
Dr. Michelle E. Newcomer

Research Scientist

Lawrence Berkeley National Laboratory

mnewcomer@lbl.gov

<https://eesa.lbl.gov/profiles/michelle-newcomer/>

ResearcherID: L-8984-201

ORCID: orcid.org/0000-0001-5138-9026

Curriculum Vitae

Education

2012-2016 **University of California at Berkeley**, *PhD Civil & Environmental Engineering*-GPA: 3.87

2006–2012 **San Francisco State University**, *M.S. Geoscience: Hydrogeology* –GPA: 3.78

2002–2006 **University of California at Santa Barbara**, *B.A. Sociology & French* –GPA: 3.50

PhD. Dissertation “*Simulating Bioclogging Effects on Dynamic Permeability, Infiltration, and Subsurface Geochemistry*”

M.S. Thesis “*Recharge Beneath Low-Impact Development and the Effects of Climate Variability*”

Research Interests

- Impacts of California wild-fires on watershed hydrology and water quality
- Extreme climate and changes to groundwater-surface water connectivity
- Harmful Algal Blooms (HABs) and the role of food-webs, riverine exports, and climate perturbations
- Terrestrial Aquatic Interface (TAI): exploring the biogeochemistry of the TAI across large-scale (coastal zones) to small-scale (hyporheic zones)
- New fiber-optic technologies for sensing across the TAI

Professional & Research Experience

Lawrence Berkeley National Laboratory, Climate & Ecosystem Sciences: Berkeley, California

2018-present:
*Hydrological
Research Scientist
(career-track)*

Leading research in the fields of hydrology, biogeochemistry, reactive transport modeling, riverine ecology, harmful algal blooms, groundwater surface-water interactions, and the impacts of fire and climate on the functioning of surface and subsurface systems.

Lawrence Berkeley National Laboratory, Climate & Ecosystem Sciences: Berkeley, California

2016-2018: *Post-
Doctoral Fellow*

Launched the post-fire Sonoma County Water Quality Monitoring Program. Member of the Watershed Function SFA 2.0 Team. Analyzing the effects of climate perturbations on hydrological and biogeochemical cycling in hyporheic zones.

UFZ Helmholtz Centre for Environmental Research: Leipzig, Germany

2013,2014: *Visiting
Scholar*

Conducted hyporheic zone and numerical modeling with scientists at UFZ. My research work focused on assessing groundwater-surface water interactions at the Wohler Riverbank Filtration site along the Russian River, CA working collaboratively with the Sonoma County Water Agency

NASA Ames Research Center: Science Systems and Applications Inc. DEVELOP National Program

2010-2012: *Center
Lead, Research
Adviser, Project
Coordinator*

Principal investigator for 3 different applied science research projects. Collaborated research partnerships with the Environmental Protection Agency, the California Department of Water Resources, and the National Park Service. Oversaw the development and implementation of more than 10+ research teams. Developed research topics and wrote project proposals to NASA Headquarters. Participated in outreach events for encouraging students in STEM fields. Member of the DEVELOP strategic planning committee.

2009-2010: *Earth
Science Research
Consultant-Team
Leader*

Lead a team of 5 students on a study analyzing sedimentation in the wetlands of South San Francisco Bay. Responsible for field work and project design, image processing, developing a sedimentation model, statistical analysis, and task delegation. Analyzed sediment samples in the USGS Marine Geology Lab. Primary author on a manuscript for *Geocarto International*.

2007-2009: *Earth
Science Research
Consultant-Team
member*

Used GIS and remote sensing for an environmental analysis of pine beetle attacks and fire severity in the Okanogan-Wenatchee National Forest, Washington. In charge of field work design, and laboratory analysis experiments. Experience with radar, lidar, hyperspectral, and multispectral image processing.

Publications, Proceedings & Articles

- 1) **Newcomer, M.E.**, N. Bouskill, H. Wainwright, T. Maavara, B. Arora, E. Siirila-Woodburn, D. Dwivedi, K. Williams, C. Steefel, S. Hubbard. (2020). Hysteresis Patterns of Watershed Nitrogen Retention and Loss in United States Hydrological Basins. *Submitted to Global Biogeochemical Cycles* by June 2020.
- 2) **Newcomer, M.E.**, N. Bouskill, H. Wainwright, T. Maavara, B. Arora, E. Siirila-Woodburn, D. Dwivedi, K. Williams, C. Steefel, S. Hubbard. (2020). Changes in Timing and Mass Flux of Carbon and Nitrogen Exports from the Upper Colorado River Basin. *In prep for Global Biogeochemical Cycles* by July 2020.
- 3) Cheng, Y., Bhoot, V., Kumbier, K., Sison-Mangus, M., Brown, B., **Newcomer, M.** (2020). A Novel Random Forest Approach to Revealing Interactions and Controls During Harmful Algal Blooms. *ISME*. *Submitted* July 2020.
- 4) Matheus-Carnevali, P.B., A. Lavy, A. D. Thomas, A. Crits-Christoph, S. Diamond, R. Meéheust, M. R. Olm, A. Sharrar, S. Lei, W. Dong, N. Falco, N. Bouskill, **M. Newcomer**, P. Nico, H. Wainwright, D. Dwivedi, K. H. Williams, S. Hubbard, J.F. Banfield. (2020) Meanders as a scaling motif for understanding of floodplain soil microbiome and biogeochemical potential at the watershed scale. *bioRxiv*. <https://doi.org/10.1101/2020.05.14.086363>
- 5) Maina, F. Z., Siirila-Woodburn, E. R., **Newcomer, M.**, Xu, Z., & Steefel, C. (2020). Determining the impact of a severe dry to wet transition on watershed hydrodynamics in California, USA with an integrated hydrologic model. *Journal of Hydrology*, 580, 124358. DOI: 10.1016/j.jhydrol.2019.124358. [[link](#)]
- 6) Arora, B., Burrus, M., **Newcomer, M.**, Steefel, C. I., Carroll, R. W. H., Dwivedi, D., et al. (2020). Differential C-Q Analysis: A New Approach to Inferring Lateral Transport and Hydrologic Transients Within Multiple Reaches of a Mountainous Headwater Catchment. *Frontiers in Water*, 2, 24. DOI: 10.3389/frwa.2020.00024. [[link](#)]

