CURRICULUM VITAE (last 5 years)

WILLEM J. D. VAN LEEUWEN

Professor School of Natural Resources and the Environment (SNRE) &
School of Geography, Development and Environment (SGDE)
Director Arizona Remote Sensing Center (ARSC)
Associate Director Development/Philanthropy in SNRE

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CHRONOLOGY OF EDUCATION

1995 Ph.D., University of Arizona, Tucson, Arizona. Major: Soil and Water & Remote Sensing (Dept. of Soil, Water and Environmental Science).
Dissertation Title: *Biophysical Interpretation of Spectral Indices for Semi-Arid Soil and Vegetation Types in Niger*
Advisor: Dr. Alfredo R. Huete

1988 M.S., Wageningen University, University for Life Sciences, Wageningen, The Netherlands.
Major Field: *Soils and Remote Sensing.* Department of Soil Science (1988)
Thesis*: Isolation of Soil, Vegetation, and Atmosphere Signals over Maricopa Agricultural Center*
Advisors: Drs. Toon Janse and Hein ten Berge

1986 B.S., Wageningen University, University for Life Sciences, Wageningen, The Netherlands.
Major Field: *Soils.* Department of Soil Science (1986)

CHRONOLOGY OF EMPLOYMENT

2023 – Associate Director for Development and Philanthropy, School of Natural Resources and the Environment
2020 – 23 Interim Director, School of Natural Resources and the Environment (ended 7-10-23)
2017 – Professor, School of Natural Resources and the Environment & School of Geography and Development, University of Arizona, Tucson. Joint appointments: Arid Lands Resource Sciences, Remote Sensing & Spatial Analysis (Exec committee).
2011 – Director, Arizona Remote Sensing Center, University of Arizona, Tucson.
2011 – 17 Associate Professor, School of Natural Resources and the Environment & School of Geography and Development, University of Arizona, Tucson.
2013. *Visiting Professor*, Universidad de Sonora, División de Ciencias Biológicas y de La Salud, Departamento de Investigaciones Científicas y Technológicas, Hermosillo MX. Feb-May, 2013.
2012. *Visiting Professor*, Universidad Católica de Chile (UC), Centro Cambio Global UC. Departamento de Ecosistemas y Medio Ambiente, Santiago, Chile, August-December, 2012.
2010 – 11 *Associate Director, Arizona Remote Sensing Center,* University of Arizona, Tucson, AZ

2009 – 11 *Assistant Professor, School of Natural Resources and the Environment - Office of Arid Lands Studies,* University of Arizona, Tucson, AZ.
2005 – 11 *Assistant Professor, School of Geography and Development,* University of Arizona, Tucson, AZ. (shared appointment)
2005 – 09 *Assistant Professor, Office of Arid Lands Studies,* University of Arizona, Tucson, AZ.
2002 – 05 *Research Scientist*, University of Arizona, Office of Arid Lands Studies, Tucson, AZ.
2000 – 02 *Research Scientist*, Météo France, Centre Nationale de la Recherche Scientifique (NSF equivalent), Toulouse, France.
1999 – 00 *Research Scientist*, Météo France, Centre Nationale de Recherches Météorologiques, Toulouse, France.
1995 – 99 *Assistant Research Scientist*, Department of Soil, Water and Environmental Science, University of Arizona, Tucson, AZ.
1990 – 95 *Graduate Research Associate*, Department of Soil and Water and Environmental Science, University of Arizona, Tucson, AZ.

HONORS AND AWARDS

Individual:
2023 SNRE Interim Directorship – Special Recognition Award
2021 SNRE Outstanding Faculty Award
2017 GIDP Honored Faculty Award

Students' Honors and Awards While Under My Supervision:
Kangsan Lee - NASA Develop Program and travel and research awards 2021-23

SERVICE/OUTREACH (LIMITED TO PERIOD IN CURRENT RANK)
(Period [.] indicates completed, hyphen [–] ongoing)

Local/state Outreach

Decision support services in the Arizona Remote Sensing Center:
- USA and Pima County - DroughtView decision support system support DroughtView (arizona.edu)
- Salt River Project - SnowView Decision support system SnowView (arizona.edu)

National/international service/outreach

2023 – 24 IEEE Geoscience and Remote Sensing Conference technical committee
2024 – 25 IEEE Geoscience and Remote Sensing Conference technical committee

University Committees

2021 – Director Graduate GIS certificate program
2021 – Executive committee member - Remote Sensing and Spatial Analysis Graduate Interdisciplinary Program (RSSA GIDP), University of Arizona.
2009 – 20 *Chair* Remote Sensing and Spatial Analysis Graduate Interdisciplinary Program (RSSA GIDP), University of Arizona.
2006 – *Faculty member,* Arid Lands Resource Sciences Graduate Interdisciplinary Program (ALRS GIDP), University of Arizona.
2007 – Faculty member of Graduate Certificate in Geographic Information Science at the University of Arizona.

