Marc H Weber

Geographer

Curriculum Vitae
May, 2024

⚲ Corvallis, Oregon
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Employment

June 2008 - Present	**Geographer**	US Environmental Protection Agency

Corvallis, Oregon

➤ Provide geospatial support for the EPA National Aquatic Resource Surveys (NARS) and helping build national predictive models and maps of watershed integrity and aquatic condition

➤ Develop approaches primarily in Python and R, as well as using ArcGIS, to process landscape data for spatial designs and modeling, and to interact with the National Hydrography Dataset Plus (NHDPlus).

➤ Develop the spatial framework and geospatial analysis support for the national lakes, rivers and streams, wetlands, and coastal surveys.

➤ Develop natioanl scale geospatial products such as StreamCat and LakeCat - datasets of national scale watershed characteristics.

➤ Produce R packages such as StreamCatTools and spsurvey for applying data and methods to aquatic resource work

Aug 2020 - Sep 2023 **Water Resources Data Scientist**

Sep 2022 - Present **Hydrofabric Technical Director**   NOAA Office of Water Prediction

Remote

➤ Lead the development of foundational geospatial products essential to the Next Generation Water Modeling Framework.

➤ Foster collaboration with the USGS to construct federal software and data products crucial for advancing the NOAA and USGS Water Mission Areas.

➤ Collaborate closely with member universities of the CIROH (Cooperative Institute for Research to Operations in Hydrology) to facilitate the transition of research findings into operational hydrology practices.

➤ Direct a team dedicated to pioneering geospatial, machine learning, and cloud-based solutions tailored for open hydrologic science

Aug 2020 - Present **Senior Data Scientist / Lead Hydrofabric Developer**

2016 **Research Coordinator**

➤ Coordinate research activities and initiatives within the NOAA Summer Institute program.

➤ Facilitate collaboration between participants, mentors, and program organizers to ensure the smooth execution of research projects.

➤ Evaluate the effectiveness of research activities and contribute to the continuous improvement of the program.

Oct 2023 - Present **Graduate Faculty (Affiliate)**   University of Alabama

Remote

➤ Serve as member or co-chair on dissertation and thesis committees

Nov 2019 - Apr 2023 **Lead Data Scientist (Independent Contractor)**   Urban Flooding Open Knowledge Network

Remote

➤ Co-authored successful proposals to NSF and served as an advocate for the team in the initial C-ACCEL program

➤ Developed and designed a cost effective, cloud native, building level, flood forecasting system for the Continental United States.

Summer 2020, 2021 **Lecturer - Geography Department**   UC Santa Barbara

Santa Barbara, California

➤ Designed and taught the first geoinformatics course for UC Santa Barbara.

Amsterdam, Boulder, Tuscaloosa

➤ **Institute for Environmental Studies. Vrije Universiteit**, Amsterdam, Netherlands: June - July 2019; January - March 2018

➤ **Research Applications Laboratory. NCAR**, Boulder, Colorado: August - September 2018

➤ **NOAA National Water Center**. Tuscaloosa, Alabama: Summers of 2016, 2017

Education

2001　　**Portland, OR**　　　　　　　　　　　　　　　　　　　Portland State University

MS in Geography

➤ **Advisor**: Dr. Keith Hadley

➤ **Committee**: Barbara Brower, Andrew Fountain, Peter Frenzen, Robert Tinnin

➤ **Title**: Patterns in Forest Succession and Mortality Following Burial by Mudflow at Cedar Flats, Mount St. Helens, Washington

1988-1992　　**Eugene, OR**　　　　　　　　　　　　　　　　　University of Oregon

BA in English

➤ Robert D. Clark Honors College

➤ **Minor**: Environmental Studies

Publications

1. Lin, J., Compton, J., Sabo, R., Herlihy, A., Hill, R., Weber, M., Brooks, J., & . . . . (2024). The changing nitrogen landscape of united states streams: Declining deposition and increasing organic nitrogen. *PNAS Nexus*, *3 (1), pgad362*.

