environment interactions & water resources
- Land-atmosphere interactions
- Aerosols and hydroclimate variability
- Seasonal drought forecasting

## Education

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Cornell University	Atmospheric Sciences	<b>Ph.D.</b> 2014–2018
Cornell University	Atmospheric Sciences	<b>M.S.</b> 2014–2017
Universidad Nacional Autónoma de México (UNAM)	Earth Sciences	<b>M.S.</b> 2008–2011
Universidad Autónoma de Santo Domingo (UASD)	Geography ( <i>summa cum laude</i> )	<b>B.S.</b> 2003–2007

## Professional Appointments

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2022–present	<b>Assistant Professor</b> , Dept. of Geography & Sustainability, University of Tennessee, Knoxville, TN, USA.
2014–present	<b>Adjunct Associate Professor</b> , Dept. of Geography, Universidad Autónoma de Santo Domingo (UASD), Santo Domingo, Dominican Republic.
2018–2020	<b>Postdoctoral Associate</b> , Dept. of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY, USA.
2014–2018	<b>Graduate Research Assistant</b> , Dept. of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY, USA.
2017	<b>Graduate Teaching Assistant</b> , Dept. of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY, USA.
2017	<b>Graduate Visitor</b> , National Center for Atmospheric Research (NCAR), Boulder, CO, USA.
2011–2014	<b>Assistant Professor</b> , Dept. of Geography, Universidad Autónoma de Santo Domingo (UASD), Santo Domingo, Dominican Republic.

## Publications

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### Published and submitted articles

- [19]. Sánchez-Murillo, **Herrera, D. A.**, et al: Tropical Cyclone isotopes, (*in revision: the Annals of the New York Academy of Sciences*; 2024).
- [18]. Hannel, C., Ellis, K., First, J., **Herrera, D. A.** (2024): Diurnal and Seasonal Patterns of Convective Weather Hazards across Tennessee and Their Likelihood for Causing Harm (1996–2022). (*in revision: Southeastern Geographer*).
- [17]. Li, X., Ault, T. R., Richardson, A. D., Frolking, S., **Herrera, D. A.**, Friedl, M. A., Carrillo, C. M., Evans, C. P. (2024): Northern hemisphere land-atmosphere feedback from changes in plant phenology in CESM. *Journal of Climate*, <https://doi.org/10.1175/JCLI-D-23-0179.1>
- [16]. **Herrera, D. A.**, Cook, B. I., Fasullo, J. T., Anchukaitis, K., Alessi, M., Martinez, C. J., Evans, C. P., Li, X., Ellis, K. N., Méndez, R., Ault, T., Centella, A., Stephenson, T., Taylor, M. A. (2023): Observed changes in hydroclimate attributed to human forcing. *PLOS Clim* 2(11): e0000303. *PLOS Climate*, <https://doi.org/10.1371/journal.pclm.0000303>. (**Invited Review Article**).
- [15]. Li, X., Ault, T. R., Richardson, A. D., Carrillo, C. M., Lawrence, D. N., Lombardozzi, D., Frolking, S., **Herrera, D. A.**, Moon, M., and Friedl, M. A. (2023): Shifting Plant Phenology in North America Alters Planetary Boundary Layer Height Differently in the Spring and Fall. *Agricultural and Forest Meteorology*, <https://doi.org/10.1016/j.agrformet.2022.109286>.
- [14]. Evans, C. P., Ault, T. R., Coats, S., Carrillo, C. M., **Herrera, D. A.** and Benton, B. N. (2022): Intrinsic century-scale variability in tropical Pacific SSTs and their influence on Southwestern US hydroclimate. *Geophysical Research Letters*, <https://doi.org/10.1029/2022GL099770>.
- [13]. Carrillo, C., Coats, S., Newman, M., **Herrera, D. A.**, Li, X., Moore, R., Shin, S., Lenner, F., Stevenson, S. and Ault, T. R. (2022): Megadroughts—a series of unfortunate La Niña events? *Journal of Geophysical Research-Atmospheres*, <https://doi.org/10.1029/2021JD036376>.
- [12]. Iturbide, M., Fernández, J., Gutiérrez, J. M., Pirani, A., Huard, D., Al Khourdajie, A., Baño-Medina, J., Bedia, J., Casanueva, A., Cimadevilla, E., Cofiño, A. S., De Felice, M., Diez-Sierra, J., García-Díez, M., Goldie, J., **Herrera, D. A.**, Herrera, S., Manzanas, R., Milovac, J., Radhakrishnan, A., San-Martín, D., Spinuso, A., Thyng, K., Trenham, C., Yelekçi, Ö. (2022): Implementation of FAIR principles in the IPCC: The WGI AR6 Atlas repository. *Scientific Data*, <https://doi.org/10.1038/s41597-022-01739-y>.
- [11]. Cook, B. I., Smerdon, J. E., Cook, E. R., Williams, A. P., Anchukaitis, K. J., Mankin, J. S., Allen, K., Andreu-Hayles, L., Ault, T. R., Belmecheri, S., Coats, S., Coulthard, B., Fosu, B., Grierson, P., Griffin, D., **Herrera, D. A.**, Ionita, M., Lehner, F., Leland, C., Marvel, K. D., Morales, M., Mishra, V., Ngoma, J., Nguyen, H., O'Donnell, A., Palmer, J., Rao, M. P., Rodriguez, M., Stahle, D., Stevenson, S., Thapa, U. K., Varuolo-Clarke, A., Wise, E. (2022): Megadroughts in the Common Era and the Anthropocene. *Nature Reviews Earth & Environment*, <https://doi.org/10.1038/s43017-022-00329-1>.
- [10]. Alessi, M. J., **Herrera, D. A.**, Evans, C. P., DeGaetano, A. T., Ault, T. R. (2022): Antecedent Soil Moisture Conditions Determine Land-Atmosphere Coupling in the Northeastern United States. *Journal of Geophysical Research-Atmospheres*, <https://doi.org/10.1029/2021JD034x740>.
- [9]. Benton, B., Alessi, M. J., **Herrera, D. A.**, Li, X., Carrillo, C. M., and Ault, T. R. (2022): Minor impacts of major volcanic eruptions in dynamically-downscaled last millennium ensemble data, *Climate Dynamics*, <https://doi.org/10.1007/s00382-021-06057-4>. (PDF).
- [8]. Carter, E., **Herrera, D. A.**, Steinschneider, S. (2021): Feature engineering for S2S warm-season precipitation forecast in the Midwestern US: towards a unifying hypothesis of anomalous warm-season hydroclimatic circulation. *Journal of Climate*, 34, 8291–8318, doi: 10.1175/JCLI-D-20-0264.1