Departmental Committees

2024 – SNRE APR Watershed Program reviewer
2025 Promotion and Tenure Committee SGDE (Chair)
2024 – 25 Annual Performance Review Committee SGDE
2024 Co-Chair SNRE 50th Anniversary Committee
2024 Annual Performance Review Committee Chair (SNRE Arid Lands faculty members)
2023 – SNRE development/philanthropy committee (maintaining properties and relationships with donated property owners)
2021 – Participation in SNRE search committees
2023 – P&T committees in SGDE and SNRE
2024 Chair P&T committee LTTR
2023 – Strategic Planning Committee member SNRE (Associate Director of Development)
2023 – 25 IT committee, School of Natural Resources and the Environment

College and University Committees

2023. P&T committee member - College of Education
2020 – 23 CALS Promotion and Tenure Committee member and co-chair in 2023

Journal Reviewer (2005-present)

2008 – Ecological Applications (Subject editor 2012-2017)
2005 – Remote Sensing of Environment
2012 – Remote Sensing

PROFESSIONAL DEVELOPMENT

2018 – Drone/UAS Pilot License part 107 (renewing every 2 years)
2023. NGWA Workshop State-of-the-Art Techniques in Characterizing, Constructing, and Operating Optimum Surface Spreading Groundwater Recharge Projects (short course) April 23, 1- 5 p.m., San Antonio, Texas

Societies

1992 – American Geophysical Union (AGU).
2005 – Association of American Geographers (AAG).
2012 – Ecological Society of America (ESA).
2023 – NGWA: National Groundwater Association
2023 – IEEE Geoscience and Remote Sensing Society

PUBLICATIONS/CREATIVE ACTIVITY (PUBLISHED OR ACCEPTED)

*Note: * = substantially based on work done as a graduate student.*
Note: bold** = My name and the names of students mentored who are co-authors are identified in **bold
Note: # = chapters presenting original research not reported elsewhere.

Refereed journal articles (74 total): Google Scholar Citations 13138; h-index 42;i10-index 80 (1-6-2026)
https://orcid.org/0000-0002-3188-7172

1. Wlodarczyk T, Babst F, Murawska-Wlodarczyk K, Stokes O, Salywon A, **van Leeuwen WJD**, Norton CL, Rader S, Maier RM, Babst-Kostecka A. 2025. Dryland ecosystem regeneration and plant metal(loid) accumulation strategies 60 years after revegetating a mine tailings pond. Sci Total Environ. https://doi.org/10.1016/j.scitotenv.2025.180705
2. Broxton, PD, JA Biederman, R Dwivedi, **WJD van Leeuwen,** TT Sankey, et al., 2025. Forest Patch

