

Vinicius Perin

PhD Student

Address:

College of Natural Resources
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Skills

Geospatial and remote sensing scientist with background in agriculture, hydrology, and surface process modeling.

Experience

North Carolina State University / Ph.D. in Geospatial Analytics

August 2019 - Present, Raleigh, NC

Assessing on-farm reservoirs surface water dynamics using satellite imagery. Activities include:

- Employing a multi-sensor approach (i.e., Landsat, Sentinel 1, Sentinel 2, PlanetScope, and RapidEye) to monitor the reservoirs' surface water area and water storage variation.
- Time series analysis using Bayesian and machine learning algorithms.
- Using open-source geospatial softwares packages (e.g., gdal, rasterio, geopandas) for data mining and analysis.
- Cloud-computing with Google Earth Engine and Google Cloud Platform for satellite imagery acquisition, processing, and analyses.
- Processing analysis ready datasets (e.g., Landsat-based and PlanetScope-based) to monitor the reservoirs' surface area change.

Planet Labs / Professional Services Intern

June 2021 - September 2021, Remote

Developing a novel application for Planet Fusion and Planet Basemaps, the next generation of high spatial and temporal resolution analysis ready datasets. Activities included:

- Processing and analyzing daily satellite imagery using open-source geospatial softwares.
- Developing a pipeline to ingest, process, and analyze the datasets in the cloud environment with Google Earth Engine and Google Cloud Platform.

Kansas State University / MSc in Ag Meteorology and Agronomy

May 2017 - July 2019, Manhattan, KS

Coordinating 11 field experiments, from planting to harvesting winter wheat, deployment of meteorological stations, and instruments to measure ammonia gas flux. Activities included:

- Creating a Python based set of functions to manipulate, clean and analyze the experimental field data.

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- Adapting the Integrated Horizontal Flux (IHF) micrometeorological method combined with a passive sampler to measure gas fluxes from nitrogen fertilized fields.
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Education

North Carolina State University / Ph.D. in Geospatial Analytics
August 2019 - Present, Raleigh, NC

Key courses: *Geospatial Analytics for Grand Challenges, Geospatial Data Management, Geospatial Data Mining and Analysis, Geospatial Computation and Simulation, and Geovisualization.*

Kansas State University / MSc in Ag Meteorology and Agronomy

May 2017 - July 2019, Manhattan, KS

Key courses: *Remote Sensing of Environment, Remote Sensing of Water, Ag Meteorology, and Micrometeorology.*

Wageningen University / BSc study abroad

August 2015 - July 2016, Wageningen, The Netherlands

Key courses: *Remote Sensing, Introduction Geo-information Science, Advanced Earth Observation, Remote Sensing and GIS Integration.*

University of Sao Paulo / BSc in Agronomy

February 2012 - December 2016, Piracicaba, Sao Paulo, Brazil

Key courses: *Differential and Integral Calculus, Agricultural Meteorology, Experimental Statistics, and Irrigation, Hydrology and Drainage.*

Recent Awards/Grants

- NASA-Future Investigators in NASA Earth and Space Science and Technology (FINESST).

Title: "Quantifying On-Farm Reservoirs' Impacts on Surface Hydrology Using a Multi-Sensor Approach". Total: \$90,000.

- College of Natural Resources Graduate Research Symposium 2021. Poster Presentation. First place in the poster competition in Human Dimensions and Community Health. Total: \$1000.

Title: "A multi-sensor satellite imagery approach to monitor on-farm reservoirs".

- Outstanding Student Presentation Award. Poster Presentation. AGU Fall meeting 2021. Total: \$250.

Title: "On-farm reservoir monitoring using Landsat inundation datasets".

- College of Natural Resources Graduate Research Symposium 2020. Poster Presentation. First place in the poster competition in Human Dimensions and Community Health. Total: \$750.

Title: "Large-scale-on-farm reservoir monitoring using remote sensing techniques".

- Earth Surface Processes Institute (ESPIn), Summer School. 6-day immersive online Earth's surface processes modeling and python programming training. 2020.

- Outstanding Graduate Student Scholarship. Department of Agronomy. Kansas State University. 2018. Total: \$1500.

