Noemi Vergopolan

NOAA Geophysical Fluid Dynamics Laboratory, 201 Forrestal Rd, Princeton, NJ, 08544
noemi@princeton.edu | waterai.earth | @NVergopolan | Google Scholar

Research Interests

Hydrology, Earth system science, satellite remote sensing, water resources, hydroclimate extremes, human-water systems, soil science, agriculture, ecology, numerical modeling, data assimilation, high-performance computing, machine learning, and big environmental datasets.

Education

Princeton University — Princeton, USA
Ph.D. in Civil and Environmental Engineering — May 2021
- Certificate in Statistics and Machine Learning (2021)
- Certificate in Computational Science and Engineering (2019)

Princeton University — Princeton, USA
M.A. in Civil and Environmental Engineering — June 2017

Federal University of Paraná — Curitiba, Brazil
B.S. in Environmental Engineering — Apr. 2014

Honors & Awards

2022	**Science for Solutions Award** - one of AGU's highest honors for *"outstanding contributions to water and food security through advances in hyper-resolution land surface modeling and satellite remote sensing"*	USA
2022	**Paul F. Boulos Excellence in Computational Hydrology Award** - American Academy Environ. Eng.	USA
2021	**Cooperative Institute for Modeling the Earth System Fellowship** - Princeton University & NOAA-GFDL	USA
2018	**Mary and Randall Hack '69 Graduate Award** - Princeton Environmental Institute	USA
2016	**School of Public and International Affairs Award** - Princeton Environmental Institute	USA
2015	**Science Without Borders PhD Scholarship** - CAPES/Brazil Government & LASPAU/Harvard (declined)	Brazil/USA
2013	**Academic Excellence Medal** - Merit award given to the top 1% students at Federal University of Paraná	Brazil
2012	**1st Place in the International Culture Leadership Award** - North Carolina State University	USA
2011	**Science Without Borders Undergraduate Scholarship** - CNPq/Brazilian Government	Brazil/USA
2010	**Undergraduate Research Fellowship** - CNPq/Brazil Government	Brazil

Professional Appointments

Rice University – Earth, Environmental and Planetary Sciences — Houston, TX, USA
Assistant Professor of Hydrology and Remote Sensing — Jul. 2024 Onwards

Princeton University – Atmospheric and Ocean Sciences Program — Princeton, NJ, USA
Postdoctoral Researcher Associate — Jun. 2021 – June 2024

NOAA – Geophysical Fluid Dynamics Laboratory — Princeton, NJ, USA
Visiting Researcher Scientist — Jun. 2021 – June 2024

Princeton University – Civil and Environmental Engineering Department — Princeton, NJ, USA
Research Assistant — Sep. 2015 – May 2021

Envex Engineering and Consulting — Curitiba, PR, Brazil
Environmental Engineer — Oct. 2013 – Aug. 2015

SIMEPAR Meteorological Institute of Technology — Curitiba, PR, Brazil
Research Assistant — Nov. 2010 – May. 2012

Short-term Visiting Researcher Positions

2019 **Duke University** – with Prof. Nathaniel Chaney, Civil and Environmental Engineering Dept. USA
2018 **Utrecht University** – with Prof. Niko Wanders, Physical Geography Dept. NL
2017 **University of Southampton** – with Prof. Justin Sheffield in the Geography & Environmental Sci. Dept. UK
2013 **NASA's Jet Propulsion Lab / Caltech** – with Dr. Joshua Fisher, Water, Energy, and Carbon Cycles Dept. USA

Peer-Reviewed Scientific Publications

Google Scholar: https://scholar.google.com/citations?user=ETyTAKcAAAAJ&hl.

2024 [25] Walker, D., **Vergopolan, N.**, Cavalcante, L., Smith, K.H., Agoungbome, A., Almagro, A., Apurv, T., Dahal, N., Hoffmann, D., Singh, V., Xiang, Z. Flash drought typologies and societal impacts: a worldwide review of occurrence, nomenclature, and experiences of local populations. *American Meteorological Society - Weather, Climate, and Society*. https://doi.org/10.1175/WCAS-D-23-0015.1.