Geometry and Climate Regulate the Impact of Forest Thinning on Snowpack in the Southwest United States. Ecohydrology 18 (6), e70111
3. **Lee, K, WJD van Leeuwen,** DA Falk, 2025. Quantifying Forest Structural and Functional Responses to Fire Severity Using Multi-Source Remotely Sensed Data. Geographies 5 (3), 30
4. **van der Leeuw, E., van Leeuwen, W. J. D.,** Marsh, S. E., & Archer, S. R. (2024). Using Fine Resolution Remotely Sensed Data-Derived Land Cover to Inform Dryland State and Transition Models. Rangeland Ecology & Management, 96, 128–142. https://doi.org/https://doi.org/10.1016/j.rama.2024.06.003
5. **Lee, K.; van Leeuwen, W.J.D.;** Gillan, J.K.; Falk, D.A. 2024. Examining the Impacts of Pre-Fire Forest Conditions on Burn Severity Using Multiple Remote Sensing Platforms. Remote Sens., 16, 1803. https://doi.org/10.3390/rs16101803
6. Dwivedi, R., Biederman, J. A., Broxton, P. D., Pearl, J. K., Lee, K., Svoma, B. M., **van Leeuwen, W. J. D.,** & Robles, M. D. (2024). How three-dimensional forest structure regulates the amount and timing of snowmelt across a climatic gradient of snow persistence. Frontiers in Water, 6. https://www.frontiersin.org/journals/water/articles/10.3389/frwa.2024.1374961
7. Holifield Collins C.,Skirvin S., Kautz M.,Winston Z, Curley, D., Corrales A., Bishop A., Bishop N.,Norton C., Ponce-Campos G., G. Armendariz, L. Metz, P. Heilman, **WJD van Leeuwen**; 2023. Brush Estimation Tool (RaBET): An Operational Remote Sensing-Based Application for Quantifying Woody Cover on Western Rangelands, Remote Sensing 15 (21), 5102 https://doi.org/10.3390/rs15215102
8. Dwivedi, R . JA Biederman, PD Broxton, K Lee, **WJD van Leeuwen,** JK Pearl, 2023. Forest density and snowpack stability regulate root zone water stress and percolation differently at two sites with contrasting ephemeral vs. stable seasonal snowpacks, Journal of Hydrology 624, 129915 https://doi.org/10.1016/j.jhydrol.2023.129915
9. Broxton, PD., **WJD van Leeuwen**, BM Svoma, J Walter, JA Biederman, 2023 Subseasonal to seasonal streamflow forecasting in a semiarid watershed, JAWRA Journal of the American Water Resources Association. https://doi.org/10.1111/1752-1688.13147
10. Dwivedi, R., JA Biederman, PD Broxton, K Lee, **WJD van Leeuwen**, 2023, Snowtography quantifies effects of forest cover on net water input to soil at sites with ephemeral or stable seasonal snowpack in Arizona, USA,Ecohydrology 16 (2), e2494 https://doi.org/10.1002/eco.2494
11. Hartfield, K.; Gillan, J.K.; Norton, C.L.; Conley, C.; **van Leeuwen, W.J.D.** A Novel Spectral Index to Identify Cacti in the Sonoran Desert at Multiple Scales Using Multi-Sensor Hyperspectral Data Acquisitions. Land 2022, 11, 786. https://doi.org/10.3390/land11060786
12. Norton, C.L.; Hartfield, K.; Collins, C.D.H.; **van Leeuwen, W.J.D**.; Metz, L.J. Multi-Temporal LiDAR and Hyperspectral Data Fusion for Classification of Semi-Arid Woody Cover Species. Remote Sens. 2022, 14, 2896. https://doi.org/10.3390/rs14122896
13. **Farella, M. M**, M.L Barnes, D. D Breshears, J.Mitchell, **Willem JD van Leeuwen**, R. E Gallery, 2022. Evaluation of vegetation indices and imaging spectroscopy to estimate foliar nitrogen across disparate biomes. Ecosphere. https://doi.org/10.1002/ecs2.3992
14. **Javadian, M.** W.K Smith, K. Lee, J. F Knowles, R. L Scott, J. B Fisher, D. JP Moore, **Willem JD van Leeuwen**, Greg Barron-Gafford, Ali Behrangi Canopy temperature is regulated by ecosystem structural traits and captures the ecohydrologic dynamics of a semiarid mixed conifer forest site. Journal of Geophysical Research: Biogeosciences. https://doi.org/10.1029/2021JG006617
15. **Khatri-Chhetri, Pratima**; Hendryx, Sean M.; Hartfield, Kyle A.; Crimmins, Michael A.; van **Leeuwen, Willem J.D.**; Kane, Van R. 2021. "Assessing Vegetation Response to Multi-Scalar Drought across the Mojave, Sonoran, Chihuahuan Deserts and Apache Highlands in the Southwest United States" *Remote Sens.* 13, no. 6: 1103. https://doi.org/10.3390/rs13061103
16. **Norton, Cynthia L**.; Dannenberg, Matthew P.; Yan, Dong; Wallace, Cynthia S.A.; Rodriguez, Jesus R.; Munson, Seth M.; **van Leeuwen, Willem J.D**.; Smith, William K. 2021. "Climate and Socioeconomic Factors Drive Irrigated Agriculture Dynamics in the Lower Colorado River Basin" Remote Sens. 13, no. 9: 1659. https://doi.org/10.3390/rs13091659

MEDIA

2019 Faculty Spotlight https://www.youtube.com/watch?v=QqwETKzOSOU

2015 Research videos – BS-GIST and MS-GIST programs e.g. https://youtu.be/2TeVg0zS94Q

CONFERENCES/ SCHOLARLY PRESENTATIONS

Conference presentations

Cynthia Norton, et al., 2025 Integrating LiDAR and Multi-temporal Multi-spectral Imagery for High-Resolution Mapping of Target Woody Vegetation Communities for Rangeland Management. AGU Fall Meeting 2025.