2. Dumelle, M., Kincaid, T., Olsen, A., & Weber, M. (2023). Spsurvey: Spatial sampling design and analysis in r. *Journal of Statistical Software*, *105 (3), 1*.

3. NA. (2023). Wetland flowpaths mediate nitrogen and phosphorus concentrations across the upper mississippi river basin. *JAWRA Journal of the American Water Resources Association*, *59 (5), 1162-1179*.

4. Leibowitz, S., Hill, R., Creed, I., Compton, J., Golden, H., Weber, M., & . . . . (2023). National hydrologic connectivity classification links wetlands with stream water quality. *Nature Water*, *1 (4), 370-380*.

5. Riato, L., Leibowitz, S., Weber, M., & Hill, R. (2023). A multiscale landscape approach for prioritizing river and stream protection and restoration actions. *Ecosphere*, *14 (1), e4350*.

6. NA. (2023). Comparing drivers of spatial variability in US lake and stream phosphorus concentrations. *Journal of Geophysical Research: Biogeosciences*, *128 (8), e2022JG007227*.

7. NA. (2022). Physical habitat in conterminous US streams and rivers, part 1: Geoclimatic controls and anthropogenic alteration. *Ecological Indicators*, *141, 109046*.

8. NA. (2022). Headwater streams and inland wetlands: Status and advancements of geospatial datasets and maps across the united states. *Earth-Science Reviews*, *235, 104230*.

9. NA. (2022). Natural and anthropogenic controls on lake water-level decline and evaporation-to-inflow ratio in the conterminous united states. *Limnology and Oceanography*, *67 (7), 1484-1501*.

10. Brooks, J., Compton, J., Lin, J., Herlihy, A., Nahlik, A., Rugh, W., & Weber, M. (2022). 15N of chironomidae: An index of nitrogen sources and processing within watersheds for national aquatic monitoring programs. *Science of The Total Environment*, *813, 151867*.

11. Lin, J., Compton, J., Hill, R., Herlihy, A., Sabo, R., Brooks, J., Weber, M., & . . . . (2021). Context is everything: Interacting inputs and landscape characteristics control stream nitrogen. *Environmental Science & Technology*, *55 (12), 7890-7899*.

12. NA. (2021). National framework for ranking lakes by potential for anthropogenic hydro-alteration. *Ecological Indicators*, *122, 107241*.

13. Benisty, H., Weber, M., Hernandez-Alias, X., Schaefer, M., & Serrano, L. (2020). Mutation bias within oncogene families is related to proliferation-specific codon usage. *Proceedings of the National Academy of Sciences*, *117 (48), 30848-30856*.

14. Fergus, C., Brooks, J., Kaufmann, P., Herlihy, A., Pollard, A., Weber, M., & . . . . (2020). Lake water levels and associated hydrologic characteristics in the conterminous US. *JAWRA Journal of the American Water Resources Association*, *56 (3), 450-471*.

15. Aho, K., Flotemersch, J., Leibowitz, S., Johnson, Z., Weber, M., & Hill, R. (2020). Adapting the index of watershed integrity for watershed managers in the western balkans region. *Environmental Management*, *65 (5), 602-617*.

16. Riato, L., Leibowitz, S., & Weber, M. (2020). The use of multiscale stressors with biological condition assessments: A framework to advance the assessment and management of streams. *Science of the Total Environment*, *737, 139699*.

17. Aho, K., Flotemersch, J., Leibowitz, S., LaCroix, M., & Weber, M. (2020). Applying the index of watershed integrity to the matanuska–susitna basin. *Arctic, Antarctic, and Alpine Research*, *52 (1), 435-449*.

18. Olsen, A., Kincaid, T., Kentula, M., & Weber, M. (2019). Survey design to assess condition of wetlands in the united states. *Environmental Monitoring and Assessment*, *191 (Suppl 1), 268*.