2023 [24] Castano-Duque, L., Winzeler, E., Blackstock, J., Liu, C., **Vergopolan, N.**, Focker, M., Barnett, K., Owens, P., van der Fels-Klerx, H.J., Vaughan, M., Rajasekaran, K. Dynamic Geospatial Modeling of Mycotoxin Contamination of Corn in Illinois: Unveiling Critical Factors and Predictive Insights with Machine Learning. *Frontiers in Microbiology*. https://doi.org/10.3389/fmicb.2023.1283127.

[23] Beck, H. E., McVicar, T., **Vergopolan, N.**, Berg, A., Lutsko, N., Dufour, A., Zeng, Z., Jiang, X., van Dijk, A., Miralles, D. High-resolution (1 km) Köppen-Geiger maps for 1901–2099 based on constrained CMIP6 projections. *Nature Scientific Data*. https://doi.org/10.1038/s41597-023-02549-6.

[22] Caballero, C., Biggs, T., **Vergopolan, N.**, West, T., Ruhoff, A. Transformation of Brazil's biomes: The dynamics and fate of agriculture and pasture expansion into native vegetation. *Science of the Total Environment*. https://doi.org/10.1016/j.scitotenv.2023.166323.

[21] Chengcheng, X., Torres-Rojas, L., **Vergopolan, N.**, Chaney, N. W. The utility of state-of-the-art soil properties maps in soil moisture modeling. *Water Resources Research*. https://doi.org/10.1029/2022WR032336.

[20] Kivi, M., **Vergopolan, N.**, Dokoohaki, H. A comprehensive assessment of in situ and remote sensing soil moisture data assimilation in the APSIM model for improving agricultural forecasting across the U.S. Midwest. *Hydrology and Earth System Sciences*. https://doi.org/10.5194/hess-27-1173-2023.

[19] Cecil, M., Chilenga, A., Chisanga, C., Gatti, N., Krell, N., **Vergopolan, N.**, Baylis, K., Caylor, K., Evans, T., Konar, M., Sheffield, J., Estes, L. How Much Control do Smallholder Maize Farmers Have Over Yield? *Field Crops Research*. https://doi.org/10.1016/j.fcr.2023.109014.

[18] Gatti, N., Cecil, M., Baylis, K., Estes, L., Blekkin, J., Heckelei, T., **Vergopolan, N.**, Evans, T. Is closing the agricultural yield gap a "risky" endeavor? *Agricultural Systems*. https://doi.org/10.1016/j.agsy.2023.103657.

2022 [17] Torres-Rojas, L., **Vergopolan, N.**, Herman, J. D., Chaney, N. W. Towards an Optimal Representation of Sub-Grid Heterogeneity in Land Surface Models. *Water Resources Research*. https://doi.org/10.1029/2022WR032233

[16] **Vergopolan, N.**, Sheffield, J., Chaney, N. W., Pan, M., Beck, H. E., Ferguson, C. R., Torres-Rojas, L., Eigenbrod, F., Crow, W., Wood, E. F. High-resolution soil moisture data reveal complex multi-scale spatial variability across the United States. *Geophysical Research Letters*. https://doi.org/10.1029/2022GL098586.

[15] Walker, D. W., Cavalcante, L., Kchouk, S., Neto, G. R., Dewulf, A., Gondim, S. R., Martins, E. S. P. R., Melsen, L. A., Filho, F. A. S. F., **Vergopolan, N.**, van Oel, P. R. Drought diagnosis: what the medical sciences can teach us. *Earth's Future*. https://doi.org/10.1029/2021EF002456.

2021 [14] **Vergopolan, N.**, Chaney, N. W., Pan, M., Sheffield, S., Beck, H. E., Ferguson, C. R., Torres-Rojas, L., Sadri, S., & Wood, E. F. SMAP-HydroBlocks, a 30-m satellite-based soil moisture dataset for the conterminous US. *Nature Scientific Data*. https://doi.org/10.1038/s41597-021-01050-2.

