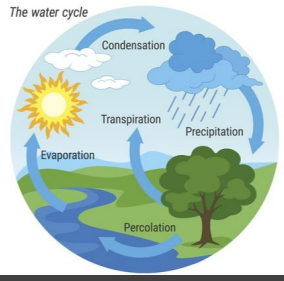
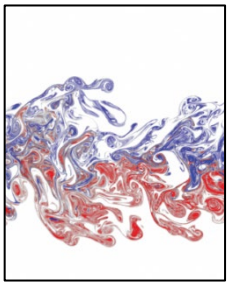
Boase Seminar Series in Hydrology and Water Resources Engineering

Department of Civil, Environmental and Architectural Engineering





Recent Advances in Hydrological Model Estimates for Chile

Prof. Pablo Mendoza

& Mr. Fabian Lema

Department of Civil Engineering

University of Chile, Santagio, Chile

Wednesday, August 31, 2021 | 11:15 AM | ECCE 1B41 &

Zoom: https://cuboulder.zoom.us/j/93058839188

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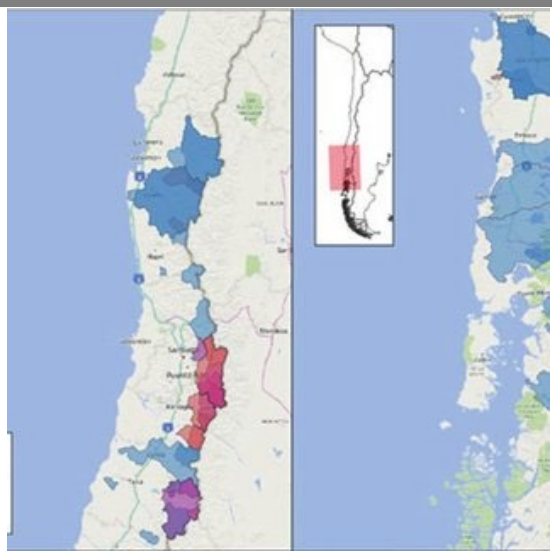
Abstract:



Characterizing the temporal evolution of water storages and fluxes over large domains can not only help to improve understanding on the interplay between physical controls, climatic features and hydrological behavior, but also to inform water management decisions. In Chile, quantifying natural water resources is a challenging task due to large heterogeneities and data limitations across the territory. In this presentation, we describe recent progress in the development of a 0.05° x 0.05° resolution hydrological database for continental Chile. The dataset builds upon numerical simulations conducted with the Variable Infiltration Capacity hydrological model at a 3-hour time step, using the national gridded meteorological product CR2met for the period Jan/1981 - April/2020. We highlight insights recently gained from the development and testing of river routing schemes, the representation of topographic subgrid heterogeneities, parameter sensitivity analyses, multivariate calibration strategies and the assessment of Global Climate Models (GCMs) for hydrological projections. Finally, we describe recent work aimed at testing different hydrological models in the Palos River Basin (Maule Region), using the Structure for Unifying Multiple Modeling Alternatives (SUMMA).

Speaker Bios: Pablo Mendoza is a Civil Engineer, with MS in Water Resources and Environment, Universidad de Chile, and PhD in Civil Engineering, University of Colorado Boulder. Pablo is Associate Professor at the Department of Civil Engineering in Universidad de Chile, and Research Associate at the Advanced Center for Mining, AMTC. Over the past 14 years, he has worked on several strategic areas for water resources in countries at different levels of development, including baseline and impact studies related with hydropower generation, assessment of hydrometeorological services, short to long-range streamflow forecasting, simulation and prediction of extremes, snow monitoring and modeling, and climate change impacts on hydrological processes.

Fabian Lema is a Civil Engineer, with MS(c) in Water Resources and Environment, Universidad de Chile. Fabián has been working on projects related to water resources and hydrology over the last two years, covering topics like statistical downscaling, hydrological modeling and climate change impacts on water resources. His ongoing work seeks to evaluate the potential of the SUMMA flexible modeling platform in catchments located in Central Chile, with the end goal to improve the predictability of hydrological droughts.

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