



Daniel Sousa, Ph.D.
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EDUCATION

2019 Ph.D.	Columbia University Earth & Environmental Sciences (Geophysics)
2012 M.A.	Columbia University Climate & Society
2011 B.S.	University of California, Davis Natural Sciences

ACADEMIC POSITIONS

Fall 2021 – Present San Diego State University	Assistant Professor Geography
Fall 2020 – Fall 2021 NASA Jet Propulsion Lab and Caltech	JPL Postdoctoral Scientist Carbon Cycle & Ecosystems Group
Fall 2019 – Fall 2020 University of California, Santa Barbara	La Kretz Postdoctoral Fellow Bren School

PROFESSIONAL GROWTH

REFEREED JOURNAL ARTICLES

Before Tenure – 452 citations, h-index = 11, [Google Scholar Profile](#)

1. (2023) J. Price, **D. Sousa**, and F. Sousa. Effect of Spatial and Spectral Scaling on Joint Characterization of the Spectral Mixture Residual: Comparative Analysis of AVIRIS and WorldView-3 SWIR for Geologic Mapping in Anza-Borrego Desert State Park. *Sensors*. <https://doi.org/10.3390/s23156742>. Contributions: formulated idea, supervised student in conducting all analysis, revised all drafts, supervised creation of all figures, coordinated revisions among co-authors, supervised submission for publication.
Impact factor: 3.9

2. (2023) **D. Sousa** and C. Small. Topological Generality and Spectral Dimensionality in the Earth Mineral Dust Source Investigation (EMIT) using Joint Characterization and the Spectral Mixture Residual. *Remote Sensing*. <https://doi.org/10.3390/rs15092295>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Ranking: #2 in Remote Sensing; Impact factor: 5.0
3. (2023) A. Quandt, A. Larsen, G. Barcel, K. Okamura, **D. Sousa**. Sustainable Groundwater Management and its Implications for Agricultural Land Repurposing. *Regional Environmental Change*. <https://doi.org/10.1007/s10113-023-02114-2>. Contributions: created a figure, contributed to revisions.
Impact factor: 4.2
4. (2023) **D. Sousa** and C. Small. Which Vegetation Index? Benchmarking Multispectral Metrics to Hyperspectral Mixture Models in Diverse Cropland. *Remote Sensing*. <https://doi.org/10.3390/rs15040971>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions.
Ranking: #2 in Remote Sensing; Impact factor: 5.0
5. (2023) C. Small and **D. Sousa**. Spectral Characteristics of the Dynamic World Land Cover Classification. *Remote Sensing*. <https://doi.org/10.3390/rs15030575>. Contributions: helped formulate idea, conducted computational analysis, wrote portions of first draft, created some figures, contributed to revisions.
Ranking: #2 in Remote Sensing; Impact factor: 5.0
6. (2023). A. Larsen, A. Quandt, I. Foxfoot, N. Parker, **D. Sousa**. The Effect of Agricultural Land Retirement on Pesticide Use. *Science of the Total Environment*. <https://doi.org/10.1016/j.scitotenv.2023.165224>. Contributions: wrote code for analysis, assisted with figures, contributed to original writing and revisions.
Impact factor: 10.8
7. (2023) C. Galaz-García, K. Bagstad, J. Brun, R. Chaplin-Kramer, T. Dhu, N. Murray, C. Nolan, T. Ricketts, H. Sosik, **D. Sousa**, G. Willard, B. Halpern. The Future of Ecosystem Assessments is Automation, Collaboration, and Artificial Intelligence. *Environmental Research Letters*. <https://doi.org/10.1088/1748-9326/acab19>. Contributions: helped formulate idea, wrote portions of first draft, assisted with figure design, contributed to revisions.
Impact factor: 9.8
8. (2023) F. Romero Galvan, R. Pavlick, G. Trolley, S. Aggarwal, **D. Sousa**, C. Starr, E. Forrestel, S. Bolton, M. del Mar Alsina, N. Dokoozlian, and K. Gold. Scalable Early Detection of Grapevine Virus Infection with Airborne Imaging Spectroscopy. *Phytopathology*. <https://doi.org/10.1094/PHYTO-01-23-0030-R>. Contributions: assisted with methodology, wrote small portions of first draft, contributed extensive revisions.
Ranking: #2 in Plant Pathology; Impact factor: 4.0
9. (2022) C. Small and **D. Sousa**. The Sentinel 2 MSI Spectral Mixing Space. *Remote Sensing (Feature Paper – by Invitation Only)*. <https://doi.org/10.3390/rs14225748>. Contributions: helped formulate idea, conducted some analysis, wrote sections of first draft, created some figures.
Ranking: #2 in Remote Sensing; Impact factor: 5.0
10. (2022) **D. Sousa** and C. Small. Joint Characterization of Sentinel-2 Reflectance: Insights from Manifold Learning. *Remote Sensing (Feature Paper – by Invitation Only)*. <https://doi.org/10.3390/rs14225688>. Contributions: helped formulate idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors.
Ranking: #2 in Remote Sensing; Impact factor: 5.0