19. Kincaid, T., Olsen, A., & Weber, M. (2019). Spsurvey: Spatial survey design and analysis. R package version 4.1. 0. *Comprehensive R Archive Network*.

20. NA. (2019). The response of wetland quality indicators to human disturbance indicators across the united states. *Environmental Monitoring and Assessment*, *191, 1-21*.

21. Thornbrugh, D., Leibowitz, S., Hill, R., Weber, M., Johnson, Z., Olsen, A., & . . . . (2018). Mapping watershed integrity for the conterminous united states. *Ecological Indicators*, *85, 1133-1148*.

22. Hill, R., Weber, M., Debbout, R., Leibowitz, S., & Olsen, A. (2018). The lake-catchment (LakeCat) dataset: Characterizing landscape features for lake basins within the conterminous USA. *Freshwater Science*, *37 (2), 208-221*.

23. NA. (2018). Nitrogen inputs drive nitrogen concentrations in US streams and rivers during summer low flow conditions. *Science of the Total Environment*, *639, 1349-1359*.

24. Fox, E., Hill, R., Leibowitz, S., Olsen, A., Thornbrugh, D., & Weber, M. (2017). Assessing the accuracy and stability of variable selection methods for random forest modeling in ecology. *Environmental Monitoring and Assessment*, *189, 1-20*.

25. Hill, R., Fox, E., Leibowitz, S., Olsen, A., Thornbrugh, D., & Weber, M. (2017). Predictive mapping of the biotic condition of conterminous US rivers and streams. *Ecological Applications*, *27 (8), 2397-2415*.

26. Omernik, J., Griffith, G., Hughes, R., Glover, J., & Weber, M. (2017). How misapplication of the hydrologic unit framework diminishes the meaning of watersheds. *Environmental Management*, *60, 1-11*.

27. Hill, R., Fox, E., Leibowitz, S., Olsen, A., Thornbrugh, D., & Weber, M. (2017). EPA public access. *Ecol Appl*, *27 (8), 2397-2415*.

28. Hill, R., Weber, M., Leibowitz, S., Olsen, A., & Thornbrugh, D. (2016). The stream-catchment (StreamCat) dataset: A database of watershed metrics for the conterminous united states. *JAWRA Journal of the American Water Resources Association*, *52 (1), 120-128*.

29. Kincaid, T., Olsen, A., & Weber, M. (2016). Spsurvey: Spatial survey design and analysis. *R Package Version*, *3 (3)*.

30. Leibowitz, S., Comeleo, R., Wigington Jr, P., Weber, M., Sproles, E., & . . . . (2016). Hydrologic landscape characterization for the pacific northwest, USA. *JAWRA Journal of the American Water Resources Association*, *52 (2), 473-493*.

31. Omernik, J., Paulsen, S., Griffith, G., & Weber, M. (2016). Regional patterns of total nitrogen concentrations in the national rivers and streams assessment. *Journal of Soil and Water Conservation*, *71 (3), 167-181*.

32. Glover, J., Omernik, J., Hughes, R., Griffith, G., & Weber, M. (2016). Watersheds, ecoregions and hydrologic units: The appropriate use of each for research and environmental management decisions. *Headwaters to Estuaries: Advances in Watershed Science and Management*, *119*.

33. Xue, J., Zartarian, V., Mintz, B., Weber, M., Bailey, K., & Geller, A. (2015). Modeling tribal exposures to methyl mercury from fish consumption. *Science of the Total Environment*, *533, 102-109*.

34. Payton, Q., McManus, M., Weber, M., Olsen, A., & Kincaid, T. (2015). Micromap: A package for linked micromaps. *Journal of Statistical Software*, *63, 1-16*.

35. Brooks, J., Gibson, J., Birks, S., Weber, M., Rodecap, K., & Stoddard, J. (2014). Stable isotope estimates of evaporation: Inflow and water residence time for lakes across the united states as a tool for national lake water quality assessments. *Limnology and Oceanography*, *59 (6), 2150-2165*.