- [7]. **Herrera, D. A.**, Mendez, R., Centella, A., and Martínez-Castro, D., Ault, T., Delanoy, R. (2021): Projected hydroclimate changes on Hispaniola Island through the 21st Century in CMIP6 models, *Atmosphere*, 12, 6, <https://doi.org/10.3390/atmos12010006>. (Invited contribution) ([PDF](#)).
- [6]. Centella-Artola, A., Bezanilla-Morlot, A., Taylor, M. A., **Herrera, D. A.**, Martínez-Castro, D., Sierra-Lorenzo, M., Vichot-Llano, A., Stephenson, T., Fonseca, C., Campbell, J., Alpizar, M. (2020): Evaluation of sixteen gridded precipitation datasets over the Caribbean region using gauge observations, *Atmosphere*, 11, 1334, <https://doi.org/10.3390/atmos11121334>. ([PDF](#)).
- [5]. **Herrera, D. A.**, T. R. Ault, C. M. Carrillo, J. T. Fasullo, X. Li, C. P. Evans, M. J. Alessi, N. M. Mahowald (2020): Dynamical characteristics of drought in the Caribbean from observations and simulations. *Journal of Climate*, 33, 10773–10797, doi: 10.1175/JCLI-D-20-0100.1. ([PDF](#)).
- [4]. **Herrera, D. A.**, T. R. Ault, J. T. Fasullo, S. J. Coats, C. M. Carrillo, B. I. Cook, A. P. Williams (2018): Exacerbation of the 2013-2016 Pan-Caribbean drought by anthropogenic warming. *Geophysical Research Letters*, <https://doi.org/10.1029/2018GL079408>. ([PDF](#)).
- [3]. **Herrera, D. A.**, and T. R. Ault (2017): Insights from a new high-resolution drought atlas for the Caribbean spanning 1950 to 2016. *Journal of Climate*, 30, 7801–7825, <https://doi.org/10.1175/JCLI-D-16-0838.1>. ([PDF](#)).
- [2]. Ortega Guerrero, B., Lozano García, M. S., **Herrera, D. A.**, Caballero, M., Beramendi-Orosco, L., Bernal, J. P., Torres, E., and Avendaño Villeda, D. (2017): Lithostratigraphy and physical properties of lacustrine sediments of the last ca. 150 kyr from Chalco basin, central Mexico. *Journal of South American Earth Sciences*, DOI: 10.1016/j.jsames.2017.09.003. ([PDF](#)).
- [1]. Ortega Guerrero, B., Lozano García, M. S., Caballero, M., and **Herrera, D. A.**, (2015): Historia de la evolución deposicional del lago Chalco, México, desde el MIS 3. *Boletín de la Sociedad Geológica Mexicana*, 67(2), 185–201. ([PDF](#)).

