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CSA R102:22
National Standard of Canada

Data qualification for Canadian automated hydrometeorological monitoring stations

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Preface

This is the first edition of CSA R102, *Data qualification for Canadian automated hydrometeorological monitoring stations*.

CSA Group has been commissioned to develop four national standards focusing on data collected by hydrometeorological monitoring stations and descriptive data about the stations. The standards are for

a) the collection and public dissemination of metadata for hydrometeorological monitoring stations;
b) the siting, operations, and maintenance of automated hydrometeorological monitoring stations;
c) a data quality rating system; and
d) the exchange of hydrometeorological data sets across information systems.

These standards will promote the standardization of methods, procedures, techniques, and practices used for collecting hydrometeorological data and related information across Canada. Standardization and improved best practices will help make more hydrometeorological observations become more easily accessible to a larger and better-informed audience. The availability of standardized sets of metadata, and through a single portal, also helps gain access to information required for homogenizing data, improving asset management, and optimizing monitoring networks.

This Standard was prepared by the Subcommittee on Data qualification for Canadian Automated Hydrometeorological Monitoring Stations under the jurisdiction of the Technical Committee on Weather Stations and the Strategic Steering Committee on Environment and Business Excellence, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada and was published as a National Standard of Canada by the CSA Group.

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   c) *wording of the proposed change; and*
   d) *rationale for the change.*

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0 Introduction

0.1 Overview and context

This Standard provides an approach and criteria to evaluate the quality of data collected at automated hydrometeorological monitoring stations (AHS). It is meant to be applicable to a wide range of entities collecting and processing weather data, from larger hydrometeorological stations that are part of established networks to smaller, often volunteer-based stations. It is recognized, however, that the applicability of this Standard and its content will also likely differ based on the needs of the end-user and, particularly, the size and structure of the entity collecting or processing weather data.

This Standard offers multiple criteria that one can use to rate the quality of a station and the data it collects. Users might find certain criteria to be more important and relevant than others, and may prioritize criteria to fit their needs.

The criteria for evaluating the quality of AHS form the basis for quantifying and rating the quality of hydrometeorological data (see Annex A, which provides this as an overall rating framework). Both "instrument-specific" and "organizational-level" criteria are included in the overall approach to measuring data quality.

0.2 Objectives

The objectives of this Standard are to

a) provide a simple and easy-to-apply data quality rating system that covers both organizational-level and instrument-specific parameters;
b) provide quality codes that document any processing of the data prior to use/distribution/sharing (e.g., temporal aggregation, outlier removal, systematic error correction); and
c) align with existing Meteorological Service Canada (MSC) and World Meteorological Organization (WMO) standards as much as possible.

0.3 Users

The targeted users of this Standard are

a) owners and operators of automated hydrometeorological stations, who can use the quantitative system in this Standard to assess and make improvements to the potential maximum quality of the data they collect; and
b) data users who will be in a position to assess the quality and value of datasets generated from a wide variety of hydrometeorological stations and equipment.