# Victor Hugo Rohden Prudente, Ph.D.

Postdoctoral Research Fellow, University of Michigan – School for Environment and Sustainability

4024 Dana Building, 440 Church Street, Ann Arbor, MI 48109

victorrp@umich.edu | victor.rprudente@gmail.com

ORCID | Google Scholar | ResearchGate | LinkedIn | Lattes | Personal webpage


## RESEARCH FOCUS

My research centers on leveraging multi-sensor satellite data for Land Use and Land Cover (LULC) monitoring, with a specific focus on applying diverse data sources–such as optical and synthetic aperture radar (SAR) imagery–for detailed crop mapping and monitoring. Currently, as a postdoctoral research fellow at the University of Michigan, I am developing remote sensing products designed to accurately estimate crop sowing times, areas, and dynamics within smallholder farming systems. This research aims to provide critical insights into farmer management practices and their impacts, offering pathways to enhance agricultural resilience and sustainability.

## RESEARCH METRICS (AS OF APRIL 2026)

| | |
|---|---|
| **Publications:** | 30+ peer-reviewed articles (as of April/2026) |
| **H-index:** | 9 \| Citations: 381 (Google Scholar) |
| **Grant funding:** | >$70,000 secured as PI/Awardee/Co-I; >$440,000 managed as Project Technical Lead |
| **Students supervised:** | 2 PhD (1 completed, 1 current), 7 Master's (1 completed, 6 current) |

## EDUCATION

**Ph.D. in Remote Sensing** *2017–2021*

*National Institute for Space Research (INPE), Brazil*

- Thesis: Multi-sensor Optical-SAR Approach to Land Use and Land Cover Characterization in Roraima
- Advisors: Dr. Ieda Del'Arco Sanches and Dr. Marcos Adami
- Internship: University of Maryland (UMD), USA (Oct 2019–Sep 2020). Foreign Advisor: Dr. Sergii Skakun

**M.S. in Agricultural Engineering** *2015–2017*

*Western Paraná State University (UNIOESTE), Brazil*

- Dissertation: Use of terrestrial remote sensing to characterize the spectro-temporal dynamics of soybean and beans
- Advisors: Dr. Erivelto Mercante and Dr. Jerry Adriani Johann

**B.S. in Agricultural Engineering (with honors)** *2010–2014*

*Western Paraná State University (UNIOESTE), Brazil*

## CAREER/EMPLOYMENT

**Postdoctoral Research Fellow** *Oct 2022–Present*

*University of Michigan, School for Environment and Sustainability*

- PI: Dr. Meha Jain
- Developing remote sensing products to estimate crop sowing times and dynamics within smallholder farming systems.

**Data Scientist** *Apr 2021–Sep 2022*

*Newe Seguros*

- Worked with remote sensing data (optical and microwave) and Google Earth Engine to create products supporting crop insurance decisions.

**Researcher** *Nov 2020–Mar 2021*

*Santos Lab*

- Worked with remote sensing data (optical and microwave) to create new products for agriculture monitoring.

## ACHIEVEMENTS AND AWARDS

*2014*

- 27th Paraná State Science and Technology Awards – Best Undergraduate Student (Department of Science, Technology and Higher Education – SETI)
- Second Place for Best Student – Agricultural Engineering Undergraduate (Western Paraná State University)

## COMPLEMENTARY EDUCATION

**TAT-6: Integration of Radar and Optical Remote Sensing in Studying LCLUC** *2018*

*European Space Agency, ESA-ESRIN, Croatia*

- 88 hours

**Introduction to Radar Remote Sensing** *2017*

*European Space Agency (ESA), Online*

- 15 hours

**Application of Satellite Remote Sensing to Support Water Resources Management** *2016*

*Applied Remote Sensing Training – NASA (ARSET), Brazil*

- 56 hours

## TECHNICAL & GEOAI SKILLS

**Platforms:** Google Cloud Computing, Google Earth Engine (GEE).

**Programming Languages:** Python, R, JavaScript.

**Machine Learning & AI:** Deep learning, Supervised/unsupervised classification, Time series analysis, Ensemble methods (Random Forest, XGBoost).

