Francisco **Zambrano Bigiarini**

Associate Professor

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Education

Universidad de Concepción — *Chile*

Doctor in Agricultural Engineering mention Water Resources — *2013-2017*

- Dissertation title: 'Agricultural drought in Chile: from the assessment toward prediction using satellite data'

Universidad de Concepción — *Chile*

Agricultural Civil Engineer — *2000-2006*

- Thesis title: 'Efecto de la aplicacion diferencial de agua y fertilizante sobre la produccion y calidad de la vid cv. Carmenere'

Projects

Fondecyt Regular N°1210526 — *2020*

Multivariate drought monitor system: biophysical modelling, remote sensing and hydroclimatic information for drought analyisis and forecasting in agriculture — *Co-Investigator*

Fondecyt Iniciación N°11190360 — *2019*

The impact of weather variability on wheat and maize production: an improved early warning model for agricultural drought — *Principal Investigator*

Fondef Idea I+D 2021 (under review) — *2021*

Sistema Satelital para la Optimización de Riego (SatOri) — *Principal Investigator*

Fondequip Mediano 2021 (under review) — *2021*

UAV con sensor hiperespectral de rango completo (400-2500 nm) para la evaluación de los cambios en la dinámica vegetacional y geológica — *Principal Investigator*

Selected publications

1. Zambrano, F. (2021). Four decades of satellite data for agricultural drought monitoring throughout the growing season in Central Chile. In *Drought*. CRC Press, (In press, forthcoming).
2. Zambrano, F. (2021). Comprehensive assessment of drought in central Central Chile's ecosystem using vegetation, precipitation, and evapotranspiration satellite data. *Remote Sensing, (Forthcoming 2021)*.
3. Jopia, A., Zambrano, F., Pérez-Martínez, W., Vidal-Páez, P., Molina, J., & Mardones, F. de la H. (2020). Time-series of vegetation indices (VNIR/SWIR) derived from sentinel-2 (A/B) to assess turgor pressure in Kiwifruit. *ISPRS International Journal of Geo-Information*, *9*(11), 641. https://doi.org/10.3390/ijgi9110641
4. Zambrano, F., Vrieling, A., Nelson, A., Meroni, M., & Tadesse, T. (2018). Prediction of drought-induced reduction of agricultural productivity in Chile from MODIS, rainfall estimates, and climate oscillation indices. *Remote Sensing of Environment*, *219*, 15–30. https://doi.org/10.1016/j.rse.2018.10.006
5. Zambrano, F., Wardlow, B., Tadesse, T., Lillo-Saavedra, M., & Lagos, O. (2017). Evaluating satellite-derived long-term historical precipitation datasets for drought monitoring in Chile. *Atmospheric Research*, *186*, 26–42. https://doi.org/10.1016/j.atmosres.2016.11.006
6. Zambrano, F., Lillo-Saavedra, M., Verbist, K., & Lagos, O. (2016). Sixteen years of agricultural drought assessment of the biobío region in chile using a 250 m resolution vegetation condition index (VCI). *Remote Sensing*, *8*(6), 1–20. https://doi.org/10.3390/rs8060530

Research experience

Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente — *Enschede, The Netherlands*

Agricultural drought prediction — *Sep. 2016 - Dec. 2016*

- We used time-series of satellite dataset MODIS and CHIRPS 2.0 for 2000-2018
- The aim was the prediction of agricultural drought over the 90
- Manuscript published in the journal Remote Sensing of Environment (RSE)

Center for Advanced Land Management Information Technologies (CALMIT), University of Nebraska — *Lincoln, NE, USA*

Satellite dataset for meteorological drought — *Jan. 2016 - Jul. 2016*

- We used time series of satellite estimates for precipitation
- The aim was to evaluate the performance of those dataset over Chile
- Manuscript published in the journal Atmospheric Research (ATMOS)

Agricultural Research Institute (INIA) — *CRI Quilamapu, Chillán*

Consultant — *Apr. 2012 - Mar. 2015*

- I worked in drought monitoring using satellite and in-situ climatic data
- I proposed, derived and assess an agricultural drought index to be applied in Chile for agricutural drought monitoring
- The assessment of the index over the Bio-Bio Region in Chile was published on June 2016 in the Remote Sensing Journal

Journals Reviewer

Reviews (#)	Journal	*Impact Factor*
29	Remote Sensing	*4.848*
5	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	*3.784*
5	Journal of Hydrology	*5.722*
5	Remote Sensing of Environment	*10.164*
4	IEEE Access	*3.367*
4	ISPRS International Journal of Geo-Information	*2.899*
2	Atmospheric Research	*5.369*
2	Science of the Total Environment	*7.963*

Journal Editor

Remote Sensing	New Insights into Ecosystem Monitoring Using Geospatial Techniques	*2021*

Teaching experience

University Tutoring

2020 S2	**METE133**: Geoestatistics (Magister en Teledetección, Universidad Mayor)
2020 S1	**METE132**: Introduction to spatial analysis with R (Magister en Teledetección, Universidad Mayor)
2019-2021	**AGRE1001**: Geographic Information Systems (GIS) (Escuela de Agronomía, Universidad Mayor)

Technical skills

R – Matlab – Python – C++	*Programming Languages*
HTML, LaTeX, Markdown, RMarkdown	*Markup Languages*
QGIS	*GIS*
PostgreSQL – SQL	*Database*
Git – Github	*Version Control*
Docker – Google Cloud	*Cloud*

Language

Native Spanish speaker and proficient in English