[13] **Vergopolan, N.**, Xiong, S., Estes, L., Wanders, N., Chaney, N. W., Wood, E. F., Konar, M., Caylor, K., Beck, H. E., Gatti, N., Evans, T., & Sheffield, J. Field-scale soil moisture bridges the spatial-scale gap between drought monitoring and agricultural yields. *Hydrology and Earth System Sciences*. https://doi.org/10.5194/hess-25-1827-2021.

[12] Chaney, N. W., Torres-Rojas, L., **Vergopolan, N.**, & Fisher, C. K. HydroBlocks v0.2: enabling a field-scale two-way coupling between the land surface and river networks in Earth system models. *Geoscientific Model Development*. https://doi.org/10.5194/gmd-14-6813-2021.

[11] Beck, H. E., Pan, M., Miralles, D. G., Reichle, R. H., Dorigo, W. A., Hahn, S., Sheffield, J., Karthikeyan, L., Balsamo, G., Parinussa, R. M., van Dijk, A. I. J. M., Du, J., Kimball, J. S., **Vergopolan, N.**, & Wood, E. F. Evaluation of 18 satellite- and model-based soil moisture products using in situ measurements from 826 sensors. *Hydrology and Earth System Sciences*. https://doi.org/10.5194/hess-25-17-2021.

2020 [10] **Vergopolan, N.**, Chaney, N. W., Beck, H. E., Pan, M., Sheffield, J., Chan, S., & Wood, E. F. Combining hyper-resolution land surface modeling with SMAP brightness temperatures to obtain 30-m soil moisture estimates. *Remote Sensing of Environment*. https://doi.org/10.1016/j.rse.2020.111740.

[9] Beck, H. E., Westra, S., Tan, J., Pappenberger, F., Huffman, G. J., McVicar, T. R., Gründemann, G. J., **Vergopolan, N.**, Fowler, H. J., Lewis, E., Verbist, K., & Wood, E. F. PPDIST, global 0.1° daily and 3-hourly precipitation probability distribution climatologies for 1979–2018. *Scientific Data*. https://doi.org/10.1038/s41597-020-00631-x.

[8] Sadri, S., Pan, M., Wada, Y., **Vergopolan, N.**, Sheffield, J., Famiglietti, J. S., Kerr, Y., & Wood, E. (2020). A global near-real-time soil moisture index monitor for food security using integrated SMOS and SMAP. *Remote Sensing of Environment*. https://doi.org/10.1016/j.rse.2020.111864.

[7] Porcù, R., Miglio, E., Parolini, N., Penati, M., & **Vergopolan, N**. HPC simulations of brownout: A noninteracting particles dynamic model. *The International Journal of High Performance Computing Applications*. https://doi.org/10.1177/1094342020905971.

2019 [6] Waldman, K. B., **Vergopolan, N.**, Attari, S. Z., Sheffield, J., Estes, L. D., Caylor, K. K., & Evans, T. P. Cognitive Biases about Climate Variability in Smallholder Farming Systems in Zambia. *Weather, Climate, and Society*. https://doi.org/10.1175/wcas-d-18-0050.1.

2018 [5] Beck, H. E., Zimmermann, N. E., McVicar, T. R., **Vergopolan, N.**, Berg, A., & Wood, E. F. Present and future Köppen-Geiger climate classification maps at 1-km resolution. *Nature Scientific Data*. https://doi.org/10.1038/sdata.2018.214.

[4] Zhao, Y., **Vergopolan, N.**, Baylis, K., Blekking, J., Caylor, K., Evans, T., Giroux, S., Sheffield, J., & Estes, L. Comparing empirical and survey-based yield forecasts in a dryland agro-ecosystem. *Agricultural and Forest Meteorology*. https://doi.org/10.1016/j.agrformet.2018.06.024.

