

# Dr. Susan Meerdink

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## Education

- 2014 – 2018 PhD Geography, University of California Santa Barbara  
2012 – 2014 M.A. Geography, University of California Santa Barbara  
2007 – 2012 B.S. Geographical Information Science, University of Northern Iowa,  
*Summa Cum Laude*  
2007 – 2012 B.A. Ecology & Systematics Honors Research, University of Northern Iowa,  
Thesis: Analyzing Taimyr wild reindeer and calving grounds dynamics  
*Magna Cum Laude*

## Professional Appointments

- 2020 – Assistant Professor, University of Iowa  
2019 – 2020 Postdoctoral Researcher, College of Engineering, University of Florida  
2016 – 2018 Graduate Research Assistant, NASA Jet Propulsion Laboratory  
2014 – 2018 Graduate Research Assistant, University of California Santa Barbara  
2017 – 2017 Geospatial Remote Sensing Intern, The Climate Corporation  
2012 – 2015 Teaching Assistant, University of California Santa Barbara

## Refereed Publications

- Kibler, C. L., Parkinson, A. L., Peterson, S. H., Roberts, D. A., Antonio, C. M. D., **Meerdink, S. K.**, & Sweeney, S. H. (2019). Monitoring post-fire recovery of chaparral and conifer species using field surveys and Landsat time series. *Remote Sensing*, *11*(2963), 1–25. <https://doi.org/10.3390/rs11242963>
- Dennison, P. E., Qi, Y., **Meerdink, S. K.**, Kokaly, R. F., Thompson, D. R., Daughtry, C. S. T., Quemada, M., Roberts, D.A., Gader, P.D., Wetherley, E.B., Numata, I., & Roth, K. L. (2019). Comparison of methods for modeling fractional cover using simulated satellite hyperspectral imager spectra. *Remote Sensing*, *11*(2072), 1–23. <https://doi.org/10.3390/rs11182072>
- Meerdink, S. K.**, Roberts, D. A., Roth, K. L., King, J. Y., Gader, P. D., & Koltunov, A. (2019). Classifying California plant species temporally using airborne hyperspectral imagery. *Remote Sensing of Environment*, *232*, 111308. <https://doi.org/10.1016/j.rse.2019.111308>
- Meerdink, S.K.**, Hook, S.J., Abbott, E.A., & Roberts, D.A. (2019). The ECOSTRESS Spectral Library 1.0. *Remote Sensing of Environment*.
- Meerdink, S.K.**, Roberts, D. A., Hulley, G., Gader, P.D., Pisek, J., Raabe, K., King, J., & Hook, S. J. (2019). Plant species' spectral emissivity and temperature using the Hyperspectral Thermal Emission Spectrometer (HyTES) sensor. *Remote Sensing of Environment*, *224*, 421–435.
- Roberts, D.A., Roth, K.L, Wetherley, E.B., **Meerdink, S.K.**, & Perroy, R.L. (2019). Chapter 1: Hyperspectral Vegetation Indices, in: *Hyperspectral Remote Sensing of Vegetation* (second edition), CRC Press, New York.
- Meerdink, S.K.** (2018). Remote sensing of plant species using airborne hyperspectral visible-shortwave infrared and thermal infrared imagery (Published dissertation). Available from ProQuest Dissertations and Theses database.
- Meerdink, S.K.**, Roberts, D.A., King, J. Y., Roth, K. L., Dennison, P. E., Amaral, C. H., & Hook, S. J. (2016). Linking seasonal foliar traits to VSWIR-TIR spectroscopy across California ecosystems. *Remote Sensing of Environment*, *186*, 322–338.

**Meerdink, S.K.** (2014). Linking seasonal foliar traits to VSWIR-TIR spectroscopy across California ecosystems (Published master's thesis). Available from ProQuest Dissertations and Theses database.

