

The contribution of condensation to the water cycle under high-mountain conditions

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Abstract:

Little is known about the interaction between condensation, precipitation and evaporation as an integral part of the water cycle under high-mountain conditions. This paper focuses on methods of identification and measurement of condensation under natural conditions in high alpine valleys by example of the Dischma in eastern Switzerland. The role of different vegetation zones in transferring water from and to the atmosphere is investigated above the treeline (1,900–2,600 m a.s.l.). Field measurements of condensation and evaporation at 10 min intervals show that condensation plays a more significant role in the water cycle than previously assumed. Both diurnal and nocturnal condensation are compared at different altitudes on slope and valley locations during the exceptionally hot and dry mid-summer of 1998. It is suggested that, in addition to standard hydrological components, water balance modelling in mountain zones should include more precise data on measured condensation.

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