- 7) Rogers, D.B., **M.E. Newcomer**, J. Raberg, D. Dwivedi, C.I. Steefel, N.J. Bouskill, P.S. Nico, P.M. Fox, M. Conrad, M. Bill, E. Brodie, N. Falco, B. Arora, K.H. Williams, S.S. Hubbard. Modeling the Impact of Riparian Hollows on Decadal Watershed Nitrogen Exports. *Frontiers in Water*. Submitted. June 2020.
- 8) Dwivedi, D., B. Dafflon, **M.E. Newcomer**, B. Arora, C. Steefel, K. Williams, R. Carroll, B. Faybishenko, S. Hubbard. (2018). Geochemical Exports to River from the Intra-Meander Hyporheic Zone under Transient Hydrologic Conditions: East River Mountainous Watershed, Colorado. *WRR*. DOI:10.1029/2018WR023377 [\[link\]](#)
- 9) **Newcomer, M. E.**, S. S. Hubbard, J. H. Fleckenstein, U. Maier, C. Schmidt, M. Thullner, C. Ulrich, N. Flipo, and Y. Rubin (2018), Influence of hydrological perturbations and riverbed sediment characteristics on hyporheic zone respiration of CO₂ and N₂. *JGR Biogeosciences*. doi:10.1002/2017JG004090 [\[link\]](#). Cover Article [Highlight](#).
- 10) **Newcomer, M. E.**, S. S. Hubbard, J. H. Fleckenstein, U. Maier, C. Schmidt, M. Thullner, C. Ulrich, N. Flipo, and Y. Rubin (2016), Simulating bioclogging effects on dynamic riverbed permeability and infiltration, *Water Resour. Res.*, 52, doi:10.1002/2015WR018351. [\[link\]](#)
- 11) Low-Impact Development Boosts Groundwater Recharge. (2014). AGU EOS Transactions, Research Spotlight. Editors Highlight. Vol. 95. No. 23. June. [\[pdf\]](#)
- 12) **Newcomer, M.E.**, J.J. Gurdak, L. Sklar, L. Nanus. (2014). Urban recharge beneath low impact development and effects of climate variability and change. *Water Resources Research*. Vol. 50. Pgs. 1-16. [\[link\]](#).
- 13) **Newcomer, M.**, A.J.M. Kuss, T. Ketron, A. Remar, V. Choksi, J.W. Skiles. (2013). Estuarine sediment deposition during wetland restoration: A GIS and remote sensing modeling approach. *Geocarto International*. Vol. 29(4). Pgs. 451-467 [\[link\]](#)
- 14) Kuss, A.J.M, W. Brandt, J. Randall, B. Floyd, A. Bourai, **M. Newcomer**, J.W. Skiles, C. Schmidt. (2012). Comparison of changes in groundwater storage using GRACE data and a hydrological model in California's Central Valley. *Proceedings of the American Society for Photogrammetry and Remote Sensing (ASPRS)*. [\[pdf\]](#)
- 15) Kuss, A.M., W.T. Brandt, J. Randall, B. Floyd, A. Bourai, **M.E. Newcomer**, C. Schmidt, J.W. Skiles. Groundwater Storage Estimates in the Central Valley Aquifer using GRACE satellite data. (2012). *Earthzine IEEE, Theme Article on Water Availability*. [\[link\]](#)
- 16) **Newcomer, M.**, A.J.M. Kuss, A. Nguyen, V. Choksi, C. Schmidt. (2012). NASA Ames DEVELOP Interns Collaborate with the South Bay Salt Pond Restoration Project to Monitor and Study Restoration Efforts using NASA's Satellites. NASA Earth Sciences Division Technical Report. [\[link\]](#) [\[pdf\]](#)
- 17) Hsu, W, A.J.M. Kuss, T. Ketron, A. Remar, A. Nguyen, **M. Newcomer**, E. Fleming, L. Bebout, B. Bebout, A. Detweiler, J.W. Skiles (2011). Hyperspectral Biofilm Classification Analysis for Carrying Capacity of Migratory Birds in the South Bay Salt Ponds. *Proceedings for the William T. Pecora Memorial Remote Sensing Symposium*. [\[pdf\]](#)
- 18) R.A. Grant, T. Halliday, W.P. Balderer, F. Leuenberger, **M. Newcomer**, G. Cyr, and F. T. Freund. (2011) Groundwater Chemistry Changes before Major Earthquakes and Possible Effects on Animals. *International Journal of Environmental Research and Public Health*.
- 19) **Newcomer, M.**, A.J.M. Kuss, T. Ketron, A. Remar, V. Choksi, J.W. Skiles. (2011). Modeling Sediment Deposition for Predicting Marsh Habitat Development. *Proceedings of the American Society for Photogrammetry and Remote Sensing (ASPRS)*. [\[pdf\]](#)
- 20) **Newcomer, M.**, W. Hsu, E. Justice, J.W. Skiles. (2011). Prototype Application of NASA Missions for Identifying Patterns of Wetland Vegetation Development. *Proceedings of the American Society for Photogrammetry and Remote Sensing (ASPRS)*. [\[pdf\]](#)
- 21) Justice, E., **M. Newcomer**, (2010). NASA Ames DEVELOP Interns: Helping the Western United States Manage Natural Resources One Project at a Time. *The Earth Observer*. Vol. 22 (5). Pgs 10-12. [\[pdf\]](#)
- 22) **Newcomer, M.**, J. Bird, A. Stalzer, G. Sady, S. Sabatine, T. Wheeler, J.W. Skiles, C. Schmidt. (2010). Utilizing NASA Satellite Missions to Identify Bark Beetle Infestation in Sequoia National Park. *Proceedings of the American Society for Photogrammetry and Remote Sensing (ASPRS)*.
- 23) **Newcomer, M.**, C. Gatenbein, D. Delgado, T. Wang, B. Schiffman. (2009). Burn Severity Assessment in the Okanogan-Wenatchee Forest Using NASA Satellite Missions. *Proceedings of the American Society for Photogrammetry and Remote Sensing (ASPRS)*. [\[pdf\]](#)
- 24) Ballard, M., **M. Newcomer**, J. Rudy, S. Lake, S. Sambasivam, A.W. Strawa, J.W. Skiles, and C. Schmidt, (2008). Understanding the Correlation of San Joaquin Air Quality Monitoring with Aerosol Optical Thickness Satellite Measurements. *Proceedings of the American Society for Photogrammetry and Remote Sensing (ASPRS)*. [\[pdf\]](#)

