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Assessment of climate Change impact on water supply in Peru

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In this work, the simulation of the water supply has been carried out using the SWAT hydrological model to generate streamflows throughout Peru. For this purpose, 35 hydrological stations distributed in the 3 drainages of Peru have been used, simulating the entire country for the first time considering 4,355 sub-basins and 168 hydrographic units (HU); obtaining time series of streamflows for the period 1981-2016.

To evaluate the impact of climate change on water supply of Peru, three regional climate models based on dynamic regionalization have been used, obtaining time series from 1981 to 2065 with a spatial resolution of ~ 10 km. Based on these data, and using the delta change method, the streamflows generated in the period 2035-2065 versus 1981-2016 have been compared.

The results of the impact of climate change on water supply showed different results for each one of the 14 hydrological regions that Peru was divided. Spatially, the HUs with conditions towards a more marked decrease (increase) in flows are those located towards the center-south of the Pacific drainage and HUs dispersed in the Amazon drainage (north of the Pacific drainage). The uncertainties of hydrological modeling, as well as climate scenarios, are discussed in detail. All the results of this work can be accessed on the web portal <https://idesep.senamhi.gob.pe/balance-hidrico/>.