

# Alfonso Fernández

## CURRICULUM VITA

Mountain Environments | Climate Change | Cryosphere  
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 Research group website: <http://mountains.udec.cl>

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## EDUCATION

- Ph.D. **The Ohio State University, Columbus, Ohio, USA, 2014**  
*Waning and waxing of mountain glaciers in South America: a modeling approach over multiple spatial and temporal scales*  
 Committee: Dr. Bryan Mark (adviser), Dr. David Bromwich, Dr. Michael Durand, Dr. Jialin Lin, and Dr. Lonnie Thompson.
- M.Sc. **Universidad Austral de Chile, Valdivia, Chile, 2009**  
*Patterns and Controls in the distribution of Chilean glaciers: the memory of the landscape*  
 Adviser: Dr. Mario Pino.
- Bs. **Universidad de Chile, Santiago, Chile, 2001**  
 Professional license in 2003.

## ACADEMIC APPOINTMENTS

- 2022 - to date: **Director (Chair)**, Programa Ciencia Interdisciplinaria para las Montañas de los Andes del Sur (CIMASur), Universidad de Concepción.
- 2022 - to date: **Full Professor**, Universidad de Concepción, Chile, Department of Geography.
- 2016 - 2022: **Associate Professor**, Universidad de Concepción, Chile, Department of Geography.
- 2015 - 2016: **Assistant Professor**, Universidad de Concepción, Chile, Department of Geography.
- 2014 - 2015: **Postdoctoral Researcher** and **Research Associate**, The Ohio State University, USA, Byrd Polar and Climate Research Center.
- 2010 - 2014: **Graduate Research Associate**, The Ohio State University, USA, Byrd Polar and Climate Research Center & Department of Geography.
- 2007 - 2010: **Instructor Professor** (equivalent to lecturer), Universidad de Concepción, Chile, Department of Geography.
- 2006 - 2007: **Adjunct Professor** (equivalent to lecturer), Universidad de Playa Ancha de Ciencias de la Educación, Chile, Division of Geography.
- 2000 - 2002: **Teaching and Research Assistant**, Universidad de Chile, Chile, Department of Geography.

## COURTESY ACADEMIC APPOINTMENTS

- 2020 - present: **Affiliated Faculty**, University of Texas at San Antonio, USA, Department of Earth and Planetary Sciences & NASA-MIRO Center for Advanced Measurements in Extreme Environments (CAMEE).

## AWARDS AND HONORS

- 2024: **Gordon Research Conference on Climate Engineering**: Addressing Key Process and Impacts of Earth System Response to Solar Radiation Modification. Invited Speaker (Invitation-only conference: <https://www.grc.org/climate-engineering-conference/2024/>)
- 2023-2025: **Alexander von Humboldt Foundation**: Humboldt Research Fellowship for experienced researchers. Host institution: Friedrich-Alexander-Universität Erlangen-Nürnberg
- 2022: **Nature, Google & O'Reilly**: Sci-Foo Camp, X (ex-Google) complex, Palo Alto, CA, USA. (Invitation-only conference)
- 2021: **Universidad de Concepción**: University-wide prize for scholarship and teaching.
- 2019: **National Geographic Society**: Water Tower Convening, invited as expert on Mountain topics by the Life at the Extremes program (20 world's experts invited), January, National Geographic Headquarters, Washington, D.C.
- 2016: **World Meteorological Organization - CORDEX program**: Early-career scholarship for attending the International Conference on Regional Climate-CORDEX, Stockholm, Sweden.
- 2014: **E. Willard and Ruby S. Miller** fellowship for best academic achievement. Department of Geography. The Ohio State University.
- 2013: **T.R Lakshmanan and Lata R. Chatterjee** Graduate Scholar in Geography. Department of Geography. The Ohio State University.
- 2012: **The Fenburr Travel Scholarship** Department of Geography The Ohio State University.
- 2010: **Best graduate** award. College of Sciences. Universidad Austral de Chile.
- 2009: **Chile government fellowship** for Graduate Studies in the United States.

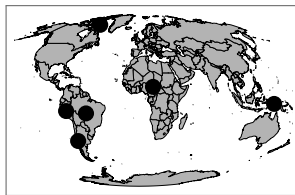
## RESEARCH EXPERIENCE

## TOPICS

Glacier-Climatic interactions  
 Water resources  
 Hydroclimatic changes and modeling  
 Coupled human and natural systems  
 Mountain Geography  
 Geomorphology

## LOCATIONS

Tropical Andes  
 Subtropical Andes  
 Sub-Sahara Africa  
 Amazon Basin  
 Papua New Guinea  
 Pan-Arctic



## WEB PROFILES

Google Scholar: <https://goo.gl/Q96ael>  
 ORCID: <https://goo.gl/OIK42k>  
 CONICYT: <https://goo.gl/NM6wOP>  
 LinkedIn: <https://goo.gl/zlwPAe>  
 ResearchGate: <https://goo.gl/ME1Klr>  
 Mendeley: <https://goo.gl/YsKOC4>  
 Twitter: <https://goo.gl/FFYyHG>

## GRANTS

- 2023 - 2025: **PI:** DEGREES Modelling fund (Degrees initiative and The World Academy of Sciences), Andean glacier-climatic interactions under solar radiation modification geoengineering [SRMG] (USD \$57,120).  
**Role:** Coordination, climatic analysis, glacier modeling.
- CO-I:** FONDECYT-Regular call: Modeling mountain streamflow and hydroclimate-elevation feedbacks in the Andean Araucania of Chile.  
**Role:** Climatic analysis.
- 2022 - 2024: **Director (Chair):** Programa Ciencia Interdisciplinaria para las Montañas de los Andes del Sur (CIMASur), Universidad de Concepción.  
**Role:** Research coordination and administration.
- Co-I:** FONDEF-ANID: Implementación de una infraestructura de datos geoespacial geomorfológica (I2GEO), para la región del BioBío: una herramienta estandarizada para la planificación territorial.  
**Role:** Coordination of mountain geomorphology analysis.
- Co-I:** National Geographic Society, Changing landscapes: From glaciers to lakes.  
**Role:** Fieldwork measurements on glaciers.
- 2021 - 2024: **PI/Director:** ANID-ANILLO program: Cold-Blooded: Drivers of Climate Change Refugia for glaciers and stream-flow responses.  
**Role:** Project coordination, paleoclimatology, glacier numerical modeling.
- CO-I:** Ministry of Education - Chile: UCO21102: Fortalecimiento de la interdisciplina en formación e investigación de la Universidad de Concepción.  
**Role:** Project coordination.
- 2022 - 2023: **PI:** Universidad de Concepción - Undergraduate Teaching Office - internationalization program: Linking three languages at once: Do you speak climate change and food security?.  
**Role:** Project coordination.
- CO-I:** ANID-Fomento a la vinculación internacional: Fortalecimiento del intercambio y vinculación internacional de investigación y formación de recursos humanos para el estudio de cambios en el paisaje y sus efectos en ambientes de montaña.  
**Role:** Project coordination at Universidad de Concepción.
- 2021 - 2022: **CO-I:** VRID (Vicerrectoría de Investigación y Desarrollo - Universidad de Concepción), Postdoctoral Research: Rock glaciers at the Sierra del Brujo (34.3°S - 70.2°W). Understanding their dynamics at the southern margin of the mountain permafrost region, Semiarid Andes of Chile.  
**Role:** Sponsorship, advising and coordination.