11. (2022) F. Sousa and **D. Sousa**. Hyperspectral Reconnaissance: Joint Characterization of the Spectral Mixture Residual Delineates Geologic Unit Boundaries in the White Mountains, CA. *Remote Sensing*. <https://doi.org/10.3390/rs14194914>. Contributions: formulated idea, conducted analysis, wrote portions of first draft, created most figures, contributed to revisions.
Ranking: #2 in Remote Sensing; Impact factor: 5.0

12. (2022) **D. Sousa**, F. Davis, Easterday, K., Riege, L., Katkowski, M., Reynolds, M., Butterfield, H. Predictive Ecological Land Classification from Multi-Decadal Satellite Imagery. *Frontiers in Forests and Global Change*. <https://doi.org/10.3389/ffgc.2022.867369>. Contributions: formulated idea, conducted all remote sensing analysis, wrote most of the first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Impact factor: 4.3

13. (2022) **D. Sousa**, P. Brodrick, K. Cawse-Nicholson, J. Fisher, R. Pavlick, C. Small, and D. Thompson. The Spectral Mixture Residual: A Source of Low-Variance Information to Enhance the Explainability and Accuracy of Surface Biology and Geology Retrievals. *Journal of Geophysical Research: Biogeosciences*, 127, e2021JG006672. <https://doi.org/10.1029/2021JG006672>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Impact factor: 4.4

14. (2022) **D. Sousa** and C. Small. Joint Characterization of Spatiotemporal Data Manifolds. *Frontiers In Remote Sensing*, 3:760650. <https://doi.org/10.3389/frsen.2022.760650>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Invited Submission – New Journal, Bibliometrics Pending

15. (2022) C. Small and **D. Sousa**. Joint Characterization of the Cryospheric Spectral Feature Space. *Frontiers in Remote Sensing*, 2:793228. <https://doi.org/10.3389/frsen.2021.793228>. Contributions: conducted all analysis, wrote sections of first draft, created some figures, coordinated revisions among co-authors.
Invited Submission – New Journal, Bibliometrics Pending

16. (2021) **D. Sousa** and C. Small. Joint Characterization of Multiscale Information in High Dimensional Data. *Advances in Artificial Intelligence and Machine Learning*, 1(3), 203-220. <https://doi.org/10.54364/AAIML.2021.1113>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Invited Submission – New Journal, Bibliometrics Pending

17. (2021) C. Small and **D. Sousa**. The Climatic Temporal Feature Space: Continuous and Discrete. *Advances in Artificial Intelligence and Machine Learning*, 1(2), 171-190. <https://doi.org/10.54364/AAIML.2021.1111>. Contributions: conducted all analysis, wrote sections of first draft, created some figures, coordinated revisions among co-authors.
Invited Submission – New Journal, Bibliometrics Pending

18. (2021) **D. Sousa** and C. Small. Land Cover Dynamics on the Lower Ganges–Brahmaputra Delta: Agriculture–Aquaculture Transitions, 1972–2017. *Remote Sensing*, 13, 4799. <https://doi.org/10.3390/rs13234799>. Contributions: helped formulate idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Ranking: #2 in Remote Sensing; Impact factor: 5.0

19. (2021) A. Boser, **D. Sousa**, A. MacDonald and A. Larsen. Micro-Climature to Macro-Risk: Mapping Fine Scale Differences in Mosquito-Borne Disease Risk Using Remote Sensing. *Environmental Research Letters*, 16:12, 124014. <https://doi.org/10.1088/1748-9326/ac3589>. Contributions: helped formulate idea, helped student with analysis, wrote sections of first draft, helped create and revise figures, contributed to revisions.
Impact factor: 6.95

Before Hire at SDSU

20. (2021) **D. Sousa**, J. Fisher, F. Romero Galvan, R. Pavlick, S. Cordell, T. Giambelluca, C. Giardina, G. Gilbert, F. Imran-Narahari, C. Litton, J. Lutz, M. North, D. Orwig, R. Ostertag, R. Phillips, L. Sack. Tree Canopies Reflect Mycorrhizal Composition. *Geophysical Research Letters*, 48, e2021GL092764. Contributions: conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
<https://doi.org/10.1029/2021GL092764>
Impact factor: 5.6
21. (2021) R. Braghieri, Y. Wang, R. Doughty, **D. Sousa**, T. Magney, J. Widlowski, M. Longo, A. Bloom, J. Worden, P. Gentine, C. Frankenberg. Accounting for Canopy Structure Improves Hyperspectral Radiative Transfer and Sun-Induced Chlorophyll Fluorescence Representations in a New Generation Earth System Model. *Remote Sensing of Environment*, 261, 112497. <https://doi.org/10.1016/j.rse.2021.112497>. Contributions: helped with some analysis, helped with some of first draft, contributed to revisions.
Ranking: #1 in Remote Sensing; Impact factor: 13.9
22. (2021) C. Small and **D. Sousa**. Spatiotemporal Evolution of COVID-19 Infection and Detection within Night Light Networks: Comparative Analysis of USA and China. *Applied Network Science*, 6, 10. <https://doi.org/10.1007/s41109-020-00345-4>. Contributions: helped formulate idea, helped with analysis, wrote portions of first draft, created some figures, contributed to revisions.
Impact factor: 2.65
23. (2020) **D. Sousa** and F. Davis. Scalable Mapping and Monitoring of Mediterranean-climate Oak Landscapes with Temporal Mixture Models. *Remote Sensing of Environment*, 247, 111937. <https://doi.org/10.1016/j.rse.2020.111937>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Ranking: #1 in Remote Sensing; Impact factor: 13.9
24. (2019) F. Sousa and **D. Sousa**. Spatial Patterns of Chemical Weathering at the Basal Tertiary Nonconformity in California from Multispectral and Hyperspectral Optical Remote Sensing. *Remote Sensing*, 11(21), 2528. <https://doi.org/10.3390/rs11212528>. Contributions: helped formulate idea, conducted all analysis, wrote most of first draft, created most figures, contributed to revisions.
Ranking: #2 in Remote Sensing; Impact factor: 5.0
25. (2019) C. Small and **D. Sousa**. Spatiotemporal Characterization of Mangrove Phenology and Disturbance Response: The Bangladesh Sundarban. *Remote Sensing*, 11(17), 2063. <https://doi.org/10.3390/rs11172063>. Contributions: helped formulate idea, conducted computational analysis, wrote portions of first draft, created some figures, contributed to revisions.
Ranking: #2 in Remote Sensing; Impact factor: 5.0

