

Mauricio Zambrano-Bigiarini

April 2026

Francisco Salazar 1145

Temuco (Araucanía)

PO Box 54-D, Chile

☎ +56 45 259 2812

✉ mauricio.zambrano@gmail.com

📄 <https://hzambran.github.io>

<http://orcid.org/0000-0002-9536-643X>

*Civil Engineer, PhD in Environmental Engineering.
More than 20 years of experience in water resources*

Education

- 2007–2010 **PhD in Environmental Engineering**, *Doctoral School in Environmental Engineering, Faculty of Civil and Environmental Engineering, Università degli Studi di Trento, Trento, Italy.*
- 1992–1998 **Civil Engineer**, *Faculty of Engineering, University of Concepción, Concepción, Chile.*

Work experience

- Nov 2018 –present **Associate Professor**, *Department of Civil Engineering, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco (Araucanía), Chile.*
- 2023–2025 **Associate Researcher**, *Center for Climate and Resilience Research (CR2), Universidad de Chile, Santiago, Chile.*
- May 2015–2022 **Adjoint Researcher**, *Center for Climate and Resilience Research (CR2), Universidad de Chile, Santiago, Chile.*
- Mar 2021–2024 **Evaluation group member**, *ANID, Santiago, Chile.*
- Member of the Earth Sciences evaluation group of the National Research and Development Agency (ANID).
- 2015–Oct 2018 **Professor**, *Department of Civil Engineering, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco (Araucanía), Chile.*
- 2013–2014 **Assistant Professor**, *Department of Environmental Engineering, Faculty of Environmental Sciences and EULA-Chile Centre, University of Concepción, Concepción, Chile.*
- 2010–2013 **Postdoctoral Researcher**, *Water Resources Unit, Joint Research Centre (JRC), European Commission, Ispra, Italy, Project IES-2010-301010.*
"Improved calibration of flood simulation models and case study research in pilot river basins".
- 2007–2010 **Research Assistant**, *Workpackage COMPUTE, EU RTD FP6 Aquaterra project (<http://www.eu-aquaterra.de/>), Trento, Italy, Project 505428 (GOCE).*
- 2005–2006 **Project Engineer**, *Departamento de Conservación y Protección de los Recursos Hídricos, Dirección General de Aguas, Ministerio de Obras Públicas [Water Protection Department, Chilean Water Authority, Public Works Ministry], Santiago, Chile.*

- 2000–2005 **Project Engineer**, *Departamento de Estudios y Planificación, Dirección General de Aguas (D.G.A.), Ministerio de Obras Públicas [Studies and Planing Department, Chilean Water Authority, Public Works Ministry]*, Santiago, Chile.
- Mar–Dec 1999 **Project Engineer**, *University of Concepción*, Concepción, Chile.
Project "[Development of a hydrological model for surface water resources".

Teaching

- 2020-present **Graduate course as invited professor**, *AG010350: "Ecosystem Ecology" [in Spanish]*, Master's Program in Territorial Management of Natural Resources, Faculty of Agronomic Sciences, Universidad de Chile, Santiago, Chile.
- 2025-present **Graduate course as main professor**, *PCN250: "Hydrological Modelling" [in Spanish]*, Doctorate Program In Natural Resources Sciences, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2023-present **Undergraduate course as main professor**, *IIO-222: "Applied Programming" [in Spanish]*, Civil Engineering Degree, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2019-present **Undergraduate course as main professor**, *IIO-409: "Hydrological Modelling" [in Spanish]*, Civil Engineering Degree, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2017-present **Undergraduate course as main professor**, *IIO-352: "Hydrology" [in Spanish]*, Civil Engineering Degree, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2017-2020 **Undergraduate course as main professor**, *IIO-101: "Introduction to Civil Engineering" [in Spanish]*, Civil Engineering Degree, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2015-2016 **Undergraduate course as main professor**, *IIM-361: "Fluid mechanics" [in Spanish]*, Civil Engineering Degree, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2014 **Postgraduate courses as main professor**, *4204082: "Introduction to the statistical environment R for analysing ecological and environmental data" [in Spanish]*, Faculty of Environmental Sciences and EULA-Chile Centre, University of Concepción, Concepción, Chile.
- 2014 **Undergraduate courses as main professor**, *999035: Hydrology; 999102: "Introduction to the R statistical environment for analysing hydro-meteorological data" [in Spanish]*, Faculty of Environmental Sciences and EULA-Chile Centre, University of Concepción, Concepción, Chile.
- 2014 **Undergraduate courses as collaborator**, *999043: "Water resources management" [in Spanish]; 999075: "Environmental modelling" [in Spanish]; 999064: "Advanced hydrology" [in Spanish]*, Faculty of Environmental Sciences and EULA-Chile Centre, University of Concepción, Concepción, Chile.
- 30 Aug 2010 **Seminar UdeC**, *"On the Effects of Hydrological Uncertainty in Assessing the Impacts of Climate Change on Water Resources"*. Seminar for doctoral students of Civil Agricultural Engineering, Universidad de Concepción, Chillán, Chile.
- 2005 **Training on Hydrological Modelling for D.G.A.**, *Trainer of Hydrological Modelling (surface water) to the Regional Water Directorates in Chile, Regional D.G.A.s*, Chile.

PhD thesis

In progress **Gimeno Molina, Fernando**, *Unravelling the effect of native vegetation on hydrological soil properties and catchment's hydrological resilience to extreme events. **Supervisor.** Co-supervisor: Dr. Mauricio Galleguillos T., PhD Programme in Natural Resources Sciences, Universidad de La Frontera, Temuco, Chile.*

MSc thesis

2024-S2 **Nuñez Ibarra, Daniel**, *Evaluation of soil moisture estimated through gridded products in the central-southern zone of Chile [in Spanish]. **Co-supervisor.** Supervisor: Dr. Mauricio Galleguillos T., Master Programme in Territorial Management of Natural Resources. Graduate School, Faculty of Agricultural Sciences, Universidad de Chile, Santiago, Chile.*

2024-S2 **Marinao Rivas, Rodrigo**, *Impacts of global change on the hydrological regime and extreme events: case study in the Andean Trancura River Basin [in Spanish]. **Supervisor,** Master Programme in Engineering Sciences, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.*

2021-S1 **Vergara González, Valeria**, *Effect of the change in the composition and configuration of the landscape on the productivity of forest ecosystems, in a Mediterranean basin of Central Chile [in Spanish]. **Co-supervisor.** Supervisor: Dr. Mauricio Galleguillos T., Master Programme in Territorial Management of Natural Resources. Graduate School, Faculty of Agricultural Sciences, Universidad de Chile, Santiago, Chile.*

2017 **Hann, Hamish**, *Hydrological evaluation of satellite-based rainfall estimates for drought management in the Imperial River Basin, Chile. **Co-supervisor.** Supervisor: Dr. Lars Ribbe, Master Programme in Integrated Water Resources Management. Cologne University of Applied Sciences, Köln, Germany.*

2017 **McNamara, Ian**, *Drought risk management solutions using water allocation modelling for climate change and irrigation development scenarios within the data-scarce Imperial River Basin (Chile). **Co-supervisor.** Supervisor: Dr. Lars Ribbe, Master Programme in Integrated Water Resources Management. Cologne University of Applied Sciences, Köln, Germany.*

Undergraduate thesis

In progress **Garcés Figueroa, Héctor**, *Development of an early warning system for floods in critical basins of the Araucanía Region [in Spanish]. **Supervisor,** Work to obtain the professional title of Civil Engineer, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.*

In progress **Saldivia Mayorga, Marfa**, *Evaluation of bivariate bias correction methods to quantify the impact of climate change on hydrological processes in the Mapocho river basin in Los Almendros [in Spanish]. **Supervisor,** Work to obtain the professional title of Civil Engineer, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.*

2025-S1 **Muñoz Neira, Rocío**, *Operational monitoring of soil moisture anomalies for continental Chile [in Spanish]. **Supervisor,** Work to obtain the professional title of Civil Engineer, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.*

- 2020-S2 **Marinao Rivas, Rodrigo**, *Development of a surface hydrological model coupled to an underground model for the Lluta River Basin, Arica and Parinacota Region [in Spanish]*. **Supervisor**, Work to obtain the professional title of Civil Engineer, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2020-S2 **Burgos Victoriano, Bastián**, *Assessment of the impact of climate change on the streamflows of a subbasin of the Trancura River, based on high- and super-high-resolution global climate projections [in Spanish]*. **Supervisor**, Work to obtain the professional title of Civil Engineer, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2019-S2 **Soto Escobar, Cristóbal**, *Construction of Intensity-Duration-Frequency curves with high spatial resolution for the Central-South zone of Chile [in Spanish]*. **Supervisor**, Work to obtain the professional title of Civil Engineer, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2019-S2 **Henríquez Jara, Bastián**, *Proposal to update the Chilean regulatory framework for wastewater and rainwater management [in Spanish]*. **Supervisor**, Work to obtain the professional title of Civil Engineer, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2019-S2 **Chiguailaf Chiguailaf, Cristián**, *Creation of a prototype early warning system for floods on a daily scale for the Trancura River sub-basin in Curarrehue, La Araucanía region [in Spanish]*. **Supervisor**, Work to obtain the professional title of Civil Engineer, Faculty of Engineering and Sciences, Universidad de La Frontera, Temuco, Chile.
- 2017 **Puelma J., Cristóbal**, *Evaluation of the impacts of climate change and land cover in the streamflow of a pluvial basin [in Spanish]*. **Co-supervisor**. Supervisor: Dr. Mauricio Galleguillos T., Work to obtain the professional title of Natural Resources Engineer, Faculty of Agronomic Sciences, Universidad de Chile, Santiago, Chile.