- 2020 - 2023: **PI:** FONDECYT-Regular call: Trajectories of glacier volume in the Sierra del Brujo, Central Chile (34°30'S) under the RCP8.5 scenario using reanalysis of multidecadal geodetic mass balance and coupled atmosphere-cryosphere modeling.  
**Role:** Project coordination, photogrammetry, glacier numerical modeling.
- International Co-I:** Establishing a peer-to-peer international and inter-university team with citizen-science monitoring to address climate resilience and food security. Bridgewater State University.  
**Role:** Project coordination in Chile.
- 2020 - 2021: **PI:** Ministry of Public Works: Supporting detailed monitoring of Nevados de Chillán, Ñuble region, central macro-zone, 2020-2021.  
**Role:** Project coordination, glacier mass balance monitoring.
- 2018 - 2019: **PI:** Planet's Education and Research Program: Near-real time monitoring of glacier features in Central South Chile (CSC): a tool to improve mountain hydrology forecasts (unrestricted access to high resolution satellite imagery).  
**Role:** Project coordination, weekly imagery analysis.
- PI:** National Geographic Society, Late Holocene glacier fluctuations in Central-South Chile: filling the gap that becomes critical in projected hydroclimatic scenarios.  
**Role:** Project coordination, rock sampling and glacier reconstruction.
- Co-I:** APECS and Partners Review of the IPCC's reports - SROCC and WGI and WGII AR6.  
**Role:** Coordination of review of the chapter dedicated to High Mountain Areas.
- 2017 - 2019: **PI:** FONDEF - CONICYT (Chilean Fund for Development of Science and Technology - Chilean Council for Science and Technology): Implementation and validation of an early warning system for hydrometeorological hazards based upon unmanned aerial vehicles.  
**Role:** Project coordination, weather-climate analysis, flooding modeling.
- 2017 - 2020: **Co-I:** FONDECYT-CONICYT (Chilean Fund for Science and Technology - Chilean Council for Science and Technology): Incendios forestales, pérdida de diversidad y debilitamiento de economías campesinas, en el contexto del modelo forestal Chileno (Wildfires, biodiversity loss and weakening of rural economies under the Chilean forestry model).  
**Role:** Fire hazard modeling under different hydroclimatic and land-cover scenarios.
- 2017 - 2018: **Co-I:** Banco de Desarrollo de América Latina (CAF): Estudios del índice de vulnerabilidad y riesgo de Territorio del Área Metropolitana de Valparaíso al Cambio Climático e identificación de las respectivas medidas de adaptación (Studying climate change vulnerability and risks of the Valparaíso Metropolitan Area and identification of adaptation measures).  
**Role:** Dynamical downscaling of CMIP5 projections and calculation of climate indices.
- 2016 - 2019: **PI:** FONDECYT-Iniciación: Developing mechanistic understanding of the snowline's role on the differential climatic sensitivity along mountain glaciers. USD \$130,000 (competitive grant with 30% success rate on average).  
**Role:** Project coordination, analysis of climatic data, climatic numerical modeling aloft glacierized and snow covered areas.
- 2015 - 2019: **Co-I:** Ohio Supercomputer Center funded project: AMAZONIAN-LINCAGES: Amazonian Land-cover-Induced Climate And Glacier Enhanced System (PAS0538-2).  
**Role:** In charge of running climatic simulations using the WRF regional climatic model. Using model output to force a glacier model in the Peruvian Andes.
- 2014 - 2017: **Postdoctoral Researcher** NSF-funded project: Exploring Social, Ecological, and Hydrological Regime Shifts in the Logone Floodplain of Cameroon (<https://mlab.osu.edu/morsl>).  
**Role:** Cooperation in the writing process (in charge of the hydroclimatic section), In charge of hydraulic-hydrologic modeling, remote sensing analysis, and climatic analysis.

- 2012 - 2014: **Co-I:** Ohio Supercomputer Center funded project: Climatic forcing on glacier surface mass balance changes along north-central Peru: a modeling perspective (PAS0538-1).  
**Role:** In charge of running climatic simulations using the WRF model. Developing of a glacier mass balance model.
- Co-I:** Association of American Geographers Dissertation Research Grant: Waning and waxing of mountain glaciers in South America: a modeling approach over multiple spatial and temporal scales.  
**Role:** Developing of a glacier mass balance model.
- 2009 - 2011: **Co-I:** Research office Universidad de Concepción: Scientific tourism in Chilean Patagonia: a proposal of touristic circuits related with glaciers in south Aysén.  
**Role:** In charge of glacier mapping in Patagonia using remote sensing and GIS.
- Co-I** Research office Universidad de Concepción: Evaluating natural risks on a socioeconomically-degraded territory in provincia de Arauco, VIII region.  
**Role:** In charge of geomorphometry analysis using GIS and remote sensing.
- 2008 - 2010: **PI** Research office Universidad de Concepción: Volume fluctuations of Sierra Velluda glaciers in the last decades, and the impact on the natural landscape of the Laguna del Laja National Park.  
**Role:** Project coordination, remote sensing of snow and ice, and climatic analysis.
- Co-I** Research office Universidad de Concepción: Chilean Oceanic Island region: diagnosis of the physical setting for their integration and sustainable development.  
**Role:** In charge of topographic measurements, geomorphometry analysis and topographic surveying.
- 2007 - 2009: **Co-I** Research office Universidad de Concepción: Holocene uplift rate of the shore at Talcahuano-Coronel and its relationship with subduction earthquakes.  
**Role:** In charge of topographic measurements and geomorphometry analysis using using DEMs and topographic surveying.

## PAPERS

- Participation: [>] → led; [=] → 30-50%; [<] → less than 30% (\* Denotes student author)
45. Oviedo-Reyes J., Cortés J., **Fernández A.**, Pérez V., Flores A. (2024). Geomorphic signatures of neotectonic activity along the Western Andean Front in the Chilean Andes (35°S 35°S). *Earth Surface Processes and Landforms*. doi: 10.1002/esp.5825  
*Participation: Conceptualization, Investigation, Supervision, Writing-reviewing & editing [<].*
44. Aguayo R., León-Muñoz J., Aguayo A., Baez-Villanueva O., Zambrano-Bigiarini M., **Fernández A.**, Jacques-Coper M. (2024). PatagoniaMet: A multi-source hydrometeorological dataset for Western Patagonia. *Scientific data*. doi: 10.1038/s41597-023-02828-2.  
*Participation: Analysis, Mentoring, Writing-Review & Editing [<].*
43. Podgórski J., Petlicki M., **Fernández A.**, Urrutia R., Kinnard C. (2023). Evaluating the impact of the Central Chile Mega Drought on debris cover, broadband albedo, and surface drainage system of a Dry Andes glacier. *Science of the Total Environment*. doi: 10.1016/j.scitotenv.2023.166907.  
*Participation: Method's advising, Writing-Review & Editing [<].*
42. Ciocca I.<sup>†</sup>, **Fernández A.**, Jaque E., Justino F., Schumacher V., Muñoz A., Silva S., de la Barrera F. (2023). Increased wildfire hazard along South-Central Chile under the RCP8.5 scenario as revealed by high-resolution modeling. *Environmental Research Letters*. doi: 10.1088/1748-9326/acba33.  
*Participation: Research planning, Mentoring, Writing-Review & Editing [=].*
41. Price B., Stansell N., **Fernández A.**, Licciardi J., Lesnek A., Sorensen M., Jaque E., Muñoz A., Shutkin T., Isabella I., Galilea I. (2022). Chlorine-36 surface exposure dating of Late Holocene moraines and glacial mass balance modeling, Monte Sierra Nevada, South-Central Chilean Andes (38°S). *Frontiers in Earth Science*. doi: 10.3389/feart.2022.848652  
*Participation: Research planning, Field sampling, Writing-Review & Editing [=].*
40. **Fernández A.** & Somos-Valenzuela M. (2022). Revisiting glacier mass balance sensitivity to surface air temperature using a data-driven regionalization. *Journal of Glaciology*. doi: 10.1017/jog.2022.16.  
*Participation: Planning, Data analysis, Writing-Review & Editing [>].*