#### Other publications

- [2]. **Herrera, D. A.**, Vargas, H., García, B., Laurencio Girón, G., Ayala, O. (2013): Dinámica morfológica y riesgos naturales por inundaciones en la “Hoya de Enriquillo” y su relación con el aumento sostenido en el nivel del lago durante el período 2008-2011. *Anuario de Investigaciones Científicas*, 2 (1), 18–27. ([PDF](#)).
- [1]. Martínez-Batlle, J. R., Cámara-Artigas, R., Santos-Grullón, I., **Herrera, D. A.**, Medina-Castillo, E. V. and Laurencio-Girón, G. (2013): Geomorfología y geobotánica de Monteada Nueva, Cortico y Cachote, sierra de Bahoruco, República Dominicana: superficies corrosivas, pedimentos y bosques nublados amenazados en karst de montaña media tropical. *Anuario de Investigaciones Científicas*, 2 (1), 18–27. ([PDF](#)).

#### Theses

- [1]. Ph.D. dissertation (2018): Understanding Caribbean drought. Cornell University, 179 pp. ([PDF](#)).
- [2]. M.S. thesis (2011): Estratigrafía y análisis de facies de los sedimentos lacustres del cuaternario tardío de la Cuenca de Chalco, México (Stratigraphy and facies analysis of late Quaternary lacustrine sediments from Chalco basin, Mexico). Instituto de Geofísica, UNAM, 122 pp. ([PDF](#)).

## Grants

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Total funding: \$492,176.00

Total funding granted: \$95,160.00

### Internal Funding

- [6]. Global Catalyst Faculty Research Grant (Center for Global Engagement and Office of Research, Innovation and Economic Development of the University of Tennessee-Knoxville): *Using High-Resolution Climate Data to Improve Drought Projections and Resilience in the Caribbean* (\$6,000; February-December 2023, Principal Investigator).

### External Funding

- [5]. National Science Foundation (NSF)—Human-Environment and Geographical Sciences: *Linking a cloud-based drought forecast and farmers' traditional knowledge to improve drought resilience*. (\$397,016; Pending grant. August 2024-July 2027, **Principal Investigator**).
- [4]. Fondo Nacional de Innovación y Desarrollo Científico y Tecnológico (Fondocyt): Evaluación de la probabilidad de sequías prolongadas en la República Dominicana a consecuencia del cambio climático (*Assessing the risk of prolonged droughts in the Dominican Republic as a result of climate change*). Dominican Republic (\$60,000; January 2020-January 2021, **Principal Investigator**).
- [3]. Fondocyt: Montaña cárstica tropical, Sierra de Bahoruco (República Dominicana), fitogeografía, y registro paleoambiental y paleoflorístico desde el Plioceno al Cuaternario (*Tropical mountain karst ('sierra de Bahoruco'): phytogeography palaeoenvironmental and palaeofloristic record from the Pliocene to the Quaternary*). (Herrera received \$10,300; Jan. 2013-Jun. 2014, **Co-PI**).
- [2]. Fondocyt: Ambientes fluviales de estacionalidad contrastada, Cuenca del río Ocoa: dinámica hidrogeomorfológica, gestión de riesgos y conservación de la naturaleza (*Seasonally contrasted fluvial environments, Ocoa Basin: hydrogeomorphology dynamics, risk management and conservation of nature*). (Herrera received \$6,860; Jan. 2013-Jun. 2014, **Co-PI**).
- [1]. Facultad de Ciencias, Universidad Autónoma de Santo Domingo (FC-UASD): Dinámica morfofluvial y riesgos naturales por inundaciones en la Hoya de Enriquillo y su relación con el aumento del nivel del lago durante el período 2008-2011 (*Morphogenetic dynamic and hazards at Enriquillo Lake Southwestern DR, related with the raising of the Lake from 2008 to 2011*). Facultad de Ciencias, UASD (\$12,000; May 2012-Dec. 2013, **Principal Investigator**).