### **Refereed conference proceedings**

**Meerdink, S.**, Bocinsky, J., Wetherley, E., Zare, A., Mccurley, C., & Gader, P. (2019). Developing spectral libraries using multiple target multiple instance adaptive cosine/coherence estimator. *2019 10th Workshop on Hyperspectral Imaging and Signal Processing: Evolution in Remote Sensing (WHISPERS)*, 1–5. <https://doi.org/10.1109/WHISPERS.2019.8920989>

Fick, R., Gader, P., Zare, A., & **Meerdink, S.** (2019). Temporal mapping of hyperspectral data. *2019 10th Workshop on Hyperspectral Imaging and Signal Processing: Evolution in Remote Sensing (WHISPERS)*, 1–4. <https://doi.org/10.1109/WHISPERS.2019.8921373>

### ***Manuscripts in preparation***

**Meerdink, S.K.**, Bocinsky, J., Zare, A., Kroeger, N., McCurley, C., Gader, P.D., & Shats, D. (submitted). Multi-Target Multiple Instance Learning for Hyperspectral Target Detection. September, 2020: arXiv:1909.03316.

**Meerdink, S.K.**, Roberts, D.A., King, J. Y., Gader, P.D., and Caylor, K. (in prep). Monitoring water stress of Southern California plant species during the 2013 – 2015 drought.

**Meerdink, S.K.**, Lin, Y., & Gader, P.D. (in prep). Classification of California plant species across dates using linear transformation.

### **Grants & Fellowships**

*Total* \$200,000

2020 National Park Service Cooperative Ecosystem Studies Units Network, *Determining the need for the management of invaded mangrove and coastal prairie plant communities*, \$240,000

2018 Department of Geography Summer Research Grant, \$2400

2017 Jet Propulsion Laboratory Subcontract, *Plant species mapping, water, and LMA using HyTES*, \$35000

2017 NASA Earth and Space Science Fellowship (NESSF), *Discriminating California plant species and evaluating temperature relations across seasons within drought impacted ecosystems*, \$30000

2017 UCSB Academic Senate Travel Grant, \$900

2017 UCSB Graduate Student Association Travel Grant, \$200

2016 Jet Propulsion Laboratory Subcontract, *Plant species mapping, water, and LMA using HyTES*, \$35000

2016 NASA Earth and Space Science Fellowship (NESSF), *Discriminating California plant species and evaluating temperature relations across seasons within drought impacted ecosystems*, \$30000

2016 Department of Geography Dangermond Travel Award, \$500

2015 Jet Propulsion Laboratory Subcontract, *Plant species mapping, water, and LMA using HyTES*, \$35000

2015 NASA Earth and Space Science Fellowship (NESSF), *Discriminating California plant species and evaluating temperature relations across seasons within drought impacted ecosystems*, \$30000

2015 Department of Geography Dangermond Travel Award, \$500

- 2012 AAG International Geographic Information Fund Student Travel Grant, \$500
- 2011 NASA Iowa Space Grant, *Taimyr Wild Reindeer calving grounds dynamics*, \$10500
- 2010 NASA Iowa Space Grant, *Taimyr Wild Reindeer calving grounds dynamics*, \$10500
- 2009 NASA Iowa Space Grant, *Long-term implications of the "Ethanol Boom"*, \$7000
- 2008 NASA Iowa Space Grant, *Ecological niche model of Glyptemys insculpta in Iowa*, \$7000

### **Grants & Proposals in Review**

- 2019 National Science Foundation, *Cyber Physical Systems*, \$6,000,000

### **Honors & Awards**

- 2018 Jack Estes Remote Sensing Memorial Award, \$500
- 2014 American Geophysical Union Outstanding Student Paper Award
- 2011 CW Lantz Scholarship
- 2011 Irene Thompson Scholarship
- 2011 Pudil Environmental Scholarship
- 2010 Pudil Environmental Scholarship
- 2010 La Duke Family Scholarship
- 2009 University of Northern Iowa Pond and Water Scholarship
- 2008 Vivian Wisemen Fuller Scholarship
- 2008 University of Northern Iowa Distinguished Scholar