39. Jaque Castillo E., **Fernández A.**, Fuentes Robles R., Ojeda C.G. (2021). Data-based wildfire risk model for Mediterranean ecosystems - case study of the Concepción metropolitan area in central Chile, *Natural Hazards and Earth System Sciences*. doi: 10.5194/nhess-21-3663-2021 [preprint doi: <https://doi.org/10.5194/nhess-2021-131>].  
*Participation: Model development and writing [>].*
38. **Fernández A.**, S. MacDonell, M. Somos-Valenzuela, and Á. González-Reyes (2021), Chile's glacier protection law needs grounding in sound science, *Eos*, 102, doi: 10.1029/2021EO160569.  
*Participation: Planning, Writing-Review & Editing [>].*
37. Justino F., Bromwich D., Wilson A., Silva A., Avila-Diaz A, **Fernández A.**, Rodrigues J. (2021). Estimates of temporal-spatial variability of wildfire danger across the Pan-Arctic and Extra-tropics. *Environmental Research Letters*. doi: 10.1088/1748-9326/abf0d0.  
*Participation: Review & Editing [<].*
36. **Fernández A.**, Mark B.G., Baraer M. (2021) Connecting Mountain Hydroclimate Through the American Cordilleras: Editorial. *Frontiers in Earth Sciences*. doi: 10.3389/feart.2021.667264.  
*Participation: Writing-Review & Editing [>].*
35. **Fernández A.**, Schumacher V., Ciocca I., Rifo A., Muñoz A., Justino F. (2021) Validation of a 9-km WRF dynamical downscaling of temperature and precipitation for the period 1980-2005 over Central South Chile. *Theoretical and Applied Climatology* 143, 361-378. doi: 10.1007/s00704-020-03416-9.  
*Participation: Planning, Data analysis, Writing-Review & Editing [>].*
34. Schumacher V., **Fernández A.**, Justino F., Comin A. (2020) WRF high resolution dynamical downscaling of precipitation for the Central Andes of Chile and Argentina. *Frontiers in Earth Science*. doi: 10.3389/feart.2020.00328.  
*Participation: Planning, Data analysis, Writing-Review & Editing [=].*
33. Comin A., Justino F., Pezzi L., Gurjão C.; Shumacher V., **Fernández A.**, Sutil U. (2020) Extreme rainfall event in the Northeast coast of Brazil: A numerical sensitivity study. *Meteorology and Atmospheric Physics*. doi: 10.1007/s00703-020-00747-0.  
*Participation: Writing-Review & Editing [<].*
32. Belmar, I.<sup>†</sup>, **Fernández A.** and Leal, G.<sup>†</sup>. (2020). Effects of water rights allocation on water resources availability within the Ñuble River Basin, South Central Chile. *Tecnología y Ciencias del Agua* 11(5), 181-226. doi:10.24850/j-tyca-2020-05-06.  
*Participation: Corresponding author, developing of the research idea, discussion of arguments and writing [=].*
31. Shastry A., Durand M., Neal J., **Fernández A.**, Phang S.C., Mohr B., Jung H.C., Kari S., Moritz M., Mark B.G., Laborde S., Murumkar A., Hamilton I. (2020) Small-scale anthropogenic changes impact floodplain hydraulics: simulating the effects of fish canals on the Logone Floodplain. *Journal of Hydrology*. doi: 10.1016/j.jhydrol.2020.125035.  
*Participation: Resources, Supervision [<].*
30. Murumkar A., Durand M., **Fernández A.**, Moritz M., Mark B., , Phang S.C., Laborde S., Scholte P., Shastry A., Hamilton I. (2020). Trends and Spatial Patterns of 20th century Temperature, Rainfall and PET in the semi-arid Logone River Basin, Sub-Saharan Africa. *Journal of Arid Environments*, 178, 104168. doi: 10.1016/j.jaridenv.2020.104168.  
*Participation: Writing-Review & Editing, Methodology, Software, Investigation, Supervision, Data Curation, Visualization [=].*
29. Casado M., Gremion G., Rosenbaum P., Caccavo J., Aho K., Champollion N., Connors S., Dahood A., **Fernández A.**, Lizotte M., Mintenbeck K., Poloczanska E., Fugmann G. (2020). The benefits to climate science of including Early Career Scientists as reviewers. *Geoscience Communication* 3, 89-97, doi: 10.5194/gc-3-89-2020 (preprint doi: 10.5194/gc-2019-20).  
*Participation: statistical analyses and writing [<].*
28. Schumacher V. <sup>†</sup>, Justino F., **Fernández A.**, Mesenguer-Ruiz O., Sarricolea P., Comin A., Venancio L., Althoff D. (2020). Comparison between observations and gridded datasets over complex terrain in the Chilean Andes: precipitation and temperature. *International Journal of Climatology*. doi: 10.1002/joc.6518.  
*Participation: Statistical analysis, discussion of arguments and writing [=].*
27. Quezada J., Jaque E., Catalán, N., Belmonte A., **Fernández A.**, Isla, F. (2020). Unexpected coseismic surface uplift at Tirúa-Mocha Island area of south Chile before and during the Mw 8.8 Maule 2010 earthquake: a possible upper plate splay fault. *Andean Geology* 47 (2), doi: 10.5027/andgeoV47n2-3057.  
*Participation: Fieldwork measurements, discussion of arguments and writing [<].*