2017 [3] Beck, H. E., **Vergopolan, N.**, Pan, M., Levizzani, V., van Dijk, A. I. J. M., Weedon, G. P., Brocca, L., Pappenberger, F., Huffman, G. J., & Wood, E. F. Global-scale evaluation of 22 precipitation datasets using gauge observations and hydrological modeling. *Hydrology and Earth System Sciences*. https://doi.org/10.5194/hess-21-6201-2017.

[2] Wanders, N., Bachas, A., He, X. G., Huang, H., Koppa, A., Mekonnen, Z. T., Pagán, B. R., Peng, L. Q., **Vergopolan, N.**, Wang, K. J., Xiao, M., Zhan, S., Lettenmaier, D. P., & Wood, E. F. Forecasting the Hydroclimatic Signature of the 2015/16 El Niño Event on the Western United States. *Journal of Hydrometeorology*. https://doi.org/10.1175/jhm-d-16-0230.1.

2016 [1] **Vergopolan, N.**, & Fisher, J. B. The impact of deforestation on the hydrological cycle in Amazonia as observed from remote sensing. *International Journal of Remote Sensing*. https://doi.org/10.1080/01431161.2016.1232874.

In Review [1] Almagro, A., Meira Neto, A., **Vergopolan, N.**, Roy, T., Troch, P. A., Oliveira, P. T. S. The drivers of hydrologic behavior in Brazil: insights from a catchment classification. *Water Resources Research*.

Book Chapters

2020 Beck, H. E., **Vergopolan, N.**, Pan, M., Levizzani, V., van Dijk, A. I. J. M., Weedon, G.P., Brocca, L., Pappenberger, F., Huffman, G. J., & Wood, E. F. Global-scale evaluation of 22 precipitation datasets using gauge observations and hydrological modeling. In: Satellite Precipitation Measurement. V. Levizzani, C. Kidd., D. B. Kirschbaum, C. D. Kummerow, K. Nakamura, F. J. Turk, Eds., Springer Nature, Cham, Advances in Global Change Research, 69, 625-653, https://doi.org/10.1007/978-3-030-35798-6_9.

Datasets

2021 **Vergopolan, N.**, Chaney, N. W., Pan, M., Sheffield, S., Beck, H. E., Ferguson, C. R., Torres-Rojas, L., & Wood, E. F. SMAP-HydroBlocks: Hyper-resolution satellite-based soil moisture over the continental United States. *Zenodo*. https://doi.org/10.5281/zenodo.5206725

Grants & Funding

2022 **National Science Foundation Research Grant**. Bridging the spatial and cognitive dimensions of farmer climate adaptation (2022-2025). PI: Waldman (Indiana University). Senior personnel due to institutional restrictions.

Professional Activities

Professional Association

- American Geophysical Union (2016 –)
- European Geosciences Union (2018 –)
- American Meteorological Society (2022 –)

Editorial Experience

- **Guest co-editor**: EGU "Drought, society, and ecosystems" inter-journal (Natural Hazards and Earth System Sciences; Hydrology and Earth System Science; Biogeosciences; Geoscience Communication) special issue.
- **Peer-Review Referee**: Nature Water, Journal of Hydrology, Remote Sensing of Environment, Water Resources Research, Hydrology and Earth System Science, Journal of Hydrometeorology, Hydrological Sciences Journal, Hydrological Processes, Global Change Biology, Remote Sensing, Water, Journal of Applied Water Engineering and Research, Atmosphere.

Federal Grant Reviewer

- National Scientific Foundation - Hydrologic Sciences

Seminars, Conferences, and Workshops Organization

- Co-convener of the "Flash and rapidly emerging droughts: challenges and opportunities" session at EGU (2023)
- Organizer of the Princeton Energy and Environment Discussion Table, hosting 4-7 speakers per semester (2017 – 2021)
- Co-Organizer of the Panta Rhei Drought in the Anthropocene Workshop. Phoenix, AZ, USA (2019)
- Co-Organizer of the Princeton University Civil and Environmental Engineering Brown Bag Seminars (2017 – 2018)
- Co-Organized of the Observations and Modeling across Scales Symposium. Princeton University (2016)

External Review Board Committees

- NASA-ISRO SAR Mission (NISAR) – Review Board Chair for the soil moisture Algorithm Theoretical Basis Document (2022).

