

ROSANA AGUILERA, PhD

Scripps Institution of Oceanography (UCSD) | La Jolla, CA | r1aguilerabecker@ucsd.edu

RECENT PROFESSIONAL EXPERIENCE

2017-Present

POSTDOCTORAL RESEARCHER

Scripps Institution of Oceanography | University of California San Diego (UCSD)

- California's coastal water quality under extreme precipitation events driven by atmospheric rivers (ARs). Air quality and wildfire impacts on human health in a changing world | Co-advisors: Dr. Alexander Gershunov and Dr. Tarik Benmarhnia

2015-2017

POSTDOCTORAL RESEARCHER

Marine Science Institute | University of California Santa Barbara (UCSB)

- Statistical analysis and modeling of hydrochemical data in relation to land use, hydroclimate and wildfire effects on nutrient and sediment fluxes from coastal watersheds - Santa Barbara Coastal Long Term Ecological Research Project (SBC LTER) | Advisor: Dr. John M. Melack

2010-2015

PREDOCTORAL RESEARCHER

Catalan Institute for Water Research (ICRA) | Girona, Spain | Co-advisors: Dr. Rafael Marcé and Dr. Sergi Sabater

- Modified the in-stream retention formulation in the USGS SPARROW model in order to incorporate biological nutrient uptake parameters.
- Analysis of multiple time-series using classical (frequency and trend analyses) and non-classical (Dynamic Factor Analysis, Maximal Information Coefficient) methodologies.
- Worked with geo-referenced spatial data using GIS tools, including basin model setup and model results visualization.

July-August 2013

VISITING PREDOCTORAL RESEARCHER

Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB) | Berlin, Germany

- Time-series decomposition and the effects of sampling resolution and data gaps using high-resolution data of Lake Müggelsee: Short-term Scientific Mission NETLAKE (Networking Lake Observatories in Europe) | Co-advisors: Dr. Rita Adrian and Dr. David M. Livingstone

EDUCATION

2010-2015

UNIVERSITAT DE GIRONA | Girona, Spain

Doctoral Program in Water Science and Technology

PhD Thesis: "Effects of land use and climate variability on the water quality of Mediterranean rivers: towards a regional vision of global change" – Cum Laude

Advisors: Dr. Rafael Marcé and Dr. Sergi Sabater

2007-2009

EUROAQUAE CONSORTIUM

Hydro-informatics and Water Management | Joint MSc Degree awarded by:

- University of Nice – Sophia Antipolis (UNS, France), Brandenburg University of Technology at Cottbus (BTUC, Germany), Budapest University of Technology and Economics (BME, Hungary), Newcastle University (NU, United Kingdom) and Technical University of Catalonia (UPC, Spain)

MSc Thesis: “Parameterization and Hysteresis Effects in Distributed Hydrological Modeling” – Mention Très Bien – Advisors: Dr. Juha Sarkkula and Dr. János Józsa

2006-2007 **UNIVERSIDAD NACIONAL DE ASUNCIÓN** | Asunción, Paraguay
Department of Geology, Graduate Specialization in Hydrogeology

2002-2005 **UNIVERSITY OF THE DISTRICT OF COLUMBIA** | Washington DC, USA
ASc in Water Quality and Marine Science
BSc in Environmental Science – Summa Cum Laude – GPA: 3.913

AWARDS, FELLOWSHIPS AND GRANTS

2016 Excellence in Reviewing | Biogeochemistry (Journal)
2016 Subsidiary Prize: Best Doctoral Thesis 2014-2015 | Iberian Association of Limnology (AIL)
2014 Student Travel Grant to attend the American Geophysical Union (AGU) Fall Meeting
2013 Short-Term Scientific Mission Grant awarded by EU COST Action (ES 1201) NETLAKE (Networking Lake Observatories in Europe)
2012-2015 Doctoral Fellowship awarded by the Catalan Government
2007-2009 Erasmus Mundus Master Scholarship awarded by the European Commission

TEACHING EXPERIENCE

2006-2007 **TEACHING ASSISTANT**
Department of Environmental Engineering | Universidad Nacional de Asunción, Paraguay
Contributed to overseeing labs, grading reports and guest lectured (40 students):

- Introduction to Environmental Engineering
- Botany
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2017-Present **GUEST LECTURER**
Scripps Institution of Oceanography | University of California San Diego (UCSD)
Climate and Health related courses at undergraduate and graduate levels

PUBLICATIONS

IN REVIEW

Aguilera R., Hansen K., Gershunov A., Ilango S.D., Sheridan P., Benmarhnia T. Spatio-temporal coherence between respiratory hospitalizations and wildfire smoke in San Diego County during the October 2007 firestorm. Submitted to American Journal of Epidemiology.