## Teaching

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### University of Tennessee—Knoxville, USA

- [1]. GEOG-434: Climatology (Fall 2022, 2024)
- [2]. GEOG-204: Understanding Climate Change (Spring 2023, 2024)
- [3]. GEOG-532: Topics in Global Change (Spring 2023)
- [4]. GEOG-600: Seminar in Climatology (Detection and Attribution analysis and downscaling methods) (Fall 2024)

### Universidad Autónoma de Santo Domingo (UASD), Dominican Republic.

- [1]. GEO-115: Climatology I (Spring 2012, 2013, 2014, 2021, 2022, Fall 2020\*, 2021, Fall 2022\*, Spring 2024\*) (**undergraduate**)
- [2]. GEO-411: Climatology II (Fall 2012, 2013, 2020\*, 2021, Spring 2021, 2022, 2023) (**undergraduate**)
- [3]. GEO-8007: General Climatology (Summer 2020, Fall 2020\*) (**graduate**)

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- [4]. GEO-115: Human Geography (Spring 2020\*)
- [5]. GEO-115: Economic Geography (Spring 2020\*)
- [6]. GEO-121: Physical Geography (Spring 2012, Fall 2012, Spring 2013, Fall 2013)
- [8]. GEO-112: Introduction to Geology (Spring 2012, Fall 2012, 2013, 2014)
- [9]. GEO-114: Introduction to Geomorphology (Spring 2014)
- [10]. GEO-131: Biogeography (Fall 2014)

#### **Instituto de Formación Docente Salomé Ureña, Dominican Republic.**

- [1]. GEO-100: Physical Geography (Spring 2020\*, Fall 2020\*, Spring 2021)
- [2]. CNT-420: Earth Sciences (Fall 2020\*, Spring 2021, 2022, Summer 2021, 2022)
- [3]. EEA-102: Climate Change (Fall 2021\*, Spring 2021) (**graduate**)

\* Denotes a distance course due to COVID-19.

#### **Cornell University, USA.**

- [1]. EAS-2680: Climate and Global Warming (Teacher assistant; Spring 2017)

### **Awards**

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*Total funding awarded: \$75,300.00*

- [7]. Faculty Research Assistants Funding Award (FRAF) (University of Tennessee-Knoxville) (2023; **\$2,250.00**)
- [6]. **Researcher of the Year 2022**, College of Sciences (UASD) (2022; **\$300.00**)
- [5]. **ASP Graduate Visitor Fellowship** (NCAR) (2017; **\$4,750.00**).
- [4]. **WISE Fellowship recipient** (RAL/NCAR) (2017; **\$2,500.00**).
- [3]. **International Hunger Program Student Grant** (First Presbyterian Church of Ithaca, NY) (2016; **\$500.00**).
- [2]. **Fulbright Scholarship** (U.S. Department of State) (2014–2016; **\$50,000.00**).
- [1]. **IPGH (OAS) Grant**, to study a M.S. in Earth Sciences at UNAM (2008-2010; **\$15,000.00**).

