Christine M. Lee

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PROFESSIONAL EXPERIENCE

2014-Present NASA Jet Propulsion Laboratory (Pasadena, CA)
Scientist, Water and Ecosystems Group (2019-current)
Technical Group Supervisor, Water and Ecosystems Group (2022-2024)
SBG Applications Lead (Acting) (2023-current)
ECOSTRESS Applications Advisor (2023-current)
California Climate Information Systems Pre-Project Scientist (2022-2024)
ECOSTRESS Applications Lead (2014-2023)
Associate Program Manager for NASA's Water Resources Program (2014-2022)
Project Scientist, NASA's Western Water Applications Program (2016-2018)
Systems Engineer, Applied Science Systems Engineering Group (2017-2019)
Software Engineer, Scientific Applications Group (2014-2017)

2012-2014 NASA Headquarters, Applied Sciences Program (Washington, DC)
- NASA Water Resources Program Team, Water Quality Subject Matter Expert
- NASA Capacity Building Program Team, providing leadership and support for workforce development (NASA DEVELOP), international development (NASA/USAID SERVIR), and training (NASA ARSET) program

2010-2012 NASA Jet Propulsion Laboratory (Pasadena, CA)
Postdoctoral Researcher, Astrobiology / Planetary Sciences, investigating microbial detection in extreme environments, biosecurity applications, and water quality

EDUCATION

2006-2010 University of California, Los Angeles: Ph.D. in Civil and Environmental Engineering, Thesis: Development of rapid, viability-based methods for enumerating fecal indicator bacteria and tracking fecal pollution in urban watersheds

2006 University of California, Los Angeles, M.S. in Civil and Environmental Engineering, Thesis: Persistence of fecal indicator bacteria in Santa Monica Bay beach sediment

2000-2005 University of California, Los Angeles, B.S. in Chemical Engineering, Biomedical Engineering Focus; Minor in English.

HONORS AND AWARDS

2025 JPL Voyager Awards – JPL Career Pathways Working Group, Infrastructure Adaptation Report for LA Basin

2024 AGU JGR-B – Top Cited Article 2022-2023 (Stavros et al., Designing an Observing System to Study the Surface Biology and Geology (SBG) of the Earth in the 2020s)

2023 Wiley Publishing – Top Downloaded Article (Lee et al., Monitoring Turbidity in San Francisco Estuary Delta Using Satellite Remote Sensing, JAWRA)

2019 NASA Early Career Public Achievement Medal

2019, 2017 JPL Voyagers Earth Ventures Applications Leadership, Water Resources Leadership

2012 AAAS Science and Technology Policy Fellowship

RESEARCH EXPERIENCE (selected)

2024-current JPL PI, Assessing Wildfire Impacts on California's Coastal Water Quality and Aquatic Ecosystems (JPL)

2024-current JPL PI (transferred) / Co-I, Fishpond stewardship through community collaboration and remote sensing, (NASA)

2024-current PI, A new era of Earth Action: linking coral health and societal well-being through NASA earth observations (JPL/Caltech)

2023-current	Co-I, Understanding the integrated ecosystem and geomorphologic evolutions across the land-ocean gradient in response to dam disruptions (NASA)
2023-current	JPL PI/Co-I, Impacts of changing wildfire regimes on human communities and water security (NASA)
2023-current	JPL PI/Co-I, Reducing human health risk and exposure to wastewater spills in coastal environments (NASA)
2022-current	Co-I, Fire Risk Vulnerability Prediction and Fire Tracking (Invited, NASA)
2022-current	JPL PI/Co-I, Integrating ECOSTRESS into Community Research (NASA)
2022-current	Co-I, Building a model for regenerative kelp cultivation in coastal oceans (NASA)
2022-current	JPL PI/Co-I, Application of UAV and satellite based optical sensors to preserve coral reefs in the U.S. Virgin Islands (NASA)
2021-current	JPL PI/Co-I, Wildfire Impacts on Carbon Transport to Coasts (NASA)
2023-2024	PI, Coastal Habitat Vulnerability Assessment Using Satellite Remote Sensing (California Ocean Protection Council)
2020-2021	PI, Snow Data System (NASA)
2020-2021	PI, User Design for NASA Prize Competitions (NASA)
2018	PI, Data Science Working Group, Data Science for Assessing Western Water Applications and Stakeholder Needs (JPL)
2019-2021	PI, ECOSTRESS Surface Temperature for Aquatic Applications (NASA)
2019-2022	Co-I, Evaluating a CONUS-wide disALEXI Evapotranspiration Product (NASA)
2018-current	Co-I, Climate Induced Nutrient Flows and Threats to the Biodiversity of the Belize Barrier Reef Reserve System (NASA)
2017-2018	PI, Monitoring Water Quality with Landsat-8, (Metropolitan Water District)
2016-2020	PI, Maximizing Remote Sensing for Water Quality Monitoring in California's Water Systems (NASA)