26. (2019) **D. Sousa** and C. Small. Globally Standardized MODIS Spectral Mixture Models. *Remote Sensing Letters*, 10(10), 1018-1027. <https://doi.org/10.1080/2150704X.2019.1634299>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Acceptance Rate: 19%; Impact factor: 2.4
27. (2019) **D. Sousa**, C. Small, A. Spalton, A. Kwarteng. Coupled Spatiotemporal Characterization of Monsoon Cloud Cover and Vegetation Phenology. *Remote Sensing*, 11(10), 1203. <https://doi.org/10.3390/rs11101203>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Ranking: #2 in Remote Sensing; Impact factor: 5.0
28. (2019) **D. Sousa** and C. Small. Mapping and Monitoring Rice Agriculture with Multisensor Temporal Mixture Models. *Remote Sensing*, 11(2), 181. <https://doi.org/10.3390/rs11020181>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Ranking: #2 in Remote Sensing; Impact factor: 5.0
29. (2018) **D. Sousa** and C. Small. Spectral Mixture Analysis as a Unified Framework for the Remote Sensing of Evapotranspiration. *Remote Sensing*, 10(12), 1961. <https://doi.org/10.3390/rs10121961>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Ranking: #2 in Remote Sensing; Impact factor: 5.0
30. (2018) C. Small, **D. Sousa**, G. Yetman, C. Elvidge, K. MacManus. Decades of Urban Growth and Development on the Asian Megadeltas. Invited Manuscript, *Global and Planetary Change*, 165, 62-89. <https://doi.org/10.1016/j.gloplacha.2018.03.005>. Contributions: helped formulate idea, conducted computational analysis, wrote portions of first draft, created some figures, contributed to revisions.
Impact factor: 4.95
31. (2018) **D. Sousa** and C. Small. Multisensor Analysis of Spectral Dimensionality and Soil Diversity in the Great Central Valley of California. *Sensors*, 18(2), 583. <https://doi.org/10.3390/s18020583>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Impact factor: 3.9
32. (2017) **D. Sousa** and C. Small. Global Cross-Calibration of Landsat Spectral Mixture Models. *Remote Sensing of Environment*, 192, 139-149. <https://doi.org/10.1016/j.rse.2017.01.033>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Ranking: #1 in Remote Sensing; Impact factor: 13.85
33. (2016) **D. Sousa** and C. Small. Spatial Structure and Scaling of Agricultural Networks. *Remote Sensing of Environment*, 184, 615-627. <https://doi.org/10.1016/j.rse.2016.07.038>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.
Ranking: #1 in Remote Sensing; Impact factor: 13.85

34. (2016) C. Small and **D. Sousa**. Humans on Earth: Global Extents of Anthropogenic Land Cover from Remote Sensing. Invited Manuscript, Anthropocene, 14, 1-33. <https://doi.org/10.1016/j.ancene.2016.04.003>. Contributions: helped formulate idea, conducted computational analysis, wrote portions of first draft, created some figures, contributed to revisions.
Impact factor: 3.969

REFEREED PROCEEDINGS

Before Tenure

35. (2021) **D. Sousa**, M. Mayes, F. Davis, J. Fisher. Low Variance Reflectance Signatures Capture Hidden Indicators of Plant and Soil Diversity. OSA Technical Digest, Optical Society of America, 2021. Paper HW6A.4. <https://doi.org/10.1364/HISE.2021.HW6A.4>. Contributions: formulated idea, conducted all analysis, wrote entire first draft, created all figures, coordinated revisions among co-authors, submitted for publication.

NON-REFEREED WHITEPAPERS

Before Tenure

36. (2021) J. Brun, C. Galaz-García, K. Bagstad, S. Brumby, R. Chaplin-Kramer, T. Dhu, A. Luers, N. Murray, C. Nolan, T. Ricketts, H. Sosik, **D. Sousa**, G. Willard, B. Halpern. Putting AI to Work for our Earth: Challenges and Opportunities in Conservation AI. Research whitepaper commissioned by Microsoft. Contributions: contributed to conversations, wrote portions of first draft, assisted with revisions.