Funded projects

- 2025-2029 **ANID-TA25I10030**, *"SICA: Integrated Climate and Water System in Chile"*, **Co-investigator**. Funded by: "ANID". IDeA I+D Tecnologías Avanzadas 2025., Chile.
- 2025-2026 **NASA 23-HMA23-0014**, *"TH2A-Perm: Assessing Permafrost Condition In High Mountain Asia And High Andes"*, **Collaborator**. Funded by: "NASA", USA.
- 2021-2025 **Fondecyt Regular 1212071**, *"The catchment's memory: understanding how hydrological extremes are modulated by antecedent soil moisture conditions in a warmer climate"*, **Principal investigator**. Funded by: "ANID", Chile.
- 2020-2023 **PCI NSFC 190018**, *"Management of global change impacts on hydrological extremes by coupling remote sensing data and an interdisciplinary modelling approach"*, **Principal investigator**. Funded by: "ANID-NSFC", Chile-China.
- 2021-2025 **Fondecyt Regular 1210932**, *"Improving forest water yield and productivity quantification at the catchment scale by mapping root depth and eco-physiological thresholds with remote sensing and water transfer modeling"*, **Co-I**. Funding agency: "ANID", Chile.
- 2023-2026 **Fondecyt Regular 1230792**, *"Triggers of Rainfall-Induced Landslides in volcanic soils Experiment: towards a fully understating of the water role in slope instability in the Southern Andes (TRILEX)"*, **Co-I**. Funded by: "ANID", Chile.

- 2023-2024 **AMSUD220008**, "*Programas regionales STIC-AMSUD, MATH-AMSUD y CLIMAT-AMSUD*", **Co-I**. Funding agency: "ANID". Concurso Redes, Estrategia y Conocimiento., Chile.
- 2022-2023 **ANID-Sequía FSEQ210001**, "*Drought and water security platform for catchment planning: historical evolution and future trajectories under global change*", **Co-investigador**. Financiado por: "ANID". Concurso Fondo de Investigación Estratégica en Sequía (Asignación Rápida) año 2021., Chile.
- 2015-2018 **Fondecyt Iniciación 11150861**, "*Understanding the relationship between the spatio-temporal characteristics of meteorological drought and the availability of water resources, by using satellite-based rainfall and snow-cover data. A case study in a data-scarce Andean Chilean catchment*", **Principal investigator**. Funding agency: "CONICYT", Chile.
- 2017-2021 **Fondecyt Regular 1171560**, "*Assessing spatio-temporal impacts of global change on water and biomass production processes at catchment scale: a synergistic approach based on remote sensing and coupled hydrological models to improve sustainable management of forest ecosystems*", **Co-I**. Funding agency: "CONICYT", Chile.
- 2016-2019 **Fondecyt Regular 1160656**, "*Hillslope water storage and runoff processes: linking climate variability and interannual storage*", **Co-I**. Funding agency: "CONICYT", Chile.

Articles

- Nuñez-Ibarra, D.; **Zambrano-Bigiarini, M.**; Galleguillos, M. (2026). From grid to ground: How well do gridded products represent soil moisture dynamics in natural ecosystems during precipitation events?. *Hydrology and Earth System Sciences*, 30, 1813–1847. doi:10.5194/hess-30-1813-2026.
- Marinao, R.; **Zambrano-Bigiarini, M.**; Baez-Villanueva, O.M. (2026). hydro-MOPSO: a flexible and model-independent multi-objective optimisation R package for environmental and hydrological models. *Environmental Modelling & Software*, 106851. doi:10.1016/j.envsoft.2025.106851.
- Soto-Escobar, C.; **Zambrano-Bigiarini, M.**; Tolorza, V., and Garreaud, R. (2026). Developing Intensity-Duration-Frequency (IDF) curves using sub-daily gridded and in situ datasets: characterising precipitation extremes in a drying climate. *Hydrology and Earth System Sciences*, 30, 91–117. doi:10.5194/hess-30-91-2026.
- Gimeno, F.; **Zambrano-Bigiarini, M.**; Alvarez-Garreton, C.; Galleguillos, M. (2025). Hydro-pedological clustering: improving the representation of low streamflows in a semi-distributed hydrological model. *Journal of Hydrology*, 134787. doi:10.1016/j.jhydrol.2025.134787.
- Garreaud, R.; Boisier, J. P.; Álvarez-Garreton, C.; Christie, D.; Carrasco-Escaff, T.; Vergara, I.; Chávez, R. O.; Aldunce, P.; Camus, P.; Suazo-Álvarez, M.; Masiokas, M.; Castro, G.; Muñoz, A., ; **Zambrano-Bigiarini, M.**; Fuster, R.; Godoy, L. (2025). Hyperdroughts in central Chile: Drivers, Impacts and Projections. *Hydrology and Earth System Sciences*, 29, 5347-5369. doi:10.5194/hess-29-5347-2025.
- Lema, F.; Mendoza, P. A.; Vásquez, N. A.; Mizukami, N.; **Zambrano-Bigiarini, M.**; Vargas, X. (2025). Technical note: What does the Standardized Streamflow Index actually reflect? Insights and implications for hydrological drought analysis. *Hydrology and Earth System Sciences*. doi:10.5194/hess-29-1981-2025.