MENTORSHIP

Postdoctoral Scholars: K. Luis, A. Lopez, C. Ade, C. Nickles, M. Pascolini-Campbell, I. Callejas, B. Pan, B. Lopez-Bareto. *Interns and students* mentored (50+ since 2014): E. Reilly, R. Trancucci, J. Longenecker, M. Ward Baranyay, Y. Kong, J. Meiseles, F. Romero-Galvan, A. Alamillo, B. Wilder, D. Sonobe, T. Morgan, R. Wachtel, N. Nada, A. Bafna, M. Ayad, E. Ortiz, P. Sey, D. Harris, R. Gustine, A. Bailey, G. Kohli, L. De Vera, I. Callejas, M. Cira, J. Vellanoweth, C. Chidiac, S. Payne, K. Alvarez, M. Bruce, R. Ly, K. Cavanaugh, L. Kucera, L. Wakamatsu, A. Lin, S. Kim, R. Avila, X. Wang, M. Spater, C. Devine, V. Valenti, H. Pippin, R. Pilot, A. Olarte, S. Pestana, S. Cooley, M. Vermillion, K. Gold, D. Kim, C. Wong, L. Berberian, M. Johnson, S. Patel, R. Suhs, K. Jimenez, Z. Ali, G. Trolley, R. Neuren, S. Eubanks

MEMBERSHIP AND COMMITTEE SERVICE

Membership	American Geophysical Union (2012-2021, 2023-), American Society of Microbiology (2010-2012), American Assoc. for the Adv of Science (AAAS) (2014-current) AGU Fall Meeting Sessions – convener and / or chair from 2016-2020
Editor Roles	Associate Guest Editor, Journal of American Water Resources Association, Special Issue: Use of NASA Earth Observations to Support Water Management (2022) Associate Guest Editor**,** Frontiers in Marine Science**,** Special Issue: Impact of COVID-19 Lockdowns on Regional and Global Oceans and Coasts (2021)
Committees	6 Ph.D (B. Lopez-Barreto/UC Merced, I. Callejas/UCLA, M. Cira/UCLA, B. Wilder/Boise State, M. Ayad/UC Santa Cruz, R. Gustine/Washington State University, B. Lopez-Barreto/UCMerced) 2 M.S. Committees (M. Ayad/CSULA, J. Vellanoweth/CSULA)

NASA Press Releases / Media Featuring C. Lee Research

Water pollution monitoring from the Tijuana River (https://tinyurl.com/NASAJPL-TJR)
Predicting Burn Severity of California Wildfires (https://tinyurl.com/NASAJPL-CA-Fires)
Assessing Coral Ecosystem Vulnerability in Belize (https://tinyurl.com/NASAJPL-BZ-Corals)
Impacts of Wildfires on Coastal Water Quality (https://tinyurl.com/NASAJPL-CA-Coasts-Fires)