- Travel Award Scholarship. Kansas State University. 2018. Total: \$750.
 - Outstanding Graduate Student Scholarship. Department of Agronomy. Kansas State University. 2017. Total: \$1000.
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Publications

- [9] **Perin, V.**, Roy, S., Kington, J., Harris, T., Tulbure, M.G., Stone, N., Barsballe, T., Yaeger, M., Reba, M.L. Monitoring Small Water Bodies Using High Spatial and Temporal Resolution Analysis Ready Datasets. *Under review. Remote Sensing*.
- [8] Tulbure, M.G., Broich, M., **Perin, V.**, Gaines, M.D., et al. *Can we detect more ephemeral floods with higher density harmonized Landsat 8/Sentinel 2 data compared to Landsat 8 alone? Under review. ISPRS Journal of Photogrammetry and Remote Sensing*.
- [7] Gaines, M.D., Tulbure, M.G., **Perin, V.**. Effects of Climate and Anthropogenic Drivers on Surface Water Area in the Southeastern United States. *Under review. Water Research Resources*.
- [6] **Perin, V.**, Tulbure, M.G., Gaines, M.D., Reba, M.L., Yaeger, M.A., 2021. A multi-sensor satellite imagery approach to monitor on-farm reservoirs. *Remote Sensing of Environment*. <https://doi.org/10.1016/j.rse.2021.112796>
- [5] **Perin, V.**, Tulbure, M.G., Gaines, M.D., Reba, M.L., Yaeger, M.A., 2021. On-farm reservoir monitoring using Landsat inundation datasets. *Agric. Water Manag.* 246, 106694. <https://doi.org/10.1016/j.agwat.2020.106694>.
- [4] Yoshizumi, A., Coffer, M.M., Collins, E.L., Gaines, M.D., Gao, X., Jones, K., McGregor, I.R., McQuillan, K.A., **Perin, V.**, Tomkins, L.M., Worm, T., Tateosian, L., 2020. A Review of Geospatial Content in IEEE Visualization Publications. *ArXiv200903390 Cs*.
- [3] **Perin, V.**, Santos, E.A., Lollato, R., Ruiz-Diaz, D., Kluitenberg, G.J., 2020. Impacts of ammonia volatilization from broadcast urea on winter wheat production. *Agron. J.* 112, 3758–3772. <https://doi.org/10.1002/agj2.20371>.
- [2] Lollato, R.P., Bavia, G.P., **Perin, V.**, Knapp, M., Santos, E.A., Patrignani, A., DeWolf, E.D., 2020. Climate-risk assessment for winter wheat using long-term weather data. *Agron. J.* 112, 2132–2151. <https://doi.org/10.1002/agj2.20168>.
- [1] **Perin, V.**, Sentelhas, P.C., Dias, H.B., Santos, E.A., 2019. Sugarcane irrigation potential in Northwestern São Paulo, Brazil, by integrating Agrometeorological and GIS tools. *Agric. Water Manag.* 220, 50–58. <https://doi.org/10.1016/j.agwat.2019.04.012>
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Professional presentations

- AGU Fall Meeting 2021. Poster. “A Multi-sensor Satellite Imagery Approach to Monitor On-farm Reservoirs”.
- College of Natural Resources Graduate Research Symposium. 2021. Poster. “A multi-sensor satellite imagery approach to monitor on-farm reservoirs”.
- AGU Fall Meeting 2020. Poster. “On-farm reservoir monitoring using Landsat inundation datasets”.
- College of Natural Resources Graduate Research Symposium. 2020. Poster. “Large-scale-on-farm reservoir monitoring using remote sensing techniques”.
- 33rd Conference on Agricultural and Forest Meteorology. 2018. Ammonia

volatilization from urea broadcast on winter wheat. Poster.

Synergistic activities

- Graduate Teaching Assistant appointments

Fall 2021. GIS 712. *Environmental Earth Observation and Remote Sensing*. North Carolina State University.

Fall 2020. GIS 712. *Environmental Earth Observation and Remote Sensing*. North Carolina State University.

- Peer review contribution

Remote Sensing of Environment (1), International Journal of Remote Sensing (2), Agricultural Water Management (2).