### **Selected presentations**

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- [29]. **Herrera, D. A.** (2024). The Anthropogenic Signal of Contemporaneous Droughts in the Caribbean and Central America. 1st Detection and Attribution Sciences workshop, University of West Indies-Mona, Kingston, Jamaica (**invited**).
- [28]. **Herrera, D. A.** (2024). Observed changes in hydroclimate attributed to human forcing. AAG, Honolulu, HI, USA (remote).
- [27]. **Herrera, D. A.** (2024). Hydroclimate extremes in the Caribbean: a historical perspective. AAG, Honolulu, HI, USA (**invited panelist**) (remote).
- [26]. **Herrera, D. A.** (2024). Megadroughts in the Caribbean? V International Congress-CI-SoDoFi 2024, Punta Cana, Dominican Republic.
- [25]. **Herrera, D. A.** (2023). Using the Community Earth System Model to study the dynamics of drought in the Circum-Caribbean. SEDAAG, Norfolk, VA, USA.
- [24]. **Herrera, D. A.** (2023). Hydroclimate variability in the Circum-Caribbean in the Common Era. University of West Indies-Mona Seminar, Kingston, Jamaica (**invited**).
- [23]. **Herrera, D. A.** (2023). Assessing the decadal drought risk in the Caribbean and Central America in the 21st Century. 2023 AAG Annual Meeting, Denver, CO, USA.

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- [22]. **Herrera, D. A.** (2023). Caribbean drought: past, present, and future. CISESS Science Seminar-NCSU, Asheville, NC, USA (**invited-remote**).
- [21]. **Herrera, D. A.** (2023). Historical and Projected droughts in the Circum-Caribbean. Geo Symposium (GeoSym), Knoxville, TN, USA (**invited**).
- [20]. **Herrera, D. A.** (2022). Assessing the dynamics of Caribbean drought using the Community Earth System Model (CESM). III International Congress in Physics (CI-SoDoFi 2022), Santo Domingo, Dominican Republic (**invited-remote**).
- [19]. **Herrera, D. A.** and Mendez-Tejeda, R. (2021). Projected hydroclimate changes on Hispaniola Island through the 21<sup>st</sup> century in CMIP6 models. XVI Congreso Internacional de Investigación Científica (CIC), Santo Domingo, Dominican Republic (**invited-remote**).
- [18]. **Herrera, D. A.** and Mendez-Tejeda, R. (2021). Increased drought risk in the Intra-Americas Seas region through the 21<sup>st</sup> century in CMIP6 models. II International Congress in Physics (CI-SoDoFi 2021), Santo Domingo, Dominican Republic (**invited-remote**).
- [17]. **Herrera, D. A.** and Ault, T. R. (2020). On the observed and projected hydroclimate change in the Caribbean between 1950 and 2100. AGU Fall Meeting, San Francisco, CA, USA (**invited-remote**).
- [16]. **Herrera, D. A.** (2020). Projected hydroclimate changes on Hispaniola Island through the 21st Century in CMIP6 models. XIX Jornada de Investigación Científica de la UASD. Santo Domingo, Dominican Republic (**invited-remote**).
- [15]. **Herrera, D. A.** and Ault, T. (2019). Climate variability and modeling in the Caribbean. Climate variability modeling tools for evidence-based decision making in agriculture risk management (ADRM) workshop. Paramaribo, Suriname (**invited-oral**).
- [14]. **Herrera, D. A.** (2019). Is climate change causing the drying-trend observed in the Caribbean? XV Congreso Internacional de Investigación Científica (CIC). Santo Domingo, Dominican Republic.
- [13]. **Herrera, D. A.** and Ault, T. (2019). A high-resolution hydroclimate dataset for the Caribbean Islands during the Last Millenium. 1st PaleoLink/PAGES2K Workshop. Murcia, Spain (**invited**).
- [12]. **Herrera, D. A.**, Ault, T. and Fasullo, J. T (2018). Dynamical characteristics of drought in the Caribbean during 1979–2016. American Geophysical Union (AGU) Fall Meeting. Washington, DC, USA.
- [11]. **Herrera, D. A.**, Ault, T., and Belcher, B. (2018). Variabilidad y tendencia hidroclimática en el Caribe y Centroamérica: perspectivas frente al cambio climático. XVII Jornada de Investigación Científica de la UASD. Santo Domingo, República Dominicana.
- [10]. **Herrera, D. A.** (2018). Climate change and drought risk in the Caribbean. International Studies Summer Institute. Understanding the Global Impacts of Climate Change. Cornell University, Ithaca, NY, USA (**Invited-oral**).
- [9]. **Herrera, D. A.**, Ault, T., Fasullo, J. T., and Carrillo, C. M. (2017). Is climate change intensifying the drying-trend in the Caribbean? American Geophysical Union (AGU) Fall Meeting. New Orleans, LA, USA.
- [8]. **Herrera, D. A.**, Ault, T., and Fasullo, J. T. (2017). The development of the Caribbean drought monitoring and forecasting dataset (CarDrought). Research Applications Laboratory (RAL) at the National Center for Atmospheric Research (NCAR) Seminar. Boulder, CO, USA (**invited**).
- [7]. **Herrera, D. A.**, Ault, T. (2016). The role of climate change on the 2013–2015 Caribbean drought. American Geophysical Union (AGU) Fall Meeting. San Francisco, CA, USA.
- [6]. **Herrera, D. A.** (2016). A new high-resolution Drought Atlas for the Caribbean: historical droughts and trends during the last 66 years. North American Symposium on Climate Change Adaptation. New York, NY, USA.
- [5]. **Herrera, D. A.** and Salazar, J. (2013). Geomorfología y vegetación de las lagunas Manatí y Flamenco, Humedales del Ozama, República Dominicana. Oral presentation delivered at the XX Congreso de