26. Immerzeel, W.W., Lutz, A.F., Andrade, M., Bahl, A., Biemans, H., Bolch, T., Hyde, S., Brumby, S., Davies, B.J., Elmore, A.C., Emmer, A., Feng, M., **Fernández A.**, Haritashya, U., Kargel, J.S., Koppes, M., Kraaijenbrink, P.D.A., Kulkarni, A.V., Mayewski, P., Nepal, S., Pacheco, P., Painter, T.H., Pellicciotti, F., Rajaram, H., Rupper, S., Sinisalo, A., Shrestha, A.B., Viviroli, D., Wada, Y., Xiao, C., Yao, T., Baillie, J.E.M. (2019). Importance and vulnerability of the world's water towers. *Nature*, doi: 10.1038/s41586-019-1822-y.  
*Participation: Developing the theory and conception of the study by providing subject expertise on hydroclimate and regional experience on the Andean region [<].*
25. Permana D., Thompson L. G., Mosley-Thompson E., Davis M. E., Lin P.-N., Nicolas J. P., Bolzan J. F., Bird B., Mikhaleiko V. N., Gabrielli P., Zagorodnov V., Mountain K. R., Schotterer U., Hanggoro W., Habibie M. N., Kaize Y., Gunawan D., Setyadi G., Susanto R. D., **Fernández A.**, Mark B. G. (2019). Disappearance of the Last Glaciers in the Pacific Warm Pool (Papua, Indonesia) Appears Imminent. *Proceedings of the National Academy of Sciences*, 116 (52) 26382-26388, doi: 10.1073/pnas.1822037116.  
*Participation: Glacier modeling, downscaling of climate data, climatic analysis, discussion of arguments [=].*
24. Narock T. W., Goldstein E., Jackson C. A., Bubeck A., Enright A., Farquharson J. I., **Fernández A.**, Fernández-Blanco D., Girardclos S., Ibarra D. E., Lengger S. K., Mackay A., Venema V., Whitehead B., and Ampuero J.P. (2019). Earth Science is Ready for Preprints. *EOS* 100, doi: 10.1029/2019EO121347.  
*Participation: Discussion of arguments and writing [<].*
23. Comin A., Schumacher V.<sup>+</sup>, Justino F., **Fernández A.** (2018). Impact of different microphysical parameterizations on extreme snow-fall events in the Southern Andes. *Weather and Climate Extremes* 21: 65-75. doi: 10.1016/j.wace.2018.07.001  
*Participation: Statistical analysis, discussion of arguments and writing [<].*
22. Labore S., Phang S.C., Ahmadou M., Henry N., **Fernández A.**, Durand M., Hamilton I.M., Kari S., Mahamat A., Mark B.G., Scholte P., Shastry A., Ziebe R., Moritz M. (2018). Research in the "Red Zone": Fieldwork constrains foster interdisciplinary integration. *The Geographical Journal*, doi: 10.1111/geoj.12264.  
*Participation: Discussion of arguments and writing [<].*
21. **Fernández A.**, Najafi M.R., Durand M., Mark B.G., Moritz M., Jung H.-C., Shastry A.R., Laborde S., Phang S.C., Hamilton I.M., Xiao N. (2018). Corrigendum to "Testing the skill of numerical hydraulic modeling to simulate spatiotemporal flooding patterns in the Logone floodplain, Cameroon". *Journal of Hydrology* 562: 833-834. doi:10.1016/j.jhydrol.2018.06.012.  
*Participation: Planning, implementation and analysis of numerical hydraulic simulations using the LISFLOOD-FP model; writing of the paper [>].*
20. **Fernández A.**, Muñoz A., González-Reyes A., Aguilera-Betti I., Toledo I., Puchi P., Sauchyn D., Crespo S., Frene C., Mundo I., González M., Vignola R. (2018). Dendrohydrology and water resources management in South-Central Chile: Lessons from the Río Imperial streamflow reconstruction. *Hydrology and Earth System Sciences*. doi: 10.5194/hess-22-2921-2018 (preprint doi: 10.5194/hess-2017-478).  
*Participation: Tree-ring sampling, statistical analysis, and writing [=].*
19. Eddy A.M., Mark B.G., Baraer M., McKenzie J., **Fernández A.**, Welch S., Fortner S. (2017). Exploring Patterns and Controls on the Hydrochemistry of Proglacial Streams in the Upper Santa River, Peru. *Rev. Glaciares y Ecosistemas Montaña*, 3, 41-57.  
*Participation: Water sampling, laboratory processing, writing and discussion of results [<].*
18. Guittard A., Baraer M., McKenzie J.M., Mark B.G., Wigmore O., **Fernández A.**, Rapre A.C., Walsh E., Bury J., Carey M., French A., Young K.R. (2017). Trace metal contamination in the glacierized Rio Santa Watershed, Peru. *Environmental Monitoring and Assessment*. doi: 10.1007/s10661-017-6353-0  
*Participation: Water sampling, laboratory processing, writing and discussion of results [<].*
17. Mark B.G., and **Fernández A.** (2017): The significance of mountain glaciers as sentinels of climate and environmental change. *Geography Compass* 11(6): e12318. doi: 10.1111/gec3.12318.  
*Participation: Both authors contributed equally to this paper [=].*
16. Aguilera-Betti I., Muñoz A., Stahle D., Figueroa G., Duarte F., González-Reyes A., Christie D., Lara A., González M., Sheppard P., Sauchyn D., Moreira-Muñoz A., Toledo-Guerrero I., Olea M., Apaz P., **Fernández A.** (2017): The first millennium-old *Araucaria araucana* specimen in Patagonia. *Tree-Ring Research* 73(1): 53-56.  
*Participation: Cooperation in tree-ring sampling, discussion of results, and in the writing of the paper [<].*

15. Hellström R., **Fernández A.**, Mark B.G., Covert J., Cochachín A, Gómez J. (2017): Incorporating Autonomous Sensors and Climate Modeling to Gain Insight into Seasonal Hydrometeorological Processes within a Tropical Glacierized Valley. *Annals of the American Association of Geographers* 107(2): 260-273.  
*Participation: Planning, implementation and analysis of numerical climatic simulations using the WRF model; cooperation in discussion of results; cooperation in the writing of the paper [=].*
14. Laborde S., **Fernández A.**, Phang S.C., Henry N., Jung H.C., Mahamat A., Ahmadou M., Labara B., Kari S., Hamilton I., Durand M., Mark B.G., Xiao N., Ziebe R., Moritz M. (2016): Social-ecological feedbacks lead to unsustainable lock-in in an inland fishery. *Global Environmental Change* 41: 13-25.  
*Participation: Analysis of flooding patterns using remote sensing; cooperation in theoretical discussion of results; cooperation in the writing of the paper [=].*
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44. **Fernández A.**, Najafi M.R., Durand M., Mark B.G., Moritz M., Shastry A., Laborde S., Phang S.C., Hamilton I.M., Xiao N. (2015). Modeling annual flooding in the Logone floodplain in Cameroon. American Geophysical Union-Fall meeting.
43. Hellström R., **Fernández A.**, Mark, B.G., Covert, J. (2015). Unraveling tropical mountain hydroclimate through integration of autonomous sensor observations and climate modeling. American Geophysical Union-Fall meeting.
42. Shastry A., Durand M., **Fernández A.**, Hamilton I., Kari S., Labara B., Laborde S., Mark B.G., Moritz M., Neal J., Phang S. C. (2015). Predicting the impacts of fishing canals on Floodplain Dynamics in Northern Cameroon using a small-scale sub-grid hydraulic model. American Geophysical Union-Fall meeting.
41. Phang S.C., Laborde S., Mouzamour, A., Durand M., **Fernández A.**, Hamilton I., Mark B., Xiao N., Ziebe R., Moritz M. (2015). Lessons learned from communicating modelling efforts in big SES projects. Conference on Complex Systems, Arizona.
40. Laborde S., Durand M., **Fernández A.**, Hamilton I., Mark B., Phang S.C., Xiao .N, Ziebe R., Moritz M. (2015). The risk of a computational 'streetlight effect' in social-ecological systems research. Conference on Complex Systems, Arizona.
39. Mark B., **Fernández A.** (2015). Hydro-climatic vulnerability to climate change in the tropical Andean Cryosphere: integrating field and modeling perspectives from north-central Peru. Association of American Geographers, Annual meeting.
38. **Fernández A.**, Mark B., Durand M., Phang S.C., Laborde S., Moritz M., Hamilton I. (2015). Investigating DEM noise reduction and resolution in flood modeling: a case study based on the Logone Floodplain, Cameroon. Association of American Geographers, Annual meeting.
37. Battista R., Mark B., **Fernández A.**, Guittard A. (2014). Assessing changing water quality in Peru due to glacial recession. Richard J. and Martha D. Denman Undergraduate Research Forum, The Ohio State University.
36. **Fernández A.**, Mark B. (2014). Climate drivers of regional changes in Andean glacier surface mass balance. Eastern Snow Conference, June.
35. Mark B., Baraer M., Carey M., French A., Bury J., Young K., McKenzie J., Eddy A., **Fernández A.**, Wigmore O. (2014). From glaciers to the desert: assessing hydrologic change and social vulnerability across a tropical Andean waterscape. Eastern Snow Conference, June.
34. Baraer M., Mark B., In Huh K., McKenzie J., Wigmore O., **Fernández A.** (2014). Glacial retreat and hydrological response across the Rio Santa watershed, Peru. European Geosciences Union General Assembly.
33. **Fernández A.**, Mark B. (2013). Assessing pan-Andean glacier response to climate changes since 1979. American Geophysical Union - Fall meeting.
32. Huh K., Mark B., Baraer M., **Fernández A.**, Ahn Y. (2013). Centennial-scale dynamics of glacier changes and stream flow in the Cordillera Blanca, Peru. American Geophysical Union - Fall meeting.
31. Mark B., Eddy A., Baraer M., McKenzie J., Walsh E., **Fernández A.**, Wigmore O., Battista R., Guittard A. (2013). Characterizing changing stream water quality in a glacierized tropical watershed. American Geophysical Union - Fall meeting.
30. **Fernández A.**, Mark B., Lagos P. (2013). Andean glacier mass balance modeling from dynamically downscaled Climate: challenges and opportunities. WCRP VAMOS/CORDEX Workshop on Latin-America and Caribbean CORDEX LAC: Phase I - South America.
29. **Fernández A.**, Mark B., Pino M. (2013). Unraveling glacier mass balance in South America through numerical models: 1979-2012. Association of American Geographers, Annual meeting.
28. Mark B., Baraer M., McKenzie J., Walsh E., **Fernández A.**, Wigmore O. (2013). Tracking stream flow and water quality below melting Andean glaciers: a survey along the Santa River, Peru. Association of American Geographers, Annual meeting.
27. Baraer M., Mark B., Wigmore O., **Fernández A.**, McKenzie J., Walsh E. (2012). From the Cordillera Blanca to the Pacific Ocean: hydrological changes and consequences across the Rio Santa watershed. American Geophysical Union - Fall meeting.

