CHRISTIANA ADE

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EDUCATION

University of California Merced Merced,CA   2017 - 2022
Doctor of Philosophy in Environmental Systems
Department of Environmental and Civil Engineering
Water Quality and Invasion Ecology: Measuring Delta Dynamics with High Spatial and Temporal Resolution Satellite Remote Sensing

North Carolina State University Raleigh, NC   2015 - 2017
Master of Science, Marine, Earth and Atmospheric Sciences
Effects of Resolution on Multi-Temporal Remote Sensing of Wetlands: Toward a Wetland Phenology Indicator

North Carolina State University Raleigh, NC   2014 - 2015
Geospatial Information Sciences Graduate Certificate Program

University of North Carolina at Chapel Hill Chapel Hill, NC   2010 - 2014
Bachelor of Science in Environmental Science, Minor in Geography

RESEARCH EXPERIENCE

NASA Jet Propulsion Laboratory   Fall 2022 - present
Post-doctoral Fellow   Co-mentors: Dr. Christine Lee and Dr. Michelle Gierach
Develop and manage workflows for California Aquatic Resource Inventory and SBG Space-based Imaging Spectroscopy and Thermal PathfindER. Investigate phenology and classification mapping for SHIFT campaign.

NASA Jet Propulsion Laboratory   Fall 2020 - 2021
Volunteer Intern   Co-mentors: Dr. Christine Lee and Dr. Michelle Gierach
Evaluated sample Surface Biology and Geology datasets (PRISM) and various atmospheric correction approaches across different coastal water bodies. Investigated algorithm implementation to level 3 data products and assessed product uncertainties relative to their applications use.

University of California Merced, Dept. of Civil and Environmental Engineering   2019 - 2021
Graduate Research Assistant   Advisor: Dr. Erin Hestir; Project PI: Dr. Susan Ustin
Developed methodologies and well documented workflows for mapping wetland vegetation and tracking changes in composition and phenology using Sentinel-2 imagery. Supervised creation of a Google Earth Engine dashboard for evaluating wetland vegetation phenology metrics at restoration sites. Lead research efforts for three of four science objectives, organized overall project reporting and data dissemination.

University of California Merced, Dept. of Civil and Environmental Engineering   2017 - 2019
Graduate Research Assistant   Advisor: Dr. Erin Hestir; Project PI: Dr. Christine Lee
Collaborated with NASA JPL Applied Sciences and Oregon State University to enhance water quality mapping in the Sacramento San Joaquin Delta with satellite and imaging spectroscopy data. Generated maps and developed workflow to enable stakeholders to process AVIRIS-NG and SPOT 5 (Take 5) imagery. Demonstrated capability of use high frequency satellite observations for evaluating impacts of an emergency drought barrier on turbidity and habitat of an endangered fish species.

University of California Merced, Dept. of Civil and Environmental Engineering   Summer 2019
Graduate Research Assistant   Advisor: Dr. Erin Hestir; Project PI: Dr. Kerry-Anne Cawse-Nicholson
Advanced research for the HySPIRI preparatory mission and lowered the barrier for managers to use imaging spectroscopy data by translating a pipeline for mapping aquatic vegetation from a commercial coding language to open source (R).

North Carolina State University, Dept of Marine Earth and Atmospheric Sciences   2015 - 2017
Graduate Research Assistant   Advisor: Dr. Erin Hestir

Contributed to research projects and proposals by gathering and analyzing satellite remote sensing data collected over wetland ecosystems. Researched vegetation phenology dynamics using a multi-sensor approach, including Landsat 8 and experimental Sentinel-2 data. Assessed sensor resolution requirements for mapping aquatic vegetation communities and phenology with satellite imagery.

