



Quality analysis and classification of Swiss phenological series (PHENOCCLASS)

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Data quality control of series and quality assessment of existing stations are crucial steps prior to a reliable application of phenological data and potential network adaptations in climate research. The Swiss Phenology Network started in 1951 and comprises around 160 stations with a maximum of 69 different phenological parameters. The quality and homogeneity of the entire dataset has never been assessed comprehensively. The goal of the recently initiated project PHENOCCLASS (supported by MeteoSwiss in the framework of GCOS Switzerland) is the systematic assessment and subsequent classification of all Swiss phenological series and stations according to, among others, their data quality, length, completeness, homogeneity, and availability of metadata. An aim is to provide a list of the top most valuable, high quality Swiss series.

Here we present the core part of the assessment: The data quality control (QC) procedure is tailored to the Swiss Phenology Network and provides the basis for the subsequent assessments (e.g., break detection and homogeneity assessment). The QC consists of several levels, comprising mostly automatic but also manual procedures. The automatic part uses absolute and relative comparisons of observations to thresholds to identify unreliable observations from various potential sources of error (e.g., transcription errors, typing errors, unreliable observations due to various reasons). Relative procedures comprise, e.g., comparisons among stations as well as comparisons within stations utilizing linear models. Less than 5 % of all observations contain an automatic flag. The largest number of flags is generated through biological inconsistency testing, as well as using three-monthly-temperature sums, highly correlated within-station, or cross-station phenological series as predictors. All automatic flags are reviewed in a final manual quality control step, where two experts inspect all series of the network independently. Also, all available meta data are reviewed, formatted and included in the manual control to enable best possible expert judgment.