PhD's and Master's Students Evaluation Committees

- PhD thesis defense of Andre Almagro. Towards a better understanding of catchment hydrology in Brazil. Federal University of Mato Grosso do Sul. Brazil (2021).
- PhD thesis qualification of Cassia Brocca Caballero. Dynamics of Land Use and Land Cover Change in Brazil and Impacts on Surface-Atmosphere Interactions. Federal University of Rio Grande do Sul. Brazil (2022).
- Master thesis defense of Leonardo Laipelt. The impacts of deforestation in the evapotranspiration processes in the Amazon. Federal University of Rio Grande do Sul. Brazil (2023).

Mentoring & Advising

Instituto Bom Aluno — Curitiba, Brazil
Teacher & Mentoring Volunteer — 2008 - Current
Individual advising to high school and college students from low-income and unprivileged backgrounds.
https://www.bomaluno.org.br

Mathey College, Princeton University — Princeton, USA
Resident Graduate Student Advisor — 2017 – 2021
Organizing community engagement events, and peer mentoring of around 20 first-year students each year.

Graduate Student Mentoring & Advising

- Duke University: Laura Torres-Rojas, Xu Chengcheng, and Luiz Bacelar.
- Princeton University: Crystal Rao (Princeton Women in Geosciences)
- UFZ Center for Environmental Research: Felipe Saavedra
- Clark University: Sitian Xiong
- Federal University of Rio Grande do Sul: Cassia Brocca Caballero, Leonardo Laipelt

Leadership & Outreach

Mathey College, Princeton University — Princeton, USA
Host of the Princeton Energy & Environment Discussion Table — 2017 - 2021
https://scholar.princeton.edu/energy_table

Highwire Earth: Insights on Sustainable Development, Princeton University — Princeton, USA
Director of Public Relations and Associate Editor — 2018 - 2020
https://https://highwire.princeton.edu

Princeton Latino Graduate Student Association (LGSA), Princeton University — Princeton, USA
Treasurer and Co-Organizer of Diversity & Inclusion Events — 2015 - 2017
http://princetonlgsa.weebly.com

Invited Talks

2023

Vergopolan, N. Local droughts: unveiling an emerging phenomenon previously underdetected, underestimated, and overlooked. Keynote Speaker. *American Geophysical Union Fall Meeting*. San Francisco, CA, USA.

Vergopolan, N. Hyper-resolution Land Surface Modeling and Satellite Data Assimilation: Bridging Data Gaps for Improved Plant-Soil-Water Representation in Earth System Models. Invited Speaker. *American Geophysical Union Fall Meeting*. San Francisco, CA, USA.

Vergopolan, N. Data Availability and Sensor Technologies: What data do (hyper-resolution) models need? *NOAA/NIDIS/USDA National Soil Moisture Workshop*. Beltsville, MD, USA.

Vergopolan, N. Towards locally relevant global soil moisture monitoring for scientific and water resources applications. Seminar at the *Earth and Climate Sciences Department - Middlebury College*. Middlebury, VT, USA.

Vergopolan, N. Towards locally relevant global soil moisture monitoring for scientific and water resources applications. Seminar at the *Civil and Urban Engineering Department - New York University*. New York, NY, USA.

Vergopolan, N. Towards locally relevant global soil moisture monitoring for scientific and water resources applications. Seminar at the *Earth, Environmental and Planetary Sciences - Rice University*. Houston, TX, USA.

Vergopolan, N. Towards locally relevant global soil moisture monitoring for scientific and water resources applications. Seminar at the *Earth and Environmental Engineering Department - Columbia University*. New York, NY, USA.

2022 **Vergopolan, N.** Towards locally relevant global soil moisture monitoring for scientific and water resources applications. Seminar at the *Research Institute for Geo-Hydrological Protection - Italian National Research Council*. Perugia, Italy.

