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The CAMELS-CL dataset: catchment attributes and meteorology for large sample studies – Chile dataset

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We provide the first large sample dataset for 516 catchments in Chile, a territory that features very distinct geographic (it spans 4,300 km along a north-south axis) and topographic (the east border of most of the country is defined by The Andes, which is the main mountain range in the southern hemisphere) characteristics.
The dataset includes daily streamflow records, catchment boundaries, and basin-averaged time series of the following meteorological variables: 1) daily precipitation coming from four different gridded sources (re-analysis and satellite-based); 2) daily maximum, minimum and mean temperature; 3) daily potential evapotranspiration (PET) based on Hargreaves formula; 4) 8-day accumulated PET based on MODIS imagery; and 5) daily snow water equivalent based on a high resolution re-analysis. In addition to the hydro-meteorological time series, we used diverse data sets to estimate key geophysical attributes that shape catchment behaviour. To account for anthropic intervention within the catchments, we processed publicly available water rights data for the country. All this information was synthetized in 56 catchment attributes describing climatic, hydrological, topographic, geological, land cover and water use characteristics. The hydro-metrological time series together with the catchments attributes constitute the CAMELS-CL dataset, which stands for Catchment Attributes and MEteorology for Large-sample Studies, Chile dataset.
CAMELS-CL provides unprecedented information in a data-scarce region, which can be used in a myriad of applications, including catchment classification and regionalization studies, impacts of different land cover types on catchment response, modelling of water availability under different management scenarios, characterisation of drought history and projections, and climate change impacts on hydrological processes. Derived practical applications include water management and allocation strategies, decision making and adaptation to climate change. This effort is part of an international initiative to create a multi-national large sample data set, and it is freely available for the community.