- Tolorza, V.; Mohr, C.H.; **Zambrano-Bigiarini, M.**; Sotomayor, B.; Poblete-Caballero, D.; Carretier, S.; Galleguillos, M.; Seguel, O. (2024). Exotic tree plantations in the Chilean Coastal Range: Balancing effects of discrete disturbances, connectivity and a persistent drought on catchment erosion. *Earth Surface Dynamics* 12, 841–861. doi:10.5194/esurf-12-841-2024.
- Alvarez-Garreton, C.; Boisier, J.P.; Garreaud, R.; González, J.; Rondanelli, R.; Gayó, E.; **Zambrano-Bigiarini, M.** (2024). HESS Opinions: The unsustainable use of groundwater conceals a 'Day Zero'. *Hydrology and Earth System Sciences*. 28, 1605–1616, doi:10.5194/hess-28-1605-2024
- Baez-Villanueva, O.M.; **Zambrano-Bigiarini, M.**; Miralles, D.G.; Beck, H.E.; Siegmund, J.F.; Alvarez-Garreton, C.; Verbist, K.; Garreaud, R.; Boisier, J.P.; Galleguillos, M. (2024). On the timescale of drought indices for monitoring streamflow drought considering catchment hydrological regimes. *Hydrology and Earth System Sciences*. 28, 1415–1439, doi:10.5194/hess-28-1415-2024
- Aguayo, R.; León-Muñoz, J.; Aguayo, M.; Baez-Villanueva, O.M.; **Zambrano-Bigiarini, M.**; Fernández, A.; Jacques-Coper, M.(2023). PatagoniaMet: A multi-institutional effort for an open hydrometeorological dataset in Western Patagonia. *Scientific Data* 11(6). doi:10.1038/s41597-023-02828-2
- Díaz-Jara, A.; Manushevich, D.; Grau, A.; **Zambrano-Bigiarini, M.** (2023). Land Management Drifted. Land use scenario modeling of Trancura River Basin, Araucanía, Chile. *Land*, 13(2), 157. doi:10.3390/land13020157
- Kreibich; H.; Schröter; K.; Di Baldassarre; G.; Van Loon; A. F.; Mazzoleni; M.; Abeshu; G. W.; Agafonova; S.; AghaKouchak; A.; Aksoy; H.; Alvarez-Garreton; C.; Aznar; B.; Balkhi; L.; ... ; **Zambrano-Bigiarini, M.**; and Ward; P. J. (2023). Panta Rhei benchmark dataset: socio-hydrological data of paired events of floods and droughts. *Earth System Science Data*. 15, 2009–2023. doi:10.5194/essd-15-2009-2023
- Kreibich, Heidi; Van Loon, Anne F. ; Schröter, Kai; Ward, Philip J. ; Mazzoleni, Maurizio; Sairam, Nivedita; Abeshu, Guta Wakbulcho; Agafonova, Svetlana; AghaKouchak, Amir; Aksoy, Hafzullah; Alvarez-Garreton, Camila; ... ; **Zambrano-Bigiarini, M.**; Blöschl, Günter; Di Baldassarre, Giuliano (2022). The challenge of unprecedented floods and droughts in risk management. *Nature*. 608(7921), 80-86 doi:10.1038/s41586-022-04917-5
- Gimeno, F.; Galleguillos, M.; Manushevich, D.; **Zambrano-Bigiarini, M.** (2022). A coupled modeling approach to assess the effect of forest policies in water provision: A biophysical evaluation of a drought-prone rural catchment in south-central Chile. *Science of the Total Environment*. 154608. doi:10.1016/j.scitotenv.2022.154608
- Marinao-Rivas, R.; **Zambrano-Bigiarini, M.** (2021). Towards best default configuration settings for NMPISO in multi-objective optimization. In *2021 IEEE Latin American Conference on Computational Intelligence (LA-CCI)* 1-6. IEEE, doi:10.1109/LA-CCI48322.2021.9769844
- Baez-Villanueva, O.M.; **Zambrano-Bigiarini, M.**; Mendoza, P.A.; McNamara, I.; Beck, H.E.; Thurner, J.; Nauditt, A.; Ribbe, L.; Thinh, N.X. (2021). On the selection of precipitation products for the regionalisation of hydrological model parameters. *Hydrology and Earth System Sciences*. 25, 5805-5837, doi:10.5194/hess-25-5805-2021

- McNamara, I.; Baez-Villanueva, O.M.; Zomorodian, A.; Ayyad, S.; **Zambrano-Bigiarini, M.**; Zaroug, M. ; Mersha, A.; Nauditt, A.; Mbuliro, M.; Wamala, S.; Ribbe, L. (2021) How well do gridded precipitation and actual evapotranspiration products represent the key water balance components in the Nile Basin?. *Journal of Hydrology: Regional Studies*. 37, 100884. doi:10.1016/j.ejrh.2021.100884
- Galleguillos, M.; Gimeno, F.; Puelma, C.; **Zambrano-Bigiarini, M.**; Lara, A.; Rojas, M. (2021) Disentangling the effect of future land use strategies and climate change on streamflow in a Mediterranean catchment dominated by tree plantations. *Journal of Hydrology* 595, 126047. doi:10.1016/j.jhydrol.2021.126047
- McNamara, I.; Nauditt, A.; **Zambrano-Bigiarini, M.**; Ribbe, L.; Hann, H. (2020) Modeling water resources for planning irrigation development in drought-prone Southern Chile. *International Journal of Water Resources Development*. doi:10.1080/07900627.2020.1768828.
- Baez-Villanueva, O. M.; **Zambrano-Bigiarini, M.**; Beck, H.; McNamara, I.; Ribbe, L.; Nauditt, A.; Birkel, C.; Verbist, K.; Giraldo-Osorio, J.D.; Thinh, N.X. (2020) RF-MEP: a novel Random Forest method for merging gridded precipitation products and ground-based measurements. *Remote Sensing of Environment*, 239, 111610. doi:10.1016/j.rse.2019.111606.
- Birkel, C.; Moore, G.; **Zambrano-Bigiarini, M.** (2019) Hydrological Processes Special Issue Hydrological processes across climatic and geomorphological gradients of Latin America. *Hydrological Processes*. doi:10.1002/hyp.13648.
- Beck, H.; Wood, E.F.; McVicar, T.; **Zambrano-Bigiarini, M.**; Alvarez-Garreton, C.; Baez-Villanueva, O.; Sheffield, J.; Karger, D. (2019) Bias correction of global high-resolution precipitation climatologies using streamflow observations from 9372 catchments. *Journal of Climate*. 33(4), 1299-1315. doi:10.1175/JCLI-D-19-0332.1.
- Rivera, D.; Gutiérrez, K.; Valdivia, W.; **Zambrano-Bigiarini, M.** Godoy-Faúndez, A.; Farías, L. (2019) Validation of a simple pore water extraction device for volcanic soils. *Water*. 11(11), 2214. doi:10.3390/w11112214
- Abdelaziz, R.; Merkel, B. J.; **Zambrano-Bigiarini, M.**; Nair, S. (2019). Particle swarm optimization for the estimation of surface complexation constants with the geochemical model PHREEQC-3.1.2, *Geoscientific Model Development*. 12, 167-177. doi:10.5194/gmd-12-167-2019
- Alvarez-Garreton, C.; Mendoza, P. A.; Boisier, J. P.; Addor, N., Galleguillos, M.; **Zambrano-Bigiarini, M.**; Lara, A.; Puelma, C.; Cortes, G.; Garreaud, R.; McPhee, J.; and Ayala, A. (2018). The CAMELS-CL dataset: catchment attributes and meteorology for large sample studies - Chile dataset, *Hydrology and Earth System Sciences*. 22, 5817-5846. doi:/10.5194/hess-22-5817-2018.
- Baez-Villanueva, O. M.; **Zambrano-Bigiarini, M.**; Ribbe, L.; Nauditt, A.; Giraldo-Osorio, J.D.; Thinh, N.X. (2018). Temporal and spatial evaluation of satellite rainfall estimates over different regions in Latin-America, *Atmospheric Research*. 213, 34-50. doi:10.1016/j.atmosres.2018.05.011.
- Garreaud, R. D.; Alvarez-Garreton, C.; Barichivich, J.; Boisier, J. P.; Christie, D.; Galleguillos, M.; LeQuesne, C.; McPhee, J.; **Zambrano-Bigiarini, M.** (2017). The 2010-2015 megadrought in central Chile: impacts on regional hydroclimate and vegetation. *Hydrology and Earth System Sciences*, 21, 6307-6327, doi:10.5194/hess-21-6307-2017.

- **Zambrano-Bigiarini, M.**; Nauditt, A.; Birkel, C.; Verbist, K.; Ribbe, L. (2017). Temporal and spatial evaluation of satellite-based rainfall estimates across the complex topographical and climatic gradients of Chile. *Hydrology and Earth System Sciences*, 21, 1295-1320, doi:10.5194/hess-21-1295-2017.
- Bisselink B.; **Zambrano-Bigiarini, M.**; Burek P.; De Roo, A. (2016). Assessing the role of uncertain precipitation estimates on the robustness of hydrological model parameters under highly variable climate conditions. *Journal of Hydrology: Regional Studies*. 8, 112-129. doi:10.1016/j.ejrh.2016.09.003
- Torres-Salinas, R.; Azócar G.; Carrasco, N.; **Zambrano-Bigiarini, M.**, Costa, T.; Bolin, B. (2016). Forestry development, water scarcity, and the Mapuche protest for environmental justice in Chile. *Ambiente & Sociedad*. 19, 121-146. doi:10.1590/1809-4422ASOC150134R1V1912016.
- Toledo, C.; Muñoz, E.; **Zambrano-Bigiarini, M.** (2015). Comparison of stationary and dynamic conceptual models in a mountainous and data-sparse catchment in the south-central Chilean Andes. *Advances in Meteorology*, Article ID 526158. doi:10.1155/2015/526158.
- Abdelaziz, R.; **Zambrano-Bigiarini, M.** (2014). Particle Swarm Optimization for inverse modeling of solute transport in fractured gneiss aquifer. *Journal of Contaminant Hydrology*. 164, 285-294. doi:10.1016/j.jconhyd.2014.06.003.
- Thiemig, V.; Rojas, R.; **Zambrano-Bigiarini, M.**; De Roo, A. (2013). Hydrological Evaluation of Satellite-Based Rainfall Estimates over the Volta and Baro-Akobo Basin. *Journal of Hydrology*. 499, 324-338. doi:10.1016/j.jhydrol.2013.07.012.
- **Zambrano-Bigiarini, M.**, and Clerc, M.; Rojas, R. (2013). Standard Particle Swarm Optimisation 2011 at CEC-2013: A baseline for future PSO improvements. *Evolutionary Computation (CEC), 2013 IEEE Congress on*, 2337-2344. doi:10.1109/CEC.2013.6557848.
- **Zambrano-Bigiarini, M.**, and Rojas, R. (2013). A model-independent particle swarm optimization software for model calibration. *Environmental Modelling & Software*. 43, 5-25. doi:10.1016/j.envsoft.2013.01.004.
- Thiemig, V.; Rojas, R.; **Zambrano-Bigiarini, M.**, Levizzani, V.; De Roo, A. (2012). Validation of satellite-based precipitation products over sparsely-gauged African river basins. *Journal of Hydrometeorology*, 13, 1760-1783. doi:10.1175/JHM-D-12-032.1.