PUBLICATIONS IN PROCESS

Before Tenure

1. (2023) M. Mattson, T. Biggs, and **D. Sousa**. Mapping Multi-Decadal Wetland Loss: Comparative Analysis of Linear and Nonlinear Spatiotemporal Characterization. Remote Sensing of Environment. Under Review. (Submitted 7/22/2023). Contributions: helped formulate idea, helped supervise student in conducting analysis, helped revise first draft, helped supervise creation of figures.
Ranking: #1 in Remote Sensing; Impact factor: 13.85
2. (2023) C. Ross, D. Stow, **D. Sousa**, M. Jennings, A. Nara, and P. Riggan. Machine learning approach to burned area mapping for southern California. International Journal of Remote Sensing. Under Review. (Submitted 8/6/2023). Contributions: advised analysis, contributed to revisions.
Ranking: #8 in Remote Sensing; Impact factor: 3.4
3. (2023) N. Tufillaro, B. Piazza, S. Reddy, J. Baustian, **D. Sousa**, P. Grötsch, I. Lalović, S. De Moitié, O. Zurita. Linking Optical Data and Nitrates in the Lower Mississippi River to Enable Satellite-Based Monitoring of Nutrient Reduction Goals. Under Review, Ecohydrology. Preprint: <https://doi.org/10.22541/au.169286233.35906903/v1>. Contributions: worked up data, supported analysis, contributed to multiple rounds of revisions.
Acceptance Rate: 19%; Impact factor: 3.0
4. (2023) E. Aguilar, T. Biggs, and **D. Sousa**. Mapping and Monitoring Plastic Pollution in Los Laureles Watershed, Tijuana, using WorldView-3 SWIR Imagery. Remote Sensing Applications: Society and Environment. In Prep. (Expected submission 9/30/2023). Contributions: helped formulate idea, helped supervise student in conducting analysis, helped revise first draft, helped supervise creation of figures.
Impact factor: 4.7

5. (2023) C. Small and **D. Sousa**. Multiscale Topology of the Spectroscopic Mixing Space: Impervious Substrates. Remote Sensing. In Prep. (Expected Submission 9/30/2023) Preprint: <https://arxiv.org/abs/2307.04716>. Contributions: helped formulate idea, conducted computational analysis, wrote portions of first draft, created some figures, contributed to revisions.
Ranking: #2 in Remote Sensing; Impact factor: 5.3
6. (2023) K. Lunneberg, **D. Sousa**, D. Zona, W. Oechel. Identifying Disagreements Between Site-Level Gross Primary Productivity and MODIS MOD17 Estimates in Semi-Arid Ecosystems. Global Change Biology. In Prep. (Expected Submission 9/30/2023). Contributions: helped supervise student in conducting image analysis, helped revise second draft.
Impact factor: 13.2
7. (2023) F. Tenorio, **D. Sousa**, S. Davidson, W. Oechel, C. Tweedie, B. Thomas, D. Zona. Mapping Microtopography in Thermokarst-Affected Landforms in a Tundra Ecosystem near Utqiagvik, Alaska. Journal TBD. In Prep. (Expected Submission 12/31/2023). Contributions: helped design analysis, helped supervise student in conducting analysis, helped all drafts, helped supervise creation and revision of figures.
8. (2023) A. Shreevastava, G. Hulley, **D. Sousa**, J. Thompson, V. Realmuto, S. Hook. Assessment of Algorithms for Detecting High Temperature Phenomena and Thermal Anomalies for the NASA Surface Biology and Geology (SBG) Mission. Journal of Geophysical Research: Biogeosciences. In Prep. (Expected Submission 12/31/2023). Contributions: assisted with idea formulation, wrote portions of first draft, contributed to revisions.
9. (2023) A. Martin and **D. Sousa**. Multisource spectral imaging of petroleum extraction in the North Slope of Alaska. Journal TBD. In Prep. (Expected Submission 12/31/2023). Contributions: formulated idea, supervised student in conducting all analysis, revised first draft, supervised creation of all figures, coordinated revisions among co-authors, supervised submission for publication.
10. (2023) M. Honey, T. Biggs, and **D. Sousa**. Quantifying tree cover on pasture in Rondonia, Brazil. Journal TBD. In Prep. (Expected Submission 12/31/2023). Contributions: helped formulate idea, helped supervise student in conducting analysis, helped revise first draft, helped supervise creation of figures.

SCHOLARLY AWARDS

Before Tenure

1. (2023) SDSU Behner Stiefel Center for Brazilian Studies – Sustainability Seed Award
Mapping and Monitoring Brazil's Natural and Managed Forests Using Novel Methods in Satellite Remote Sensing
– \$7,500
2. (2020) NSF National Ecological Observatory Network (NEON) Early Career Scholar
3. (2019) Outstanding Reviewer Award, Remote Sensing of Environment
4. (2019) Outstanding Reviewer Award, Remote Sensing
5. (2014) Winner, National Defense Science and Engineering Graduate Research Fellowship
6. (2014) Honorable Mention, NSF and Ford Foundation Graduate Research Fellowships

FUNDED RESEARCH GRANTS

Before Tenure

Extramural – \$5.8M total extramural funding. Overall PI on \$1.2M. SDSU Institutional PI on additional \$2.3M.

