Establishment of a catchment monitoring network in the mountains of Tajikistan

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The glaciers of Central Asia, some of which were, until recently, still gaining mass, are reaching a tipping point. Unlike in the southeast of High Mountain Asia, where abundant monsoon precipitation decreases the relative contribution of snowmelt and icemelt to river discharge, the relatively dry summers in Central Asia lead to a meltwater-dominated river regime. In 2021, our research group established a new, comprehensive monitoring network at Kyzylsu Glacier and its surroundings, in Tajikistan. The network monitors numerous aspects of a catchment's hydrology functioning and measures surface energy fluxes, river discharge, glacier melt and snow cover distributed over a 2000m elevation range. The aim is to investigate glaciological and hydrological processes at this high-elevation catchment tributary to the Muksu River, whose water ultimately feeds the Amu Darya. For this, we will use a wide range of in-situ and remotely sensed data to force and validate a state-of-the art land-surface model. We will briefly introduce the monitoring network in place, present our research questions with the modeling tools used to tackle them, and offer a first look at the data collected so far.