Geophysical Research Abstracts
Vol. 21, EGU2019-3756, 2019
EGU General Assembly 2019

Diagnosis of catchment water allocation in Chile in a non-stationary natural system

Pilar Barria (1), Camila Alvarez-Garreton (2,3), Raul Díaz-Vasconcellos (1), and Franco Magni (1)

(1) Departamento de Gestión Forestal y su Medio Ambiente, Facultad de Ciencias Forestales y de la Conservación de la Naturaleza, Universidad de Chile, (2) Center for Climate and Resilience Research (CR2), Santiago, Chile , (3) Instituto de Conservación, Biodiversidad y Territorio, Universidad Austral de Chile, Valdivia, Chile

The geography of Chile, characterised by a narrow and long strip of land located between the high ranges of the Andes mountains and the Pacific Ocean, provides an exceptional scenario for analysing spatial and temporal variability of climate and water resources. Chile is positioned in the 20th rank of water availability per capita, however, around a 70% of the national population is located in arid and semiarid regions. These regions have experienced significant water shortages during the last decade, which have affected water security and ecosystems. Therefore, water shortages and water governance are major issues to be addressed in Chile in the Anthropocene. Regarding water governance, the Chilean water allocation system is based on a water use rights (WURs) market, with limited regulatory and supervisory mechanisms, where the volume to be granted as permanent and eventual WURs is calculated from streamflow records when they are available. A recent study on a semi-arid catchment in central Chile emphasized the urgent need to revise the water allocation methodology, which at the moment does not account for the non-stationarity of hydrological processes. This limitation has caused an over-exploitation of water supplies in the study catchment.
To further explore these allocation system limitations and to provide robust recommendations, in this study we extend the former study and provide the first large sample diagnosis of water use rights and water supply, covering 516 basins from the catchment dataset for large sample studies in Chile, CAMELS-CL. With this approach, we are shortening the geographical gap of information, covering regions that are poorly documented, such as high elevation or austral catchments of Chile. Furthermore, we postulate this information as a tool to prioritise the resources to address water scarcity and water management in the country.