WORLD METEOROLOGICAL ORGANIZATION

COMMISSION FOR BASIC SYSTEMS
Open Programme Area Group on
Integrated Observing Systems

EXPERT TEAM ON REQUIREMENTS FOR DATA FROM AUTOMATIC WEATHER STATIONS
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Issues related to AWS' documentation (CIMO Guide)

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Summary and Purpose of Document

The document contains proposals for the adjustments of Guide to Meteorological Instruments and Methods of Observation, WMO-No. 8, and Manual on Codes, WMO-No. 306, Volumes I.1, Part A.

ACTION PROPOSED

The meeting is invited to consider the document and to submit recommendations for consideration by CBS-XIII.

References:

1 Guide to Meteorological Instruments and Methods of Observation, WMO - No. 8
2 Manual on Codes, WMO-No. 306, Volumes I.1, Part A.

I. Background

In the current edition of Guide to Meteorological Instruments and Methods of Observation, WMO - No. 8 (Parts II, III) one can find several inaccuracies relevant to automatic weather stations. Here are some of them:

PART II, Chapter 1

☞ ***1.1.1 Definition***

"An automatic weather station (AWS) is defined in this *Guide* as a station at which instruments make and either transmit or record observations automatically *the* conversion to code form, if required, *being* made either directly or at an *editing* station (WMO, 1981)."

In the corresponding reference (WMO, 1981) the definition is as follows:
"*Automatic station*: A station at which instruments make and either transmit or record observations automatically, the conversion to code form, if required, being made either directly or at an editing station."

☞ ***1.1.4 Types of automatic weather stations***

"Both types of stations can optionally be set up with means both for manual entry and for editing of visual or *objective* observations which cannot yet be made fully automatically. This includes present and past weather or observations which involve high costs, such as cloud height and visibility. Such a station could be described as partially or semi-automated."

☞ ***1.3.2.6 Data reduction***

"*Although these variables or quantities could also be computed at a central network processing system where more processing power is normally available, AWS operational real-time constraints, limited data storage capacity, and local display requirements often require these variables to be calculated in the AWS*."

☞ ***1.3.2.8 Quality control***

"Quality *control* already starts with a careful design, selection, and test of the prototype AWS before acquiring, installing, and operating an AWS network. Considerable errors can be avoided by proper siting and exposure of the AWS. To ensure good quality data, the establishment and use of good maintenance, repair, and calibration procedures and facilities are absolutely necessary. There is *as yet* no general agreement *upon* what quality-*control* routines should be used for measurements of specific variables. Indeed, since the quality-control requirements are to some extent a function of the sensor performance and environmental conditions, it may not be possible to reach such general agreements. However any specification for an AWS should state explicitly a minimum set of quality-control procedures to be used."

PART III, Chapter 3

☞ ***3.3.3 Data centres***

"AWSs in particular require careful attention at data centres because the on-station quality control systems lack the flexibility and perhaps the reliability of manual operations."

☞ ***Manual on Codes, WMO-No. 306, Volumes I.1, Part A***

The following definition of the automatic station can be found there:
"Meteorological station at which instruments make and transmit observations, the conversion to code form for international exchange being made either directly or at an editing station."

II. Proposal

It is necessary to clear away the inaccuracies mentioned above. The proposals for that are as follows:

PART II, Chapter 1

☞ ***1.1.1 Definition***

The definition should be corrected and adjusted in the following way:
"An automatic weather station (AWS) is defined in this *Guide* as a station at which instruments make and either transmit or record observations automatically. *The* conversion to code form, if required, *is* made either directly or at an *editing station* (WMO, 1981)."

"*editing station*": there is a need to use a more appropriate expression (e.g. *an observer's PC*) or to define the term "an editing station".

☞ ***1.1.4 Types of automatic weather stations***

"Both types of stations can optionally be set up with means both for manual entry and for editing of visual or *subjective* observations which cannot yet be made fully automatically. This includes present and past weather or observations which involve high costs, such as cloud height and visibility. Such a station could be described as partially or semi-automated."

☞ ***1.3.2.6 Data reduction***

"*These variables or quantities can be computed at an AWS or at a central network processing system where more processing power is normally available*."

☞ ***1.3.2.8 Quality control***

"Quality *assurance* already starts with a careful design, selection, and test of the prototype AWS before acquiring, installing, and operating an AWS network. Considerable errors can be avoided by proper siting and exposure of the AWS. To ensure good quality data, the establishment and use of good maintenance, repair, and calibration procedures and facilities are absolutely necessary. There is no general agreement *yet on* what quality *assurance* routines should be used for measurements of specific variables. Indeed, since the quality-control requirements are to some extent a function of the sensor performance and environmental conditions, it may not be possible to reach such general agreements. However any specification for an AWS should state explicitly a minimum set of quality-control procedures to be used."

PART III, Chapter 3

☞ ***3.3.3 Data centres***

The proposal is to delete the sentence.

☞ ***Manual on Codes, WMO-No. 306, Volumes I.1, Part A***

The definition should be consistent with the one in the CIMO Guide.

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