Ciencias del Ministerio de Educación Superior Ciencia y Tecnología (MESCYT), Santo Domingo, DN, Dominican Republic.

- [4]. **Herrera, D. A.**, Vargas, H., Martínez, J. R., Laurencio, G., Suárez, J. O. (2012). Dinámica morfofluvial y riesgos por inundaciones en la “Hoya de Enriquillo” y su relación con el aumento sostenido del Lago durante el período 2008-2011. Oral presentation delivered at the XI Jornada de Investigación Científica, UASD, Santo Domingo, DN, Dominican Rep.
- [3]. **Herrera, D. A.**, Ortega, B., Caballero, M., Lozano, S., Pi, T. and Brown, E. T. (2010). Stratigraphy and facies analysis of 122 m long lacustrine sequence from Chalco Lake, Central Mexico. Poster presentation delivered at the American Geophysical Union (AGU) Fall Meeting, San Francisco, California, USA.
- [2]. **Herrera, D. A.**, Ortega, B., Lozano, S. and Caballero, M. (2010). Estratigrafía y análisis de facies de los sedimentos lacustres de Chalco, México. Poster presentation delivered at the Reunión de la Unión Geofísica Mexicana (UGM), Puerto Vallarta, Jalisco, México.
- [1]. **Herrera, D. A.**, Ortega, B., Lozano, S. and Caballero, M., Pi, T. (2009). Stratigraphy from Lake of Chalco sediments, Mexico. Poster presentation delivered at the 11th International Paleolimnology Symposium, Guadalajara, Jalisco, México.

## Skills

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### Programming Skills

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| [1]. Python                            | [8]. CDO                     |
| [2]. NCL                               | [9]. git                     |
| [3]. UNIX-Linux environment (Bash/zsh) | [10]. WRF                    |
| [4]. Amazon Web Services (AWS)         | [11]. R                      |
| [5]. Emacs                             | [12]. QGIS (basic knowledge) |
| [6]. LaTeX                             | [13]. Jupyter Notebook       |
| [7]. NCO                               |                              |