Books

- Alvarez-Garretón, C.; Boisier, J.P.; Blanco, G.; Billi, M.; Nicolas-Artero, C.; Maillet, A.; Aldunce, P.; Urrutia-Jalabert, R.; **Zambrano-Bigiarini M.**; Guevara, G.; Galleguillos, M.; Muñoz, A.; Christie, D.; Marinao, R.; Garreaud, R. (2023). *Seguridad Hídrica en Chile: Caracterización y Perspectivas de Futuro*. Centro de Ciencia del Clima y la Resiliencia CR2 (ANID/FONDAP/1522A0001), 72 pp. Available online at www.cr2.cl/seguridadhidrica
- Aldunce, P.; Araya, G.; Blanco, G.; Boisier, J.P.; Bozkurt, D.; Carmona, A.; Christie, D.; Farías, L.; Gallardo, L.; Galleguillos, M.; Garreaud, R.; González, M.; Herrera, P.; Huneeus, N.; Jiménez, D.; Lara, A.; Latoja, D.; Lillo, G.; Masotti, I.; Moraga, P.; Nahuelhual, L.; Paredes, P.; Ossandón, J.; Rojas, M.; Urquiza, A.; Yévenes, M.; **Zambrano, Mauricio** (2015). *Informe a la Nación La megasequia 2010-2015: Una lección para el futuro*. Centro de Ciencia del Clima y la Resiliencia CR2 (ANID/FONDAP/15110009)), 28 pp. Available online at <https://www.cr2.cl/megasequia/>

- Ntegeka, V.; Salamon, P.; Gomes, G.; Sint, H.; Lorini, V.; **Zambrano-Bigiarini M.**; Thielen, J. (2013). EFAS-Meteo a European daily high-resolution gridded meteorological data set for 1990-2011. Luxembourg: Publications Office of the European Union. DOI: 10.2788/51262. ISBN 978-92-79-35006-1 (pdf). ISSN: 1831-9424 (online).
- De Roo, A.; Bouraoui, F.; Burek, P.; Bisselink, B.; Vandecasteele, I.; Mubareka, S.; Salomon, P.; Pastori, M.; **Zambrano M.**; Thiemig, V.; Bianchi, A.; Lavalle, C. (2012). Current Water Resources in Europe and Africa - Matching water supply and water demand. Luxembourg: Publications Office of the European Union. DOI: 10.2788/16108 (print), 10.2788/16165 (PDF). ISBN 978-92-79-23341-8 (PDF). ISBN 978-92-79-23340-1 (print). ISSN 1018-5593 (print). ISSN 1831-9424 (online).

Books chapters

- **Zambrano-Bigiarini M.**, Baez-Villanueva O.M. (2018), Characterising meteorological droughts in data scarce regions using remote sensing estimates of precipitation, in *Extreme Hydroclimatic Events in a Changing Environment*, edited by V. Maggioni and C. Massari, pp. 221-246, Elsevier. ISBN: 9780128148990
- Little C., **Zambrano-Bigiarini M.**, Benítez S. and Rivera A. (2016), Aguas Continentales, in *Informe País: Estado del medio ambiente en Chile. Comparación 1999-2015*, edited by Centro de Análisis de Políticas Públicas, Instituto de Asuntos Públicos, Universidad de Chile, pp. 115-165, Santiago, Chile. ISBN: 978-956-19-0994-6
- **Zambrano-Bigiarini, M.**, B. Majone, A. Bellin, C. I. Bovolo, S. Blenkinsop, and H. J. Fowler (2011), Hydrological impacts of climate change on the Ebro River Basin, in *The Ebro River Basin, The Handbook of Environmental Chemistry, vol. 13*, edited by D. Barceló and M. Petrovic, pp. 47-75, Springer Berlin / Heidelberg. DOI:10.1007/698_2010_85.
- C. I. Bovolo, S. Blenkinsop, B. Majone, **M. Zambrano-Bigiarini**, H. J. Fowler, A. Bellin, A. Burton, D. Barceló, P. Grathwohl and J. A. C. Barth (2011), Climate change, water resources and pollution in the Ebro Basin: Towards an integrated approach, in *The Ebro River Basin, The Handbook of Environmental Chemistry, vol. 13*, Barceló and M. Petrovic (Eds.), pp. 295-329, Springer Berlin / Heidelberg, DOI:10.1007/698_2010_86.
- A. Bellin, B. Majone, **M. Zambrano-Bigiarini**, E. Bertuzzo, G. Botter, C. Bürger, A. Gutierrez, O. Kolditz, M. Marani, A. Perez-Garcia, A. Rinaldo, T. Vogel (2010), Compute - Modelling methods and strategies, in *Advanced Tools and Models to Improve River Basin Management in Europe in the Context of Global Change: Aquaterra*. Finkel, M.; Barth, J. A.; & Grathwohl, P. (Eds.), pp. 63-78. IWA Publishing (London, New York). ISBN13: 9781843393726. eISBN: 9781780401577.

International conferences

- Garcés-Figueroa, H.; **Zambrano-Bigiarini, M.** (2025). Ahead of the Flood: Medium-Range Hydrological Forecasting for Southern Chilean Catchments (oral presentation). Simposio Internacional Clima y Resiliencia: el futuro se hace presente, Santiago-Viña del Mar, Chile, 3-7 Nov 2025. Session HC2. ID 98
- Baez-Villanueva, O.; Tolorza, V.; **Zambrano-Bigiarini, M.**; Galleguillos, M.; Block, P. (2025). Understanding soil memory: how antecedent moisture modulates streamflow responses to precipitation on events (oral presentation). Simposio Internacional Clima y Resiliencia: el futuro se hace presente, Santiago-Viña del Mar, Chile, 3-7 Nov 2025. Session HC2. ID 115