Aguilera R., Gershunov A., Ilango S.D., Guzman-Morales J., Benmarhnia T. Santa Ana winds of Southern California impact PM_{2.5} with and without smoke from wildfires. GeoHealth, in review.

Leibel S., Nguyen M., Brick W., Parker J., Ilango S., **Aguilera R.**, Gershunov A. and Benmarhnia T. (2019). Increase in Pediatric Respiratory Visits Associated with Santa Ana Wind-driven Wildfire and PM_{2.5} levels in San Diego County. Annals of the American Thoracic Society, in review.

PEER-REVIEWED

Aguilera R., Gershunov A., Benmarhnia T. (2019) Atmospheric rivers impact California's coastal water quality via extreme precipitation. *Science of the Total Environment*, 671:488-494.

Aguilera R., Melack J.M. (2018). Relationships among nutrient and sediment fluxes, hydrological variability, fire, and land cover in coastal California catchments. *Journal of Geophysical Research-Biogeosciences*, 123.

Goodridge B.M., Hanan E.J., **Aguilera R.**, Wetherley E.B., Chen Y.J., D'Antonio C.M., Melack J.M. (2018). Retention of Nitrogen Following Wildfire in a Chaparral Ecosystem. *Ecosystems*, 1-15.

Marcé R., von Schiller D., **Aguilera R.**, Martí E., Bernal S. (2018). Contribution of hydrologic opportunity and biogeochemical reactivity to the variability of nutrient retention in river networks. *Global Biogeochemical Cycles*, 32.

Aguilera R., Melack J.M. (2018). Concentration-discharge responses storm events in coastal California watersheds. *Water Resources Research*, 54.

Aguilera R., Livingstone D.M., Marcé R., Jennings E., Piera J., Adrian R. (2016). Using dynamic factor analysis to show how sampling resolution and data gaps affect the recognition of patterns in limnological time series. *Inland Waters*, 6(3): 284-294.

Aguilera R., Sabater S., Marcé R. (2016). A methodological framework for characterizing the spatiotemporal variability of river water-quality patterns using dynamic factor analysis. *Journal of Environmental Informatics*, 31(2), 97-110.

Aguilera R., Marcé R., Sabater S. (2015). Detection and attribution of global change effects on river nutrient dynamics in a large Mediterranean basin. *Biogeosciences* 12: 4085-4098.

Aguilera R., Marcé R., Sabater S. (2013). Modeling nutrient retention at the watershed scale: does small stream research apply to the whole river network? *Journal of Geophysical Research-Biogeosciences*, 118: 1-13.

Aguilera R., Marcé R., Sabater S. (2012). Linking in-stream nutrient flux to land use and inter-annual Hydrological variability at the watershed scale. *Science of the Total Environment*, 440: 72-81.

BOOK CHAPTERS | REPORTS | THESES

Aguilera R. Effects of land use and climate variability on the water quality of Mediterranean rivers: towards a regional vision of global change. Universitat de Girona. PhD Thesis, March 2015.

Aguilera R., Sabater S., Marcé R. (2012). In-Stream Nutrient Flux and Retention in Relation to Land Use in the Llobregat River Basin. In: *The Llobregat: The Story of a Polluted Mediterranean River*, S. Sabater et al. (eds), *The Handbook of Environmental Chemistry*, 21: 69-92.

Aguilera R. Parameterization and Hysteresis Effects in Distributed Hydrological Modelling. EUROQUAE Consortium, Budapest University of Technology and Economics, Hungary. MSc Thesis, August 2009.

Aguilera R. Mae Chaem Basin VMod 1km Grid Hydrological Modeling Report. Basin-wide Application and Calibration of the Mekong Watershed IWRM-tool (VMod model). Finnish Environment Institute and EIA Ltd., August 2009.