### Fieldwork experience

- [1]. **Chalco Lake coring campaign (2008-2011)** Universidad Nacional Autónoma de México (México). As a graduate student in Earth Sciences, I collaborated with the logistics during the 2008-2011 coring campaigns in Chalco Lake (Mexico City). This work included the storage of the recovered lacustrine cores and post-coring stratigraphical description.
- [2]. **Physical Geography (2011-2014)** Universidad Autónoma de Santo Domingo (Dominican Republic). I organized and conducted field trips as part of an introductory class in Physical Geography with students majoring in Geography across the Dominican Republic. Fieldwork included assessing local landscape (e.g., analyzing vegetation, climate, land use, soil characteristics, hydrology, and geomorphology) and mapping the findings using QGIS and remote sensing (Google Earth and other satellite images).
- [3]. **Introductory Geology (2011-2014)** Universidad Autónoma de Santo Domingo (Dominican Republic). I organized and conducted field trips as part of an introductory class in Geology to sophomore students majoring in Geography. Fieldwork usually lasted a couple of days, and the students were able to analyze both the lithology and structural characteristics of the places visited. As in Physical Geography, the final product from these trips was a geology map (1:50,000) using local topographic maps (1:50,000) and a geological map (1:250,000) of the Dominican Republic as a reference.
- [4]. **Biogeography and geomorphology (2011-2014)** Universidad Autónoma de Santo Domingo (Dominican Republic). Along with colleagues in the Departments of Geography and Biology at

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Universidad Autónoma de Santo Domingo, I organized and conducted field trips with junior and senior students majoring in Geography and Biology. These fieldworks included the estimation of plant diversity and descriptions of soil profiles and local geomorphology. The final products of these field trips included geomorphological maps and vegetation distribution.

- [5]. **Dendrochronology (2018-2019)** Cornell University and University of Arizona (USA). I organized and conducted fieldwork in the highlands of the Dominican Republic to collect tree ring cores of *Pinus occidentalis*. The goal of this work is to construct the first chronology from tree-rings in the Caribbean based on previous exploratory research.

### Languages

- [1]. Spanish (native)
- [2]. English (proficient)

### Research outreach

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Herrera, D. A., Ault, T. R., and Blecker, B.: Interactive high resolution drought maps for the Caribbean and Central America: <http://climatesmartfarming.org/tools/caribbean-drought>.

### Media

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- <https://www.mona.uwi.edu/fpas/mathematics/physics-and-geography-geology-host-visiting-tennessee-lecturer>
- <https://cge.utk.edu/2023/01/18/cge-announces-2022-23-global-catalyst-faculty-research-grants-awardees/>
- <https://phys.org/news/2022-10-historical-megadroughts-permanent-due-climate.html>
- <https://www.newscientist.com/article/2340790-megadrought-could-become-the-new-normal-in-the-south-western-us/>
- <https://theconversation.com/megadroughts-helped-topple-ancient-empires-weve-found-their-traces-in-australias-past-and-expect-more-to-come-191770>
- <https://newsroom.unsw.edu.au/news/science-tech/megadroughts-helped-topple-ancient-empires-theyre-australias-past-more-come>
- <https://news.cornell.edu/stories/2017/07/climate-scientists-create-caribbean-drought-atlas>
- <https://myemail.constantcontact.com/Announcements---July-24--2017.html?soid=1108743637593&aid=ILsaGpdOri8>
- <https://news.cornell.edu/stories/2018/11/severe-caribbean-droughts-may-magnify-food-insecurity>
- <https://www.nbcboston.com/news/national-international/puerto-rico-coffee-sector-risk-drought/2043407/>
- <https://www.newfoodmagazine.com/news/75703/caribbean-drought/>
- <https://hoy.com.do/llaman-a-mejorar-responsabilidad-social-para-poder-enfrentar-futuras-sequias/>
- <https://iica.int/en/press/news/iica-trained-producers-and-technicians-suriname-agricultural-disasters-risk-management>
- <https://www.buffalo.edu/cibr/news-events/news.host.html/content/shared/university/news/ub-reporter-articles/stories/2017/04/food-ideas-lab.detail.html>



## Service and leadership

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### Journal Reviewer

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|---|----------------------------------|
| [1]. Journal of Climate                               | [8]. Atmosphere                  |
| [2]. npj Climate and Atmospheric Science              | [9]. Sustainability              |
| [3]. Journal of Hydrometeorology                      | [10]. Remote Sensing             |
| [4]. Climate Services                                 | [11]. Climate                    |
| [5]. Ocean Dynamics                                   | [12]. Water                      |
| [6]. Journal of Coastal Research                      | [13]. Frontiers in Earth Science |
| [7]. Geophysical Research Letters                     | [14]. Water Resources Research   |
| [15]. Journal of Geophysical Research: Biogeosciences | [16]. Applied Sciences           |

