CURRICULUM VITAE

I. PERSONAL INFORMATION

Name	:	Cristóbal Javier Soto Escobar
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II. INTERESTS

- Analysis of extreme precipitation events in the context of changing climate.
- Application of gridded datasets (e.g. precipitation, temperature, evapotranspiration) in hydrological studies.
- Integrated modeling of surface and groundwater systems through coupled hydrological models.

III. EDUCATION

2023: Diploma in Hydrology and Climate Change Impacts. Universidad Adolfo Ibáñez, Santiago, Chile (16 SCT).

2014 - 2020 Civil Engineer. Universidad de la Frontera, Temuco, Chile. Achieved highest grade in thesis project: "Construction of High-Resolution Spatial Intensity-Duration-Frequency Curves in Central-Southern Chile," January 2020.

IV. WORK EXPERIENCE

2020 – Present: ICASS Spa Consulting Firm, Chile
Consulting Engineer specializing in hydrological and hydraulic projects and studies, with a focus on the hydrological cycle, earth sciences, and water resource management for urban and productive areas. Proficient in integrated modeling of surface and groundwater systems.

Contributed to the development of Strategic Water Resource Management Plans, in collaboration with the Water Agency, for the following basins:

- Maipo Basin:
  - Access link: https://snia.mop.gob.cl/repositoriodga/handle/20.500.13000/125473
- Coastal Basins between Maipo and Rapel:
  - Access link: https://snia.mop.gob.cl/repositoriodga/handle/20.500.13000/125826
- Lluta and Pampa Basins:
  - Access link: https://snia.mop.gob.cl/repositoriodga/handle/20.500.13000/125586
  - Access link: https://snia.mop.gob.cl/repositoriodga/handle/20.500.13000/125587
- Quebrada de la Concordia Basin:
  - Access link: https://snia.mop.gob.cl/repositoriodga/handle/20.500.13000/126255

Developed potable water and water management projects for private companies, including designing distribution networks for industrial sites and exploring new sources for rural potable water systems.

Developed the MODFLOW hydrogeological numerical model for the Barahona Tailings Dam at Codelco's El Teniente mine, focusing on the assessment of hydrological aspects related to a tailings removal project.

Provided technical advisory services on process and water resource management for Minera Los Pelambres.

Currently leading integrated modeling efforts for the Strategic Water Resource Plan in the Maipo Basin and surrounding areas

2022: ANID Project 11190864
Led a research study on the evolution of precipitation intensities, utilizing high-resolution satellite products and applying non-stationary probabilistic analysis. This research was conducted as part of ANID Project 11190864, under the supervision of Ph.D. Violeta Tolorza.

2020: Universidad de la Frontera
Collaborated as web developer on ANID/UFRO - NSF Project 190018, creating interactive, responsive website (chi2.ufro.cl) with maps, graphs, and tables to enhance data comprehension.

2020: Universidad de Chile
Updated CAMELS-CL platform, improving graphical elements and interface functionality. Additionally, modified internal data management and created a Docker version of the platform for hosting on dedicated servers: camels.cr2.cl.

2020: Universidad Austral de Chile
Contributed to FONDAP Project 15110009, assisting in the research titled "Streamflow Response to Native Forest Restoration in Former Eucalyptus Plantations in South-Central Chile" (Lara, A. et al.). DOI: 10.1002/hyp.14270

2019: Rural Potable Water Unit – Direction of hydraulic projects
Completed Internship II as assistant to Inspector Stefany Díaz, conducting technical inspections for APR contract in Quintrilpe, Vilcún, and Santa Juana Los Acacios.

2016 – 2017: Southern Andes Volcanological Observatory (SERNAGEOMIN)
Worked as Primary Analyst focused on volcanic activity monitoring from Osorno Volcano to Hudson Volcano.