Fern Bromley et al., 2025. Ecosystem Management and Protection for Groundwater Enhancement in Southern Arizona: Critical Considerations and Uncertainties. AGU Fall Meeting 2025.

Ravindra Dwivedi et al., 2025. High Resolution Modelling of Forest Thinning Impacts on Ephemeral and Seasonal Snowpacks in the Southwestern US.AGU Fall Meeting 2025.

Patrick D Broxton et al., 2025. Comparative analysis of seasonal water supply forecasting performance in cold/seasonal vs. warm/ephemeral snowpack watersheds. AGU Fall Meeting 2025.

Biederman, J., et al., 2024. SnowPix: A Regional Network of Automated Daily Snow Monitoring to Support Decision Tools for Resilient Forests and Water Resources AGU Fall Meeting 2024.

Fern Bromley et al., 2024. Assessing Vegetation Groundwater Dependency to Inform Hydrologic Modeling of a Semi-Arid Riparian System, AGU Fall Meeting 2024.

Kang San Lee, Willem van Leeuwen, Jeffrey Gillan, Donald A Falk, Unraveling the Determinants of Burn Severity: Predictive Regression Analysis of the Bighorn Fire in Santa Catalina, Arizona. AGU Fall Meeting 2023.

Cynthia Norton, Flurin Babst, Willem van Leeuwen. Fusing Ground and Airborne LiDAR with Tree-Ring Data to Assess Forest Productivity. AGU Fall Meeting 2023.

Tomasz Wlodarczyk, Kamila Murawska-Wlodarczyk, Willem van Leeuwen, Raina M Maier, Alicja Babst-Kostecka, Assessing Plant Metal Adaptation Strategies in a Mining-Impacted Arid Ecosystem. AGU Fall Meeting 2023.

Cynthia Norton Chandra Holifield Collins Kyle Alan Hartfield Loretta Metz Willem J D Van Leeuwen, Multi-Temporal LiDAR and Hyperspectral Data Fusion for Classification of Woody Cover Species at Different NEON Sites AGU Fall Meeting 2022.

Ravindra Dwivedi Jessie Kathleen Pearl Joel A Biederman Kang San Lee Patrick D Broxton Jesse pearl Willem van Leeuwen, Forest structure controls on water inputs to soils, vegetation water stress, and percolation at sites with contrasting ephemeral or seasonal snowpack AGU Fall Meeting 2022.

Patrick D Broxton Joel A Biederman Willem J D Van Leeuwen, Using high resolution modelling to predict the effects of forest change on snowpack in the semiarid Southwest US. AGU Fall Meeting 2022.

R Dwivedi, J Biederman, PD Broxton, WJD Van Leeuwen, K San Lee; Improved understanding of climate-forest-snow interactions in forested ecosystems leads to a better understanding of ecohydrologic processes and informs forest management, AGU Fall Meeting 2021.

M Farella, M Barnes, DD Breshears, WJD Van Leeuwen, JJ Mitchell, R Gallery; High resolution landscape scale predictions of collective soil functioning; AGU Fall Meeting 2021.

PD Broxton, WJD Van Leeuwen, J Biederman; Using high resolution modelling to predict the effects of forest change on snowpack in the semiarid Southwest US; AGU Fall Meeting 2021.

M Farella, M Barnes, WJD van Leeuwen, J Mitchell, D Breshears, R Gallery. Novel Use of Remote Sensing for High Resolution Predictions of Collective Soil Functioning across a Dryland Ecosystem Landscape. ASA, CSSA, SSSA International Annual Meeting 2021

AWARDED GRANTS AND CONTRACTS

Federal/Agency

2025 – 30 Hazardous Dust in Drylands: Exposure, Health Impacts, and Mitigation ($10,000,000) PI Xinxin Ding (UA) Co-PI Raina Maier et al., Co-I **W. van Leeuwen** et al. My effort: 10% research. Sponsor: National Institute for Environmental Health Sciences (NIEHS) Superfund Research Program (SRP)

2025 – 26 Historical and Current Assessment of Seasonal Streamflow Forecasts Based on Alternative Forecast Methodologies and S2S Data. $78,064. **W. van Leeuwen (PI)**. Co-I's Patrick Broxton. My effort: 50% research; Period: 8/2025 – 7/2026; Sponsor: Salt River Project.