Vergopolan, N. Advances in water and food security through hyper-resolution land surface modeling and satellite remote sensing. Oral talk. *American Geophysical Union Fall Meeting*. Chicago, IL, USA.

Vergopolan, N. Advances in water and food security through hyper-resolution land surface modeling and satellite remote sensing. Oral talk. *American Geophysical Union – Early Career Researcher Conference*. Chicago, IL, USA.

Vergopolan, N. Towards locally relevant global soil moisture monitoring for water resources and agriculture applications. Seminar at the *Crop Sciences - University of Illinois Urbana-Champaign*. Champaign, IL, USA.

Vergopolan, N. Locally relevant soil moisture monitoring for water resources applications. Seminar at the *American Academy of Environmental Engineers and Scientist*. Virtual, USA.

Vergopolan, N. Field-scale soil moisture for drought monitoring and agricultural yield prediction at the local scales. Oral talk. *American Geophysical Union – Frontiers in Hydrology*. San Juan, PR, USA.

Vergopolan, N. Towards locally relevant global soil moisture monitoring for water resources and climate applications. Seminar at the *UFZ – Helmholtz Center for Environmental Research*. Virtual. Leipzig, Germany.

Vergopolan, N. Eric Wood's contributions and recent advances on hyper-resolution land surface modeling. Oral talk. *European Geophysical Union General Assembly*. Vienna, Austria.

Vergopolan, N. Towards locally relevant global soil moisture monitoring for water resources and climate applications. *Climate Seminar Series - the Department of Geosciences, the Program in Atmospheric and Oceanic Sciences, and the High Meadows Environmental Institute - Princeton University*. Princeton, NJ, USA.

Vergopolan, N. Towards locally relevant global hydrologic monitoring via satellite land data assimilation. Seminar at the *Department of Earth and Environmental Sciences - Rutgers University*. Newark, NJ, USA.

Vergopolan, N. Towards locally relevant global hydrologic monitoring via satellite land data assimilation. Seminar at the *Earth, Environmental and Planetary Sciences - Rice University*. Houston, TX, USA.

2021 **Vergopolan, N.** Field-scale soil moisture for drought monitoring and agricultural yield prediction at the local-scales. Seminar at the *Climate Hazards Center - University of California Santa Barbara*. Virtual. Santa Barbara, CA, USA.

Vergopolan, N. The role of satellite remote sensing and land surface modeling for soil moisture monitoring at field scales. Seminar at the *Federal University of Paraná - Academic Week of Civil Engineering*. Virtual. Curitiba, Brazil.

2020 **Vergopolan, N.** & Wood, E.F. Hyper-resolution land surface modeling enables 30-m SMAP-based soil moisture at continental scales. Seminar at the *US Army Engineer Research and Development Center - Cold Regions Research & Engineering Laboratory*. Virtual. Hanover, NH, USA.

Vergopolan, N. Field-scale land surface modeling and remote sensing for soil moisture prediction at the decision-making scales. Seminar at the *NOAA Geophysical Fluid Dynamics Laboratory*. Princeton, USA.

2019 **Vergopolan, N.** Hyper-resolution Hydrological Modeling. Lecture series at the *BRECcIA workshop for 'Building Research Capacity for sustainable water and food security in sub-Saharan Africa'*. University of Southampton, UK.

Vergopolan, N. High-resolution Remote sensing for Hydrological Prediction at the Decision-making Scales. Oral talk at the *Association of Latino Princeton Alumni*. Princeton, NJ, USA.

2018 **Vergopolan, N.** Hyper-Resolution Land Surface Modeling for Water Management Applications. Seminar at the *Physical Geography Department at Utrecht University*. Utrecht, Netherlands.

Conference Talks

2023 **Vergopolan, N.**, Chaney, N., Malyshev, S., Shevliakova, E. Leveraging advances in hyper-resolution vegetation data assimilation for S2S hydroclimate applications. Oral talk. *8th EGU Galileo Conference - A European vision for hydrological observations and experimentation*. Naples, Italy.

