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Probabilistic forecasts of snow making conditions

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Ski resorts increasingly rely on artificial snow making to ensure perfect conditions of their ski slopes. The meteorological parameter that determines the quality and amount of snow that can be produced artificially is wet-bulb temperature. Probabilistic forecasts of wet-bulb temperature support ski resort operators in optimizing snow making to ensure good quality of the slopes while minimizing the water and electricity resources needed.
These forecasts were computed with lead times out to 10 days for two Alpine ski resorts by statistically postprocessing physically-based ensembles of numerical weather prediction forecasts from ECMWF. Different variable selection methods and statistical models (bias correction, non-homogeneous Gauss regression (NGR), heteroscedastic ordered logistic regressions) are applied. Even with the longest lead time of 10 days, the best method outperforms climatology by about 15%.