2024 – 26 Improving Water Supply Forecasting in the Colorado Basin with 40 years of Gridded Snowpack Data $893,483 P. Broxton (PI) Co-I **W. van Leeuwen** My effort: 10% research; Sponsor: Bureau of Reclamation

2020 – 26 Producing an Operational RaBET for Rangelands in the Western U.S. **W. van Leeuwen (UA PI) & Chandra Holifield (ARS PI)**. $343,167.00/year. Award Period: 9/2020 – 7/2026. Sponsor: Non Assistance Cooperative Agreement with the University of Arizona funded with Natural Resources Conservation Service (NRCS) - Conservation Effects Assessment Project (CEAP) funds

2024 – 25 Novel real-time forecasting of streamflow in central Arizona through the integration of teleconnection climate indices, soil moisture, precipitation, and snowpack data $103,129. **W. van Leeuwen (PI)**. Co-I's Patrick Broxton. My effort: 50% research; Period: 8/2024 – 7/2025; Sponsor: Salt River Project.

2023 – 24 Improving Streamflow Forecasting in Central Arizona with Remotely Sensed Soil Moisture and Other Satellite Observations; $121,957**. W. van Leeuwen (PI)**. Co-I's Patrick Broxton. My effort: 50% research; Period: 8/2023 – 7/2024; Sponsor: Salt River Project.

2022 – 23 Snowpack Monitoring, Modelling of Snow-Forest Interactions, and Streamflow Forecasting in Northern Arizona's Cragin Watershed $116,523**. W. van Leeuwen (PI)**. Co-I's Patrick Broxton. My effort: 50% research; Period: 8/2022 – 7/2023; Sponsor: Salt River Project.

2021 – 22 Monitoring and modelling the impact of forest change on snowpack in northern Arizona $119,137**. W. van Leeuwen (PI)**. Co-I's Patrick Broxton. My effort: 50% research; Award Period: 8/2021 – 7/2022; Sponsor: Salt River Project.

2020 – 22 Assessing Watershed Impacts of the Bighorn Fire – A collaboration with Pima County Regional Flood Control District **W. van Leeuwen (PI)**. Co-I's Kyle Hartfield and Jeff Gillan. My effort: 50% research; Award Period: 11/2020 – 3/2022; Sponsor: Pima County Flood Control District

2020 – 21 Studying Snow-Forest Interactions with an Ultra-high Resolution Snowpack Mass and Energy Balance Model $160,245 **W. van Leeuwen (PI)**. Co-I's Patrick Broxton. My effort: 50% research; Award Period: 8/2020 – 7/2021; Sponsor: Salt River Project.

2016 – 21 Lower Gila River Vegetation Mapping Using Novel LiDAR and Multispectral Data Fusion and Classification Techniques to Inform Riparian Habitat Restoration; **W. van Leeuwen (PI)**, K Hartfield and T. Swetnam Co-PI's. $249,999.00 My effort 80% research; Award Period: 8/2016 –

7/2021 Sponsor: Bureau of Land Management (BLM).

UA or Private Foundations

2025 – 26 Establishing baseline vegetation targets for revegetated mine tailings in southern and central Arizona.$25,000 PI: **Willem van Leeuwen**. Co-PIs: A. Babst-Kostecka, Flurin Babst. Sponsor: School of Mining and Mineral Resources, University of Arizona.

2023 - 24 Plant-metal interactions as the basis for remediation of metal-contaminated mine sites in drylands, RII (TRIF) $82,421. PI: A Babst-Kostecka. Co-PIs: Raina M. Maier, Flurin Babst, **Willem van Leeuwen.**

2022 - 23 Enhancing the VIP BEST-CLIM with a belowground perspective on carbon allocation in Southwestern vegetation. PI Flurin Babst, William K. Smith, Donald Falk, **Willem van Leeuwen,** Babst-Kostecka, AIRES $8000