Conference and Professional Presentations (*Presenting Author)

- 1) **Newcomer, M.***, N. Bouskill, D. Dwivedi, C. I. Steefel, U. Maier, B. Arora, P.S. Nico, B. Faybishenko, B. Dafflon, H.M. Wainwright, R. Carroll, P.M. Fox, K.H. Williams, S.S. Hubbard (2020). Advancing Understanding,

- Modeling, and Scaling of Hyporheic Zone Terrestrial Aquatic Interfaces and their Impacts on Watershed Function. *Invited Keynote Talk. Goldschmidt. Session 12k.* [[abstract](#)]
- 2) **Newcomer, M.***, Y. Cheng, V. Bhoot. (2020). Climate and Hydrological Controls on Coastal Harmful Algal Blooms. *Invited Seminar. Department of Water Resources Estuarine Ecology Meeting, Oakley, CA.*
 - 3) **Newcomer, M. E.***, J. Underwood, R. Harvey, T. Schram, M. Smedt, P. Bliznik, C. Ulrich, D. Seymour, M. Trotta, J. Jasperse, S. Hubbard. Advanced Simulation Capabilities to Explore Pre-and-Post Fire Water Quality after the 2017 Wine Country Fires. (2020). *Invited. Civil and Environmental Engineering Distinguished Alumni Seminar Series. UC Berkeley.*
 - 4) **Newcomer, M.***, N. Bouskill, U. Maier, D. Dwivedi, C. Steefel, K. Williams, R. Carroll, S. Hubbard. (2019). Advancing Understanding, Modeling, and Scaling of Ecological Control Points in Mountainous River Corridors. *Invited Talk. American Geophysical Union, Abstract #B42A-07.* [[abstract](#)]
 - 5) **Newcomer, M.***, Y. Cheng, V. Bhoot. (2019). Climate and Hydrological Controls on Coastal Harmful Algal Blooms. *Oral Presentation. American Geophysical Union, Abstract #OS11B-07.* [[abstract](#)]
 - 6) **Newcomer, M.*** (2019). Disturbance Regimes, Extreme Events, and Compounding Perturbations: Impacts to River Corridors and Watershed HydroBioGeoChemistry (HBGC). *Invited Plenary Talk. Watershed SFA Workshop, Pacific Northwest National Laboratory.*
 - 7) **Newcomer, M.***, N. Bouskill, H. Wainwright, B. Arora, T. Maavara, D. Dwivedi, E. Woodburn, K. Williams, R. Carroll, C. Steefel, H. Hubbard. (2019). Evolution and Mechanisms Driving Water Quality Trends across United States Watersheds. *Invited Keynote Oral Presentation. International Society of Environmental Geochemistry (ISEG), Peking University, Beijing, China.*
 - 8) **Newcomer, M.***, J. Underwood, R. Harvey, T. Schram, M. Smedt, P. Bliznik, C. Ulrich, D. Seymour, M. Trotta, J. Jasperse, S. Hubbard. (2019). Advanced Simulation Capabilities to Explore Pre-and-Post Fire Water Quality after the 2017 Wine Country Fires. *Poster Presentation. 2nd Groundwater Congress, Groundwater Resources Association, Sacramento.*
 - 9) **Newcomer, M.***, J. Underwood, R. Harvey, T. Schram, M. Smedt, P. Bliznik, C. Ulrich, D. Seymour, M. Trotta, J. Jasperse, S. Hubbard. (2019). Advanced Simulation Capabilities to Explore Pre-and-Post Fire Water Quality after the 2017 Wine Country Fires. *Oral Presentation. American Chemical Society (ACS).*
 - 10) **Newcomer, M.E.***, V. Bhoot, Y. Cheng. (2019). Exploration of climatic impacts on watershed water quality as a control on harmful algal blooms and water sustainability. *Oral Presentation. American Chemical Society (ACS).*
 - 11) **Newcomer, M.***, N. Bouskill, H. Wainwright, B. Arora, T. Maavara, D. Dwivedi, E. Woodburn, K. Williams, R. Carroll, C. Steefel, H. Hubbard. (2019). Evolution and Mechanisms Driving Water Quality Trends across United States Watersheds. *Poster Presentation. American Chemical Society (ACS).*
 - 12) **Newcomer, M.***. (2019). Advancing Integrated Groundwater -Surface Water Interaction and Biogeochemical Cycling Research in a Changing World. *Invited Research Seminar. Beijing Normal University, Beijing, China.*
 - 13) **Newcomer, M.***, N. Bouskill, H. Wainwright, B. Arora, T. Maavara, D. Dwivedi, E. Woodburn, K. Williams, R. Carroll, C. Steefel, H. Hubbard. (2019). Relationship between Water Quality Trends and Watershed Characteristics across the United States. *Oral Presentation. International Association of Hydrologic Sciences (IAHS).*
 - 14) **Newcomer, M.***, N. Bouskill, H. Wainwright, B. Arora, T. Maavara, D. Dwivedi, E. Woodburn, K. Williams, R. Carroll, C. Steefel, H. Hubbard. (2019). Relationship between Water Quality Trends and Watershed Characteristics across the United States. *Oral Presentation. 11th National Water Quality Monitoring Conference. II: Long-Term Trends in Stream Water Quality.* [[link](#)]
 - 15) **Newcomer, M.***, T. Schram, J.C. Underwood, R.W. Harvey, M. Smedt, P. Bliznik, C. Ulrich, D. Seymour, M. Trotta, J. Jasperse, S. Hubbard. (2018) Advanced Simulation Capabilities to Explore Pre-and-Post Fire Surface water-Groundwater Interactions after the 2017 California Wine-Country Fires. *Poster presentation. American Geophysical Union, Abstract #H23L-2107.* [[abstract](#)] [[news](#)]
 - 16) **Newcomer, M.***. (2018). Advancing Integrated Groundwater -Surface Water Interaction and Biogeochemical Cycling Research in a Changing World. Research Seminar. Lawrence Berkeley National Lab.