26. **Fernández A.**, Mark B. (2012). The application of a regionally distributed glacier-climate model and a dynamical downscaling in the central Andes of Chile and Argentina (30°S to 37°S): first results. International symposium on glaciers and ice sheets in a warming climate, University of Alaska Fairbanks, Alaska, June.
25. Quezada J., Torrejón F., Jaque E., **Fernández A.**, Belmonte A., Martínez C. (2012). Comparación entre el terremoto Mw=8,8 del 27 de febrero de 2010 y su predecesor de 1835. XIII Congreso Geológico Chileno, 100-102.
24. Quezada J., Jaque E., **Fernández A.**, Belmonte A., Martínez, C. (2012). Ciclo sísmico anómalo en la Isla Mocha (38.3°S-38.4°S). XIII Congreso Geológico Chileno, 114-116.
23. Quezada J., Torrejón F., Jaque E., **Fernández A.**, Belmonte A., Martínez C. (2012). Segmentación sísmica en el ancho del contacto interplaca en el centro sur de Chile. XIII Congreso Geológico Chileno, 174-176.
22. Quezada J., Jaque E., **Fernández A.**, Belmonte A., Martínez C. (2012). La Península de Arauco (37.15°S-37.9°S): barrera y aspereza sísmica? XIII Congreso Geológico Chileno, 177-179pp.
21. de la Peña J., Jaque E., **Fernández A.** (2011). Reconocimiento de áreas de riesgos de movimientos en masa a la zona urbana de Coronel según el método Analyst Hierarchy Process. Congreso de Geografía, Chile.
20. **Fernández A.**, Jaque E., Martínez C., Santana A. (2010). Glacier Changes on Sierra Velluda massif, Chile (37°30'S): an approach to the explicative factors in a transitional climate setting. VICC2010 Conference.
19. Huiliñir V., Jaque E., **Fernández A.** (2010). Efectos de los cambios de uso del suelo en la conservación de los Sistemas Naturales Protegidos: caso de estudio Parque Nacional Laguna del Laja. Congreso Nacional de Geografía, Chile.
18. Orellana P., Martínez C., Portilla D., Jaque E., **Fernández A.**, Quezada J. (2009). Caleta modelo isla Alejandro Selkirk, archipiélago de Juan Fernández: intervención arquitectónica desde la protección del medio natural y la identidad cultural. Simposio Desarrollo, Ciudad y Sostenibilidad.
17. Riquelme N., Muñoz A., **Fernández A.**, Cuq E., Lara A., Álvarez, C. (2009). Efecto del Campo de Hielo Norte en la relación clima-crecimiento del *Nothofagus pumilio*. XVI Reunión Anual de la Sociedad de Ecología de Chile.
16. **Fernández A.**, Quezada J., Martínez C., Jaque E. (2009). Geomorfometría digital de las Islas Oceánicas de Chile y los controles en la evolución geomorfológica. XII Congreso Geológico Chileno.
15. Sáez R, **Fernández A.** (2009). Webmapping de la información glaciológica de la Sierra Velluda (37°S): base geoinformática para el apoyo en la divulgación científica y la toma de decisiones a nivel local en la región del BíoBío. XXX Congreso Nacional y XV Internacional de Geografía.
14. Santana A., **Fernández A.** (2009). Análisis comparativo de métodos de estimación de superficies glaciadas en Chile centro-sur a través de sensoramiento remoto: caso Sierra Velluda (37°S). XXX Congreso Nacional y XV Internacional de Geografía.
13. Gómez M., **Fernández A.** (2009). Estudio de las fluctuaciones de nieve en Chile centro-sur mediante el uso de imágenes de libre acceso. XXX Congreso Nacional y XV Internacional de Geografía.
12. Quezada J., **Fernández A.**, Martínez C., Pineda V., Jaque E, Isla F. (2009). Alzamiento holoceno en el litoral del Golfo de Arauco (37°S) y su relación con los terremotos de subducción. XII Congreso Geológico Chileno.
11. Quezada J., **Fernández A.**, Martínez C., Jaque E. (2009). Evolución geomorfológica y erosión del litoral de Isla de Pascua. 2009: XII Congreso Geológico Chileno.
10. Martínez C., Jaque E., Orellana P., **Fernández A.**, Quezada J. (2009). El proyecto La Región de las Islas Oceánicas de Chile. Avances y perspectivas futuras. XXX Congreso Nacional y XV Internacional de Geografía.
9. Martínez C., Jaque E., Quezada M., Flores L., Quezada J., **Fernández A.** (2009). Spatio-temporal changes of the shoreline in Concon bay, central Chile. 9th International Symposium on GIS and Computer Cartography for Coastal Zone Management, September 30th to October 2nd, Santa Catarina, Brazil.
8. **Fernández A.**, Araos J., Marín J. (2006). Hypsometric analysis of glaciers located at Chilean Andes of Chiloé Continental Area. Symposium on Climate Change: Organizing the Science in the American Cordillera (CONCORD), Mendoza, Argentina.
7. **Fernández A.**, Araos J., Marín J. (2005). Inventario de glaciares del volcán Michimahuida utilizando Sistemas de Información Geográfica (SIG): Resultados preliminares. Simposio Internacional: Nuevos Enfoques de Ciencias del Cuaternario en Fuego-Patagonia, Centro de Estudios de Fuego-Patagonia y Antártica.
6. **Fernández A.** (2003). Recent glacier variations in Southern Chile (42° to 49°S). Symposium on Mass Balance of Andean Glaciers and 1st Mass Balance Workshop on Andean Glaciers, Valdivia, Chile.