1. \$320,000. Climate-Modulated Environmental Health Risk at the Length Scale of Geochemical Variance: Predicting Paddy-Scale Geogenic Arsenic Exposure in Cambodian Smallholder Rice Farmers. Overall PI. Funded by NASA – Commercial Smallsat Data Scientific Analysis Program. Sep 2023 – Sep 2025.
2. \$153,000. Fieldwork to Support Fall 2023 FireSense Airborne Science: 3D Structure, Live Fuel Moisture, Soil Moisture, and Burn Temperature. Overall PI. Funded by NASA SMDSS23:Science Mission Directorate Single-Source - by invitation only. Aug 2023 – Dec 2023.
3. \$2,000,000. Rural Heat Islands: Mapping and Mitigating Farmworker Exposure to Heat Stress in the Imperial Valley. Co-I (PI Trent Biggs, SDSU). Funded by California Climate Action Matching Grants Program. Aug 2023 – Aug 2025.
4. \$125,000. Reducing Human Health Risk and Exposure to Wastewater Spills in Coastal Environments. Overall PI. Funded by NASA – Applications-Oriented Augmentation for Research and Analysis. Nov 2023 – Oct 2024.
5. \$300,000. Rapid Response to Extreme Weather to Promote Human Health and Agroecosystem Resilience in the San Joaquin Valley, California. Co-I. Funded by USDA – Rapid Response to Extreme Weather Events Across Food and Agricultural Systems (A1712).
6. \$1,200,000. Improving Rice Cultivation by Observing Dynamic Soil Chemical Processes from Grain to Landscape Scales, SDSU Institutional PI, Funded by NSF – Signals in the Soil. #2226647. 2023-2026.
7. \$600,000. Mapping and Monitoring Coastal Wastewater Pollution using Empirical Line Method-based Atmospheric Correction and Manifold Learning-based Data Fusion, Overall PI, Funded by NASA – Remote Sensing of Water Quality. #80NSSC22K0907. 2022-2025.
8. \$450,000. Analyzing the Land-Use Change Impacts of Oil and Gas Exploration Related Infrastructure Changes on Arctic Communities, SDSU Institutional PI, Funded by NASA – Land Cover/Land Use Change (LCLUC). # NNH21ZDA001N-LCLUC. 2022-2025.
9. \$650,000. Sustainable Agroecosystems: Harnessing Policy-Driven Land Use Change for the Sustainability, Productivity and Vitality of Agroecosystems, SDSU Institutional PI, Funded by USDA – NIFA Sustainable Agroecosystems. #2022-67019-36397. 2022-2026.

Intramural

10. \$7,500. Remote Sensing of Wetland and Agricultural Land Cover Change in the Mexicali Valley. U.S. PI. Funded by SDSU Big Ideas: Water Across Borders / Agua a Través de las Fronteras. 2023.
11. \$500. Travel to Build Research Collaborations Among California Universities. PI. College of Arts and Letters Microgrant. 2023.
12. \$30,000. Monitoring a Unique Case of Extreme River Incision in Ecuador Using Remote Sensing. Co-I. Funded by SDSU DRI. 2022.

Before Hire at SDSU

Extramural

- 13. \$200,000. Rapid Production of Geospatial Network Inputs for Spatially Explicit Epidemiologic Modeling of COVID-19 in the USA. Co-I. Funded by NSF – EAGER. #2032276. 2020-2022.
- 14. [data; no clear dollar value]. 3D Fuel Structure and Plant Community Composition in Relation to Prescribed Fire at the University of California Sedgwick Reserve. To K. Brande (student advisee). Funded by National Center for Airborne Laser Mapping (NCALM) Seed Program. 1 airborne LiDAR acquisition of approximately 25 km².

Intramural

- 15. \$10,000. Retrospective Spatiotemporal Mapping of Rainfall Events in an Arid Agricultural Basin. Science PI. Funded by Lamont Climate Center (intramural). 2016-2018.

RESEARCH PROPOSALS SUBMITTED

Before Tenure

- 1. \$300,000 – Understanding the Mixed Pixel. Overall PI (sole investigator). Submitted Aug 11, 2023 to NASA Earth Science Division – Early Career Investigator Program. Pending.
- 2. \$420,000 - Comparative Analysis of Spectroscopic Mixing Spaces: To What Extent Does Fine Particulate Cover Affect Impervious Surface Reflectance in Global Built Environments? Overall PI. Submitted Jul 18, 2023 to NASA – EMIT Science and Applications Team. Pending.
- 3. \$3,000,000. Merging Long-Term Carbon Fluxes, Vegetation Analyses, and Local Knowledge to Understand the Recent Decline in Caribou Population Numbers and Changes in Migration Routes. Co-PI (PI Donatella Zona, SDSU). NSF – Arctic System Science (ARCSS). Pre-proposal submitted Sep 15, 2023, full proposal encouraged 9/19/2023.
- 4. \$1,080,000. Strict Protection or Not? Science-Based, Adaptive Management for Human-Nature Harmony in Protected Areas. Co-I (PI Li An, SDSU). Submitted Apr 14 2023 to NASA Earth Science Applications: Ecological Conservation. Not Selected.
- 5. \$450,000 - Quantifying Plastic Use in California Agricultural Systems to Advance Agroecological and Societal Wellbeing. Co-I. Submitted Jan 31, 2023 to California State University – Agricultural Research Institute. 2023 – 2026. Not Selected.
- 6. \$250,000 - Agricultural Big Data: A New Curriculum for 21st Century Remote Sensing and Citizen Science. Co-I. Submitted Jan 26, 2022 to USDA HSI Education Grants Program. 2022 – 2025. Not selected.