- 17) **Newcomer, M.***, U. Maier, D. Dwivedi, S. Hubbard, and C. Steefel. (2018). Oral presentation in Session 44: S24-5: Reactive Transport Modeling. Advancing Numerical Capabilities for Microbial and Biogeochemical Processes in Hyporheic Zones. Computational Methods in Water Resources (CMWR) Saint-Malo, France. [\[link\]](#)
- 18) **Newcomer, M.***, U. Maier, D. Dwivedi, S. Hubbard, and C. Steefel. (2018) Poster 62. Advancing Numerical Capabilities for Microbial and Biogeochemical Processes in Hyporheic Zones. Computational Methods in Water Resources (CMWR) Saint-Malo, France. [\[link\]](#)
- 19) **Newcomer, M. E.***, S.S. Hubbard, C. Ulrich. Climate and Hydrological Controls on Hyporheic Biogeochemical Cycling. (2018). Invited Alumni Lecture to Civil and Environmental Engineering Hydrology Class. *UC Berkeley*.
- 20) **Newcomer, M. E.***, S.S. Hubbard, C. Ulrich. Post-Fire Water Quality Sampling for Sonoma County California. (2018). Invited Distinguished Alumni Lecture. *San Francisco State University*.
- 21) **Newcomer, M. E.***, D. Dwivedi, J. Raberg, P.M. Fox, P.S. Nico, H.M. Wainwright, M. Conrad, M. Bill, N. Bouskill, K. Williams, S. Hubbard, and C. Steefel. Hyporheic Interfaces Serve as Ecological Control Points for Mountainous Landscape Biological Productivity. (2017). Oral presentation. *American Geophysical Union Conference (AGU)*, Abstract # H41N-08 [\[link\]](#)
- 22) **Newcomer, M. E.***, S.S. Hubbard, J.H. Fleckenstein, U. Maier, C. Schmidt, G. Laube, N. Chen, C. Ulrich, D. Dwivedi, C. Steefel, Y. Rubin. Hydrological and Climate Controls on Hyporheic Contributions to River Net Ecosystem Productivity. (2016). Invited Presentation. *American Geophysical Union Conference (AGU)*, Abstract # B31H-0573. [\[link\]](#)
- 23) **Newcomer, M. E.***, Hubbard, S. S.; Fleckenstein, J. H.; Schmidt, C.; Maier, U.; Thullner, M.; Ulrich, C.; Flipo, N.; Rubin, Y. Riverbed Bioclogging and the Effects on Infiltration and Carbon Flux under Climate Variability. (2015). Oral Presentation. *American Geophysical Union Conference (AGU)*, Abstract # B54B-04. [\[link\]](#) [\[pdf\]](#)
- 24) **Newcomer, M. E.***, Hubbard, S. S.; Fleckenstein, J. H.; Schmidt, C.; Maier, U.; Thullner, M.; Ulrich, C.; Rubin, Y. Feedbacks between Bioclogging and Infiltration in Losing River Systems. (2014). Poster. *American Geophysical Union Conference (AGU)*, Abstract #B31E-0055. [\[link\]](#)
- 25) **Newcomer, M. E.***, Hubbard, S. S.; Fleckenstein, J. H.; Schmidt, C.; Maier, U.; Thullner, M.; Ulrich, C.; Rubin, Y. Seasonal Dynamic Permeability Effects on the Transient Connection Status of a River. (2014). Oral presentation. International Water Association (IWA) Conference, San Francisco, 2014.
- 26) **Newcomer, M. E.***, Hubbard, S. S.; Fleckenstein, J. H.; Schmidt, C.; Maier, U.; Thullner, M.; Ulrich, C.; Rubin, Y. Dynamic Permeability and Clogging Processes of Riverbank Filtration Systems. (2013). Oral presentation. *American Geophysical Union Conference (AGU)*, Abstract #H24A-07. [\[link\]](#)
- 27) **Newcomer, M. E.***, Gurdak, J. J. Climate variability effects on urban recharge beneath low impact development. (2012). Oral presentation. *American Geophysical Union Conference (AGU)*, Abstract #H54F-06. [\[link\]](#)
- 28) **Newcomer, M. E.***, Gurdak, J. J. Quantifying Recharge Beneath Low Impact Development Under Current and Future Climate Variability. (2012). Oral Presentation. *Groundwater Resources Association Conference*, Rohnert Park, CA. [\[pdf\]](#)