**Remote Sensing Physics:** Multi-sensor fusion (SAR-Optical), Phenology metrics, SAR Polarimetry.

## PUBLICATION LIST

### Selected/Representative Publications

1. Chaves, M.; Adami, M.; Oldoni, L.; Rodigheri, G.; **Prudente, V. H. R.**; Santana, C.; Garcia, A.; Covre, R.; Sanches, I. D.. GEEadas: GEE-based automatic detection of adverse-frost stress. *Remote Sensing Applications: Society and Environment*, v.40, p. 1-13, 2025. https://doi.org/10.1016/j.rsase.2025.101799
2. **Prudente, V. H. R.**; Garcia-Medina, M.; Krishna, V.; Euler, M.; Bhattarai, N.; Lerner, A. M.; McDonald, A. J.; Sherpa, S.; Rajan, H.; Urfels, A.; Santana, C. T. C.; Jain, M.. Mapping Grain Crop Start of Season in Smallholder Systems Using Optical Imagery. *Remote Sensing Applications: Society and Environment*, v.39, p. 1-17, 2025. https://doi.org/10.1016/j.rsase.2025.101660
3. Garcia, A. D. B.; Sanches, I. D.; **Prudente, V. H. R.**; Trabaquini, K.. Characterization of Irrigated Rice Cultivation Cycles and Classification in Brazil Using Time-Series Similarity and Machine Learning Models with Sentinel Imagery. *AgriEngineering*, v.7, p. 1-36, 2025. https://doi.org/10.3390/agriengineering7030065
4. **Prudente, V. H. R.**; Skakun, S.; Oldoni, L. V.; Xaud, H. A. M.; Xaud, M.; Sanches, I. D.; Adami, M.. Multisensor approach to Land Use and Land Cover Mapping in Brazilian Amazon. *ISPRS Journal of Photogrammetry and Remote Sensing*, v.189, p. 95-109, 2022. https://doi.org/10.1016/j.isprsjprs.2022.04.025
5. **Prudente, V. H. R.**; Martins, V. S.; Vieira, D. C.; Silva, N. R. F.; Adami, M.; Sanches, I. D.. Limitations of cloud cover for optical remote sensing of agricultural areas across South America. *Remote Sensing Applications: Society and Environment*, v.20, p. 1-14, 2020. https://doi.org/10.1016/j.rsase.2020.100414

### Articles in prep and under review

1. Brito, P. V. S.; Carvalho, H. F. S.; **Prudente, V. H. R.**; Conto, T.; Santos, R. D. C.; Chaves, M. E. D.. Recent applications of SAR and LiDAR data for land use and land cover classification: a systematic review. *[In Review]*, 2025.
2. Li, K.; **Prudente, V. H. R.**; Deshpande, M. V.; Jain, M.. Mapping DSR and TPR rice by applying machine learning with a combined Optical-SAR multisensor method. *[In preparation]*, 2025.
3. Oldoni, L. V.; Kuhl, S.; Garcia, A. D. B.; **Prudente, V. H. R.**; Deshpande, M. V.; Mendes, I. S.; Cattani, C.; Sanches, I. D. A.; Mercante, E.; Adami, M.. Brazil-Crop dataset: a benchmark for agricultural remote sensing applications. *[In preparation]*, 2025.
4. Jain, M.; **Prudente, V. H. R.**; Belsare, H.; Heilmayr, R.; Kerner, H.; Nakalembe, C.; Pingali, P.; Singh, K.; Sohoni, M.; Tubiello, F.; Waldman, K.; Talekar, A.. Leveraging satellite data and artificial intelligence for improved decision-making in data-scarce smallholder systems. *Nature Sustainability [Invited Perspective Article]*, 2025.
5. Shao, Y.; **Prudente, V. H. R.**; Blesh, J.; Wang, H.; Rao, P.; Jain, M.. Mapping cover crop species in Michigan using Sentinel-1 and Sentinel-2 imagery and Google Earth Engine. *Remote Sensing [In Review]*, 2025.
6. Jain, M.; **Prudente, V. H. R.**; Zhou, W.; Deshpande, M.; Bhattarai, N.; Ishtiaque, A.; Pathak, H.; Singh, B.. Tradeoffs between crop yield, agricultural residue burning, and groundwater depletion in India's wheat belt. *[In preparation]*, 2025. https://eartharxiv.org/repository/view/9957/
7. Silva, B. Q. N.; Alves, F. B.; Moreira, E. B. M.; **Prudente, V. H. R.**. Mapping center-pivot irrigation areas in western Bahia: evaluation of image classification methods and implications for irrigated agriculture. *Fronteira: Journal of Social, Technological and Environmental Science [In Review]*, 2025.

### Additional Peer-Reviewed Journal Articles

1. Islam, S.; Garcia, A. D. B.; Sanches, I. D.; **Prudente, V. H. R.**; Cheng, I.. Remote Sensing-Based Rice Mapping in Brazil: Identifying the Best Approach for Segmenting Different Spectral Compositions using Deep Learning. *Remote Sensing Applications: Society and Environment*, v.40, p. 1-25, 2025. https://doi.org/10.1016/j.rsase.2025.101770