PRESENTATIONS

INVITED TALKS | DEPARTMENTAL SEMINARS

Aguilera R., Melack J.M. 'Concentration-Discharge Responses to Storm Events in Coastal California Watersheds'. American Geophysical Union Fall Meeting, Washington DC, 10-14 December 2018.

Aguilera R., Melack J.M, Goodridge B.M., Chen H., Meyerhof M. 'Spatio-temporal patterns of nutrient fluxes as A function of hydrologic variability, land cover and fires in SBC LTER catchments'. Santa Barbara Coastal Long Term Ecological Research Program, Annual Meeting, 18 November 2016.

Aguilera R. 'Water quality in relation to global change at the basin scale'. Paraguayan Scientific Society, Asunción, Paraguay, 22 June 2016.

Aguilera R. 'Effects of land use and climate variability on the water quality of Mediterranean rivers: towards a regional vision of global change'. Department of Ecology, University of Barcelona, Spain, 17 April 2015.

Aguilera R., Livingstone D.M, Marcé R., Sabater S., Adrian R. 'Detection and attribution of patterns in time-series using Dynamic Factor Analysis'. NETLAKE Management Committee/Working Groups Meeting, Mugla, Turkey, 21-23 January 2015.

Aguilera R., Livingstone D.M, Marcé R., and Adrian R. 'Freshwater time-series decomposition and the effects of sampling data resolution'. NETLAKE Management Committee/Working Groups Meeting, Girona, Spain, 21-23 January 2014.

ORAL CONTRIBUTIONS

Aguilera R., Gershunov A., Benmarhnia T. 'Atmospheric rivers and public health: observed links between extreme precipitation events and California's coastal water quality'. American Geophysical Union Fall Meeting, Washington DC, 10-14 December 2018.

Aguilera R., Marcé R., Sabater S. 'Linking in-stream nutrient flux and removal to land use and climate variability in the Llobregat River basin (NE Spain)'. Congress of the Iberian Association of Limnology (AIL) Guimarães, Portugal, 2-6 July 2012.

Aguilera R., Marcé R., Sabater S. 'Modeling nutrient loads and in-stream retention in basins under chronic human impact: lessons from the Llobregat River basin (NE Spain)'. 2nd SCARCE Annual Conference, Madrid, Spain, 27-29 November 2011.

Aguilera R., Marcé R., Sabater S. 'Modeling instream nutrient processes at the basin scale: Testing the Efficiency Loss hypothesis'. Symposium for European Freshwater Sciences (SEFS7), Girona, Spain, 27 June-1 July 2011.

POSTER CONTRIBUTIONS

Aguilera R., Melack J.M., Goodridge B.M. 'Spatio-temporal patterns of nutrient fluxes as a function of hydrologic variability, land cover and fires in coastal California catchments', American Geophysical Union Fall Meeting, San Francisco, 12-16 December 2016.

Aguilera R., Marcé R., Sabater S. 'Detection and attribution of regional land-use and climate change signatures in river nutrient time-series using Dynamic Factor Analysis'. American Geophysical Union Fall Meeting, San Francisco, 15-19 December 2014.

Aguilera R., Marcé R., Sabater S. 'Assessing the effects of global change on the spatio-temporal variability of nutrients in a Mediterranean basin'. Catalan Cluster for Water Research Symposium, Girona, 27 June 2014.

Aguilera R., Livingstone D.M., Marcé R., Sabater S., and Adrian R. 'Freshwater time-series decomposition and the effects of sampling data resolution'. Congress of the International Society of Limnology (SIL XXXII), Budapest, Hungary, 4-9 August 2013.

Aguilera R., Marcé R., Sabater S. 'Application of a Spatially Referenced Regression Model for the Estimation of Nutrient Sources Related to Land Uses in the Llobregat Basin (NE Spain)'. 1st SCARCE Annual Conference, Girona, Spain, 2-3 December 2010.

RECENT PROFESSIONAL SERVICE AND OUTREACH

Reviewer: Acta Biológica Colombiana, Biogeochemistry, Biogeosciences, Limnology and Oceanography, Neotropical Biodiversity, Global Biogeochemical Cycles, Fire

Volunteer: Gray Whales Count – Santa Barbara, CA (February-May 2017)

Membership: American Geophysical Union (AGU), 2014-Present