- 29) **Newcomer, M. E.***, T. Brandt. Downscaling GRACE Satellite Data for Small-Scale Groundwater Analysis. (2012). Workshop and oral presentation. *Department of Water Resources Briefing*, Sacramento, CA.
- 30) **Newcomer, M. E.***, College of Science & Engineering Graduate Student Research Showcase (2012). Poster. Quantifying Recharge Beneath Low Impact Development Under Current and Future Climate Variability. *San Francisco State University*.
- 31) **Newcomer, M. E.***, A. Nguyen. Hyperspectral Mapping of the Invasive Species Pepperweed and Development of a Habitat Suitability Model (2011). Oral presentation. *American Geophysical Union Conference (AGU)*, NASA booth exhibit.
- 32) **Newcomer, M. E.***; Gurdak, J. J. Recharge beneath low-impact design rain gardens and the influence of El Niño Southern Oscillation on urban, coastal groundwater resources. (2011). Poster. *AGU Conference Abstract #H53J-1553*. [\[link\]](#)
- 33) **Newcomer, M. E.***, Assessment of Groundwater Storage in California's Central Valley using GRACE Data, a Hydrological Model, and *in-situ* Groundwater Levels. (2011). Oral presentation. *Northern California Geological Society*, Danville, CA. [\[pdf\]](#)

- 34) **Newcomer, M. E***, T. Brandt. Groundwater Storage in California's Central Valley. An Analysis using GRACE Data, a Hydrological Model, and *in-situ* Groundwater Levels. (2011). Oral presentation. *Groundwater Resources Association Conference (GRAC)*, Sacramento, CA. [\[pdf\]](#)
- 35) **Newcomer, M. E***, A. Kuss. Estimates of Groundwater Storage using GRACE Data, a Hydrological Model, and Groundwater Levels in California's Central Valley. (2011). Workshop and oral presentation. *Department of Water Resources Briefing*, Sacramento, CA.
- 36) **Newcomer, M. E***. Marsh Habitat Restoration and Sediment Deposition in the South San Francisco Bay. (2011). Oral presentation. *Bay Area Automated Mapping Conference*, San Francisco, CA. [\[link\]](#)
- 37) **Newcomer, M. E***. DEVELOP Program Strategic Planning Report. (2011). *Oral Briefing to NASA Headquarters*, Washington D.C.
- 38) **Newcomer, M. E***. Modeling Sediment Deposition for Predicting Marsh Habitat Development. (2010). Poster. *AGU Conference Abstract #OS31C-1439*. [\[link\]](#)
- 39) **Newcomer, M. E***. Estuarine Sediment Deposition: A GIS and Remote Sensing Analysis. (2010). Invited Lecture, *San Francisco State University*
- 40) **Newcomer, M. E***. Prototype Application of NASA Missions to Identify Patterns of Wetland Vegetation Development within the South San Francisco Bay Salt Ponds. (2010). Poster. *AGU Conference Abstract # EP31B-0742*. [\[link\]](#)
- 41) **Newcomer, M. E***. Identification of Bark Beetle Infestation in Sequoia National Park Using NASA Satellite Missions. (2010). Oral presentation. *ASPRS Conference*, San Diego, CA.
- 42) **Newcomer, M.***, Aqueous Geochemical Changes in Groundwater along Mechanically Stressed Igneous Rocks. (2010). Guest Presentation- Invited Session, *Livermore Valley Lithophiles*, Livermore, CA.
- 43) **Newcomer, M. E***. Utilizing NASA Satellite Missions to Identify Bark Beetle Infestation in Sequoia National Park. (2009). Poster. *AGU Conference Abstract #B33F-05*. [\[link\]](#)
- 44) **Newcomer, M.***, Geographic Information Systems and Remote Sensing Technology. (2009). Guest Lecture, Hydrogeology 475, *San Francisco State University*
- 45) **Newcomer, M.***, C. Gantenbein, D. Delgado, T. Wang, B. Schiffman. Burn Severity Assessment in the Okanogan-Wenatchee Forest Using NASA Satellite Missions. (2009). Oral presentation. *ASPRS Conference*, Baltimore Maryland.

