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Observed trends in the hydrologic regime of Alpine catchments

Antoine Bard, Benjamin Renard, and Michel Lang
Cemagref, UR HHLY, Hydrology-Hydraulics, Lyon, France (antoine.bard@cemagref.fr)

A European trans-national project, AdaptAlp, has been set up since 2008 in order to study the impacts of climate change in the Alps and to assess adaptation strategies. One of the objectives of this project is to study past and present changes in the hydrologic regime of Alpine rivers. This poster presents preliminary results of a trend analysis over the whole Alpine area.
A new dataset of more than two hundred discharge time series has been collected over the six countries of the alpine space: Switzerland, Italy, Germany, Austria, Slovenia and France. These series are made up of at least forty years of daily record and are related to undisturbed catchments. This dataset covers the whole spectrum of hydrological regimes existing in the Alps (from glacier- to mixed rainfall/snow regimes).
In a second step, a set of hydrologic indices has been defined to characterize the hydrologic regime in terms of low, medium and high flows. In particular, these indices describe the drought severity (in terms of duration, intensity and volume deficit) and seasonality, the volume and timing of snowmelt, floods intensity and seasonality.
A statistical trend test is finally applied for each hydrologic indice at each site. Consistent trends affecting the timing of snowmelt-dominated streamflow are found all over the Alps. Spring floods appear earlier in the season and tend to be longer in duration. Winter droughts tend to be shorter and less severe in terms of volume deficit.