5. Aravena J., Lara A., Cuq E., **Fernández A.** (2002). Evidences of neoglacial events inferred from tree ring and aerial photos in arroyo San Lorenzo Valley, Mount San Lorenzo, Chile. 6th International Dendrochronology Conference, Quebec, Canada.
4. Aravena J., Lara A., **Fernández A.** (2002). Evidence of neoglacial events from tree-ring and aerial photos in arroyo San Lorenzo Valley, Mount San Lorenzo, Chile, IAI CRN 03, Annual Science meeting, Oaxaca, Mexico.
3. Rivera A., Casassa G., Bown F., **Fernández A.** (2002). Mass balance of glaciers in Southern Chile, based on Dems from Aster and aerial photographs, European Geophysical Union. Geophysical Research Abstracts (EGS02-A-05852).
2. Aravena J., **Fernández A.**, Lara, A., Rivera A., Villalba R., Wolodarsky-Franke A. (2001). Cambios climáticos durante los últimos siglos en los Andes del sur de Chile a partir de anillos de crecimiento y fluctuaciones. In: 13° Reunion Anual de la Sociedad Botánica de Chile. La Serena, Chile (Gayana Botánica 58[1]).
1. Rivera A., Acuña C., **Fernández A.**, Casassa G. (2001). Use of satellite imagery, aerial photographs and historical data for determining the frontal variations of the glaciers of central-south Chile (33-49° S). 4th International Symposium on Remote Sensing in Glaciology. College Park, Maryland, USA.

## PREPRINTS

5. Lizama E., Somos-Valenzuela M., Rivera D., Lillo M., Morales B., Baraer M., **Fernández A.** Role of Mountain Glaciers in the Hydrological Dynamics of Headwater Basins in the Wet Andes. <https://doi.org/10.2139/ssrn.4791931>
4. Morales B., Somos-Valenzuela M., Lillo M., Irarrazaval I., Fariás D., Lizama E., Rivera D., **Fernández A.** Glacier geometry limits the propagation of thinning in Patagonian Icefields. <https://doi.org/10.5194/egusphere-2024-1053>
3. Casado M., Gremion G., Rosenbaum P., Caccavo J., Aho K., Champollion N., Connors S., Dahood A., **Fernández A.**, Lizotte M., Mintenbeck K., Poloczanska E., Fugmann G. The benefits to climate science of including Early Career Scientists as reviewers. Geoscience Communication Discussions. <https://doi.org/10.5194/gc-2019-20>.
2. Narock, T.W., E. Goldstein, C. A. Jackson, A. Bubeck, A. Enright, J. I. Farquharson, **A. Fernández**, D. Fernández-Blanco, S. Girardclos, D. E. Ibarra, S. K. Lengger, A. Mackay, V. Venema, B. Whitehead, and J.P. Ampuero. (2018). Earth Science is Ready for Preprints: The First Year of EarthArXiv. doi: 10.31223/osf.io/kftsv.
1. **Fernández A.**, Santana A., Jaque E., Martínez C., Sáez R. (2011): Glacier changes on Sierra Velluda massif, Chile (37°S): mountain glaciers of an intensively-used mid-latitude landscape. The Cryosphere Discussions 5: 1-36.

## COMMENTS

2. Narock, T.W., E. Goldstein, C. A. Jackson, A. Bubeck, A. Enright, J. I. Farquharson, **A. Fernández**, D. Fernández-Blanco, S. Girardclos, D. E. Ibarra, S. K. Lengger, A. Mackay, V. Venema, B. Whitehead, and J.P. Ampuero. (2019). Earth Science Is Ready for Preprints. Eos, 100, 6-11, doi: 10.1029/2019EO121347.
1. Casado, M., Aho, K., Bradley, A., Caccavo, J., Champollion, N., Dahood, A., **Fernández, A.**, Fugmann, G., Gremion, G., Lizotte, M., Rosenbaum, P., Vidal, F. (2018). Engage more early-career scientists as peer reviewers. Nature 560: 307. doi: 10.1038/d41586-018-05956-7 (full list of authors: <https://goo.gl/RoqD96>).

## REPORTS

1. Dirección General de Aguas (DGA), 2022. Monitoreo de detalle del glaciar noroeste del complejo volcánico Nevados de Chillán, 2020-2021, región de Ñuble, SDT N°519, 2022. Ministerio de Obras Públicas, Dirección General de Aguas, Unidad de Glaciología y Nieves. Produced by: Department of Geography, Universidad de Concepción. Grant Director **Fernández, A.** Team: Jaque E., Ciocca I., Garcés K., Rifo A., Gómez M., Varas J. 51pp (<https://snia.mop.gob.cl/repositoriodga/handle/20.500.13000/125613>)

## EDITORIAL ROLES

- 2022 - Academic Editor, PLOS Climate (<https://journals.plos.org/climate/s/editorial-board>).
- 2022 - Review Editor, Frontiers in Earth Science: Quaternary Science, Geomorphology and Paleoenvironment (<https://loop.frontiersin.org/people/546276/editorial>).
- 2022-2023: Editor Special Issue Research Topic “Remote sensing of the global cryosphere: status, processes, and trends”, Remote Sensing of Environment ([shorturl.at/movZ1](http://shorturl.at/movZ1)).
- 2019: Editor for Research Topic “Connecting Mountain Hydroclimate Through the American Cordilleras”, Frontiers (<https://www.frontiersin.org/research-topics/9969>).
- 2015-2018: Chief Editor “Revista Geográfica del Sur”, Universidad de Concepción (<http://www.revgeosur.udec.cl>).

## REVIEWER

### JOURNALS

- Annals of Glaciology
- Climate Dynamics
- Cuadernos de Geografía de la Universitat de Valencia
- Earth Science Reviews
- Frontiers in Earth Science
- Geosciences
- Geoscientific Instrumentation, Methods and Data Systems
- Global and Planetary Change
- International Journal of Climatology
- International Journal of Digital Earth
- Investigaciones Geográficas
- Journal of Geophysical Research
- Journal of Hydrology
- Journal of South American Earth Sciences
- Marine Geodesy
- Nature Climate Change
- Nature Climate Communications
- Progress in Physical Geography
- Quaternary Research
- Scientific Reports
- Revista Geográfica del Sur
- Regional Environmental Change
- The Holocene
- The Cryosphere
- Water

### GRANTS

- **NSF** (USA National Science Foundation)
- **SNSF** (Swiss National Science Foundation)
- **RCUK**: Research Council of the United Kingdom
- **FONDECYT** (Fondo Nacional de Ciencia y Tecnología), Chile
- **Becas Chile** - ANID (CONICYT), Chile
- **Austral Incuba**, Universidad Austral de Chile
- **National Geographic Society**
- **FONDECYT** , Peru.



## OTHER

- IPCC, Co-chair for APECS group review of chapter “High Mountain Areas” from the IPCC Special Report on Ocean and Cryosphere in a Changing Climate (SROCC).