Conference and Professional Presentations (Co-Author, *Presenting Author)

- 1) Hubbard, S*., H. Wainwright, B. Dafflon and **M. Newcomer**, Next Generation Watershed Characterization using Geophysics, Invited talk, Water Resource Sustainability Issues on Tropical Islands, Hawaii, Dec 2015.
- 2) Gurdak, J. J*., **Newcomer, M. E.**, Sklar, L. S., Nanus, L. Managed aquifer recharge with low impact development under a changing climate (Invited). (2013). *American Geophysical Union Conference (AGU)*, Abstract #H11F-1210. [\[link\]](#)
- 3) Floyd, B.*, Kuss, A. M., Brandt, W. T., Randall, J. N., Bourai, A., **Newcomer, M. E.**, Schmidt, C., Skiles, J. W. A comparison of groundwater storage using GRACE data, groundwater levels, and a hydrological model in California's Central Valley (Invited). (2011). Oral presentation given by B. Floyd. *AGU Conference Abstract #NS13A-07*. [\[link\]](#)
- 4) Ketron, T., Hsu, W., Kuss, A. M., Nguyen, A., Remar, A. C., **Newcomer, M. E.***, Fleming, E., Bebout, L., Bebout, B., Detweiler, A. M., Skiles, J. W. Hyperspectral Biofilm Classification Analysis for Carrying Capacity of Migratory Birds in the South Bay Salt Ponds. (2011). Poster. *AGU Conference Abstract #B13C-0575*. [\[link\]](#)
- 5) Ballard, M., **M. Newcomer***, J. Rudy, S. Lake, S. Sambasivam, A.W. Strawa, J.W. Skiles, and C. Schmidt. Understanding the Correlation of San Joaquin Valley Air Quality Monitoring with Aerosol Optical Thickness Satellite Measurements. (2008). Oral presentation. *ASPRS Conference*, Portland, Oregon.

Published Datasets

- 1) **Newcomer, M.**, Bouskill, N., Wainwright, H., Maavara, T., Arora, B., Woodburn, E., et al. (2020). Gap-filled water quality, Normalized Differenced Vegetation Index, total nitrogen (nitrate and ammonia) deposition, and land cover data trends for the Continental United States [Data set]. Environmental System Science Data Infrastructure for a Virtual Ecosystem; Watershed Function SFA. <https://doi.org/10.15485/1647366>
- 2) **Newcomer, M.**, Raberg, J., Dwivedi, D., Fox, P., Nico, P., Dong, W., & Steefel, C. (2020). Hyporheic, Floodplain, and Surface Water (on Floodplain and River) Geochemical Datasets, and Shapefiles on Meander C at the East River, Colorado [Data set]. Environmental System Science Data Infrastructure for a Virtual Ecosystem; Watershed Function SFA. <https://doi.org/10.15485/1647038>
- 3) Matheus Carnevali, P., Hobson, C., Geller-McGrath, D., Dong, W., Falco, N., Wainwright, H., **Newcomer, M.**, et al. (2020). Genome-resolved metagenomics and metatranscriptomics of microbial communities in three meander-bound floodplain soils along the East River, Colorado. [Data set]. Environmental System Science Data Infrastructure for a Virtual Ecosystem; Watershed Function SFA. <https://doi.org/10.15485/1631979>
- 4) Dwivedi, D., **Newcomer, M.** et al. (2019). Geochemical exports to river from the intra-meander hyporheic zone under transient hydrologic conditions, Water Resources Research: Dataset [Data set]. Watershed Functionality Scientific Focus Area. <https://doi.org/10.21952/WTR/1506940>
- 5) Stegen, J., Goldman, A., Blackburn, S., Chu, R., Danczak, R., Garayburu-Caruso, V., **Newcomer, M.**, et al. (2018). WHONDRS Surface Water Sampling for Metabolite Biogeography [Data set]. Environmental System Science Data Infrastructure for a Virtual Ecosystem; Worldwide Hydrobiogeochemistry Observation Network for Dynamic River Systems (WHONDRS). <https://doi.org/10.15485/1484811>
- 6) Newcomer, M.E., J. C. Underwood, T. Schram, P. Bliznik, D. A. Roth, T. I. Plowman, M. Smedt, R. W. Harvey, S. S. Hubbard, M. Trotta, D. Seymour, J. Jasperse, Water Quality of the Russian River Watershed After Sonoma and Napa County Fires: U.S. Geological Survey. (2018). (Dataset available at <https://doi.org/10.5066/F73B5ZF9>).