- Muñoz Neira, R.; **Zambrano-Bigiarini, M.** (2025). Monitoreo operacional de las anomalías de humedad de suelo para Chile continental (poster presentation). Simposio Internacional Clima y Resiliencia: el futuro se hace presente, Santiago-Viña del Mar, Chile, 3-7 Nov 2025. Session HC2. ID 70
- Gimeno Molina, F.; **Zambrano-Bigiarini, M.**; Galleguillos, M.; Block, P. (2025). Soil mapping matters: Changes high streamflow simulations through spatial soil information (poster presentation). Simposio Internacional Clima y Resiliencia: el futuro se hace presente, Santiago-Viña del Mar, Chile, 3-7 Nov 2025. Session HC2. ID 132
- Figueiras, E.; **Zambrano-Bigiarini, M.**; Spennemann, Pablo C.; Galleguillos, M.; Salvia, M.; Baez Villanueva, Oscar M. (2025). Sequía a través del ciclo hidrológico: comprendiendo el tiempo de propagación a través de escalas temporales y paisajes del centro-sur de Chile (poster presentation). Simposio Internacional Clima y Resiliencia: el futuro se hace presente, Santiago-Viña del Mar, Chile, 3-7 Nov 2025. Session HC7. ID 229
- Torres, R.; Alvarez-Garreton, C.; Marinao, R.; **Zambrano-Bigiarini, M.**; Spennemann, Pablo C.; Galleguillos, M.; Salvia, M.; Baez Villanueva, Oscar M. (2025). Caracterización y clasificación de pozos de agua subterránea en Chile (poster presentation). Simposio Internacional Clima y Resiliencia: el futuro se hace presente, Santiago-Viña del Mar, Chile, 3-7 Nov 2025. Session HC2. ID 165
- **Zambrano-Bigiarini, M.**; Nuñez-Ibarra, D., and Galleguillos, M. (2025). How well do gridded products represent soil moisture signatures in natural ecosystems during precipitation events?. EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-13801, <https://doi.org/10.5194/egusphere-egu25-13801>. Abstract EGU24-21043.
- Garces-Figueroa, H.; **Zambrano-Bigiarini, M.**(2025). Development of a Flood Early Warning System for Critical Catchments in Southern Chile. EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-13525, <https://doi.org/10.5194/egusphere-egu25-13525>. Abstract EGU25-13525.
- **Zambrano-Bigiarini, M.**; Marinao Rivas, Rodrigo (2024). Mawün-NRT: A web platform for near real-time evaluation of gridded precipitation products during extreme precipitation events in Chile. Presented at AGU24 Annual Meeting, Washington D.C., 9-13 December 2024. <https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1760610>. Abstract H41S-0770.
- **Zambrano-Bigiarini, M.**; Gimeno, F.; Galleguillos, M.; Marinao, R. (2024). Evaluation of soil clustering techniques to characterise hydrological soil processes at the catchment scale with SWAT+. International SWAT Conference 2024, Strasbourg, France, 8-12 Jul 2024.
- **Zambrano-Bigiarini, M.**; Soto, C.; Tolorza, V. (2024). Spatially-distributed Intensity-Duration-Frequency (IDF) curves for Chile using sub-daily gridded datasets. EGU General Assembly 2024, Vienna, Austria, 14-19 Apr 2024, EGU24-21043, <https://doi.org/10.5194/egusphere-egu24-21043>. Abstract EGU24-21043.
- Gimeno, F.; **Zambrano-Bigiarini, M.**; Galleguillos, M.; Marinao, R. (2024). Evaluation of soil mapping methods for SWAT hydrological model through multi-objective calibration. EGU General Assembly 2024, Vienna, Austria, 14-19 Apr 2024, EGU24-12291, <https://doi.org/10.5194/egusphere-egu24-12291>. Abstract EGU24-12291.

- Baez-Villanueva, O. M.; **Zambrano-Bigiarini, M.**; Miralles, D.G.; Beck, H.E.; Siegmund, J.F.; Álvarez-Garretón, C.; Verbist, K.; Garreaud, R.; Boisier, J.P.; Galleguillos, M. (2023). On the temporal scale of meteorological, soil moisture, and snow drought indices to assess streamflow droughts over catchments with different hydrological regimes. Simposio Internacional Clima y Resiliencia en Tiempos de Cambio, Santiago-Viña del Mar, Chile, 4-7 Sep 2023.
- Soto, C.; **Zambrano-Bigiarini, M.**; Tolorza, V. (2023). Intensity, duration, and frequency of maximum rainfall in Chile using high-resolution gridded precipitation products. Simposio Internacional Clima y Resiliencia en Tiempos de Cambio, Santiago-Viña del Mar, Chile, 4-7 Sep 2023.
- Marinao, R.; **Zambrano-Bigiarini, M.**; (2023). Mawün: explorador de precipitaciones. Simposio Internacional Clima y Resiliencia en Tiempos de Cambio, Santiago-Viña del Mar, Chile, 4-7 Sep 2023.
- Saldivia, M.; **Zambrano-Bigiarini, M.**; Boisier, J.P.; Galleguillos, M.; Álvarez-Garretón, C.; Galleguillos, M.; Lagos-Zuñiga, M. (2023). Comparación de métodos de corrección de sesgo basados en mapeo de cuantiles en la simulación hidrológica de la cuenca nivo-pluvial Mapocho en los Almendros. Simposio Internacional Clima y Resiliencia en Tiempos de Cambio, Santiago-Viña del Mar, Chile, 4-7 Sep 2023.
- Nuñez, D.; Galleguillos, M.; **Zambrano-Bigiarini, M.**; (2023). Evaluación de la humedad de suelo estimada mediante productos grillados en la zona centro-sur de Chile. Simposio Internacional Clima y Resiliencia en Tiempos de Cambio, Santiago-Viña del Mar, Chile, 4-7 Sep 2023.
- Gimeno, F.; Marinao, R.; **Zambrano-Bigiarini, M.**; Galleguillos, M. (2023). Soil properties's maps and uncertainties in hydrological modeling. Simposio Internacional Clima y Resiliencia en Tiempos de Cambio, Santiago-Viña del Mar, Chile, 4-7 Sep 2023.
- Seguel, O.; Galleguillos, M.; **Zambrano-Bigiarini, M.**; Pfeiffer, M.; Casanova, G. (2023). Rol de los suelos de alta montaña en la reserva hidrológica de las cuencas. Simposio Internacional Clima y Resiliencia en Tiempos de Cambio, Santiago-Viña del Mar, Chile, 4-7 Sep 2023.
- Tolorza, V. ; Mohr, C.H. ; **Zambrano-Bigiarini, M.**; Carretier S.; Galleguillos, M. (2023). Discrete disturbances, connectivity and a persistent drought at the Purapel catchment. Simposio Internacional Clima y Resiliencia en Tiempos de Cambio, Santiago-Viña del Mar, Chile, 4-7 Sep 2023.
- **Zambrano-Bigiarini, M.**; Marinao, R. (2023). Multi-period and multi-variable calibration of SWAT+ using gridded input datasets and a novel R package. International SWAT Conference 2023, Aarhus, Denmark, 28-30 Jun 2023.
- Marinao, R.; **Zambrano-Bigiarini, M.** (2023). A new multi-objective calibration R package for SWAT and SWAT+ models. International SWAT Conference 2023, Aarhus, Denmark, 28-30 Jun 2023.
- **Zambrano-Bigiarini, M.**; Bernal Vallejos, S. (2023). A new software for spatio-temporal analysis of gridded data sources. EGU General Assembly 2023, Vienna, Austria, 24-28 Apr 2023, EGU23-16978, <https://doi.org/10.5194/egusphere-egu23-16978>. Abstract EGU23-16978.
- Marinao, R.; **Zambrano-Bigiarini, M.** (2023). Multi-period and multi-variable calibration of SWAT+ using gridded input datasets and a novel R package. EGU General Assembly 2023, Vienna, Austria, 24-28 Apr 2023, EGU23-16995, <https://doi.org/10.5194/egusphere-egu23-16995>. Abstract EGU23-16995.

- Baez Villanueva, O. M.; **Zambrano-Bigiarini, M.** (2023). Effective hydrological drought monitoring depending on the catchment's hydrological regime. EGU General Assembly 2023, Vienna, Austria, 24-28 Apr 2023, EGU23-16949, <https://doi.org/10.5194/egusphere-egu23-16949>. Abstract EGU23-16949.
- Lema, F.; Mendoza, P.; Vásquez, N.; Mizukami, N.; **Zambrano-Bigiarini, M.**; Vargas, X. (2023). Historical and projected drought characteristics across different hydrological regimes in Central Chile. EGU General Assembly 2023, Vienna, Austria, 24-28 Apr 2023, EGU23-9349, <https://doi.org/10.5194/egusphere-egu23-9349>. Abstract EGU23-9349.
- Kreibich, H. and the Flood and drought paired event community (2023). Panta Rhei benchmark dataset: socio-hydrological data of paired events of floods and droughts. EGU General Assembly 2023, Vienna, Austria, 24-28 Apr 2023, EGU23-4932, <https://doi.org/10.5194/egusphere-egu23-4932>. Abstract EGU23-4932.
- **Zambrano-Bigiarini, M.**; Bernal Vallejos, S. Dec 2022. An R package for efficient analysis of raster time series. Presented at 2022 AGU Fall Meeting, Chicago, IL, 12-16 Dec. <https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1189529>. Abstract H12P-0873.
- Marinao-Rivas, R.; **Zambrano-Bigiarini, M.** Dec 2022. hydroMOPSO: A versatile Particle Swarm Optimization R package for multi-objective calibration of environmental and hydrological models. Presented at 2022 AGU Fall Meeting, Chicago, IL, 12-16 Dec. <https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1189056>. Abstract H15M-0961.
- Baez-Villanueva, O. M.; **Zambrano-Bigiarini, M.**; Mendoza, P. A.; McNamara, I.; Beck, H. E.; Thurner, J.; Nauditt, A.; Ribbe, L.; Thinh, N. X. Apr 2022. On the selection of precipitation products for the regionalisation of hydrological model parameters. EGU General Assembly 2022, Vienna, Austria, 23-27 May 2022, <https://doi.org/10.5194/egusphere-egu22-10286>. Abstract EGU22-10286.
- Marinao-Rivas, R.; **Zambrano-Bigiarini, M.** Apr 2022. hydroMOPSO: A versatile Particle Swarm Optimization R package for multi-objective calibration of environmental and hydrological models. EGU General Assembly 2022, Vienna, Austria, 23-27 May 2022, <https://doi.org/10.5194/egusphere-egu22-9902>. Abstract EGU22-9902.
- Tolorza, V.; **Zambrano-Bigiarini, M.**; Mohr, C.; Sotomayor, B.; Poblete-Caballero, D.; Galleguillos, M. Apr 2022. Increasing sediment connectivity and decreasing water availability: the anthropogenic impacts of exotic tree plantations on a Mediterranean catchment in central Chile. EGU General Assembly 2022, Vienna, Austria, 23-27 May 2022, <https://doi.org/10.5194/egusphere-egu22-10839>. Abstract EGU22-10839.
- Grau-Neira, A.; Manushevich, D.; Galleguillos, M.; **Zambrano-Bigiarini, M.**; Marinao, R. Apr 2022. Assessment of water provision under different future land use scenarios in the Cauquenes Catchment, Chile. EGU General Assembly 2022, Vienna, Austria, 23-27 May 2022, <https://doi.org/10.5194/egusphere-egu22-8141>. Abstract EGU22-8141.
- Tolorza, V.; Poblete, D.; González, V.I.; **Zambrano-Bigiarini, M.**; Cabezas, J. Galleguillos, M.; Apr 2021. Fire-induced catchment erosion on a depleted soil system from GeoWEPP and RUSLE models, Santa Olga, Chile. (PICO presentation). EGU General Assembly 2021, online, 19-30 Apr 2021, EGU21-13140, <https://doi.org/10.5194/egusphere-egu21-13140>. Abstract EGU21-13140.