## TALKS

- **2024:** Solar Radiation Management Unlikely to Stop 21st Century Andean Glacier Shrinkage. Degrees Initiative, Mexico City research planning workshop.
- **2023:** Andean glacier-climatic interactions under solar radiation modification geoengineering. Degrees Initiative, Istanbul research planning workshop.
- **2022:** Atmosphere-Cryosphere-Hydrosphere nexus along the forgotten Andes: a unique physical geography or just wishful thinking?. Universidad de Playa Ancha, Valparaíso (shorturl.at/dhlxU)
- **2022:** Cold-Blooded: Drivers Of Climate Change Refugia For Glaciers And Streamflow Responses. Centro de Investigación Ecológica y Aplicaciones Forestales (CREAF), Universidad Autónoma de Barcelona.
- **2021:** Discussion on Climate Change and Weather Extremes, Union of Geographers of Valparaíso (<http://www.geografos.cl/index.php/2021/08/17/cambio-climatico-y-eventos-extremos/>)
- **2019:** Workshop “Ciencia y Gobernanza de la Geoingeniería Solar, ¿Qué papel tendrá Sudamérica?”, The Solar Radiation Management Governance & The Third World Academy of Sciences (shorturl.at/jqvRY).
- **2019:** Workshop “Impacto del cambio climático en la geocriósfera en los Andes centrales: pasado, presente, futuro”, Universidad Católica de Chile. Talk: “Monitoreo y simulación de los cambios del hielo y la nieve en la Sierra del Brujo (34°S)” (shorturl.at/kpqw3”).
- **2019:** Official regional event, COP25 in Chile, Universidad de Concepción “Cambios en la Criósfera: énfasis en BíoBío y Araucanía” (<http://www.udec.cl/panoramaweb2016/node/19521>).
- **2019:** National Geographic Headquarters, Washington D.C. “Global water use from agriculture and the energy sector: Focus on Mountains”, Water Tower Convening.
- **2018:** Byrd Polar and Climate Research Center, The Ohio State University (<https://goo.gl/WMXPAz>).
- **2018:** Geology Department, University of Cincinnati.
- **2018:** Geography Department and INSTAAR, University of Colorado Boulder (<https://bit.ly/2J2kqTZ>).
- **2018:** Geography Department, Pontificia Universidad Católica de Chile (<https://bit.ly/2J7kq5g>).
- **2018:** Geography Department, University of North Carolina - Greensboro.
- **2017:** “Glaciologies of Nostalgia”, GAIA-Antártica, Universidad de Magallanes, Punta Arenas, Chile.
- **2016:** “Climate Change” School for adults ” José Manuel Balmaceda”, Concepción, Chile.
- **2015:** “Scientific aspects of the Laudato Si Encyclical” Concepción Catholic Seminary (<https://cutt.ly/lwMFU8F>).
- **2015:** “Overview on Andean glaciers and recent global climate change”, LatinNight, Byrd Polar and Climate Research Center, The Ohio State University, March (<https://cutt.ly/awMFDYF>).
- **2014:** “Modelación numérica de la interacción clima-glaciar en los Andes” Department of Geology, Universidad Nacional Andrés Bello Viña del Mar campus, Chile, October.
- **2014:** “Glaciares, Montañas y Gente (En Español!)” Climate Explorations project, Byrd Polar Research Center, The Ohio State University, September.
- **2011:** “Glaciers and Climate Change” for elementary school students in Cranbrook Elementary, Columbus, Ohio.
- **2009:** “Climate Change” for high school teachers in “Encuentros con la Geografía”, Universidad de Concepción, Chile.

## MEDIA PRESENCE

- **2024.** Primer testigo de hielo del glaciar Sollipulli. Cooperativa Ciencia (<https://www.youtube.com/live/8qoltsLTkDA?si=5HQEujNeqz0oMpSG>)
- **2023.** Dona casi US\$1 millón: cofundador de Facebook incluye a Chile en investigación sobre enfriamiento de la tierra (<http://bit.ly/3k7RnGD>).
- **2017.** Aclaración sobre el cambio climático antropogénico. El Mostrador newspaper (<https://goo.gl/KSHpdq>).
- **2017.** Studying Microclimate in Central Chile. For GlacierHub (<https://goo.gl/bNRh8J>).
- **2013.** Hielo que tardó los últimos 1.600 años en formarse en los Andes ha desaparecido en los últimos 25 (featuring Lonnie Thompson and Alfonso Fernández). NTN24 channel (<https://goo.gl/Aom76h>).
- **2012.** Melting in the Andes: Goodbye glaciers (Alfonso Fernández featured as Ph.D. student). Barbara Fraser, Nature 491: 180-182 (<https://goo.gl/QsAMQV>).

## TECHNICAL SKILLS

- **Field sampling:** Water/snow/ice, Cosmogenic nuclides, Tree-rings, Sediments, Radiometry (Remote sensing calibration).
- **Field mapping:** Differential GPS, Geomorphic mapping, Topographic surveying, UAV mapping.
- **Programming/Computing:** Linux shell scripting, R, IDL/GDL,  $\LaTeX$ , Julia, Matlab/Octave, Python, NCL, CDO, Netlogo, Fortran.
- **GIS and Remote sensing:** ArcGIS, CarisGIS, ENVI, ERDAS, Globalmapper, GRASS, IDRISI, Ilwis, Mapwindows, PCI Geomatica, QGIS, SagaGIS.
- **Third-party models:** Cellular automata ice flow model (Harper and Humphrey, 2003, GRL), Glacier-climate model (Plummer and Phillips, 2003, QSR), SWAT (Hydrology), WRF (Weather/Climate modeling), LISFLOOD-FP (Hydraulic modeling).
- **Laboratory:** Elemental chemical analysis (ICP-OES/MS) for trace metals, Ion Chromatography for major ions, and sedimentology.
- **Languages:** Spanish (native speaker), English (full professional proficiency).

## MEMBERSHIP TO SOCIETIES

Association of American Geographers  
 American Geophysical Union  
 Yes network  
 Association of Early Polar Career Scientists  
 (Alpine Cryosphere Project Group)  
 Chilean Cryosphere Society

## SUMMER AND PROFESSIONAL SCHOOLS ATTENDED

- **2016:** Regional Climate Model Evaluation System (RCMES - NASA-JPL) training session at ICRC-CORDEX 2016, Stockholm, Sweden.
- **2014:** NASA-JPL Earth Observations Summer School. Pasadena, California, USA. Travel scholarship from NASA-JPL (<http://goo.gl/2X8Bsx>).
- **2013:** 1st International ACCION/UNESCO Climate School on "Andean Climate Variability and Change". Lima, Peru.
- **2013:**WRF (Weather Research and Forecasting) model tutorial. NCAR, Boulder, Colorado, USA.
- **2011:** Karthaus Summer School on Ice Sheets and Glaciers in the Climate System, Karthaus, Italy (<https://goo.gl/SGCQio>).
- **2009:** Postglacial Isostatic Rebound Modeling Course, COST Initiative ES0701, Landmateriet, Gävle, Sweden.
- **2008:** Paleoclimatology Course, Instituto Argentino de Nivología y Glaciología (IANIGLA), CONICET, Mendoza, Argentina.
- **2008:** Course-workshop on Idrisi Andes, Centro Interamericano del Recurso Agua (CIRA), Universidad Autónoma del Estado de México (UAEM), Toluca, México.
- **2008:** Dinámica y Evolución Costera, Departamento de Geografía, Universidad de Concepción. Fees funded by the Universidad de Concepción.
- **2000:** Field course on Dendroglaciology, Casa Pangué glacier, Chile. Inter American Institute for Global Change Research (IAI).