PARTICIPATION IN PROFESSIONAL ASSOCIATIONS

Before Tenure

- 1. American Association of Geographers
- 2. American Society for Photogrammetry and Remote Sensing
Faculty Supervisor, SDSU Student Chapter (2021 – present)
- 3. American Geophysical Union
- 4. Optical Society of America
- 5. Ecological Society of America

TEACHING EFFECTIVENESS

Graduate Students Supervised (based on school start year)

- 2023 Bruce Markman, MS, thesis advisor (Mapping Residual Dry Matter in California Rangelands with Hyperspectral Imagery).
Michael Marks, MS, thesis advisor (Mapping California's Floristic Diversity with Hyperspectral Imagery).
Stephanie Hurtado, MS, thesis advisor (Thesis title TBD).
- 2022 My-Thu Tran, PhD, dissertation advisor (Dissertation title TBD)
Rex Peacock, PhD, dissertation advisor (Dissertation title TBD)
Peaceibisia Jack, Masters, thesis co-advisor (Mapping Plastic Debris in a Floodplain, co-advisor Trent Biggs, SDSU Geography)
Brenna Fowler, Masters, thesis committee member (Dissertation title TBD, primary advisor Doug Stow, SDSU Geography)
Nowshin Nawar, Masters, thesis committee member (Dissertation title TBD, primary advisor Doug Stow, SDSU Geography)
Wesley Motlow, Masters, thesis committee member (Dissertation title TBD, primary advisor André Skupin, SDSU Geography)
William Walker, Masters, thesis committee member (Dissertation title TBD, primary advisor Trent Biggs, SDSU Geography)
Hannah Samy, Masters, thesis committee member (Soil Structure and Organic Matter Content Along a California Chaparral Fire Chronosequence, Ecuador; advisor David Lipson, SDSU Biology)
- 2021 Elena Aguilar, Masters, thesis co-advisor (Mapping dumped waste in a coastal binational watershed using field surveys, plastic spectral signatures, and multispectral remote sensing; co-advisor Trent Biggs, SDSU Geography)
Stephany Garcia, Masters, thesis co-advisor (Mapping Surface Water Turbidity Hotspots in the Tijuana River Estuary with Sentinel 2 and Planet Dove Satellites; co-advisor Trent Biggs, SDSU Geography).
Margot Mattson, Masters, thesis co-advisor (Analysis of Multi-Temporal Images for Detection of Changes in Wetland Extent and Vegetation Composition in the Colorado River Delta region; co-advisor Trent Biggs, SDSU Geography)
Mallorie Honey, Masters, thesis co-advisor (Mapping Pasture in the Brazilian Amazon with Multispectral Satellite Imagery; co-advisor Trent Biggs, SDSU Geography)
Alma Quintero, Masters, thesis co-advisor (Monitoring Air Quality in the Imperial Valley: In-situ and Remote Sensing; co-advisor Trent Biggs, SDSU Geography)
Chandler Ross, Masters, thesis committee member (Machine Learning Approach to Burned Area Mapping for Southern California; primary advisor Doug Stow, SDSU Geography)
Francia Tenorio, Masters, thesis co-advisor (Mapping Arctic Thermokarst Features and Associated N₂O Emissions; co-advisor Donatella Zona, SDSU Biology)
Briana Chronister, PhD, committee member (Assessing the role of home proximity to agricultural crops on exposure to pesticides, and symptoms of depression and anxiety amongst adolescents living in Pedro Moncayo, Ecuador; advisor José Suarez, UCSD Public Health)

Undergraduate Students Supervised (based on start year of supervision)

- 2023 Payton Kleidon, Weber Honors College, Title TBD
- 2023 Victoria Sanchez, Weber Honors College, Title TBD
- 2023 Fernanda Portillo, SDSU Geography, Title TBD
- 2023 Drake Valencia, SDSU Geography, "Hyperspectral Imaging of Global Evaporites"
Awarded CSU COAST Undergraduate Research Scholarship