SKILLS

- **Remote Sensing Image Analysis:** ENVI, Google Earth Engine, ArcGIS, and QGIS

- **Programming Langauges:** Proficient - R. Literate - Python, IDL, Matlab, Unix Shell Scripting

HONORS, AWARDS, AND GRANTS

UC Merced Environmental Systems Summer Award (2020) – US\$ 3,400

Delta Stewardship Council. Low-cost satellite remote sensing of the Sacramento-San Joaquin Delta to enhance mapping for invasive and native aquatic vegetation. PI: Susan Ustin. (2019) – US \$ 382,421

UC Merced Environmental Systems Professional Development Award (2019) – US \$ 2,000 UC Merced Environmental Systems Professional Development Award (2018)– US\$ 2,000

Ocean Carbon and Biogeochemistry Grant for IOCCG Summer School (2018)- US\$ 2,200

UC Merced Environmental Systems Professional Development Award (2018)– US\$ 1,000

UC Merced Environmental Systems Summer Award (2018)– US\$ 3,400

Ocean Carbon and Biogeochemistry Program Travel Grant for IOCS Meeting (2017)– US\$ 1,000

NCGIS Conference G. Herbert Stout Award (2017)

University of Washington Geohackweek Student Travel Grant Award (2016)– US\$1,050

PEER REVIEWED PUBLICATIONS

1. **C. Ade**, S. Khanna, M. Lay, S.H. Ustin E.L. Hestir. (2022) Genus-level Mapping of Invasive Floating Aquatic Vegetation Using Sentinel-2 Satellite Remote Sensing. Remote Sensing. 14(13), 3013 doi(10.3390/RS14133013)

2. **C. Ade**, E.L. Hestir, C.M. Lee. (2021). Assessing Fish Habitat and the Effects of an Emergency Drought Barrier on Estuarine Turbidity Using Satellite Remote Sensing. Journal of American Water Resources Association (JAWRA). 1– 19. doi:10.1111/1752-1688.12925

3. F. Muller-Karger, E.L. Hestir, **C. Ade** et al. (2018). Satellite sensor requirements for monitoring essential biodiversity variables of coastal ecosystems. Ecological Applications 28: 749-760 doi: 10.1002/eap.1682

4. T. Chandler, A. Drake, E. Brown, H. Julian, N. Simonsen, **C. Ade**, K. Wangyao, R.M. Kamens, and S.H. Gheewala. (2014). Comparative Life Cycle Assessment of Tropical Island Municipal Solid Waste Strategies. *Journal of Sustainable Energy and Environment.* 5: 75-84. (JSEE Journal)

PEER REVIEWED PUBLICATIONS IN PREPARATION

1. **C. Ade**, A. Weingram, E.L. Hestir, S. Khanna. Priority effects, niche breadth and environmental plasticity of invasive floating aquatic vegetation phenology revealed by satellite remote sensing.

BOOK REVIEWS AND BOOK CHAPTERS

1. E.A. Bolch, M.J. Santos, **C. Ade**, et al. (2019). Remote Detection of Invasive Species. In: Cavender-Bares, J (Ed) Remote Sensing of Plant Biodiversity: Using spectral signals of plants to understand the biology and biodiversity of plants, plant communities, ecosystems and the tree of life, Springer, New York.

2. **C. Ade** and E.L Hestir. (2017). Review of Remote Sensing and GIS for Ecologists: Using Open Source Software. PE & RS. June Issue

CONFERENCE PROCEEDINGS

1. **C. Ade**, E.L. Hestir, S. Khanna, S.L. Ustin. (2016). High Resolution Mapping of Wetland Ecosystems: Spot-5 Take 5 for Evaluation of Sentinel-2. European Space Agency Living Planet Symposium. Prague, Czech Republic. *(Conference proceedings)*

CONFERENCE PRESENTATIONS

* denotes supervised student

C. Ade, E.L. Hestir, C.M. Lee. (2021). Assessing Fish Habitat Potential and the Effects of an Emergency Barrier on Turbidity in a Drought Impacted Estuary Using Satellite Remote Sensing. GEO AquaWatch Project Updates Webinar. *(Oral)*

2. J. Burmistrova, **C. Ade**, S. Khanna, M. Lay, A. Weingram*, E.L. Hestir. (2021). Using Sentinel-2 to Provide Open-Access Tools for Plant and Water Mapping in the Sacramento Bay-Delta. 11th Biennial Bay Delta Science Conference. *(Oral)*