### **Scholarly Presentations & Posters**

- 2018 **Meerdink, S.K.**, Bocinsky, J., Zare, A., McCurley, C., Shats, D., Gader, P. *Multi-target multiple instance learning for hyperspectral target detection*. 2019 WHISPERS Workshop. Amsterdam, Netherlands. (Presentation)
- 2018 **Meerdink, S.K.**, Bocinsky, J., Wetherley, E., Zare, A., McCurley, C., Gader, P. *Developing spectral libraries using multiple target multiple instance adaptive cosine/coherence estimator*. 2019 WHISPERS Workshop. Amsterdam, Netherlands. (Poster)
- 2017 **Meerdink, S.K.**, Roberts, D.A., Hook, S.J. *Exploring spectral emissivity features of plants from leaf to canopy levels*. American Geophysical Union Fall Meeting. New Orleans, LA. (Presentation)
- 2017 **Meerdink, S.K.**, Hook, S.J., Abbott, E.A., Roberts, D.A. *The ECOSTRESS Spectral Library*. HypsIRI Science Workshop. Pasadena, CA. ([Presentation](#))
- 2017 Dennison, P., Kokaly, R., Thompson, D.R., Daughtry, C. Gader, P., **Meerdink, S.K.**, Quemada, M., Roberts, D.A., Wetherley, E.B. *Comparing methods for mapping fractional cover using simulated HypsIRI spectra*. HypsIRI Science Workshop. Pasadena, CA. ([Presentation](#))
- 2016 **Meerdink, S.K.**, Roberts, D.A., Hook, S. *Spectral emissivity features of plants: Prospects for the Hyperspectral Thermal Emission Spectrometer (HyTES) sensor*. American Geophysical Union Fall Meeting. San Francisco, CA. (Poster)
- 2016 **Meerdink, S.K.**, Roberts, D.A., Hook, S.J. *Spectral emissivity features of plants: Prospects for the Hyperspectral Thermal Emission Spectrometer (HyTES) sensor*. HypsIRI Science Workshop. Pasadena, CA. ([Presentation](#))

- 2016 **Meerdink, S.K.**, Roberts, D.A., Roth, K. *Differentiating California plant species across seasons using airborne VSWIR and TIR imagery*. Invited talk, University of Florida Department of Geography Colloquium. Gainesville, FL. (Presentation)
- 2016 **Meerdink, S.K.**, Roberts, D.A., Roth, K. *Differentiating California plant species across seasons using airborne VSWIR and TIR imagery*. Association of American Geographers Annual Meeting. San Francisco, CA. (Presentation)
- 2015 **Meerdink, S.K.**, Roberts, D.A., Roth, K. *Discriminating plant species across California's diverse ecosystems using airborne VSWIR and TIR imagery*. American Geophysical Union Fall Meeting. San Francisco, CA. (Poster)
- 2014 **Meerdink, S.**, Roberts, D.A., Roth, K., Amaral, C., Hook, S., King, J. *Linking seasonal foliar chemistry to VSWIR-TIR spectroscopy across California ecosystems*. American Geophysical Union Fall Meeting. San Francisco, CA. (Presentation)
- 2014 **Meerdink, S.**, Roberts, D.A., Roth, K., Amaral, C., Hook, S., King, J. *Linking seasonal foliar chemistry to VSWIR-TIR spectroscopy across California ecosystems*. HypsIRI Science Workshop. Pasadena, CA. ([Presentation](#))
- 2014 Cooney, M.D., Petrov, A.N., Kolpashchikov, L., **Meerdink, S.K.** *Understanding long-term spatiotemporal dynamics of the Taimyr reindeer herd in a changing environment*. Association of American Geographers Annual Meeting. Tampa, FL. (Presentation)
- 2013 **Meerdink, S.**, Roberts, D.A., Amaral, C., Hook, S., King, J. *Linking seasonal foliar chemistry to VSWIR-TIR spectroscopy across California ecosystems*. HypsIRI Science Workshop. Pasadena, CA. ([Presentation](#))
- 2012 **Meerdink, S.**, Petrov, A.N., Kolpashchikov, L., Pestereva, A.V. *Taimyr wild reindeer spatial fidelity and calving grounds dynamics in a changing climate*. International Polar Year Conference. Montréal, Canada. (Presentation)
- 2012 **Meerdink, S.**, Petrov, A.N., Kolpashchikov, L., Pestereva, A.V. *Taimyr wild reindeer spatial fidelity and calving grounds dynamics in a changing climate*. Association of American Geographers Annual Meeting. New York, NY. (Presentation)
- 2011 **Meerdink, S.**, Petrov, A.N., Voss, M., Sugumaran, R. *Long-term implications of the "ethanol boom" for American agriculture: Iowa case study*. Association of American Geographers Annual Meeting. Seattle, WA. (Presentation)