V. ACADEMIC EXPERIENCE

2019: Teaching assistant for the Engineering Project course, Department of Civil Engineering.
2018: Teaching assistant for Reinforced Concrete II course, Department of Civil Engineering.
2018: Teaching assistant for Hydrology course, Department of Civil Engineering.
2016: Teaching assistant for Surveying Elements course, Department of Civil Engineering.
2016: Teaching assistant for Concrete Technologies course, Department of Civil Engineering.

VI. SCHOLARSHIPS

2023: Fulbright-ANID BIO Scholarship. Funding for doctoral studies in the United States starting in 2026.
2015 - 2019: Higher Education Tuition-Free Scholarship.
2014: Bicentenario Scholarship. Higher education funding

VII. COURSES

2021: Completed the course "Integrated Surface and Groundwater Modeling: Approaches and Case Studies Using WEAP-MODFLOW," CEAZA.

VIII. CONFERENCES AND PUBLICATIONS

Soto-Escobar, C., Zambrano-Bigiarini, M., Tolorza, V., and Garreaud, R.: Gridded Intensity-Duration-Frequency (IDF) curves: understanding precipitation extremes in a drying climate, EGUsphere [preprint], https://doi.org/10.5194/egusphere-2025-621, 2025.

Zambrano-Bigiarini, M., Soto, C., and Tolorza, V.: 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, 2024.

Soto C., Tolorza V., Zambrano M. Duración y Frecuencia de precipitaciones máximas en Chile utilizando productos grillados de precipitación de alta resolución espacial. XVI Congreso Geológico Chile: Nuevos desafíos para un territorio en evolución. Nov 2023. DOI: 10.5281/zenodo.10340229

Soto C., Tolorza V., Zambrano M. Duración y Frecuencia de precipitaciones máximas en Chile utilizando productos grillados de precipitación de alta resolución espacial. Simposio Internacional: Clima y Resiliencia en Tiempo de Cambio. Sep 2023. DOI: 10.5281/zenodo.8327125

Sanzana, P., Vargas, M., Muñoz, M., Soto, C., Gironas, J., and Braud, I. Artificial recharge effects in water balance of a peri-urban semi-arid catchment: a case study in an Andean aquifer using WEAP-MODFLOW. EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-10479. https://doi.org/10.5194/egusphere-egu22-10479, 2022.

Soto C., Zambrano M.: Construcción de curvas Intensidad-Duración-Frecuencia, de alta resolución espacial para la zona Centro-Sur de Chile. XXV Congreso chileno de ingeniería hidráulica. SOCHID, 2021.

Zambrano M., Soto C., Baez O.: "Spatially-distributed IDF curves for Center-Southern Chile using IMERG." EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-21091. https://doi.org/10.5194/egusphere-egu2020-21091, 2020

IX. TECHNICAL SKILLS

Proficient in hydrological and hydraulic modeling using software such as HEC-HMS, SWAT+, WEAP, TUWmodel EPANET and MODFLOW.

Experienced in programming, data processing, and visualization using the R statistical environment.

Developed platforms integrating multiple data sources from study areas, enhancing communication and performance in large teams. Examples include:

- **Coastal Basins between Maipo and Rapel:** https://icass.shinyapps.io/CCMaipoRapel/
- **Quebrada de la Concordia Basin:** https://icass.shinyapps.io/shiny_Concordia/
- **Research Study Basins Information:** https://chi2.ufro.cl/Datos/

Worked on the development of pro bono platforms to contribute to community knowledge and advance innovation, such as:

- **National Basin Information:** https://csoto.shinyapps.io/KO-Explorador/
- **Araucanía Region Information:** https://kimunko.ufro.cl/
- **IDF Curve Results from Thesis Project:** https://ingenieriacivil-ufro.shinyapps.io/CurvasIDFChile/

X. LANGUAGES

English: Intermediate Level (B2).
Spanish: Native language.

XI. REFERENCES

PhD. Mauricio Zambrano-Bigiarini
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