PUBLICATIONS

*11 in review/submitted; * denotes early career mentee*

11. *Gustine et al., **in revision**. Warm and Combined Warm-Dry Snow Droughts Increase Global Cold Season ET Fluxes.
10. *Galdamez et al., **in review**. From Global Trends to Local Microclimates: assessing NOAA Coral Reef Watch Alerts and ECOSTRESS thermal imagery in Belize
9. *Gustine et al., **in review**. Adaptation of Water and Agricultural Systems to Snow Droughts: Historical Responses and Future Risks in the Snow-Dominant Western U.S.
8. *Ward-Baranyay, M. et al., **in review**. Pre-fire fuel conditions are dominant drivers of burn severity in 2025 LA county fires.
7. Rivera. et al., **in review**. Post wildfire ecosystem resilience in prescribed burn regions revealed by ECOSTRESS ET.
6. *Johnson., et al. **in review**. Vegetation type conversions in response to wildfire increase water use efficiency in a Mediterranean chaparral watershed.
5. Lee et al., **in revision**. Earth observations and the Earth science workforce: advancing water security and national preparedness
4. *Espinoza et al., **in revision.** Assessment of Projected Sea Level Rise in California (2050 and 2100): Economic Losses in Coastal Tourism Sectors
3. Meshesha, et al., **in review.** The effects of wildfire on watershed processes: A model-based comparison of two watershed.
2. *Gustine et al, **in review**. Adaptation of Water and Agricultural Systems to Snow Droughts: Historical Responses and Future Risks in the Snow-Dominant Western U.S.
1. *Lopez Barreto et al., in review. Space-based monitoring enhances public health alerts for harmful algal blooms across California.

*Refereed Publications * denotes early career mentee*

50. *Alamillo et al., **accepted**. Post-fire vegetation recovery response: a case study of the 2020 Bobcat Fire in Los Angeles, California. *Remote Sensing.*
49. *Lopez, A. M., Meshesha, T. W., Lee, C. M., Mohammed, I. N., Hestir, E. L., Harmon, T. C., & Avouris, D. M. (2025). Post-Wildfire Sediment Fluxes and Turbidity Plumes in a Coastal-Draining Watershed. *Earth and Space Science*, *12*(12), e2024EA003843. https://doi.org/10.1029/2024EA003843
48. *Galdamez et al., **accepted**. Evaluating Antibiotic Resistance in Urban Rivers and Coral Reefs of Belize: Evidence for Hotspots and a Potential Screen Tool. *AGU GeoHealth*
47. Pierrat et al., **accepted.** Human contributions to evapotranspiration mitigate swings in dry to wet year transitions. *Nature Comm. Sustainability*
46. *Ayad et al.,2025**.** Impacts of the 2023 Marine Heatwave in the Florida Keys: Detection and Analysis of a Mass Coral Bleaching Event Using Spaceborne Remote Sensing Imagery, *Environmental Science and Technology,* https://doi.org/10.1021/acs.est.5c03122
45. Pascolini-Campbell, M., Fisher, J. B., Cawse-Nicholson, K., Lee, C. M., & Stavros, N. (2025). Assessment of spatial autocorrelation and scalability in fine-scale wildfire random forest prediction models. *Scientific Reports*, *15*(1), 21504. https://doi.org/10.1038/s41598-025-06814-z
44. Scrivner, et al., Linking chemical composition of untreated wastewater in estuarine and coastal waters with laboratory, in situ, and EMIT spaceborne spectroscopy. *Science of the Total Environment* https://doi.org/10.1016/j.scitotenv.2025.179598
43. *Payne et al., Bar-built estuary breach detection with remote sensing: an automated tool to inform management practices. *Estuaries and Coasts*, https://doi.org/10.1007/s12237-025-01545-w
42. *Gustine et al,. Historical occurrence of and shift in snow drought drivers in global mountain ranges. *Journal of Hydrology,* https://doi.org/10.1016/j.jhydrol.2025.133270
41. *Kong, Jimenez, Lee et al., 2025. Satellite-empowered public health: mapping coastal fecal contamination risks through Sentinel-2 particulate signatures. *Environmental Research*, https://doi.org/10.1016/j.envres.2025.121586