News & Media

- 1) DOE Direct Current Live Podcast at the AAAS meeting, Seattle (2020) [[link](#)][[mp3](#)]
 - 2) Berkeley Lab-CSUEB Internship Collaboration Is Changing Lives (2020) [[link](#)]
 - 3) Expert Panel: Bridging science and policy for improved wildfire resilience and healthy forests. National Council on Science and Environment. (2020). [[link](#)]
 - 4) Tiny Toxins: Tiny Toxins: How Algal Blooms Affect Coastal Systems Through a Complex Web of Interactions August 2019. [[link](#)]
 - 5) Expert Legislative Briefing on Environmental Impacts of Wildfire in California. [[press release](#)] [[video](#)]
 - 6) Poseidon Water Partners with Lawrence Berkeley National Laboratory on Algal Bloom Research. [[link](#)]
 - 7) Intro to Jupyter for Water Data Analysis: CA Big Data [Challenge](#). Video time 0:10 [[video](#)]. Binder [materials](#).
 - 8) Lab Hosts First Big Data study trip. BLEND Workshop. February 2018. [[link](#)]
 - 9) Research Becomes Reality in Study of Fire Impact on Sonoma Water Resources. October 2017. [[link](#)]
 - 10) DOE EESA 40th Anniversary Video (time 4:08) [[video](#)]
 - 11) Earth Scientist Women's Network ESWN Identify with A Scientist. June 2015. [[link](#)]
 - 12) Sensors Validate California Groundwater Management Techniques. August 2015. [[link](#)]
 - 13) Under low-impact development, groundwater rates much higher. Environmental Monitor. May 2014. [[link](#)]
 - 14) Earthzine: Improving Groundwater Storage Estimates in California. 2012 (time 1:58): [[link](#)] [[video](#)]
 - 15) Earthzine: Downscaling GRACE data in the Central Valley aquifer in California. 2012. [[link](#)]
 - 16) Earthzine: NASA Satellites Detect Changes in California's Central Valley Groundwater. 2011 [[link](#)] [[video](#)]
 - 17) Earthzine: Hyperspectral Biofilm Classification Analysis to Determine Carrying Capacity for Migratory Birds in the South Bay Salt Ponds. 2011 [[pdf](#)] [[video](#)]
 - 18) NASA Ames DEVELOP interns collaborate with the South Bay Salt Pond Restoration Project to monitor and study restoration efforts using NASA's satellites. 2010. [[pdf](#)]
 - 19) NASA Feature Article. NASA Ames Scientists Train the Next Generation of Earth Explorers. 2010: [[link](#)]
- Outreach videos available [here](#).

Teaching Experience

Stanford University Pre-Collegiate Institute: *Lecturer*

2015: Environmental Science Instructor. Directed all aspects of course preparation and implementation: lectures, code, assignments, exams, and final projects.

University of California, Berkeley: *Graduate Student Instructor*

2013-2014: Teaching assistant for an introductory level Hydrology course. Directed student projects, developed and taught 10 lectures to a 50 person class, mentored students one-on-one.

San Francisco State University: *Lab Technician-Hydrogeology Laboratory, Hydrogeology Research Group*

2010-2012: Conducted hydrogeology lab work including: building soil-moisture characteristic curves, sediment grain size analysis and measuring bulk density, demonstrated lab and field techniques to undergraduate students.

San Francisco State University: *Graduate Teaching Assistant*

2011-2012: Instructed an introductory Oceanography lab for undergraduate students. Responsible for directing field and laboratory activities and gave lectures to a 150 person class.

SETI Institute: *Research Assistant and Summer Instructor*

2009-2011 Analyzed the influences of stress on igneous rock for enhanced electro-corrosion experimentation. Applications for earthquake and water quality studies.

Community & Agency Service

Convener

- AGU (2020) session Chair for Biogeosciences 83811: Fire in the Environment: Pyrogenic Organic Matter Cycling and Environmental Impacts Across Watersheds
- AGU (2019) session Chair for Biogeosciences 83811: Fire in the Environment: Pyrogenic Organic Matter Cycling and Environmental Impacts Across Watersheds
- ISEG (2019) Session Co-Chair: Global Soil Carbon Cycles
- IAHS (2019) Early Career Session Co-Chair for “Advances in Groundwater Hydrology”
- IAHS (2019) Early Career Workshop-Session Chair for “R in Hydrology”
- AGU (2017) session Co-Chair for Hydrology H081: Linking dynamic hydrologic and biogeochemical processes in watershed systems

Panels

- Panel Discussion: Wildfire in the Environment (2020) National Conference for Science & Environment. [\[link\]](#)
- Expert Legislative Briefing on Environmental Impacts of Wildfire in California. (2019) [\[press release\]](#) [\[video\]](#)

Early Career

- Elected member of the International Association of Hydrological Sciences (IAHS) Early Career Committee (ECC) and U.S. representative of the International Commission on Groundwater (ICGW) (2018-2021) [\[link\]](#)
- Director of the LBNL “Get to know your Post-doc” Seminar Series. (2020)
- EESA CESD Division Council Early Career Representative (2018-Present)

Review Work

- Red Team Reviewer for SLAC SFA proposal (2020)
- Technical Advisory Committee for the EBMUD SGMA planning committee (2020-2022)
- Reviewer for 5 articles in 2017, 6 articles in 2018, 7 articles in 2019 spanning journals Water Resources Research, Hydrogeology, Water, Water Research, JGR Biogeosciences, Journal of Hydrology
- Invited reviewer for DOE’s SBR proposals (2017), TES proposals (2019)

Workshops

- PNNL Microbial Modeling Workshop: R in Hydrology (2020)

- AGU Early Career CZO Workshop: Utilizing R for Data Analysis (2019). AGU.
- IAHS Workshop on R in Hydrology (2019). Montreal Canada.
- Invited participant for the AI for Science DOE Townhall (2020). Oak Ridge.
- #CAWaterDataChallenge Jupyter Notebook Workshop (2018)
- Invited participant and writing team for DOE's Terrestrial Aquatic Interfaces TAI workshop (2016).