### Academic Service

- [1]. Reviewer for the Fulbright Scholarship, Dominican Republic (2019-present).
- [2]. Reviewer for the Atkinson Center for Sustainability's postdoctoral fellowship and AVF at Cornell University (2019–2021).
- [3]. Weekly Colloquium in Geography coordinator, Department of Geography & Sustainability, University of Tennessee–Knoxville (Spring 2024).
- [4]. Vice Chair of the American Association of Geographers (AAG) Caribbean Geography Specialty Group (CGSG) (2024–2025).
- [5]. Chair-elected of the American Association of Geographers (AAG) Caribbean Geography Specialty Group (CGSG) (2025–2026).

### Leadership

- [1]. Head of the Research Area at the Instituto Geográfico Universitario, Universidad Autónoma de Santo Domingo (2011-present).
- [2]. Coordinator of M.S. program in Geography, Universidad Autónoma de Santo Domingo (2019-2021).

### Advising

- [1]. Syeda Nazifa Tasneem (PhD student, 2023–2028, University of Tennessee-Knoxville, TN, USA) (Principal advisor)
- [2]. Karson Holliday (Undergraduate student, 2022–2026, University of Tennessee-Knoxville, TN, USA) (Principal advisor)
- [3]. Corey Cooper (PhD student, 2023–2028, University of Tennessee-Knoxville, TN, USA) (Committee Member)
- [4]. KH Shakibul Islam (PhD student, 2023–2028, University of Tennessee-Knoxville, TN, USA) (Committee Member) KH Shakibul Islam
- [5]. Haya Albaker (PhD student, 2020–2025, University of Tennessee-Knoxville, TN, USA) (Committee Member)
- [6]. Ana LaFollette (MS student, 2022–2024, University of Tennessee-Knoxville, TN, USA) (Committee Member)
- [7]. Cara Hannel (MS student, 2022–2024, University of Tennessee-Knoxville, TN, USA) (Committee Member)
- [9]. Elizabeth Barnes (MS student, 2022–2024, University of Tennessee-Knoxville, TN, USA) (Committee Member)

*Updated: August, 2024*

- [10]. Lucas Phillips (MS student, 2023–2025, University of Tennessee-Knoxville, TN, USA) (Committee Member)
- [11]. Seth Thompson (PhD student, 2023–2025, University of Tennessee-Knoxville, TN, USA) (Committee Member)
- [12]. Ana Maria Greenberger (MS student, 2023–2025, University of Tennessee Institute of Agriculture, TN, USA) (Committee Member)
- [13]. Mason McVey (MS student, 2023–2025, University of Tennessee-Knoxville, TN, USA) (Committee Member)

### Professional Affiliations

- [1]. American Geophysical Union (AGU)
- [2]. American Meteorological Society (AMS)
- [3]. American Association of Geographers (AAG)
- [3.1] SouthEastern Division of AAG (SEDAAG)

### Advisors

- Ph.D. Advisor: Dr. Toby R. Ault (Cornell)
- M.S. Advisor: Dr. Beatriz Guerrero (UNAM)
- B.S. Advisor: MS. Elsa B. Culó (UASD)

### Professional references

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- [1]. **Dr. Toby R. Ault.** Earth and Atmospheric Sciences, 2108 Snee Hall, Cornell University, Ithaca, NY, 14853. Tel.: (607) 255-1509; email: [toby.ault@cornell.edu](mailto:toby.ault@cornell.edu)
- [2]. **Dr. John T. Fasullo.** Climate & Global Dynamics Lab., National Center for Atmospheric Research (NCAR), Boulder, CO, 30000. Tel.: (303) 497-1712; email: [fasullo@ucar.edu](mailto:fasullo@ucar.edu)
- [3]. **Dr. Kevin J. Anchukaitis.** School of Geography, Development & Environment ENR2 Building, South 4th floor 1064 E. Lowell Street, University of Arizona, Tucson, Arizona 85721. Tel.: (520) 626-8054, email: [kanchukaitis@email.arizona.edu](mailto:kanchukaitis@email.arizona.edu)

### Other interests

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Amateur astronomy, playing piano, architecture, permaculture/gardening, cooking, and curious about cancer, aging, genetics, and time.