2. Santana, C. T. C.; Adami, M.; **Prudente, V. H. R.**; Garcia, A. D. B.; Caldas, M. M.. Using Harmonized Landsat Sentinel-2 Vegetation Indices to Estimate Sowing and Harvest Dates for Corn and Soybeans in Brazil. *Remote Sensing*, v.17, p. 1-29, 2025. https://doi.org/10.3390/rs17172927
3. Santos, P. A.; Adami, M.; Picoli, M. A.; **Prudente, V. H. R.**; Esquerdo, J. C. D. M.; Queiroz, G. R.; Santana, C. T. C.; Chaves, M. E. D.. Land Use and Land Cover Products for Agricultural Mapping Applications in Brazil: Challenges and Limitations. *Remote Sensing*, v.17, p. 1-35, 2025. https://doi.org/10.3390/rs17132324
4. Munhoz, H. M.; Francisco, B. S.; **Prudente, V. H. R.**; Mercante, E.; Temponi, L. G.. Forest fragmentation dynamics in the direct influence area of Iguaçu National Park, Brazil. *Environmental Monitoring and Assessment*, v.197, p. 1-13, 2025. https://doi.org/10.1007/s10661-025-13801-4
5. Garcia, A. D. B.; Islam, S.; **Prudente, V. H. R.**; Sanches, I. D.; Cheng, I.. Irrigated rice-field mapping in Brazil using phenological stage information and optical and microwave remote sensing. *Applied Computing and Geosciences*, v.25, p. 1-14, 2025. https://doi.org/10.1016/j.acags.2025.100223
6. Garcia, A. D. B.; Celeste, J. J.; Cheng, I.; **Prudente, V. H. R.**; Sanches, I. D.. Evaluation of multiple SAR speckling filter techniques performance in irrigated rice areas. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, v.XLVIII-3-2024, p. 169-176, 2024. https://doi.org/10.5194/isprs-archives-XLVIII-3-2024-169-2024
7. Garcia, A. D. B.; **Prudente, V. H. R.**; Silva, D. T.; Chaves, M. E. D.; K., T.; Sanches, I. D.. Detailed Mapping of Irrigated Rice Fields Using Remote Sensing data and Segmentation Techniques: A case of study in Turvo, Santa Catarina, Brazil. *Journal of Information and Data Management*, v.16, p. 1-18, 2025. https://doi.org/10.5753/jidm.2024.4181
8. Cunha, I. A.; Baptista, G. N. M.; **Prudente, V. H. R.**; Melo, D. D.; Amaral, L. R.. Integration of Optical and Synthetic Aperture Radar Data with Different Synthetic Aperture Radar Image Processing Techniques and Development Stages to Improve Soybean Yield Prediction. *Agriculture*, v.14, p. 1-21, 2024. https://doi.org/10.3390/agriculture14112032
9. Oldoni, L. V.; Sanches, I. D.; Picoli, M.; **Prudente, V. H. R.**; Adami, M.. Geometric accuracy assessment and a framework for automatic sub-pixel registration of WFI images from CBERS-4, CBERS-4A, and Amazonia-1 satellites. *Remote Sensing Applications: Society and Environment*, v.28, p. 1-22, 2022. https://doi.org/10.1016/j.rsase.2022.100844
10. Vieira, D. C.; Sanches, I. D.; Montibeller, B.; **Prudente, V. H. R.**; Hansen, M.; Baggett, A.; Adami, M.. Cropland expansion, intensification, and reduction in Mato Grosso state, Brazil, between the crop years 2000/01 to 2017/18. *Remote Sensing Applications: Society and Environment*, v.28, p. 1-18, 2022. https://doi.org/10.1016/j.rsase.2022.100841
11. Ganascini, D.; Mendes, I. S.; Caon, I. L.; Cattani, C. E. V.; Mercante, E.; Machado Coelho, S.; Viana, O. H.; **Prudente, V. H. R.**. Evaluation of bean desiccation plants with diquat and glufosinate-ammonium using terrestrial hyperspectral sensor. *Australian Journal of Crop Science*, v.16, p. 216-226, 2022. https://doi.org/10.21475/ajcs.22.16.02.3344
12. Oldoni, L. V.; Mercante, E.; Antunes, J. F. G.; Cattani, C. E. V.; Silva Junior, C. A.; Caon, I. L.; **Prudente, V. H. R.**. Extraction of crop information through the spatiotemporal fusion of OLI and MODIS images. *Geocarto International*, v.37, p. 8336-8360, 2021. https://doi.org/10.1080/10106049.2021.2000648
13. **Prudente, V. H. R.**; Mercante, E.; Johann, J. A.; Souza, C. H. W.; Oldoni, L. V.; Almeida, L.; Becker, W.; Silva, B. B.. Comparison Between Vegetation Index Obtained by Active and Passive Proximal Sensors. *Journal Of Agricultural Studies*, v.9, p. 392-405, 2021. https://doi.org/10.5296/jas.v9i2.18462
14. Sanches, I. D.; Feitosa, R. Q.; Montibeller, B.; Achanccaray Diaz, P. M.; Luiz, A. J. B.; Soares, M. D.; **Prudente, V. H. R.**; Vieira, D. C.; Murano, L. E. P.; Happ, P. N.; Chamorro, J.; Oldoni, L. V.. First results of the LEM benchmark database for agricultural applications. *ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, v.XLIII-B5-2020, p. 251-256, 2020. https://doi.org/10.5194/isprs-archives-XLIII-B5-2020-251-2020
15. Oldoni, L. V.; **Prudente, V. H. R.**; Diniz, J. M. F. S.; Wiederkehr, N. C.; Sanches, I. D.; Gama, F. F.. Polarimetric SAR data from Sentinel-1a applied to early crop classification. *ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, v.XLIII-B3-2020, p. 1039-1046, 2020. https://doi.org/10.5194/isprs-archives-XLIII-B3-2020-1039-2020
16. **Prudente, V. H. R.**; Mercante, E.; Johann, J. A.; Souza, C. H. W.; Cattani, C. E. V.; Mendes, I. S.; Caon, I. L.. Use of terrestrial remote sensing to estimate soybeans and beans biophysical parameters. *Geocarto International*, v.36, p. 773-790, 2019. https://doi.org/10.1080/10106049.2019.1624982
17. **Prudente, V. H. R.**; Oldoni, L. V.; Vieira, D. C.; Cattani, C. E. V.; Sanches, I. D.. Relationship between SAR/Sentinel-1 Polarimetric and interferometric data with biophysical parameters of agricultural crops. *ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, v.WG III/10, p. 599-607, 2019. https://doi.org/10.5194/isprs-archives-XLII-3-W6-599-2019
18. Girolamo-Neto, C. D.; Sanches, I. D.; Neves, A. K.; **Prudente, V. H. R.**; Körting, T. S.; Picoli, M. C. A.; Aragão, L. E. O. C.. Assessment of Texture Features for Bermudagrass (Cynodon dactylon) Detection in Sugarcane Plantations. *Drones*, v.3, p. 1-15, 2019. https://doi.org/10.3390/drones3020036