Vergopolan, N., Chaney, N., Malyshev, S., Shevliakova, E. Leveraging advances in hyper-resolution vegetation data assimilation for S2S hydroclimate applications. Oral talk. *American Meteorological Society – Hydrology Conference*. Denver, CO, USA.

2022 **Vergopolan, N.**, Chaney, N., Malyshev, S., Shevliakova, E. Leveraging advances in hyper-resolution vegetation data assimilation for S2S hydroclimate applications. Oral talk. *American Geophysical Union Fall Meeting*. Chicago, IL, USA.

Vergopolan, N., J. Sheffield N., Chaney, M. Pan, HE. Beck, CR. Ferguson, L. Torres-Rojas, F. Eigenbrod, W. Crow, and EF. Wood. The spatial variability and scaling behavior of field-scale soil moisture across the United States using SMAP-HydroBlocks. Oral talk. *American Geophysical Union – Frontiers in Hydrology*. San Juan, PR, USA.

Vergopolan, N., J. Sheffield N., Chaney, M. Pan, HE. Beck, CR. Ferguson, L. Torres-Rojas, F. Eigenbrod, W. Crow, and EF. Wood. Mapping field-scale soil moisture and its spatial variability across the United States using SMAP-HydroBlocks. Oral talk. *European Geophysical Union General Assembly*. Vienna, Austria.

Vergopolan, N. Towards locally relevant global soil moisture monitoring for water resources and climate applications. Poster. *Land Surface Modeling Summit – University of Oxford*. Oxford, UK.

2021 **Vergopolan, N.**, Sheffield, J., Chaney, N. W., Pan, M., Beck, H. E., Torres-Rojas, L., Crow, W., & Wood, E. F. Mapping surface soil moisture at 30-m resolution and assessing its spatial variability across the United States using SMAP-HydroBlocks. Oral talk. *American Geophysical Union Fall Meeting*. New Orleans, LA, USA.

Vergopolan, N., Herrera-Estrada, J. E., Sheffield, J., Estes, L., & Wood, E. F. Improved detection of flash droughts using hyper-resolution hydrological modeling. Oral talk. *European Geophysical Union General Assembly*. Virtual.

2020 **Vergopolan, N.**, Chaney, N., Beck, H., Pan, M., Sadri, S., Sheffield, J., & Wood, E.F. Hyper-resolution land surface modeling enables hydrologically consistent 30-m SMAP-based soil moisture retrievals over continental scales. Oral talk. *American Geophysical Union Fall Meeting*. Virtual.

Vergopolan, N., Chaney, N. W., Beck, H. E., Pan, M., Sheffield, J., & Wood, E. F. Hyper-resolution land surface modeling enables 30-m SMAP-based soil moisture at continental scales. Oral talk. *European Geophysical Union General Assembly*. Virtual.

2019 **Vergopolan, N.**, Xiong, S., E. Herrera-Estrada, J., Sheffield, J., Wood, E.F., & Estes, L. The spatiotemporal scales of drought and its impacts on field-scale agricultural yields. *Panta Rhei Drought in the Anthropocene Workshop*. Phoenix, AZ, USA.

Vergopolan, N., Xiong, S., J., Sheffield, J., Wood, Evans, T., K. Caylor, K., E.F., & Estes, L. The spatiotemporal scales of drought and its impacts on field-scale agricultural yields. Poster. *American Geophysical Union Fall Meeting*. San Francisco, CA, USA

Vergopolan, N., Chaney, N., Pan, M., Beck, H., Sheffield, J., & Wood, E.F. High-resolution hydrological modeling and remote sensing for soil moisture prediction at the decision-making scales. *Princeton Research Day*. Princeton, NJ, USA

Vergopolan, N. Using Hyper-resolution Land Surface Modeling to Downscale SMAP Soil Moisture to 30 Meters. *Princeton Environmental Institute - Discovery Day*. Princeton, NJ, USA

2018 **Vergopolan, N.**, Chaney, N., Pan, M., Beck, H., Sheffield, J., & Wood, E.F. Using hyper-resolution land surface modeling for downscaling of remotely sensed soil moisture. Abstract 9327. Oral talk. *European Geophysical Union General Assembly*. Vienna, Austria.