## PROFESSIONAL AND ACADEMIC SERVICE

### 2011 to date

- Director, Universidad de Concepción Program on Mountain Sciences (CIMASur - 2022 to date).
- Director, Ph.D. program Estudios Territoriales del Sur Global, Universidad de Concepción (2021-2022).
- Advisory member International Union for Quaternary Research's Stratigraphy and Geochronology Commission (INQUA-SACCOM, <https://www.inqua.org/commissions/saccomm/people> - 2021 to date).
- Organizing committee third meeting of the Chilean Cryosphere Society ([www.sochicri.cl](http://www.sochicri.cl)-2022).
- Steering Committee for EarthArXiv, the free preprint service for the Earth Sciences (<http://eartharxiv.org>, 2018-2020).
- Founding member of the Chilean Cryosphere Society ([www.sochicri.cl](http://www.sochicri.cl)).
- Chair of the session entitled "Climate change: Climate, glaciers, adaptation and resilience", Chilean Geographical Society annual meeting (<https://goo.gl/ZPNbyU> - 2018).
- Director fieldwork committee for the Chilean Geographical Society annual meeting (<https://goo.gl/ZPNbyU> - 20218).
- Convener of two sessions entitled "Understanding the High-Mountain Water Cycle and Cryosphere in the Anthropocene" (C33D and C41F) at the Fall meeting of the American Geophysical Union (together with Walter W. Immerzeel, Joseph M. Shea, and Jakob F. Steiner - 2017).
- Judge for the Outstanding Student Paper Award (OSPA) program at the American Geophysical Union (AGU) fall meeting (2017).
- Lecturer in the hydroclimatic session, international summer school and workshop on "Complex systems", Ngaoundere, Cameroon, May (<https://goo.gl/FHFbdi> - 2017).
- Host of the webinar "Research Processes and Politics in the Peruvian Andes" (speaker, Dr. Mark Carey), Association of Polar Early Career Scientists (<https://vimeo.com/235444089> - 2017).
- Host of the webinar "The first and only ice core histories from the Kilimanjaro ice fields" (speaker, Dr. Lonnie Thompson), Association of Polar Early Career Scientists (<https://vimeo.com/218875030> - 2017).
- Judge for the Outstanding Student Paper Award (OSPA) program at the American Geophysical Union (AGU) fall meeting (2015).
- American Geophysical Union. Student member at the Executive Committee, Earth and Planetary Surface Processes focus group (2013).
- Personnel committee representative, Geography Graduate Organization (GGO) executive committee member 2013-2014.
- Member of the organizing team for the GGO spring panel "Restoring our rivers, imagining our future: The Olentangy in Columbus", April 4th (2013).
- Organizing session in AAG annual meeting: Global environmental changes in mountain land-water-scapes (sponsored by the Mountain Geography, Geomorphology, and Cryosphere Specialty Groups - 2013).
- Panelist in AAG session: Geography in the Americas: Making the Most of Student Exchanges for Research and Study Abroad (organized by the Latin America Specialty Group - 2013).
- Presentation for Ohio State University Geography 2800 (prof. Alvaro Montenegro). Class size: 36 students (2013).
- Scientific advisor for the AAC Nikwax Alpine Bellwether Grant "Significant Glaciers of Chile: Ice, Water and Community Survival near Santiago, Chile" (<https://bit.ly/2jUOUg5> - 2011).

## MENTORING & ADVISING

### POSTDOC MENTORING

- Dr. David Farías - 2021 to 2022. Currently Associate Professor, Department of Geography, Universidad de Concepción (SIA program from ANID).
- Dr. Marijosé Herrera - 2022 to 2023. Currently Associate Professor, Department of Geography, Universidad de Concepción.
- Dr. Jan Arndt - 2022 to 2004. Currently: Senior Lecturer, Institute of Geomatics, Boku University, Austria

## STUDENT ADVISING

### Ph.D.

- Vanúcia Schumacher, Ph.D. in Applied Meteorology, Universidade Federal de Viçosa, graduated in 2019 (co-adviser with Dr. Flavio Justino).
- Sofía Navas, Ph.D. in Geological Sciences, Universidad de Concepción (co-adviser with Dr. Edilia Jaque).
- Francisco Castro, Ph.D. in Geological Sciences, Universidad de Concepción (co-adviser with Dr. Edilia Jaque).
- Jorge Oviedo, Ph.D. in Geological Sciences, Universidad de Concepción, (co-adviser with Dr. Joaquín Cortés).
- Hazem Mahmoud, Ph.D. in Environmental Science and Engineering, University of Texas at San Antonio (co-adviser with Dr. Hongjie Xie).

### Masters.

- Natalia Carmona, Master in Geographical Analysis, Universidad de Concepción, 2017.
- Alan Pinos, Master in Geographical Analysis, Universidad de Concepción, 2019.
- Isabella Ciocca, Master in Regional Sciences, Universidad de Concepción, 2021.
- Andreaw Rifo, Master in Regional Sciences, Universidad de Concepción, 2023.
- Belén Cartes, Master in Geographical Analysis, 2023.
- Juan Varas, Master in Geographical Analysis, 2023.
- Gianni Leal, Master in Geographical Analysis, 2024.
- Felipe Pino, Master in Geographical Analysis, ongoing.

### Undergraduate

- Marcos Gómez, Bs. Geography, Universidad de Concepción, 2009.
- Rodrigo Sáez, Bs. Geography, Universidad de Concepción, 2009.
- Andrés Santana, Bs. Geography, Universidad de Concepción, 2009.
- Juan Varas, Bs. Geography, Universidad de Concepción, 2017.
- Iván Belmar, Bs. Geography, Universidad de Concepción, 2017.
- Mauricio Aleuy, Bs. Geography, Universidad de Concepción, 2018.
- Walter Bravo, Bs. Geography, Universidad de Concepción, 2019.
- Patricio Torres, Bs. Geography, Universidad de Concepción, 2019.
- Gianni Leal, Bs. Geography, Universidad de Concepción, 2019.
- Abimelec Jesús, Bs. Geography, Universidad de Concepción, 2020.
- Manuel Suazo, Bs. Geophysics, Universidad de Concepción, 2023.
- Ignacio Ortiz, Bs. Geography, Universidad de Concepción, 2023
- Javiera Bustamante, Bs. Geography, Universidad de Concepción, 2024
- Patricia Lagos, Bs. Geography, Universidad de Concepción, 2024
- Ramón Herrera, Bs. Geology, Universidad de Concepción, 2024
- Carlos Pérez, Bs. Geography, Universidad de Concepción, ongoing.
- Carlos Almendras, Bs. Geography, Universidad de Concepción, ongoing.

- Camila Eriz, Bs. Geography, Universidad de Concepción, ongoing.
- Camila Contreras, Bs. Geography, Universidad de Concepción, ongoing.
- Ignacio Vargas, Bs. Geology, Universidad de Concepción, ongoing
- Gabriela Zurita, Bs. Geography, Universidad de Concepción, ongoing.

## **COMMITTEE MEMBER**

### **Postgraduate**

- Luis Astudillo, Ph.D. in Geological Sciences, Universidad de Concepción, 2022.
- Javiera de la Peña, Master in Geographical Analysis, Universidad de Concepción, 2017.
- Constanza Jorquera, Master in Geographical Analysis, Universidad de Concepción, 2023.

### **Undergraduate**

- Javiera Yagi, Bs. Geography, Universidad de Concepción, 2021.
- Claudia Fuentes, Bs. Geography, Universidad de Concepción, 2021.
- Julio Parra, Bs. Geography, Universidad de Concepción, 2015.
- Ingrid Cornejo, Bs. Geography, Universidad de Playa Ancha de Ciencias de la Educación, 2006.