19. Sanches, I. D.; Feitosa, R. Q.; Achanccaray, P.; Montibeller, B.; Luiz, A. J. B.; Soares, M. D.; **Prudente, V. H. R.**; Vieira, D. C.; Maurano, L. E. P.. LEM benchmark database for tropical agricultural remote sensing application. *ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, v.XLII-1, p. 387-392, 2018. https://doi.org/10.5194/isprs-archives-XLII-1-387-2018
20. Wrublack, S. C.; Mercante, E.; Vilas Boas, M.; **Prudente, V. H. R.**; Silva, J. L. G.. Variation of water quality along a river in an agricultural watershed with support of geographic information systems and multivariate analysis. *Engenharia Agricola*, v.38, p. 74-81, 2018. http://dx.doi.org/10.1590/1809-4430-Eng.Agric.v38n1p74-81/2018
21. Remor, M. B.; Sampaio, S. C.; Model, K. J.; Falco, T. D.; **Prudente, V. H. R.**. Mercury in the sediment of Pelotas river basin, Brazil. *Engenharia Agricola*, v.38, p. 117-123, 2018. http://dx.doi.org/10.1590/1809-4430-Eng.Agric.v38n1p117-123/2018
22. **Prudente, V. H. R.**; Silva, B. B.; Johann, J. A.; Mercante, E.; Oldoni, L. V.. Comparative assessment between per-pixel and object-oriented for mapping land cover and use. *Engenharia Agricola*, v.37, p. 1015-1027, 2017. https://doi.org/10.1590/1809-4430-Eng.Agric.v37n5p1015-1027/2017
23. Wrublack, S.; Mercante, E.; Correa, M. M.; **Prudente, V. H. R.**; Silva, J.; Vilas Boas, M. A.. Geotechnologies in mapping on land use and cover in an agricultural watershed. *Geama*, v.3, p. 5-9, 2017. https://www.journals.ufrpe.br/index.php/geama/article/view/1369
24. Wrublack, S. C.; Mercante, E.; **Prudente, V. H. R.**; Silva, J. L. G.; Vilas Boas, M. A.; Oldoni, L. V.. Geotechnologies and multivariate statistics applied to water resources management in a predominantly agricultural watershed. *International Journal of Food, Agriculture and Environment*, v.13, p. 201-209, 2015. https://doi.org/10.1234/4.2015.3991
25. **Prudente, V. H. R.**; Souza, C. H. W.; Mercante, E.; Johann, J. A.; Uribe-Opazo, M. A.. Spatial statistics applied to soybean production data from Paraná State for 2003-04 to 2009-10 crop-years. *Engenharia Agricola*, v.34, p. 755-769, 2014. https://doi.org/10.1590/S0100-69162014000400015
26. Souza, C. W.; Mercante, E.; **Prudente, V. H. R.**; Justina, D. D. D.. Methods of performance evaluation for the supervised classification of satellite imagery in determining land cover classes. *Ciencia e Investigacion Agraria*, v.40, p. 419-428, 2013. https://doi.org/10.4067/S0718-16202013000200016
27. Wrublack, S. C.; **Prudente, V. H.**; Mercante, E.; Machado Coelho, S.. Spatial distribution of Canola culture in the State of Paraná (Brazil) between the agricultural years of 2005 and 2009. *Ciencia e Investigacion Agraria*, v.40, p. 523-535, 2013. http://dx.doi.org/10.4067/S0718-16202013000300005

**Books**

1. Wrublack, S. C.; Mercante, E.; Xavier, A. H.; Silva, B. B.; Neneve, F.; Silva, J. L. G.; Reginatto, J. H.; Marcondes, L.; Vilas Boas, M. A.; **Prudente, V. H. R.**. *GIS as a tool for water resources management: Lontra Rivers Microbasin study case (In Portuguese)*. EDUNIOESTE. 2017.

**Book Chapters**

1. **Prudente, V. H. R.**; Oldoni, L. V.; Wrublack, S. C.; Mercante, E.. Erosive susceptibility analysis in the micro basin of Lontras rivers in southwest Paraná by multi-criteria analysis (In Portuguese). In: *2015 Brazilian Congress of Agricultural Engineering Book*, 2015.
2. Oldoni, L. V.; Mercante, E.; **Prudente, V. H. R.**; Kusminski, D.; Silva, B. B.. Identification of soybean and corn areas using Landsat-8 image classification methods (In Portuguese). In: *2015 Brazilian Congress of Agricultural Engineering Book*, 2015.
3. Lima, L. E. P.; Lima, P. H. P.; **Prudente, V. H. R.**; Souza, C. H. W.; Mercante, E.. Mapping of the expansion of the perimeter irrigated by a central pivot in the municipality of Unaí-MG using geoprocessing techniques (In Portuguese). In: *2012 Brazilian Congress of Agricultural Engineering Book*, 2012.
4. Lima, L. E. P.; Justina, D. D. D.; **Prudente, V. H. R.**; Mercante, E.; Opazo, M. A. U.. Estimated area planted with soybean by digital processing of Landsat 5/TM satellite images (In Portuguese). In: *2011 Brazilian Congress of Agricultural Engineering Book*, 2011.

