



Quality Control Methodology Of A Surface Wind Observational Database In North Eastern North America

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This work summarizes the design and application of a Quality Control (QC) procedure for an observational surface wind database located in North Eastern North America.

The database consists of 526 sites (486 land stations and 40 buoys) with varying resolutions of hourly, 3 hourly and 6 hourly data, compiled from three different source institutions with uneven measurement units and changing measuring procedures, instrumentation and heights. The records span from 1953 to 2010.

The QC process is composed of different phases focused either on problems related with the providing source institutions or measurement errors. The first phases deal with problems often related with data recording and management: (1) compilation stage dealing with the detection of typographical errors, decoding problems, site displacements and unification of institutional practices; (2) detection of erroneous data sequence duplications within a station or among different ones; (3) detection of errors related with physically unrealistic data measurements.

The last phases are focused on instrumental errors: (4) problems related with low variability, placing particular emphasis on the detection of unrealistic low wind speed records with the help of regional references; (5) high variability related erroneous records; (6) standardization of wind speed record biases due to changing measurement heights, detection of wind speed biases on week to monthly timescales, and homogenization of wind direction records. As a result, around 1.7% of wind speed records and 0.4% of wind direction records have been deleted, making a combined total of 1.9% of removed records. Additionally, around 15.9% wind speed records and 2.4% of wind direction data have been also corrected.