- Marinao, R.; **Zambrano-Bigiarini, M.**; March 2021. When low and high streamflows are in conflict: using NMPSO to provide a multi-objective compromise solution. Water Security and Climate Change (WSCC) conference 2021. Hanoi, Vietnam (virtual event), 1-4 March (oral presentation), Abstract 310.
- **Zambrano-Bigiarini, M.**; Soto, C.; Baez-Villanueva, O. M.; McNamara, I.; Ribbe, L.; May 2020. Spatially-distributed IDF curves for Center-Southern Chile using IMERG. (poster presentation). EGU General Assembly 2020. Wien, Austria. HS7.5 - Hydro-meteorological Extremes and Hazards: Vulnerability, Risk, Impacts and Mitigation:. Abstract EGU2020-21091.
- Alvarez-Garreton, C.D.; Beck, H.; Wood, E.F.; McVicar, T.; **Zambrano-Bigiarini, M.**; Baez-Villanueva, O.; Sheffield, J.; Karger, D.; May 2020. Bias correction of global high-resolution precipitation climatologies using streamflow observations from 9372 catchments.(PICO presentation). EGU General Assembly 2020. Wien, Austria. HS2.5.3 - Recent advancement in estimating global, continental and regional scale water balance components. Abstract EGU2020-10699.
- Baez-Villanueva, O. M.; McNamara, I.; **Zambrano-Bigiarini, M.**; Ribbe, L.; May 2020. Evaluation of precipitation and actual evaporation products over the Nile Basin. (poster presentation). EGU General Assembly 2020. Wien, Austria. HS2.1.5 - Advances in African Hydrology and Climate: Modelling, Water Management, Environmental and Food Security. Abstract EGU2020-11877.
- Beck, H.; McVicar, T.; **Zambrano-Bigiarini, M.**; Alvarez-Garreton, C.D.; Baez-Villanueva, O.; Sheffield, J.; Karger, D.; Wood, E.F.; December 2019. Bias correction of global high-resolution precipitation climatologies using streamflow observations from 9372 catchments. AGU Fall Meeting 2019. San Francisco, CA, 9-13 Dec (oral presentation). Session: H51V - Using Precipitation Data Sets and Quantifying Associated Uncertainties in Hydrometeorological and Climate Impact Applications, Abstract 586472.
- **Zambrano-Bigiarini, M.**; October 2019. On the impacts of Temperature to Chilean Droughts Using Ensemble Climate Projections. Water Security and Climate Change Conference 2019. San Luis de Potosí, México (oral presentation). Session: Novel Approaches to Assess and Cope with Droughts in Data Scarce Regions, Abstract 194.
- **Zambrano-Bigiarini, M.**; December 2018. Spatio-temporal evaluation of the latest Integrated Multi-satellite Retrievals for GPM over the different climates and complex topography of Chile. AGU Fall Meeting 2018. Washington D.C., USA (oral presentation). Session: H52C: Global Precipitation Measurement, Validation, and Applications II, Abstract 455831.
- **Zambrano-Bigiarini, M.**; Galleguillos, M.; Puelma, C.; Munro, J. November 2018. Using remote sensing to explore the relationship between the spatial characteristics of Chilean megadrought and wildfires. Proc. Joint conference Forests and Water 2018. Valdivia, Chile (oral presentation).
- **Zambrano-Bigiarini, M.** October 2018. Temporal and spatial evaluation of long-term satellite-based precipitation products across the complex topographical and climatic gradients of Chile. Proc. SPIE 10782, Remote Sensing and Modeling of the Atmosphere, Oceans, and Interactions VII, 1078202. DOI: 10.1117/12.2513645. Honolulu, USA. (oral presentation).
- **Zambrano-Bigiarini, M.**, Galleguillos, M., Garreaud, R., Puelma, C. and Jopia, A. April 2018. Using remote sensing estimates of precipitation and evapotranspiration to assess the spatial characteristics of Chilean megadrought. EGU General Assembly 2018. Wien, Austria. (oral presentation). Session HS4.4, Abstract 11460.

- Nauditt, A., **Zambrano-Bigiarini, M.**, Hann, H., Thurner, J., Ribbe, L. April 2018. Evaluating satellite-based rainfall estimates to support low flow modelling in data scarce Andean catchments at different latitudes of Chile. EGU General Assembly 2018. Wien, Austria. (poster presentation). Session HS4.4, Abstract 18702.
- Galleguillos, M., **Zambrano-Bigiarini, M.**, Puelma, C. April 2018. Assessment of water yield under global change scenarios in a Mediterranean rainfed watershed dominated by exotic tree plantations. EGU General Assembly 2018. Wien, Austria. (poster presentation). Session HS2.4.1, Abstract 12036.
- Alvarez-Garreton, C., Mendoza, P., Boisier, J.P., Galleguillos, M. **Zambrano-Bigiarini, M.**, Lara, A., Addor, N., Puelma, C., Cortes, G., Garreaud, R., McPhee, J. April 2018. The CAMELS-CL dataset: catchment attributes and meteorology for large sample studies – Chile dataset. EGU General Assembly 2018. Wien, Austria. Session HS1.10, Abstract 2374.
- **Zambrano-Bigiarini, M.**, L. Alfieri, G. Naumann, R. Garreaud. December 2017. Contribution of Temperature to Chilean Droughts Using Ensemble Climate Projections. AGU Fall Meeting 2017. New Orleans, USA (oral presentation). Session: H110, Abstract 268147. doi:10.5281/zenodo.1161271
- Baez Villanueva, O.M., **Zambrano-Bigiarini, M.**, Ribbe, L., Nauditt, A., Rebolledo Coy, M.A., Thinh, N.X., Bartz-Beielstein, T. December 2017. Temporal and spatial evaluation of satellite rainfall estimates over different regions in Latin-America. AGU Fall Meeting 2017. New Orleans, USA (oral presentation). Session: H103, Abstract 250312.
- **Zambrano-Bigiarini, M.**, Nauditt, A., Birkel, C., Verbist, K. and Ribbe, L., April 2017. Assessing the temporal and spatial performance of satellite-based rainfall estimates across the complex topographical and climatic gradients of Chile. EGU General Assembly 2017. Wien, Austria. (oral presentation), Abstract EGU2017-10425. doi:10.5281/zenodo.570146
- **Zambrano-Bigiarini, M.**, April 2017. Using R for analysing spatio-temporal datasets: a satellite-based precipitation case study. EGU General Assembly 2017. Wien, Austria. (PICO presentation), EGU2017-18343. doi:10.5281/zenodo.570145
- **Zambrano-Bigiarini, M.**, R. Garreaud. December 2016. Disentangling the contribution of precipitation and temperature to Chilean *megadrought* (2010-2015). AGU Fall Meeting 2016. San Francisco, USA. doi:10.5281/zenodo.224157.
- **Zambrano-Bigiarini, M.**. November 2015. Modelo SWAT 2012: Descripción, aplicaciones y un ejemplo en Chile. Simposio "Hidrología Andina para el Manejo de los Recursos Hídricos: Conceptos y Herramientas". Santiago, Chile (oral presentation). doi:10.5281/zenodo.34228.
- **Zambrano-Bigiarini, M.**. November 2015. Estimaciones satelitales de precipitación y otros datos públicos útiles para la modelación hidrológica. Simposio "Hidrología Andina para el Manejo de los Recursos Hídricos: Conceptos y Herramientas". Santiago, Chile (oral presentation). doi:10.5281/zenodo.34219.
- **Zambrano-Bigiarini, M.**. November 2014. Meteorological drought monitoring based on satellite rainfall estimates: A case study on the Andean Rapel River Basin (Chile). International Expert Symposium "Coping with Droughts". Santiago, Chile (oral presentation).
- **Zambrano-Bigiarini, M.**, Z. Zajace, P. Salamon. December 2013. Using R for the Calibration of a fully-distributed hydrological model at Continental Scale. AGU Fall Meeting 2013. San Francisco, USA.