**Complete works published in proceedings of conferences**

1. Queiroz, H. A. A.; Sanches, I. D.; **Prudente, V. H. R.**; Santos, L. G.; Santos, G. M. S. S.; D., S. E.; Souza, J. A. M.. Assessing Grapevine's Polarimetric Dynamics Using Dual-Pol Sentinel-1: A Case Study in Guanambi, Bahia, Brazil. In: *XXI Brazilian Symposium on Remote Sensing*, Salvador, Brazil, 2025.
2. Garcia, A. D. B.; **Prudente, V. H. R.**; Sanches, I. D.. Identification of Initial Stages of Irrigated Rice-Fields Utilizing Sentinel-2 Imagery and a Machine Learning Algorithm. In: *XXI Brazilian Symposium on Remote Sensing*, Salvador, Brazil, 2025.
3. Garcia, A. D. B.; Chaves, M. E. D.; **Prudente, V. H. R.**; Sanches, I. D.. Assessing the Influence of Borders and Roads on the Segmentation of Rice Fields: A Case Study. In: *XXIV GEOINFO*, Sao Jose dos Campos, Brazil, 2023. http://www.geoinfo.info/geoinfo2023/proceedings2023_red.pdf

4. **Prudente, V. H. R.**; Silva, N. R. F. E.; Garcia, A. D. B.; Oldoni, L. V.; Xaud, H. A. M.; Xaud, M.; Adami, M.; Sanches, I. D.. Land Use and Land Cover classification using a SAR optical cloud computer approach in southern of Roraima. In: *XX Brazilian Symposium on Remote Sensing*, Florianopolis, Brazil, 2023. https://proceedings.science/sbsr-2023/trabalhos/land-use-and-land-cover-classification-using-a-sar-optical-cloud-computer-approa?lang=pt-br
5. **Prudente, V. H. R.**; Sanches, I. D.; Adami, M.; Skakun, S.; Oldoni, L. V.; Xaud, H. A. M.; Xaud, M.; Zhang, Y.. SAR data for Land Use Land Cover classification in a tropical region with frequent cloud cover. In: *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Hawaii, USA, 2020. https://doi.org/10.1109/IGARSS39084.2020.9323404
6. Zhang, Y.; Skakun, S.; **Prudente, V. H. R.**. Detection of changes in the impervious surface using Sentinel-2 imagery. In: *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Hawaii, USA, 2020. https://doi.org/10.1109/IGARSS39084.2020.9323327
7. **Prudente, V. H. R.**; Vieira, D. C.; Montibeller, B.; Oldoni, L. V.; Sanches, I. D.; Adami, M.. Use of SAR data to classify first and second harvest (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/utilizacao-de-dados-sar-na-classificacao-de-especies-agricolas-de-primeira-e-segunda-safra
8. Oldoni, L. V.; Sanches, I. D.; **Prudente, V. H. R.**; Vieira, D. C.; Gama, F. F.. Characterization of soybean, corn, and cotton dynamics based on Sentinel-1A polarimetric SAR data (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/caracterizacao-da-dinamica-da-soja--milho-e-algodao-com-base-em-dados-sar-polarimetricos-do-sentinel-1a-
9. Oliveira, W. V.; Silva, N. R. F. E.; Vieira, D. C.; **Prudente, V. H. R.**; Moreira, M. A.; Sanches, I. D.. Analysis of the expansion and dynamics of agriculture in central pivots in the microregion of Barreiras/BA from the interpretation of Landsat-8/OLI images (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/analise-da-expansao-e-dinamica-da-agricultura-em-pivos-centrais-na-microrregiao-de-barreiras-ba-a-partir-da-interpretaca
10. Oldoni, L. V.; **Prudente, V. H. R.**; Vieira, D. C.; Sanches, I. D.. Mapping of agricultural crops using Sentinel-1A polarimetric multitemporal SAR data (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/mapeamento-de-culturas-agricolas-utilizando-dados-multitemporal-sar-polarimetricos-do-sentinel-1a-
11. Vieira, D. C.; **Prudente, V. H. R.**; Silva, N. R. F. E.; Oliveira, W. V.; Oldoni, L. V.; Adami, M.; Becker, W. R.; Korting, T. S.; Sanches, I. D.. Identification of annual cycle agricultural areas in the state of Paraná from EVI2 and NDVI time metrics using the google earth engine (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/identificacao-de-areas-agricolas-de-ciclo-anual-no-estado-do-parana-a-partir-de-metricas-temporais-de-evi2-e-ndvi-utiliz
12. Caon, I. L.; Becker, W. R.; Ganascini, D.; Cattani, C. E. V.; Mendes, I. S.; **Prudente, V. H. R.**; Oldoni, L. V.; Antunes, J. F. G.; Mercante, E.. Comparison between rf and Maxver classifiers, for land use and coverage classification, in different time densities (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/comparativo-entre-os-classificadores-rf-e-maxver--para-classificacao-de-uso-e-cobertura-da-terra--em-diferentes-densidad?lang=en
13. **Prudente, V. H. R.**; Vieira, D. C.; Silva, N. R. F. E.; Oliveira, W. V.; Oldoni, L. V.; Adami, M.; Sanches, I. D.. Identification of areas suitable for the installation of cereal collection storage units in the state of Rio Grande do Sul (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/identificacao-de-areas-aptas-a-instalacao-de-unidades-armazenadoras-coletoras-de-cereais-no-estado-do-rio-grande-do-sul-
14. Becker, W. R.; Caon, I. L.; Cattani, C. E. V.; Mercante, E.; Johann, J. A.; Ganascini, D.; **Prudente, V. H. R.**. Median and standard deviation of NDVI spectrum-temporal profile as rating parameters (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/mediana-e-desvio-padrao-do-perfil-espectro-temporal-de-ndvi-como-parametros-de-classificacao
15. Silva, N. R. F. E.; Oliveira, W. V.; Vieira, D. C.; **Prudente, V. H. R.**; Moraes, E. C.. Characterization of environmental fragility of the Gi8/PE water basin through multi-criteria analysis (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/caracterizacao-da-fragilidade-ambiental-da-bacia-hidrografica-gi8-pe-por-meio-de-analise-multicriterio
16. **Prudente, V. H. R.**; Dutra, A. C.; Vieira, D. C.; Silva, N. R. F. E.; Moraes, E. C.; Shimabukuro, Y. E.; Sanches, I. D.. Influence of the calibration factor between plates in the study of vegetation (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/influencia-do-fator-de-calibracao-entre-placas-no-estudo-da-vegetacao