Vergopolan, N., Chaney, N., Pan, M., Beck, H., Sheffield, J., Chan, S., & Wood, E.F. Using hyper-resolution land surface modeling for downscaling of remotely sensed soil moisture. Poster. *American Geophysical Union Fall Meeting*. Washington, DC, USA.

2017 **Vergopolan, N**., Chaney, N., Wanders, N., Sheffield, J., & Wood, E.F. Incorporating human-water dynamics in a hyper-resolution land surface model. Abstract 296821. Oral talk. *American Geophysical Union Fall Meeting*, New Orleans, Louisiana, USA.

2016 **Vergopolan, N**., & Fisher, J. B. The impact of deforestation on the hydrological cycle in Amazonia as observed from remote sensing. Poster. *American Geophysical Union Fall Meeting*, San Francisco, CA, USA.

2012 **Vergopolan, N.**, Heilmann, A., Igarashi, A., & Leite, E. Empirical and standard frequency distributions of lightning peak current of cloud-to-ground flashes in Parana and Sao Paulo states. *International Conference on Grounding and Earthing & International Conference on Lightning Physics and Effects*. Bonito, MS, Brazil.

Vergopolan, N., & Leite, E. Extreme Rainfall in Parana Coast: Distribution and Recurrence Time. *Brazilian Meteorology Congress*. Gramado, RS, Brazil.

2010 **Vergopolan, N.**, & Grimm, A. The impact of climate change on El Niño Southern Oscillation in South America. *18th EVINCE - Federal University of Parana Scientific Meeting*. Curitiba, PR, Brazil.

News & Media

2023 *NOAA/NIDIS/USDA National Soil Moisture Workshop*. Data Availability and Sensor Technologies: What data do (hyper-resolution) models need? (**Talk**). [Video].

2022 *Environmental Engineering and Science Foundation*. Locally Relevant Soil Moisture Monitoring for Water Resources Applications (**Talk**). [Video].

Brazilian Association of Water Resources. Água em Pauta: Ciência Aberta (**Webinar**). [Video in Portuguese].

2021 *Center for Statistics and Machine Learning*. Satellite data and machine learning for predicting droughts (**Interview**). [Article].

Agência Escola UFPR. Trajetória de uma pesquisadora: Noemi Vergopolan (**Interview**). [Video in Portuguese].

14Bis Aerospace. Perfil Acadêmico (**Interview**). [Article in Portuguese].

2020 *Coalition for Academic Scientific Computation*. Mapping Soil Moisture (**Spotlight**). [Annual brochure]

2017 *UOL News*. Perfil Acadêmico (**Spotlight**). [Article in Portuguese].

2015 *UFPR TV*. O impacto do desmatamento no ciclo da água na Amazônia (**Interview**). [Video in Portuguese].

CAPES. Perfil Acadêmico (**Spotlight**). [Article in Portuguese].

UFPR TV. Perfil Acadêmico (**Spotlight**). [Video in Portuguese].

2013 *CBN News, Curitiba*. O impacto do desmatamento no ciclo da água na Amazônia (**Radio Interview**).

Additional Experience & Training

2016 **Summer School Participant,** Oxford University, Smith School of Enterprise and the Environment — Oxford, UK
2012 **Exchange Student,** Civil and Environmental Engineering Dept. at North Carolina State University — USA
2010 **Undergraduate Research Assistant** Meteorology Laboratory at Federal University of Paraná — Brazil
2009 **Project Coordinator,** Environmental Eng. Junior Enterprise at Federal University of Paraná — Brazil

Skills

Languages Fluent Portuguese, basic Spanish, basic Italian
Programming Python, Fortran, C, Matlab, R, HPC, MPI-OpenMPI, Pytorch, TensorFlow
Software netCDF, GDAL, xarray, zarr, hdf5, ArcGIS, AutoCAD, GRASS, HEC-MS, HEC-RAS, SWIMM, EPANET