Titre : Long-term (1900-2100) SWE and Hydrometeorological reconstructions in the French Southern Alps (Mercantour Natural Parc)

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The aim of this communication is to study climate variability and change on snow water equivalent (SWE) and streamflow over the 1900-2100 period. It is based on SWE and streamflow observations, past reconstructions (1900-2018) and future GIEC scenarii (up to 2100) of some snow courses and hydrological stations situated within the French Southern Alps (Mercantour Natural Parc). This study has been conducted by EDF (French hydropower company) and Mercantour Natural Parc.

This issue became particularly important since a decade, especially in regions where snow variability had a large impact on water resources availability, poor snow conditions in ski resorts and artificial snow production or impacts on mountainous ecosystems (fauna and flora). Considering snow and streamflow observations within Mercantour region, this communication focuses on: (1) long term (1900-2018) analyses of variability and trend of hydrometeorological and snow variables (total precipitation, air temperature, snow water equivalent, snow line altitude, snow season length, streamflow regimes) , (2) long term variability of snow and hydrological regime of snow dominated watersheds and (3) future trends (2020 -2100) using GIEC Climate Change scenarii.

Comparing former period (1950-1984) to recent period (1984-2018), quantitative results within these regions roughly shows an increase of air temperature by 1.2 °C, an increase of snow line height by 200m, a reduction of SWE by 200 mm/year and a reduction of snow season duration by 15 days. Characterization of the increase of snow line height and SWE reduction are particularly important at a local and watershed scale. Then, this communication focuses on impacts on long-term time scales (2050, 2100). This long term change of snow dynamics within moutainuous regions both impacts (1) water resources management, (2) snow resorts and artificial snow production developments or (3) ecosystems dynamics. This study allowed to provide some local quantitative scenarii. Correlated impacts on hydrological regimes and some hydrological variables are also shown.

Mots-Clés : Snow ; Hydrology ; Hydrometrorological variability ; Alps ; Climate change

Merci de ne rien inscrire dans cette zone et ne pas modifier les marges des pieds de page et entêtes.