Leadership

- Co-leader for the Land-Water Interface Strategic Element at LBNL (2020)
- Successfully completed the LBNL Early Career Enrichment Program (ECEP) (2020)
- Co-led the development of the successful "River Corridor Processes" Component of the Watershed SFA (2019)
- Successfully completed the EESA SupER Leadership Training for incoming leaders (2019)

Mentoring

- Mentor for students within the LBNL-CSUEB (Cal State East Bay) Internship Program [\[link\]](#)
- Mentor for students within the DOE-SULI and CCI internship programs

Outreach

- San Jose Tech Museum Science Exhibit on Post-Fire Water, 2019
- BLEND Big Data Workshop: LBNL and El Cerrito High School. 2018. [\[link\]](#)
- UC Berkeley Resume Writing Workshop, 2014
- UC Berkeley Statement of Purpose Workshop, 2013
- American Society of Civil Engineers Career Seminar "If I knew then what I know now". 2013
- NASA Ames Girls Go Tech "When I Grow Up..." Career expo, 2011 [\[link\]](#)
- SETI Institute: Research Assistant, Electrical Conductivity of Igneous Rocks 2008-2012
- inGenius! Tutoring Learning Center, 2009-2011
- Women's Center Art Gallery, Assistant Curator, UC Santa Barbara, 2003-2004
- Hermanas Unidas Volunteer Activities, 2002-2005

Fellowships, Grants, and Scholarships

- LBNL Early Career LDRD research grant 2018-2020: Climate and Hydrological Controls on Coastal Algal Blooms [\[link\]](#)
- EESA Early Career Research Grant 2016-2019: Fiber-Optic Sensing of the Resazurin/Resorufin System
- Department of Energy Graduate Student Research Grant (DOE SCGSR) 2015-2016. [\[link\]](#)
- Sonoma County Water Agency Research Grant 2014-2015
- Roy G. Post Foundation Scholarship 2014. [\[link\]](#)
- Recipient of the Prestigious Jane Lewis Fellowship 2012-2014, UC Berkeley
- San Francisco State University Graduate Student Grant: 2006-2012
- Geological Society of America (GSA) Graduate Student Research Grant: 2011
- Recipient of the G.A. Harris Graduate Student Fellowship: 2011. [\[link\]](#)
- Groundwater Resources Association, Conference Scholarship: 2010, 2011, 2012
- Research Scholarship, Livermore Valley Lithophiles: 2009 and 2010
- UC Santa Barbara Study Abroad Scholarship: 2005
- Bank of America Joe Martin Scholarship: 2003-2006

Awards and Accomplishments

- NASA Group Achievement Award: August 2014
- Best Student Presentation Award. International Water Association Conference. September 2014. San Francisco.
- Water Resources Research Editor's Highlight. February 2014. [\[link\]](#)
- NASA's Applied Sciences DEVELOP National Program Commitment to Service Award: 2012
- San Francisco State University College of Science & Engineering Graduate Distinguished Achievement Award: May 2012
- Recipient of the NASA Group Achievement Award: July 2011
- NASA's Applied Sciences DEVELOP National Program Project Achievement Award: 2008-2012
- Earthzine Honorable Mention for Outstanding Video: 2012
- Dean's List, UC Santa Barbara: 2004
- High School Senior Class Vice-President: 2001-2002
- California Scholarship Federation Academic Achievement Award: 1998-2002
- National Society of Collegiate Scholars Academic Achievement and Member: 1998-present

Professional Memberships

- American Water Works Association: 2013-Present
- Association of Engineering Geologists: 2011- Present
- American Society of Civil Engineers: 2011- Present
- American Geophysical Union (AGU): 2009 - Present
- Geological Society of America (GSA): 2010 - Present
- American Society for Photogrammetry and Remote Sensing (ASPRS): 2007- 2012

Special Training & Skills

MIN3P, R, UNIX, GSSHA, Modflow, Hydrus-3D, PHREEQC, Matlab, ArcGIS 10, ERDAS Imagine, ENVI, Python, C++, Fortran, LabVIEW, SPSS.

Students and Post-docs

David Brian Rogers, Ved Bhoot, Brenda Delgadillo Moreno

Websites

LBNL EESA Profile

- <https://eesa.lbl.gov/profiles/michelle-newcomer/>

Google Scholar Profile

- <https://scholar.google.com/citations?user=h6NmRpEAAAAJ&hl=en&oi=ao>

LinkedIn

- <https://www.linkedin.com/in/michellenewcomer>

Blog

- <https://HydrologyLab.com/>

San Francisco State University:

- <http://tornado.sfsu.edu/News.html>
- <http://online.sfsu.edu/jgurdak/People.html>