40. Chadwick, K. D., et al. Unlocking ecological insights from subseasonal visible to shortwave infrared imaging spectroscopy: The SHIFT Campaign. *Ecosphere* 16(3): e70194. https://doi.org/10.1002/ecs2.70194
39. Buzzanga B., Hamlington B, et al., 2024. Monitoring water from space: an illustration in Death Valley, CA, *Geophysical Research Letters*, 52, e2024GL110250. https://doi.org/10.1029/2024GL110250
38. *Kong, Y.; Jimenez, K.; Lee, C.M.; Winter, S.; Summers-Evans, J.; Cao, A.; Menczer, M.; Han, R.; Mills, C.; McCarthy, S.; et al. Monitoring Coastal Water Turbidity Using Sentinel2—A Case Study in Los Angeles. *Remote Sens.* **2025**, *17*, 201. https://doi.org/10.3390/rs17020201
37. Wilder, B.A., Lee, C.M. et al, 2024. Computationally efficient retrieval of snow surface properties from spaceborne imaging spectroscopy measurements through dimensionality reduction using k-means spectral clustering. IEEE JSTARS. **DOI:** 10.1109/JSTARS.2024.3386834
36. *Lopez-Barreto et al. 2024. Satellite Remote Sensing: A Tool to Support Harmful Algal Bloom Monitoring and Recreational Health Advisories in a California Reservoir. *AGU GeoHealth.* DOI: 10.1029/2023GH000941
35. Kumar et al, 2024. Perceived Barriers and Advances in Integrating Earth Observations with Water Resources Modeling. *Remote Sensing Applications: Society and Environment.* https://doi.org/10.1016/j.rsase.2023.101119
34. Chintan et al, 2023. Spatio-temporal Dynamics of Total Suspended Sediments in the Belize. *Remote Sensing.* https://doi.org/10.3390/rs15235625
33. Schiavon, E., Taramelli, A., Tornato, A., Lee, C. M., Luvall, J. C., Schollaert Uz, S., et al. (2023). Maximizing societal benefit across multiple hyperspectral earth observation missions: A user needs approach. *Journal of Geophysical Research: Biogeosciences*, 128, e2023JG007569. https://doi.org/10.1029/2023JG007569
32. *Callejas IA, …**Lee C.M.**, et al. Use of Google Earth Engine for Teaching Coding and Monitoring of Environmental Change: A Case Study among STEM and Non-STEM Students. *Sustainability*. 2023; 15(15):11995. https://doi.org/10.3390/su151511995
31. *Gustine RN, Nickles C, **Lee, C.M.,** et al. Evaluating Habitat Suitability and Tidal Wetland Restoration Actions with ECOSTRESS, *Journal of Geophysical Research: Biogeosciences,* https://doi.org/10.1029/2022JG007306
30. *Callejas IA, Osborn K, **Lee, C.M.**., et al. A GEE Toolkit for water quality monitoring from 2002-2022 in support of SDG 14 and coral health in Marine Protected Areas in Belize, *Frontiers in Remote Sensing*. https://doi.org/10.3389/frsen.2022.1020184
29. Stavros EN,…**Lee, C.M.**, et al. Designing an Observing System to Study the Surface Biology and Geology (SBG) of the Earth in the 2020s. *Journal of Geophysical Research: Biogeosciences.* https://doi.org/10.1029/2021JG006471
28. **Lee, C. M.**, Glenn, N. F., Stavros, E. N., Luvall, J., Yuen, K., Hain, C., & Uz, S. S. (2022). Systematic integration of applications into the Surface Biology and Geology (SBG) Earth mission architecture study. *Journal of Geophysical Research: Biogeosciences*. https://doi.org/10.1029/2021JG006720
27. *Pascolini-Campbell, M., Lee, C., Stavros, N. & Fisher, J. B. (2022). ECOSTRESS reveals pre-fire vegetation controls on burn severity for Southern California wildfires of 2020. *Global Ecology and Biogeography*, 31, 1976– 1989. https://doi.org/10.3389/FENVS.2022.848085
26. Martin-Arias, V., Evans, C., Griffin, R., Cherrington, E. A., Lee, C. M., Mishra, D. R., et al. (2022). Modeled Impacts of LULC and Climate Change Predictions on the Hydrologic Regime in Belize. *Frontiers in Environmental Science*. https://doi.org/10.3389/FENVS.2022.848085
25. *Cira, M., Bafna, A., **Lee, C.M.** *et al.* Turbidity and fecal indicator bacteria in recreational marine waters increase following the 2018 Woolsey Fire. *Nature Sci Rep* **12,** 2428 (2022) https://doi.org/10.1038/s41598-022-05945-x
24. *Gustine RN, **Lee CM,** et al. Using ECOSTRESS to Observe Diurnal Variability in Water Temperature Conditions in the San Francisco Estuary. *IEEE Transactions in Geoscience and Remote Sensing*, 2021. **DOI:** 10.1109/TGRS.2021.3133411