3. A. Weingram*, **C. Ade**, E.L. Hestir, S. Khanna. (2020). Vegetation Index Sensitivity Analysis for Wetland Vegetation Phenology Using Sentinel-2 Data. AGU Fall Meeting 2020. *(Poster)*

4. J. Burmistrova, S. Khanna, **C. Ade**, E.L. Hestir. (2020). Satellite Remote Sensing of Functional Flows to Improve Ecological Performance Metrics for the Sacramento-San Joaquin River Delta, California. AGU Fall Meeting 2020. *(Oral)*

5. C.M. Lee, N. Tufillaro, B. Palmieri, A. Osti, S. Acuña, T. Sommer, G.H. Halverson, E.L. Hestir, **C. Ade**.(2019). Assessment of Water Flow Operations Impacts on Turbidity Using Satellite Remote Sensing. AGU Fall Meeting 2019. San Fransisco, CA. *(Oral)*

6. G.H. Halverson, C.M Lee, G.C. Hulley, K.A. Cawse-Nicholson, Brendan Palmieri, Amye Osti, E.L. Hestir, **C. Ade**, S. Acuña. (2019). Smelt Habitat Suitability and Thermal Refugia in the San Francisco Bay Delta as Seen by Landsat and ECOSTRESS with Comparison to CDEC. AGU Fall Meeting 2019. San Fransisco, CA. *(Oral)*

7. M. Vermillion, C.M Lee, **C. Ade**, E.L. Hestir, M.M. Gierach, D.R. Thompson. (2019). Improving Water Quality Retrievals from Imaging Spectroscopy Datasets using ISOFIT Atmospheric Correction: a Case Study in Grizzly Bay, California. AGU Fall Meeting 2019. San Fransisco, CA. *(Oral)*

8. **C. Ade** ,A.S Fernandez Bou, T.C. Harmon, E.L. Hestir. (2019). Boogie Flux: Incorportaning Low-cost, Rapidly Deployable CO2 Chambers into Multi-scale Aquatic Flux Studies. AGU Fall Meeting 2019. San Fransisco, CA. *(Poster)*

9. Q. Xu, A.L. Westerling, C. Wiedinmyer, M.D. Hurteau, **C. Ade**. (2018). Estimating Wildfire Emissions in California. AGU Fall Meeting 2018. Washington, DC. *(Poster)*

10. E.L. Hestir and **C. Ade**. (2018). Advances in terrestrial and aquatic ecology enabled by four decades of imaging spectroscopy and the future of observing surface biology from space. AGU Fall Meeting 2018. Washington, DC. *(Oral)*

11. E.L. Hestir, **C. Ade**, C.M Lee, S. Khanna, M. Santos, J.A. Greenberg, A.C. Planes, S. Ustin. (2018). Fish versus tomatoes and other tales of using remote sensing to meet California's co-equal goals of providing water supplies and protecting ecosystems.AGU Fall Meeting 2018. Washington, DC. *(Oral)*

12. **C. Ade**, E.L. Hestir, C.M. Lee. (2018). Improvements in Water Quality Mapping using Hyperspectral Remote Sensing. 10th Biennial Bay-Delta Science Conference. Sacramento, California. *(Poster)*

13. **C. Ade**, E.L. Hestir, S. Khanna, C.M. Lee, S.L. Ustin. (2018). Aquatic Weed Detection to Support Fish and Water Resources Management An Imagining Spectroscopy Story to guide future SBG Aquatic Applications. 2018 HyspIRI Science and Applications Workshop. Washington,DC. *(Poster)*

14. **C. Ade** and E.L. Hestir. (2017). Effects of Resolution on Multi-Temporal Remote Sensing of Wetlands: Towards a Wetland Vegetation Phenology Indicator. 9th Biennial Bay-Delta Science Conference. Sacramento, California. *(Poster)*

15. **C. Ade**, E.L. Hestir, S. Khanna, S.L. Ustin. (2017). Exploring Sensor Resolution Requirements for Mapping Wetland Vegetation Phenology. Society of Wetland Scientists meeting 2017 Annual Meeting. San Juan, Puerto Rico. *(Oral)*