- 2023 Ethan Greeley, University of Richmond, "Quantifying Healthy Vegetation Dynamics in Southern California After a Record 2023 Wet Season". <https://www.youtube.com/watch?v=pXGUFSn87H4> (Through NASA SARP)
- 2023 Duncan Jurayj, Brown University, "Assessing Heat Stress in Oak Trees Using Airborne Thermal Spectroscopy". (Through NASA SARP)
- 2023 Tierney Cantwell, Gettysburg College, "Sudden Oak Death and its Forecasted Threat to California Oaks". (Through NASA SARP)
- 2023 Eva Coleman, Denison University, "Revisiting Rewilding at Atwell Island using Hyperspectral Images". <https://www.youtube.com/watch?v=4yQSeWzurUo> (Through NASA SARP)
- 2023 Ivan Tochimani-Hernandez, Dartmouth College, "Refining Spectral and Spatial Resolution through Spectroscopic Analysis in the El Paso Mountains". (Through NASA SARP)
- 2023 Miriam Bartleson, University of Michigan, "Differential Drought Impacts on Green Space Across Different Income Areas in Los Angeles, California". (Through NASA SARP)
- 2022 Nell Schafer, Carleton College, "Mapping Eucalyptus Mortality Using Hyperspectral Imagery in Ellwood Mesa, Santa Barbara". <https://youtu.be/hWTCBIscluY> (Through NASA SARP)
- 2022 Karina Jhaj, University of California, Irvine, "Characterizing Springtime Variation in Canopy-Scale Reflectance of California ice plant (*Carpobrotus edulis*). <https://youtu.be/P1qRWHN7VJ4> (Through NASA SARP)
- 2022 Donald Conley III, College of Wooster, "Investigating Burn Severity and Revegetation Dynamics in Sedgwick Reserve". <https://youtu.be/-OaHf0iVY6E> (Through NASA SARP)
- 2022 Jeffrey Price, Bowdoin College, "Quantifying Intra- and Inter-unit Geologic Variability at Contrasting Spatial and Spectral Resolutions in a Complex Geologic Environment". <https://youtu.be/5oudXOEEjB8> (Through NASA SARP)
- 2022 Jennifer Berardi, University of Wisconsin-Whitewater, "Predicting the Importance of Biogeographical Factors and their Contribution to Plant Mortality and Resilience in Mediterranean Climate Big Sur Before and After a Severe Drought Using Hyperspectral Imagery". <https://youtu.be/0U0fBUp1hX0> (Through NASA SARP)
- 2022 Lianna Goh, Oberlin College, "Finding Fossils with Remote Sensing". <https://youtu.be/ZqyR2i2Rc6s> (Through NASA SARP)
- 2022 Eva Scrivner, CSU Monterey Bay, "Highs and Lows: Quantifying the Effects of Tidal Variability on Hyperspectral Pixel Unmixing". <https://youtu.be/dHSTzwwLKLiv> (Through NASA SARP)
- 2022 Haley White, Weber Honors College, "Statistical Analysis of Historical Water Quality in the San Diego Coastal Ocean".
- 2021 Avi Martin, MARC Scholar, "Impacts of Oil & Gas Exploration in the North Slope Borough, Alaska". Featured interview in SDSU CAL UROC promotional video (1:59 and 2:58): <https://www.youtube.com/watch?v=fPRqp42NiLg&feature=youtu.be>

Courses Taught

2023	GEOG 591/591L	Introductory Remote Sensing (+ Lab)
2022	GEOG 780	Advanced Image Processing
2022 – 2023	GEOG 592/592L	Intermediate Remote Sensing (+ Lab)
2022 – 2023	GEOG 700	Research Design in Geography

Teaching Awards, Trainings, Accomplishments

2023	Participant, Undergraduate Research Office at CAL (UROC) Undergraduate Mentoring Workshop
2023	Participant, CSU Introduction to Teaching Online Using QLT Summer Institute
2022	Participant, NASA/USRA Training – Inclusion Best Practices Workshop
2022	Partial redesign of GEOG 592/592L (Intermediate Remote Sensing)
2021	Participant, SDSU Flexible Course Design Summer Institute

Awards to Student Advisees

- 2023 ASPRS Pacific Southwest Region Annual Award
To My-Thu Tran (Ph.D. Student) – \$1500
- 2023 CSU COAST Undergraduate Research Support Award
To Drake Valencia (B.S. Student). Hyperspectral Imaging of Global Evaporites – \$1,020
- 2023 The Nature Conservancy – Oren Pollack Memorial Fund Graduate Student Research Award
To Bruce Markman (M.S. Student). Using Hyperspectral Imagery to Monitor Residual Dry Matter (RDM) across California Grasslands – \$7,500

SERVICE

Service for the Department

1. 2023-present Member, Hiring Committee, SDSU Geography
*Completed Training: Diversity Equity and Inclusion in Faculty Searches
Completed Training: Creating an Equity-Minded Campus Community*
2. 2023 Interim Chair, Computing Committee, SDSU Geography
Coordinated setup of new Geography Department servers
3. 2022-present Member, Colloquium Committee, SDSU Geography
4. 2022-2023 Member, Scholarship Committee, SDSU Geography
5. 2021-2023 Member, Computing Committee, SDSU Geography
Helped secure \$145,000 in intramural funds for Geography Department servers
6. 2021-present Co-Director, Center for Earth Systems Analysis Research (CESAR), SDSU Geography

