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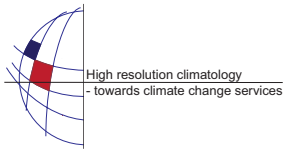

Operational quality control of daily precipitation using spatio-climatological consistency testing

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Quality control (QC) of meteorological data is of utmost importance for climate related decisions. The search for an effective automated QC of precipitation data has proven difficult and many weather services still use mainly manual inspection of daily precipitation including MeteoSwiss. However, man power limitations force many weather services to move towards less labour intensive and more automated QC with the challenge to keeping data quality high. In the last decade, several approaches have been presented to objectify daily precipitation QC.

Here we present a spatio-climatological approach that will be implemented operationally at MeteoSwiss. It combines the information from the event based spatial distribution of everyday's precipitation field and the historical information of the interpolation error using different precipitation intensity intervals. Expert judgement shows that the system is able to detect potential outliers very well (hardly any missed errors) without creating too many false alarms that need human inspection. 50-80% of all flagged values have been classified as real errors by the data editor. This is much better than the roughly 15-20% using standard spatial regression tests. Very helpful in the QC process is the automatic redistribution of accumulated several day sums. Manual inspection in operations can be reduced and the QC of precipitation objectified substantially.