



Persistence of lessons learned from 120 years of runoff measurements in small forested catchments

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The devastating flood of 1868 in the alps triggered a systematic study of the role of forests for the hydrology in Switzerland (and neighboured countries). As a direct consequence, the first longterm observations of runoff in small forested catchments were launched in 1903 in the Swiss Emmental (and have been run ever since). Several similar longterm investigations of runoff formation in other first-order catchments of the Swiss pre-alps – with different geology, forest compositions and rainfall regimes – followed in the course of the past century, among others the 50-year old hydrological observatory in the Alptal (central Switzerland).

Looking back to the history of these old pillars of forest-hydrological research, it becomes obvious that they served much more than for satisfying pure academic curiosity. The legacy of correspondence from the archive tells us that the initiative and planning of new forest-hydrological observatories was closely related with political and forest-promoting interests. In the same way, the results of these studies have been interpreted and communicated in a way that sometimes exceeded pure scientific conclusions.

In fact, all these data from more nearly 120 years illustrate a very differentiated (ambiguous) relationship between the presence (and shape) of the forest and the runoff response to heavy rainfall. In contrast, the public doctrine (disseminated by both researchers and stakeholders) was often simplified and biased towards a too positive effect of forests in mitigating floods. On the other hand, the complex (differentiated) insights from numerous specific analyses of students and researchers have often been disremembered.

We state that this conclusion doesn't apply only to the present case of forest hydrology, but pose a challenge for other hydrological (or: environmental) topics as well.