17. Dutra, A. C.; **Prudente, V. H. R.**; Vieira, D. C.; Silva, N. R. F. E.; Silva Junior, C. H. L.; Moraes, E. C.; Shimabukuro, Y. E.; Sanches, I. D.. Reflectance factor of different beach almond vegetation leaves (T. catappa sp) (In Portuguese). In: *XIX Brazilian Symposium on Remote Sensing*, Santos, Brazil, 2019. https://proceedings.science/sbsr-2019/papers/fator-de-reflectancia-de-diferentes-folhas-de-vegetacao-de-amendoeira-da-praia--t--catappa-sp-?lang=en
18. **Prudente, V. H. R.**; Mercante, E.; Oldoni, L. V.; Cattani, C. E. V.; Silva, B. B.. Comparison between Leaf Area Index and Vegetation Index obtained by terrestrial remote sensing (In Portuguese). In: *XVII Selper International Symposium*, Puerto Iguazú, Argentina, 2016. https://www.researchgate.net/publication/315664437_COMPARACAO_ENTRE_O_INDICE_DE_AREA_FOLIAR_E_INDICES_D
19. Becker, W. R.; **Prudente, V. H. R.**; Johann, J. A.; Richetti, J.; Mercante, E.. Obtaining spatial and temporal data of crops in the state of Paraná (In Portuguese). In: *XVIII Brazilian Symposium on Remote Sensing*, João Pessoa, Brazil, 2015. http://www.dsr.inpe.br/sbsr2015/files/p0650.pdf

## PEER REVIEW

**Journal Reviewer:** Remote Sensing of Environment, ISPRS Journal of Photogrammetry and Remote Sensing, International Journal of Applied Earth Observation and Geoinformation, Remote Sensing Applications – Society and Environment, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, International Journal of Remote Sensing, International Journal of Digital Earth, Agricultural and Forest Meteorology, Computers and Electronics in Agriculture, Geocarto International, Remote Sensing (MDPI), Sensors (MDPI), AIMS Agriculture and Food, Brazilian Journal of Cartography, Rural Science, Heliyon, Online Geoenvironmental

**Grant Reviewer:** NASA

## FUNDING & GRANT WRITING

**Google Cloud Research Credits Program** *2026–2027*
*Google Cloud ($5,000)*

- Automating agricultural ground-truth data generation in Mexico through the fusion of Google Street View, satellite time-series, and Generative AI.
- Role: Awardee

**SinergIA: Remote Sensing and AI for Mapping Energy Crops in the Brazilian Semi-Arid Region** *2025–2027*
*CNPq (BRL 249,937.95)*

- PI: A. T. Sales
- Role: International Technical Lead & Collaborator

**Land-Cover and Land-Use Change (LCLUC) Program** *2021–2024*
*NASA ($448,693)*

- PI: M. Jain. Collaborators: V. Krishna, A. Lerner.
- Role: Project Technical Lead (Postdoctoral Fellow)

**CAPES-Print – SENSING: Satellites for Environmental Solutions Informing Nations Globally** *2019–2020*
*CAPES-Print ($23,662.00)*

- Brazilian advisors: I. Sanches, M. Adami (INPE). Foreign Advisor: S. Skakun (UMD/USA)
- Role: PhD Awardee

