



## **A new climate and glacier baseline for the Cordillera Vilcanota, Peru, reduces critical information gaps**

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The Cordillera Vilcanota in the Southern Peruvian Andes is the second largest ice-covered Cordillera in Peru (after the Cordillera Blanca) and serves for the Cusco Region as a temporary water storage for fresh-water and hydropower generation and irrigation. Despite the Cordillera Vilcanota's size and socio-economic relevance, there has so far no comprehensive baseline data been available for climate and glacier evolution. In the framework of two jointly launched –Peruvian-Swiss climate change impact and adaptation programs (Climate Change Adaptation Programm - PACC; Glacier Change Adaptation and Disaster Risk Reduction Programm - Glacier 513) significant efforts have been undertaken and are on the way to create a climate, glacier and hazard baseline for the Cordillera Vilcanota. Because of the remoteness of the area and the scarcity of available data, multiple sources such as climate stations, climate reanalysis and satellite data have been collected, processed and analyzed.

Based on our data, we found only marginal glacier changes between 1962 and 1985, but a massive ice loss since 1985 (about 30% of area and about 45% of volume). These high numbers corroborate studies from other glacierized cordilleras in Peru. The climate data show overall a moderate increase in air temperature, and mostly weak and not significant trends for precipitation sums, which probably cannot fully explain the observed substantial ice loss. The likely increase of specific humidity in the upper troposphere, where the glaciers are located, probably played a major role in the observed massive of the Cordillera Vilcanota over the past decades.

The mass balance measurements initiated in 2010 on two glaciers of the Cordillera Vilcanota, and the climate station installed in 2011 on one of the glaciers, preliminarily indicate that ice loss (in water equivalent) is clearly lower than in the Cordillera Blanca. In the near future the data will provide new and important insights on climate and related glacier evolution during the coming years.