- **Zambrano-Bigiarini, M.**, Z. Zajac, S. Tarantola, July 2013. Global sensitivity analysis for the calibration of a fully-distributed hydrological model. 7th International Conference on Sensitivity Analysis of Model Output, MASCOT-SAMO 2013. Nice, France.
- Thiemig, V., R. Rojas, **M. Zambrano-Bigiarini** and A. De Roo, April 2013. Hydrological Evaluation of Satellite-Based Precipitation Products over the Volta and Baro-Akobo Basin. EGU General Assembly 2013. Wien, Austria. (poster).
- Rojas, R., **Zambrano-Bigiarini, M.**, September 2012. hydroPSO: A model-independent R package for calibration of environmental models. hydroPredict 2012. Wien, Austria. (poster).
- **Zambrano-Bigiarini, M.**, Rojas, R., April 2012. hydroPSO: A Versatile Particle Swarm Optimisation R Package for Calibration of Environmental Models. EGU General Assembly 2012. Wien, Austria. (poster).
- **Zambrano-Bigiarini, M.**, Bellin, A., April 2012. Comparing Goodness-of-fit Measures for Calibration of Models Focused on Extreme Events. EGU General Assembly 2012. Wien, Austria. (poster).
- **Zambrano-Bigiarini, M.**, Majone, B., Bellin, A., Bovolo, C. I., Blenkinsop, S., Fowler, H.J., May 2010. Evaluating the impact of hydrological uncertainty in assessing the impact of climate change on water resources of the Ebro River Basin (Spain). EGU General Assembly 2010. Wien, Austria. (oral presentation).
- **Zambrano-Bigiarini, M.**, Bellin, A., Mayo 2010. R: a statistical environment for hydrological analysis. EGU General Assembly 2010. Wien, Austria. (oral presentation).
- **Zambrano-Bigiarini, M.**, Majone, B., Bellin, A., Bovolo, C. I., Blenkinsop, S. December 2009. Hydrological Impacts of Climate Change: A Case Study on the Ebro Basin (Spain). AGU Fall Meeting 2009. San Francisco, USA. (oral presentation).
- **Zambrano-Bigiarini M.**, 2009, R in Hydrological Modelling: Why we should try it?. Use R! 2009 Conference. July 2009. Rennes, France. (oral presentation).
- **Zambrano-Bigiarini M.**, Bellin A., Majone B., Bovolo, C.I., Blenkinsop, S., Fowler, H.J., Burton, A. March 2009. Hydrological Impact of Climate Change on the Ebro Basin: Attempting an Integrated approach at a Large Scale. Aquaterra Final Assembly. Tübingen, Germany (poster).
- **Zambrano-Bigiarini M.**, Bellin A. April 2008. Hydrological Impact of Climate Change on a Complex Basin: Ebro, Spain. Aquaterra General Assambly. Kracow, Poland. (oral presentation).

Technical reports and other presentations

- **Zambrano-Bigiarini, M.** (2025). Desafíos hídricos de la zona sur de Chile. Seminario "Hidrodesafíos para Chile 2025: Oportunidades y desafíos del sector sanitario, Santiago, Chile. 26 Nov 2025 (oral presentation). Zenodo. doi:10.5281/zenodo.17753658.
- **Zambrano-Bigiarini, M.** (2025). Hacia una Araucanía resiliente: Desafíos hídricos ante el cambio climático. III Seminario Regional de Cambio Climático, Temuco, Chile. 21 Nov 2025 (oral presentation). Zenodo. doi:10.5281/zenodo.17754214.
- Núñez, D.; Galleguillos, M.; **Zambrano-Bigiarini, M.** (2022). Evaluación de la humedad de suelo estimada mediante productos grillados en la zona centro-sur de Chile. XIV Congreso Nacional de la Ciencia del Suelo. Valdivia, Chile, 22-25 Nov.

- Soto Escobar, C.; **Zambrano-Bigiarini, M.** October 2021. Construcción de curvas IDF en alta resolución espacial para la zona Centro-Sur de Chile. XXV Congreso Chileno de Ingeniería Hidráulica. Santiago, Chile (oral presentation).
- Burgos Victoriano, B.; **Zambrano-Bigiarini, M.** October 2021. Evaluación del impacto del cambio climático en el caudal de salida de una subcuenca del río Trancura, en base a proyecciones climáticas globales de alta y super alta resolución. XXV Congreso Chileno de Ingeniería Hidráulica. Santiago, Chile (oral presentation).
- Marinao Rivas, R.; **Zambrano-Bigiarini, M.** October 2021. Impacto de una calibración multiobjetivo en la incerteza predictiva de una cuenca pluvio-nival. XXV Congreso Chileno de Ingeniería Hidráulica. Santiago, Chile (oral presentation).
- Munro Gormaz, J.; **Zambrano-Bigiarini, M.** October 2021. ¿Qué rol juega la geomorfología y los factores climatológicos en la propagación de sequía meteorológica a hidrológica? Análisis en Chile centro-sur durante el siglo XXI. XXV Congreso Chileno de Ingeniería Hidráulica. Santiago, Chile (oral presentation).
- Bernal Vallejos, S.; **Zambrano-Bigiarini, M.** October 2021. Análisis del comportamiento histórico de eventos extremos de precipitación y temperatura en Chile mediante el cálculo de índices CLIMDEX. XXV Congreso Chileno de Ingeniería Hidráulica. Santiago, Chile (oral presentation).
- Marinao Rivas, R.; **Zambrano-Bigiarini, M.** November 2020. Una metodología flexible y de código abierto para evaluar el desempeño de productos de precipitación en la simulación de caudales en la zona Centro-Sur de Chile. XXIV Congreso Chileno de Ingeniería Hidráulica. Santiago, Chile (oral presentation).
- **Zambrano-Bigiarini, M.** June 2019. Evaluación espacio-temporal de las estimaciones satelitales de precipitación IMERGv05-F sobre los diferentes climas y la compleja topografía de Chile. Workshop "*Gestión Eficiente del Recurso Hídrico, un desafío frente al Cambio Climático*". 28 Jun, Vallenar, Chile (oral presentation).
- **Zambrano-Bigiarini, M.**; Nistal, M. (2017). *Imperial River Basin - Challenges in a growing multi-cultural region* in Al-Saidi, Mohammad, Ribbe, Lars (Eds.) "*Nexus Outlook: assessing resource use challenges in the water, energy and food nexus*". Nexus Research Focus, TH-Koln, University of Applied Sciences
- **Zambrano-Bigiarini, M.** Marzo 2016. Recursos hídricos en Chile: desafíos actuales y futuros. Charla por el día del Agua. Universidad de La Frontera Temuco, Chile (presentación oral).
- **Zambrano-Bigiarini, M.** January 2016. Modelo SWAT 2012: Descripción, aplicaciones y un ejemplo en Chile. Estimaciones satelitales de precipitación y otros datos públicos útiles para análisis hidrológico. Escuela de Verano UC "Agua y agricultura, desafíos del futuro". Santiago, Chile (oral presentation).
- **Zambrano-Bigiarini, M.** Noviembre 2015. Modelo SWAT 2012: Descripción, aplicaciones y un ejemplo en Chile. International Symposium Hidrología Andina para el Manejo de los Recursos Hídricos: Conceptos y Herramientas. Santiago, Chile (presentación oral). doi:10.5281/zenodo.34228
- **Zambrano-Bigiarini, M.** Noviembre 2015. Estimaciones satelitales de precipitación y otros datos públicos útiles para la modelación hidrológica. International Symposium Hidrología Andina para el Manejo de los Recursos Hídricos: Conceptos y Herramientas. Santiago, Chile (presentación oral). doi:10.5281/zenodo.34219