23. *Halverson G, **Lee CM,** et al. Decline in Thermal Habitat Conditions for the Endangered Delta Smelt as Seen from Landsat Satellites (1985-2019). *Environmental Science and Technology*, https://doi.org/10.1021/acs.est.1c02837
22. Bales J and **Lee CM.** Introduction to Featured Collection on Use of NASA and Other Earth Observations, Data, Assets, and Tools to Support Water Management, *Journal of American Water Resources Association,* 2021. https://doi.org/10.1111/1752-1688.12969
21. Wong AJ,… **Lee CM**, et al. Assessment of Agricultural Consumptive Water Use in California's Central Valley. AGU Water Resources Research, 2021. https://doi.org/10.1029/2020WR028876
20. **Lee CM**, Hestir EL, Tufillaro N, Palmieri B, Acuna S, Osti A, Bergamaschi B, Sommer T., Monitoring turbidity in San Francisco Estuary and Sacramento-San Joaquin Delta using satellite remote sensing. *Journal of American Water Resources Association,* 2021. https://doi.org/10.1111/1752-1688.12917
19. *Ade C, Hestir EL, **Lee CM**, Assessing Fish Habitat and the Effects of an Emergency Drought Barrier on Estuarine Turbidity Using Satellite Remote Sensing. *Journal of American Water Resources Association,* 2021. https://doi.org/10.1111/1752-1688.12925
18. *Callejas I, **Lee CM**, Mishra DR, Felgate SL, Evans C, Carrias A, Rosado A, Griffin R, Cherrington EA, Ayad MA, Rudresh M, Page BP, Jay JA. Effect of COVID-19 Anthropause on Water Clarity in Belize Coastal Lagoon. *Frontiers in Marine Science,* 2021. https://doi.org/10.3389/fmars.2021.648522
17. Cawse-Nicholson K, et al. NASA's surface biology and geology designated observable: A perspective on surface imaging algorithms. *Remote Sensing of Environment,* 2021. https://doi.org/10.1016/j.rse.2021.112349
16. **Lee CM**, Fisher JB, Hook SJ, ECOSTRESS Maps Vegetation Health Around the World. *AGU Eos Transactions*, 2020. https://doi.org/10.1029/2020EO146736
15. *Kohli G, **Lee CM**, Fisher JB, Halverson G, Variano E, Jin Y, Carney D, Wilder BA, Kinoshita AM. ECOSTRESS and CIMIS: A Comparison of Potential and Reference Evapotranspiration in Riverside County, CA, Remote Sensing, 2020. https://doi.org/10.3390/rs12244126
14. *Ayad M, Li J, Holt B, **Lee CM**, Analysis and Classification of Stormwater and Wastewater Runoff from Tijuana River Using Remote Sensing Imagery, Frontiers Env Sci, 2020. https://doi.org/10.3389/fenvs.2020.599030
13. Zimmer-Faust A, Thulsiraj V, **Lee CM**, et al. Multi-tiered approach utilizing microbial source tracking and human associated-IMS/ATP for surveillance of human fecal contamination in Baja California, Mexico. Science of the Total Environment, 2018. DOI: 10.1016/j.scitotenv.2018.05.172
12. **Lee CM**, et al. Applying Earth Observations for Water Resources Challenges, Ch 6. *Earth Science Satellite Applications,* Springer Remote Sensing/Photogrammetry, 2016. DOI:10.1007/978-3-319-33438-7_6
Cooley SA, Fisher JB, Williams C, Halverson G, Williams C, **Lee CM**, Assessing regional drought impact on vegetation and evapotranspiration: a case study in Guanacaste, Costa Rica, Ecological Applications, 2018. https://doi.org/10.1002/eap.1834
11. Hossain F, Serrat-Capdevila, Granger S, Thomas A, Saah D, Ganz D, Mugo R, Murthy MSR, Ramos VH, Anderson E, Schumann G, Lewison R, Kirschbaum D, Escobar V, Srinivasan M, **Lee CM,** et al. A Global Capacity Building Vision for Societal Applications of Earth Observation Systems and Data: Key Questions and Recommendations, *Bulletin in American Meteorological Society,* 2016. https://doi.org/10.1175/BAMS-D-15-00198.1
10. Bolten JB, **Lee CM**, Houser P. Satellite Data for Water Resources Mgmt. *AGU Eos transactions,* 2015. doi:10.1029/2015EO035971
9. **Lee CM,** Cable ML, Hook SJ, et al. An introduction to the NASA Hyperspectral InfraRed Imager (HyspIRI) mission and preparatory activities, *Remote Sensing of Environment,* 2015. https://doi.org/10.1016/j.rse.2015.06.012
8. **Lee CM,** Orne T., Schaeffer B. How can remote sensing be used for water quality? Bridging the operational and applications communities. *AGU Eos transactions*, 2014. https://doi.org/10.1002/2014EO390011

