



## **Development of a reliable wind database for eastern Canada.**

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Any inferences resulting from the analysis of meteorological records lean on the robustness of the observational data. Uncertainties in the data can be roughly classified into three groups: uncertainties due to random, systematic errors and rough errors. Random errors are unavoidable and inherent to the very nature of the measurements as instrumental responses to various physical phenomena. Systematic errors are produced by scale shifts of the instruments or by some more or less persistent factor that is not accounted for. Rough errors are associated with a dysfunction of the sensor or mistakes introduced during the data processing, transmission, reception or storage. Therefore, it is essential to develop procedures that allow to identify and correct the observations for these errors, thereby improving the quality of the data sets.

This work involves the compilation and quality assurance of a data set of wind variables from a wide area over eastern Canada (including the provinces of Quebec, Prince Edward Island, New Brunswick, Nova Scotia, and Newfoundland and Labrador), a subset of the adjacent ocean areas and a set of the northeastern USA (Maine, New Hampshire, Massachusetts, New York and Vermont). The data set spans the period 1940-2009 and has been compiled from three different sources: a set of 414 land sites obtained from Environment Canada (1940-2009), a subset of 36 buoys distributed over the East Coast and the Canadian Great Lakes (1988-2008) provided by the Department of Fisheries and Oceans, and a subset of 259 land sites combining both eastern Canada and Northeast of the USA provided by the National Center of Atmospheric Research (1975-2007).

After the compilation of the initial data set, quality assurance techniques are applied involving the detection and correction of random measurement errors, outliers as well as systematic changes (inhomogeneities) in sampling procedures. The impact of these corrections in the data set will be evaluated. This is the first step of a study at a regional scale that will be mainly focused in the area of Nova Scotia. The variability of the wind field will be analyzed attending to the specific features of the local topography and to changes in the large scale circulation. Subsequent studies will address the high spatial resolution simulation of the wind field using a regional climate model (WRF) and its validation with the presently developed data set.