- **Zambrano-Bigiarini, M.** Noviembre 2014. Meteorological drought monitoring based on satellite rainfall estimates: A case study on the Andean Rapel River Basin (Chile). International Expert Symposium Coping with Droughts. Santiago, Chile (presentación oral).
- **Zambrano-Bigiarini, M.** October 2014. Evaluación de los datos de precipitación TRMM 3B42.V7 en la Cuenca del Río Rapel, Chile. XIII Jornadas de Hidráulica. Concepción, Chile (oral presentation).
- **Zambrano-Bigiarini, M.** August 2014. hydroPSO: Un versátil optimizador global para la calibración de modelos hidrológicos y ambientales. XXVI Congreso Latinoamericano de Hidráulica (*Hidrolatam 2014*). Santiago, Chile (oral presentation, Session O-2.1, O-060. ID:521).
- **Zambrano-Bigiarini, M.** July 2014. Impactos de la sequía en un año "lluvioso". Escuela de Invierno Universidad de Concepción. Concepción, Chile (oral presentation).
- Zajac, Z., **Zambrano-Bigiarini M.**, Salomon P., Burek P., Gentile A., Bianchi A. 2013. Calibration of the LISFLOOD hydrological model for Europe. Calibration Round 2013. European Union 2013.
- De Roo A., Bouraoui F., Burek P., Bisselink B., Vandecasteele I., Mubareka S., Salomon P., Pastori M., **Zambrano M.**, Thiemig V., Bianchi A., Lavallo C. 2012. Current Water Resources in Europe and Africa - Matching water supply and water demand. European Union 2012. ISBN 978-92-79-23341-8 (PDF). DOI: 10.2788/16108 (print), 10.2788/16165 (PDF).
- **Zambrano-Bigiarini M.**, Majone B., Bellin A., Bovolo C. I., Blenkinsop S., 2009. Calibration of the hydrological model on the Ebro River basin, and interpretations of predictive climatic scenarios. EU FP6 Aquaterra deliverable C3.11.
- **Zambrano-Bigiarini M.**, Bellin A. 2008. GEOTRANSF applications to the Ebro River basin (analysis of data consistency and conceptual model). EU FP6 Aquaterra deliverable C3.5.
- **Zambrano-Bigiarini M.**, Bellin A., Majone B. 2007. Intermediate data collection for the entire Ebro River basin. EU FP6 Aquaterra deliverable C3.4.
- **Zambrano, M.**, Pagliero, L., Rojas, R. and Gangas. A. M. 2005. MAGIC: Modelación analítica, genérica e integrada de cuencas. Dirección General de Aguas. Reporte Técnico S.I.T. No 107, pp 178, Santiago, Chile.

Developer of web platforms

- Mawün Web platform for exploring the spatial and temporal distribution of different gridded precipitation products over Chile during the historical period 1961-2020. <https://mawun.cr2.cl/>.
- Mawün-NRT Web platform for exploring the spatial and temporal distribution of near real-time gridded precipitation products over Chile. <https://mawunnrt.cr2.cl/>.
- curvasIDF Web platform for exploring the spatial distribution of intensity-duration-frequency curves over Chile. <https://curvasidf.cl/>.
- Pulliko Web platform for exploring the spatial and temporal distribution of volumetric soil water content and standardised soil moisture drought indices over Chile. .

Developer of hydrological modelling software

- RFmerge R package implementing the Random Forest Merging Procedure (RF-MEP), which combines two or more satellite-based datasets (e.g., precipitation products, topography) with ground observations to produce a new dataset with improved spatio-temporal distribution of the target field. <https://cran.r-project.org/package=RFmerge>.
- hydroMOPSO State-of-the-art multi-objective Particle Swarm Optimiser (MOPSO), based on the algorithm developed by Lin et al. (2018), with a special focus on the calibration of environmental models. <https://cran.r-project.org/package=hydroMOPSO>.
- hydroPSO Global optimisation R package implementing a state-of-the-art version of the Particle Swarm Optimisation (PSO) algorithm (SPSO-2011 and SPSO-2007 capable), with a special focus on the calibration of environmental models. <https://cran.r-project.org/package=hydroPSO>.
- hydroTSM R package providing S3 functions for management, analysis, interpolation and plotting of time series used in hydrology and related environmental sciences. <https://cran.r-project.org/package=hydroTSM>.
- hydroGOF R package providing S3 functions implementing both statistical and graphical goodness-of-fit measures between observed and simulated values, mainly oriented to be used during the calibration, validation, and application of hydrological models. <https://cran.r-project.org/package=hydroGOF>.
- RcamelsCL R package to download and easy handling of the spatial and temporal data of the CAMELS-CL dataset <https://cran.r-project.org/package=RcamelsCL>.
- MAGIC Integrated river basin management model, used by the D.G.A. for the assessment and allocation of water resources, considering both the current availability and water rights previously granted.
- SIMED Lumped rainfall-runoff model used by the D.G.A. for simulating daily discharges from daily precipitation data.

Related coursework

- May-2016 **R Programming for Data Science**, *Johns Hopkins University*, Baltimore, U.S.A. (Fundamentals of scientific programming with the R statistical environment).
- May-2015 **The Data Scientist's Toolbox**, *Johns Hopkins University*, Baltimore, U.S.A. (Overview of the data, questions, and tools that data analysts and data scientists work with (R, GIT, Markdown)).
- Ago-2014 **Habilidades de Liderazgo Docente en el Aula Universitaria**, *Dirección de Docencia, Universidad de Concepción*, Concepción, Chile. (Training on how to improve teaching skills for effective learning of students)
- Apr-2013 **Communicating Science to the Public**, *Joint Research Centre (JRC), European Commission*, Ispra, Italy. (Training on how to communicate scientific results to the general public and the press.)
- Sep-2012 **Geostat 2012**, *Institute for Geoinformatics at the University of Münster (ifgi)*, Münster, Germany. (Training in spatial analysis, and spatiotemporal geostatistics using open-source software.)
- Jun-2008 **Climate Forcings and Climate Patterns**, *Istituto Veneto di Scienze, Lettere ed Arti*, Venice, Italy.
- May-Jul 2007 **Geostatistics**, *Dep. of Civil and Environmental Engineering, Università degli Studi di Trento*, Trento, Italy.

- Sep 2006 **Groundwater Management in Arid Countries**, *University of Böchum (Alemania) y Universidad de La Serena (Chile)*, La Serena, Chile.
- May 2006 **Modelación Numérica de Aguas Subterráneas**, *Dep. de Ciencias Físicas y Matemáticas, Universidad de Chile*, Santiago, Chile.
- Feb 2006 **Modelación Hidro-Geomorfológica del Territorio Integrada a SIG**, *Università degli Studi di Trento*, Trento, Italia.
- Sep 2004 **Applied Hydrogeology in Arid Zones**, *University of Böchum (Germany) y Universidad de La Serena (Chile)*, La Serena, Chile.
- May-2003 **Conceptos Básicos de Georreferencia y Aplicaciones de ArcView en la Gestión del Recurso Hídrico**, *DEP, DGA*, Santiago, Chile.
- Aug–Oct 2002 **"Diplomado en Contaminación de Aguas"**, *Faculty of Physical and Mathematical Sciences, Universidad de Chile*, Santiago, Chile.
- Nov–Dec 2002 **"Diplomado en Gestión Ambiental"**, *Faculty of Physical and Mathematical Sciences, Universidad de Chile*, Santiago, Chile.

Languages

Spanish	Mother tongue	
English	Excellent	<i>C1 (Common European Framework of Reference, CEF)</i>
Italiano	Proficient	<i>B2 (Common European Framework of Reference, CEF)</i>

Awards

- **JRC IES Excellence Award**, category: Support to EU Policy 2011. Given to the EFAS team in 2011.
- **Edgar Pino**. Given by the Department of Civil Engineering of the University of Concepción to the best degree thesis of the department in 1998.

Mauricio Zambrano-Bigiarini