Service for the College

1. 2023-present Member, College of Arts and Letters Scholarship Committee
2. 2022-present Member, College of Arts and Letters Geography Subcommittee
3. 2023 Undergraduate Research Office CAL (UROC)
*Video with undergraduate student Avi Martin, featured in promotional materials:
<https://www.youtube.com/watch?v=fPRqp42NiLg>*
4. 2023 Volunteer Reviewer, Splice: CAL Journal for Undergraduate Scholarship
Student Submission: WeChat Usage and Emoji Ratings: How usage of the social media platform WeChat influences the ratings of emojis from WeChat
5. 2023 Collaborative mapmaking assistance for Political Science M.A. thesis
*Student: Danielle Coleman, Advisor: Cheryl O'Brien
Topic: Recent Changes in European Oppositional and Feminist Movements*

Service for the University

1. 2023-present Participating Faculty, NOAA Center for Earth System Sciences and Remote Sensing Technologies (CESSRT).
Cooperative program for underrepresented student research and funding. Collaboration with other CESSRT faculty university-wide. SDSU PI: Walt Oechel (Biology).
2. 2023-present Participant, Agua a Través de las Fronteras/Water Across Borders (SDSU Big Ideas)
*Binational Water and Agriculture Working Group
Participant, April 19, 2023 Full-Day Meeting in Tijuana
Collaborative Project Lead (US-Side): Remote Sensing of Wetland and Agricultural Land Cover Change in the Mexicali Valley*
3. 2022-present Member, SDSU Field Stations Program Steering Committee

Service for the Profession

1. 2023 Invited Reviewer, USDA Proposal Review Team
Rapid Response to Extreme Weather Across Food and Agricultural Systems
2. 2023 Invited Reviewer, NASA Earth Science Directorate Review Panel
3. 2023 Invited Expert Interviewee, NSF I-CORPS
Mathew Ugwuany, University of Wisconsin-Milwaukee
Spatiotemporal Analysis of Phenological Changes in the Great Lakes Bioclimatic Domain
4. 2023-present Editorial Board Member, *Remote Sensing Applications: Society and Environment*
5. 2022-present Invited Faculty Advisor, NASA Student Airborne Research Program (SARP)
NASA's top summer internship program: 61% students from minority-serving or low-research productivity universities, 10% acceptance rate, >90% STEM retention rate, and median student GPA = 3.9/4.0.
Promotional video: <https://www.youtube.com/watch?v=QjZij043B50>
6. 2022-present NASA Arctic Boreal Vulnerability Experiment (ABOVE) Spectral Imaging Working Group Member
6. 2022 Invited Faculty Advisor, NASA DEVELOP Student Program, Ames Research Center
Funded by NASA Applied Sciences. Supervised team of 5 undergraduate and graduate student researchers. Fully remote.
7. 2022 Invited Presenter, NASA ECOSTRESS Science Team Meeting
7. 2021-present Student Honors Paper Judge, Remote Sensing, American Association of Geographers
8. 2021-present NASA Surface Biology and Geology (SBG) Algorithms Working Group
9. 2021-2022 NCEAS & Microsoft: AI for Earth. Invited Working Group Member, Santa Barbara, CA
10. 2021 Invited Reviewer, NASA Biological Diversity and Ecological Forecasting Report
11. 2021 Panel Reviewer, Future Investigators in NASA Earth and Space Science (FINESST)
12. 2019-present Reviewer Board Member, *Remote Sensing*
13. 2016-present >160 verified journal peer reviews for >30 journals ([Web of Science Profile](#)), including:
Advances in Space Research, Advances in Water Resources, Agronomy, Applied Sciences, Climate, Climatic Change, Engineering Computations, Environmental Modeling and Assessment, Environmental Science and Pollution Research, Forest and Society, Frontiers in Environmental Science, Geocarto International, Global Change Biology, IEEE Journal of Selected Topics in Applied Observations and Remote Sensing, International Journal of Remote Sensing, ISPRS International Journal of Geo-Information, ISPRS Journal of Photogrammetry and Remote Sensing, Journal of Geophysical Research: Biogeosciences, Land, Mitigation and Adaptation Strategies for Global Change, Plant Methods, PLoS ONE, Remote Sensing, Remote Sensing Applications: Society and Environment, Remote Sensing of Environment, Scientific Reports, Sensors, Water, Water Resources Research, Water Practice and Technology

Service for the Community

1. 2023 CBS 8 – San Diego Local News, MS Student Stephany Garcia Interviewed.
<https://www.cbs8.com/amp/article/news/local/sdsu-graduate-creates-first-of-its-kind-water-tool/509-8bc9c9ce-e8ed-49c7-89d6-6ff2647714a9>
2. 2022-2023 Invited Contributor, Rockefeller Foundation Pandemic Prevention Institute, Supporting Wastewater Surveillance in Unsewered Cities.
3. 2022-present Civilian Volunteer, San Diego County Search and Rescue
4. 2022 Invited Contributor, Rockefeller Foundation Pandemic Prevention Institute, Potential for NASA wastewater monitoring technology to assist with pandemic preparedness.
8. 2022 Industry Panelist (Subject Matter Expert), ENVI Spectral Sessions, Harris Geospatial
9. 2021-2022 Technical advisory group – Planning and Management of L.A. County's Urban Forest