### **Teaching Experience**

- 2014 Teaching Assistant - Remote Sensing of the Environment, University of California Santa Barbara, Instructor: Dr. Joe McFadden
- 2013 Teaching Assistant - Technical Issues in Geography Information Systems, University of California Santa Barbara, Instructor: Dr. Krzysztof Janowicz
- 2013 Teaching Assistant - Environmental Data Analysis, University of California Santa Barbara, Instructor: Dr. Dar Roberts
- 2012 Teaching Assistant - Introduction to Geographic Information Systems, University of California Santa Barbara, Instructor: Dr. Krzysztof Janowicz
- 2012 Teaching Assistant - Maps and Spatial Reasoning, University of California Santa Barbara, Instructor: Dr. Keith Clark

## **Professional Service**

- 2019 Session Chair for IEEE Workshop in Hyperspectral Image and Signal Processing: Evolution in Remote Sensing
- 2019 Organized and presented engineering outreach workshop for K-12 students
- 2012 – 2018 Chair of UCSB Geography Department's Visibility and Outreach Committee
- 2012 – 2018 Planned and executed Geography Awareness Week in November where UCSB Geography Department faculty and students attend local K-12 schools to share their perspective and love of geography. As part of this even I also presented at local school sharing my research.
- 2012 – 2018 Planned and attended tabling events at local K - 9 school's Science Nights
- 2014 – 2018 Planned, organized, and presented a workshop at an AAUW Tech Savvy event geared at attracting girls 6- 9 grades into STEM fields.
- 2017 & 2018 Planned a Trivia Night for UCSB Geography Department faculty, graduate, and undergraduate students
- 2016 Planned a Scavenger Hunt for UCSB Geography faculty and students
- 2014 – 2015 Vice President of UCSB Student Chapter of the American Society for Photogrammetry and Remote Sensing (ASPRS)
- 2013 Session Chair for Association of American Geographers Annual Conference

## **Journal Reviewer**

Remote Sensing of Environment, International Journal of Remote Sensing, Remote Sensing, Applications in Plant Sciences, GigaScience, European Journal of Remote Sensing

## **Professional Affiliations**

American Geophysical Union (AGU), American Society for Photogrammetry and Remote Sensing (ASPRS), Association of American Geographers (AAG), Association of Polar Early Career Scientists (APECS), Ecological Society of America (ESA)

## **Other Relevant Work Experience**

Git Repositories: [www.github.com/susanmeerdink](https://www.github.com/susanmeerdink) & [www.gitlab.com/susanmeerdink](https://www.gitlab.com/susanmeerdink)

Programming: Python, MATLAB, IDL, Java, R

Software: ENVI/IDL, ArcGIS, MATLAB, MODTRAN 5.3

Sensors: AVIRIS, MASTER, Landsat, HyTES, Planet