**Research Grant – CNPq Bench Fee** *2018–2021*
*CNPq (BRL 10,638.00)*

- Role: PhD Candidate

## GRANT WRITING EXPERIENCE

**NASA CSDA – Agricultural residue burning mapping in smallholder systems** *2025*
*PI: M. Jain. Collaborators: M. Deshpande, V. Prudente*

**NASA LCLUC – Dynamic Agricultural LCLUC and Improved Hydrology into Climate Models** *2024*
*PI: M. Jain. Collaborators: S. McDermid, Y. Pokhrel, N. Bhattarai, A. Srivastava, A. Urfels, V. Prudente*

## (CO-)SUPERVISED THESES & MENTORSHIP

**PhD Students**

- Heithor Alexandre de Araujo Queiroz (INPE, Brazil) – Co-advisor (2024–Present). Thesis: Advancing fruit crop mapping using remote sensing.
- Andre Dalla Bernardina Garcia (INPE, Brazil) – Co-advisor (2023–2025). Thesis: Mapping of irrigated rice in Santa Catarina based on optical and radar images of the sentinel constellation.

**Master's Students**

- Kunxi Li (SEAS, University of Michigan) – 2024–2025 (completed)
- Shaoying Zheng (SEAS, University of Michigan) – 2023–present
- Zhiqing Huang (SEAS, University of Michigan) – 2025–present
- Hantao Wang (SEAS, University of Michigan) – 2025–present
- Jiangpan Bian (SEAS, University of Michigan) – 2025–present
- Simon Wu (SEAS, University of Michigan) – 2025–present
- Estela Carneiro Moraes (PPGEA, Federal Rural University of Pernambuco) – 2025–present

**Undergraduate Students**

- Elvis Roberto Picinato Junior (UNIOESTE, Brazil) – 2017
- Fayllon Ricardo Furquim Garcia Rodrigues (UNIOESTE, Brazil) – 2017

## ACADEMIC AND PROFESSIONAL TEACHING

**Graduate Faculty Member / Lecturer** *2025–Present*
*AmbGeo – Postgraduate Program in Remote Sensing and Geoprocessing*

- Module: Remote Sensing Applications in Agronomy
- Focus: Theory and practical application of satellite data for agricultural monitoring

**Lead Instructor – Applied Radar Remote Sensing (SAR)** *2022–Present*
*ClickGeo – Professional Training Program*

- Focus: Decoding SAR data, from theory to practical multidisciplinary analysis

**Guest Lecturer – Radars (SAR) and Integration with Agricultural Targets** *2024*
*University of São Paulo (ESALQ/USP)*

**Guest Lecturer – Geoprocessing II** *2023–Present*
*Western Paraná State University (UNIOESTE)*

**Guest Lecturer – Agricultural Remote Sensing** *2018–Present*
*National Institute for Space Research (INPE)*

- Focus: SAR and Optical multisensor for agricultural monitoring

**Instructor – Agriculture Remote Sensing Module** *2018–2019*
*INPE – XX Course on Remote Sensing for Environmental Education*

**Teaching Assistant** *2011–2012, 2019*
*Western Paraná State University (UNIOESTE)*

- Courses: Geoprocessing, Topography, and Global Positioning System

## LIST OF GIVEN TALKS

**"Overcoming data scarcity to map corn in smallholder farms"** *2025*
*Faculty Seminar Series – Postdoc Lightning Talks, SEAS / University of Michigan, Ann Arbor, MI*

- Invited lecture

**"Adapting Maize Systems to Climate Change in Mexico"** *2024*
*NASA LCLUC Science Team Meeting, Gaithersburg, MD*

- Poster presentation

**"Using Sentinel-2 satellite data and GEE to identify field-level sow dates in smallholder systems"** *2023*
*American Geophysical Union (AGU) Fall Meeting, San Francisco, CA*

- Oral presentation

**"Remote-sensing for crop type mapping: advances and applications for modeling pest populations"** *2023*
*Ecological Society of America (ESA) Annual Meeting, Portland, OR*

- Oral presentation

**"Sub-national cropland validation"** *2023*
*CEOS/GEOGLAM Joint Workshop on Community Good Practices, Beltsville, MD*

- Invited lecture

**"SAR data for Land Use Land Cover classification in a tropical region with frequent cloud cover"** *2020*
*IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Waikoloa, HI (Virtual)*

- Oral presentation

**"SAR Polarimetric and Interferometric data for Crop Classification"** *2019*
*International Workshop on Earth Observations for Agricultural Monitoring, New Delhi, India*

- Invited lecture

**"Use of SAR data to classify first and second harvest agricultural species"** *2019*
*XIX Brazilian Symposium on Remote Sensing (SBSR), Santos, Brazil*
- Oral presentation

**"Erosive susceptibility analysis in the Lontras river microbasin using multi-criteria analysis"** *2015*
*XLIV Brazilian Congress of Agricultural Engineering (CONBEA), São Pedro, Brazil*
- Oral presentation

**"Use of GIS for characterization of soybean cultivated areas in Western Paraná"** *2013*
*XVI Brazilian Symposium on Remote Sensing (SBSR), Foz do Iguaçu, Brazil*
- Poster presentation