16. **C. Ade** and E.L. Hestir. (2017). The Benefit of Increased Temporal Resolution on Monitoring Inland Water Quality. International Ocean Colour Science Spring Meeting 2017. Lisbon, Portugal. *(Poster)*

17. **C. Ade** and E.L. Hestir. (2017). Exploring the Benefit of Increased Temporal Resolution on Monitoring Inland Water Quality Using a Sentinel-2 Proxy. ASLO Winter Meeting 2017. Honolulu, Hawaii. *(Poster)*

18. **C. Ade**, E.L. Hestir, S. Khanna, S.L. Ustin. (2016). Comparison of Sensor Resolution Trade-offs Between Landsat 8 and a Sentinel-2 Proxy for Mapping Wetland Vegetation Phenology. AGU Fall Meeting 2016. San Francisco, CA. *(Oral)*

19. M. Amanatides, **C. Ade**, and E.L Hestir. (2016). Determining the Optimal View Angle for Hyperspectral Based Estimates of Wetland Plant Biomass. 6th Annual HyspIRI Data Product Symposium and Aquatic Forum. Greenbelt, MD. *(Poster)*

20. **C. Ade**, E.L. Hestir, I. Dornova, C. Fichot, M. Gierach, B. Bergamaschi, L. Windham-Myers, K. Byrd, S. Khanna, S.L. Ustin. (2016). DEWSS: Dual Ecosystem and Water Supply Sustainability for the Sacramento- San Joaquin River Delta. European Space Agency Living Planet Symposium. Prague, Czech Republic. *(Poster)*

21. E.L. Hestir, **C. Ade**, and M. Amanatides. (2015). Earth Observations and Remote Sensing for Biodiversity, Water Quality and Security. North Carolina State University Global Change Symposium. Raleigh, NC. *(Poster)*

TEACHING EXPERIENCE

- **University of California Merced Valle De Exploracion** Spr. 2020 and 2021
  Guest Lecturer
  Remote Sensing Using Google Earth Engine

- **University of California Merced - University Extension** Spr. 2019
  Primary Instructor
  2-Day Workshop - Remote Sensing Using Google Earth Engine.

- **University of California Merced,** Environmental Systems Fall 2018
  Laboratory Teaching Assistant
  ES/ENVE 152/252: Remote Sensing and Global Environmental Change with Dr. Erin Hestir

- **University of California Merced,** Environmental Systems Spr. 2018
  Co-developer
  ES 295: Advanced Remote Sensing with Dr. Erin Hestir

- **University of California Merced,** Environmental Systems April 2018
  Guest Lecturer
  Remote Sensing Applications with R (ES 207: Environmental Data Analysis)

- **North Carolina State University,** Dept. of Marine, Earth and Atmospheric Sciences   Jan. 2017
  Guest Lecturer
  Image Processing and Analysis (MEA 593: Remote Sensing and Global Environmental Change)

- **North Carolina State University,** Dept. of Marine, Earth and Atmospheric Sciences   Sep. 2016
  Guest Lecturer
  Raster Data Processing and Analysis (MEA 493: Remote Sensing and Global Environmental Change)

- **North Carolina State University,** Dept. of Marine, Earth and Atmospheric Sciences   2015 - 2017
  Laboratory Teaching Assistant
  MEA 110: Online and in-class Geology I Laboratory with Dr. David McConnell
  MEA 100: Earth System Science: Exploring the Connections

OUTREACH AND MENTORING

- **Valle De Exploracion**   Spring 2020, 2021
  Graduate Student Panelist

- **Environmental Systems Department Seminar Lead**   Spring 2020
  Organized graduate student lunches with speakers, managed website with seminar abstracts and presenter biographies, coordinated speaker schedules.

- **Mentored Students on Funded Projects**
  Adam Weingram - Low-cost satellite remote sensing of the Sacramento-San Joaquin Delta to enhance mapping for invasive and native aquatic vegetation (2020 - Present)
  Brittany Lopez-Barreto - NASA Applied Sciences Maximizing Utility of Remote Sensing for Water Quality Monitoring in California's Water Systems (Fall 2018)