7. Noell AC, Greenwood A, **Lee CM,** Ponce A. High Density, Homogeneous Endospore Monolayer Deposition on Test Surface, *Journal of Microbiological Methods,* 2013. DOI: 10.1016/j.mimet.2013.05.003
6. **Lee CM,** Hemmings SN, Searby ND. Using Earth observations to enhance WR decision-making & disaster assessment processes in the U.S. and in the developing world. *IEEE GHTC*, 2013. **DOI:** 10.1109/GHTC.2013.6713738
5. Ros-Giralt J, Launglucknavalai K, Massaguer D, Casanova J, **Maxwell (Lee) CM.** Using Labdoo to Bridge the Digital Divide: A New Form of International Cooperation. Service Learning in the Computer and Information Sciences: Practical Applications in Engineering Education, Ch 18 © 2012. https://doi.org/10.1002/9781118319130.ch18
4. **Lee CM,** Griffith JF, Kaiser W, Jay JA. Covalently-linked immunomagnetic separation/adenosine triphosphate technique is a rapid and field-portable method for measuring E. coli and Enterococcus spp., in fresh and marine water environments. *Journal of Applied Microbiology.* 2010. DOI: 10.1111/j.1365-2672.2009.04660.x
3. Mika KB, Imamura G, Chang C, Conway V, Fernandez G, Griffith J, Kampalath R, **Lee CM,** et al. Pilot and bench-scale testing of fecal indicator bacteria survival in marine beach sand near point sources. *Jounral of Applied Microbiology.* 2009. DOI: 10.1111/j.1365-2672.2009.04197.x
2. Ramanathan N, **Lee CM,** et al. Sensor-based investigation of biogeochemical control on arsenic mobilization in rural Bangladesh. Conference Proceedings, *American Chemical Society.* 2007.
1. **Lee CM,** Lin TY, Lin CC, Kohbodi G., Bhatt A, Lee R, Jay JA. Persistence of fecal indicator bacteria in Santa Monica Bay beach sediments. *Water Research.* 2006, https://doi.org/10.1016/j.watres.2006.04.032