



A hydrological study over Alps based on the new ERA5 database within SECLI-FIRM project

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Energy market is particularly sensitive to the renewable sources availability but their volatility makes them extremely difficult to use. For this reason, the skill to forecast these non-programmable fonts represents a crucial challenge that industrial companies have to face to improve their risk management.

This work focuses on the analysis of the hydrological variables involved in melting processes of the snowpack over Alps whose glaciers act as natural reservoirs of water. To forecast the contribution from the snow/ice melting to the water cycle it is necessary to develop a proper model simulating a realistic response of snowpack to different external forcing.

The ERA5 climate reanalyses are used to the scope. First, a preliminary analysis has been performed to better understand processes ruling the snow/ice melting over Italian Alps regions under different meteorological conditions in recent times. Therefore, specific areas of interest have been selected and studied paying particular attention to their position with respect to the reference hydropower plants and the consequent contribution to the basin water content. ERA5 reanalysis daily data have been averaged over a monthly time scale.

The study will put the base for a future modelling application of the seasonal forecasts to the energy market contest within the Horizon 2020 SECLI-FIRM project.