36. Payton, Q., Olsen, A., Weber, M., McManus, M., & Kincaid, T. (2014). Micromap: Linked micromap plots. *R Package Version*, *1*.

37. Symanzik, J., Dai, X., Weber, M., Payton, Q., & McManus, M. (2014). Linked micromap plots for south america–general design considerations and specific adjustments. *Revista Colombiana de Estadística*, *37 (2), 451-469*.

38. Symanzik, J., Carr, D., McManus, M., & Weber, M. (2014). Micromaps. *Wiley StatsRef: Statistics Reference Online*, *1-11*.

39. Peck, D., Olsen, A., Weber, M., Paulsen, S., Peterson, C., & Holdsworth, S. (2013). Survey design and extent estimates for the national lakes assessment. *Freshwater Science*, *32 (4), 1231-1245*.

40. Hughes, R., Kaufmann, P., & Weber, M. (2011). National and regional comparisons between strahler order and stream size. *Journal of the North American Benthological Society*, *30 (1), 103-121*.

41. Heyerdahl, E., Brown, P., Kitchen, S., & Weber, M. (2011). Multicentury fire and forest histories at 19 sites in utah and eastern nevada. *US Department of Agriculture*.

42. Brown, P., Heyerdahl, E., Kitchen, S., & Weber, M. (2008). Climate effects on historical fires (1630–1900) in utah. *International Journal of Wildland Fire*, *17 (1), 28-39*.

43. Weber, M., Hadley, K., Frenzen, P., & Franklin, J. (2006). Forest development following mudflow deposition, mount st. Helens, washington. *Canadian Journal of Forest Research*, *36 (2), 437-449*.

44. Gayton, D., Weber, M., Harrington, M., Heyerdahl, E., Sutherland, E., & . . . . (2006). Fire history of a western montana ponderosa pine grassland: A pilot study. *Indiana State University, Department of Geography, Geology, and Anthropology . . . .*

45. Frenzen, P., Hadley, K., Major, J., Weber, M., Franklin, J., Hardison, J., & . . . . (2005). Geomorphic change and vegetation development on the muddy river mudflow deposit. *Ecological Responses to the, 1980 eruption of Mount St. Helens, 75-91*.

46. Weber, M. (2001). Patterns in forest succession and mortality following burial by mudflow at cedar flats, mount st. Helens, washington. *Portland State University*.

Workshops

Awards

2024	US EPA Mason Hewitt Award for Excellence in GIS for StreamCat / LakeCa
2022	US EPA PESD Division Honor Award
2021	US EPA Spcial Service Award: Developing the data and Methods Enabling the Strategic Analysis of the Nation's Surface Waters
2019	US EPA PESD Division Honor Award
2018	US EPA PESD Division Honor Award
2016	US EPA ORD Bronze Medal
2015	US EPA Office of Water Achievement in Science & Technology Award
2015	US EPA Western Ecology Division Certificate of Recognition
2013	US EPA Western Ecology Division Certificate of Recognition
2012	US EPA PeerOvation Top Innovation Award
2012	US EPA Office of Water Bronze Medal
2010	US EPA Office of Water Bronze Medal
2010	US EPA ORD Exceptional Technical Assistance to Regions / Program Offices Award
2007	USFS LANDFIRE Program Appreciation Award
2005	USFS Certificate of Appreciation for Fire history fieldwork

Open Source Software

Author	**R package to work with the StreamCat API within R and access the full suite of StreamCat catchment and watershed scale metrics for all NHDPlusV2 stream reaches and catchments.**	StreamCatTools
Co-author	**spsurvey is an R package that implements a design-based approach to statistical inference, with a focus on spatial data.**	spsurvey
Contributor	**Manipulating hydrographic data with the NHDPlus data model.**	DOI-USGS/nhdplusTools