**"Mapping the expansion of central pivot irrigation in Unaí-MG using geoprocessing techniques"** *2012*
*X Latin American and Caribbean Congress of Agricultural Engineering (CLIA), Londrina, Brazil*
- Oral presentation

## COMMITTEE MEMBER

**Pedro Brito – Ph.D. Applied Computing (Proposal Examination)** *2025*
*National Institute for Space Research (INPE), Brazil*
- Thesis: Fusion of multisensor data cubes to map fruit farming areas in the São Francisco valley

**Pedro Brito – Ph.D. Applied Computing (Qualifying Examination)** *2025*
*National Institute for Space Research (INPE), Brazil*
- Thesis: Recent applications of SAR and LiDAR data for land use and land cover classification

**Andre Dalla Bernardina Garcia – Ph.D. Remote Sensing** *2025*
*National Institute for Space Research (INPE), Brazil*
- Thesis: Utilizing Artificial Intelligence and SAR-Optical Data to Mapping Irrigated Rice Cultivation in Santa Catarina, Brazil

**Isabella Alves da Cunha – Master in Agricultural Engineering** *2024*
*University of Campinas (Unicamp), Brazil*
- Thesis: Using SAR Images to Predict Soybean Yield

**Samuel Kuhl – Master in Agricultural Engineering** *2024*
*Western Paraná State University (UNIOESTE), Brazil*
- Thesis: Variable Selection for Deforestation Classification Optimization on the Google Earth Engine Platform

**Isabella Alves da Cunha – Master in Agricultural Engineering (Qualifying Examination)** *2023*
*University of Campinas (Unicamp), Brazil*
- Thesis: Using SAR Images to Predict Soybean Yield

**Alex Paludo – Ph.D. Agricultural Engineering** *2023*
*Western Paraná State University (UNIOESTE), Brazil*
- Thesis: Geospatial analysis of the storage capacity units in relation to agricultural production

**Newmar Wegner – Ph.D. Agricultural Engineering** *2023*
*Western Paraná State University (UNIOESTE), Brazil*
- Thesis: Use of geographical data and forecast automated with Neural Networks in agriculture

**Henrique dos Santos Felipetto – Ph.D. Agricultural Engineering** *2022*
*Western Paraná State University (UNIOESTE), Brazil*
- Thesis: Multispectral Images from a UAV (Unmanned Aerial Vehicle) in wheat yield estimation

**Carlos Eduardo Vizzotto Cattani – Ph.D. Agricultural Engineering** *2022*
*Western Paraná State University (UNIOESTE), Brazil*
- Thesis: Gross primary productivity in areas with different types of land use and coverage

## ACADEMIC HISTORY – COURSES

**Ph.D. in Remote Sensing (INPE)**
- Physical Principles of Remote Sensing
- Introduction to Remote Sensors
- Introduction to Geoprocessing
- Imaging Radar – Principles and Applications
- Targets Spectral Behavior

- Agricultural Remote Sensing
- Digital Image Processing of Remote Sensing
- Advanced Topics in Image Processing
- Spatial Analysis
- Hyperspectral Remote Sensing

**M.S. in Agricultural Engineering (UNIOESTE)**

- Experimental Statistics
- Geoprocessing I: Remote Sensing and Global Positioning System
- Scientific Research Methodology
- Geoprocessing II: Geographic Information Systems (GIS)
- Data Mining and Knowledge Discovery
- Multivariate Analysis

## CERTIFICATIONS

**Basic Principles of Radar Backscatter** *2022*
*EO-College (Online)*

**TAT-6: Integration of Radar and Optical Remote Sensing in Studying LCLUC** *2018*
*European Space Agency, ESA-ESRIN, Croatia*

**Echoes in Space – Introduction to Radar Remote Sensing** *2017*
*EO-College (Online)*

**Application of Satellite Remote Sensing to Support Water Resources Management** *2016*
*ARSET-NASA, Brazil*

## LANGUAGES

Portuguese (Native), Spanish (Proficient), English (Proficient)

## MEMBERS

American Geophysical Union (AGU), Sigma-Xi Society, NASA Land-Cover and Land-Use Change (LCLUC) Program, Global Land Programme (GLP)

## INTERNATIONAL COLLABORATIONS

University of Michigan (USA), University of Maryland (USA), Mississippi State University (USA), National Institute for Space Research – INPE (Brazil), Western Paraná State University – UNIOESTE (Brazil), Federal Rural University of Pernambuco (Brazil), São Paulo State University (Brazil), University of Lisbon (Portugal), Commonwealth Scientific and Industrial Research Organisation – CSIRO (Australia), CIMMYT (Mexico and India).

## REFEREES

| | |
|---|---|
| **Meha Jain, Ph.D.** | Associate Professor, University of Michigan (UofM) – mehajain@umich.edu |
| **Sergii Skakun, Ph.D.** | Associate Professor, University of Maryland (UMD) – skakun@umd.edu |
| **Marcos Adami, Ph.D.** | Research Scientist, National Institute for Space Research (INPE) – marcos.adami@inpe.br |
| **Erivelto Mercante, Ph.D.** | Associate Professor, Western Paraná State University (UNIOESTE) – erivelto.mercante@unioeste.br |

*April 2026*

Victor Hugo Rohden Prudente, Ph.D.