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# Quality Control techniques applied to surface data in ERA-CLIM2

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In this work we present the Quality Control (QC) techniques developed for testing and detecting errors in daily/sub-daily surface datasets that are being digitized in project ERA-CLIM2. The data recovered spans the 1863-1946 period, in what concerns the Portuguese collection, and the 1950-1958 period, for Chile. The Portuguese dataset includes the former African and Asian colonies. A QC Fortran software has been developed applying several threshold rules to the digitized ECVs, as well as temporal and spatial consistency tests. Cross-checks between ECVs also allow us to detect potential problems in the data. Published monthly means or sums also help to infer the data quality. The QC software produces several statistical outputs, attributes QC flags to the data, formats the data in order to be supplied to databases (such as ISPD and ERA-CLIM database) and plots the series using GNUPLOT. From the ECVs supplied by us, the ERA-CLIM2 reanalyses use surface pressure as input and others for comparison purposes. It is also required that we supply possible breakpoints, usually associated with metadata changes. The QC'd monthly and annual data is subjected to different homogeneity tests (RHTestsV4, HOMER) and the detected breakpoints are compared to metadata records. Most of the breakpoints found are explained by metadata changes, but we have been able to infer possible undocumented metadata changes based on the persistence and magnitude of breakpoints. Some of the results obtained with the homogeneity tests will be presented in this work.
Another kind of QC has been applied to the stations metadata, due to the development of the ERA-CLIM2 Global Registry which includes the ISPDv4 inventory. By determining the country corresponding to each ISPD (longitude, latitude) we have been able to detect spatial outliers that are due to incorrect conversions, essentially of longitudes, which are easy to correct.