WORLD METEOROLOGICAL ORGANIZATION

COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMME AREA GROUP
ON INTEGRATED OBSERVING SYSTEMS

EXPERT TEAM ON SURFACE BASED OBSERVATIONS

SUB-GROUP MEETING ON WIGOS REGULATORY MATERIAL

Geneva, Switzerland, 24-28 November, 2014

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AGENDA 3.2

Proposals for Update of Regulatory Material on AWS

(*Submitted by Karl Monnik, Australia)*

SUMMARY AND PURPOSE OF DOCUMENT

To provide proposal for the updating WIGOS Regulatory and Guidance material in WIGOS documentation.

ACTION PROPOSED

Participants are invited to review and comment on the proposed documentation.

PROPOSALS FOR UPDATE OF REGULATORY MATERIAL ON AUTOMATIC WEATHER STATIONS

1. Background

The existing sources of material concerning regulatory material for automatic weather stations includes:

- Manual on the Global Observing System, Volume I – Global Aspects, WMO-No. 544.
- Guide to the Global Observing System, WMO-No. 488.
- Final reports and documents previously submitted to ET-AWS

Documentation has also been provided by a number of member countries including Canada and Australia.

2. Discussion

The existing documentation concerning surface observations stations is strongly focussed on manual observations with some inclusion to AWSs. However, many countries have transitioned to networks which are largely automated, with support from human observations. The new documentation needs to address this change in emphasis.

Appendix 1 provides a structure for the documentation based in the Manual on the WIGOS.

Appendix 2 provides a source of documents which are being used to regulatory and guidance material relevant to AWSs.

Appendix 1 – Outline of AWS chapter.

7 GLOBAL OBSERVING SYSTEM OF THE WORLD WEATHER WATCH

Note 1: The provisions of sections 1, 2, 3 and 4 of this Manual are common to all WIGOS component observing systems including the GOS.

Note 2: Provisions specific to the GOS are currently set out in the *Manual on the Global Observing System* (WMO-No. 544), Volume I).

Requirements

Design, planning and evolution

The main elements of the surface-based subsystem are:

a. Land surface stations (in situ)
    a. Automatic surface stations (including manual supported stations)
    b. Manual surface stations
b. Sea surface stations
    a. Fixed sea stations
    b. Mobile sea stations
c. Upper –air stations
    a. Rawindsonde
    b. Radiosonde
    c. Radiowind
    d. Pilot balloon
    e. Aircraft meteorological stations
    f. Meteorological rocket station
d. Remote sensing stations
    a. Weather radar stations
    b. Wind profiler stations
    c.
e. Research and special purpose stations
    a. Solar radiation stations
    b. Atmospherics Detection stations
    c. Meteorological reconnaissance aircraft station
    d. Global atmospheric watch station
    e. Planetary boundary-layer stations

Networks…

Instruments and Methods of Observation

Operations

Automated surface stations (Automatic Weather Stations AWS)

Note: The common name for automated surface stations is Automatic Weather Stations (AWS).

General Requirements

Each observing station shall be identified by a unique station index number assigned by the Member concerning within the allocations made to that Member, in compliance with the scheme prescribed in the *Manual on Codes.*

When a member establishes an automatic weather station, the Member shall provide the following information to the Secretariat through OSCAR or via email.

(a) Station index number, station name, and whether the station is fully automatic, fully manned or both.
(b) Geographical coordinates in decimal degrees (to 5 decimal places) and elevation of the station , in metres (up to two decimals) above mean sea level;
(c) Geopotential of the datum level in whole metres to which the pressure is reduced, or the reference isobaric surface the geopotential of which is reported;
(d) Times at which synoptic observations are made and reported;
(e) Topographical situation;
(f) Any other information required for completion of the entries in Weather Reporting (WMO-No. 9), Volume A – Observing Stations.

Members shall update the information supplied under 2.4.1.1.2 (a) – (f) above ~~to the Secretariat~~in OSCAR as soon as possible.

Surface land stations, including those in the RBSN, should be spaced at intervals not exceeding the minimum horizontal resolution required by applications areas supported by the network and as described in the Rolling Review of Requirements Process. During the first decade of the twenty-first century, the interval, in general, should not exceed 250 km (or 300 km in sparsely populated areas).

Surface synoptic observations recorded at an automated land station shall consist of observations of the following meteorological elements:

a. Air temperature;
b. Humidity;
c. Atmospheric pressure;
d. Wind direction and speed;

Automated surface observations recorded at a land station should consist of observations of the following meteorological elements:

e. Present weather;
f. Past weather;
g. Cloud amount;
h. Height of cloud base;
i. Horizontal visibility;
j. Precipitation.

Quality Control

Data and Metadata Reporting

Each Member should publish ~~a description~~ observations metadata, in sufficient detail to enable departures from the representativeness of observations to be assessed, of each of its ~~synoptic~~ stations whose reports are included in international exchanges.

Incident Management

Change Management

Any change in index number of synoptic stations included in the international exchanges should be notified to the Secretariat at least one month before becoming effective.

All changes in the station index number of a ~~synoptic~~ station shall be effective from 1 January or 1 July each year.

Each Member of WMO shall designate a national focal point to communicate with the WMO Secretariat on matters regarding the contents of *Weather Reporting* (WMO-No. 9), Volume A – Observing Stations. The national focal point shall be authorized to act in these matters on behalf of the Permanent Representative concerned.

Maintenance

Inspection and Supervision

Calibration Procedures

Observational Metadata

Quality Management

Capacity Development

Requirements

Appendix 2 – Resource documentation

No.	Doc Name	Source	Description	Manual	Guide
1	Manobs Chapter 12 Amend.15 Draft v1.1.doc	MSC	THE SYNOPTIC CODE - DETAILED DESCRIPTION – mostly manual codes which are based on WMO Codes handbook.	Nil	Possibly some guidance material for coding manual synops.
2	MSC_Inspect_2.1.1_ENG.docx Version 2.1.1, August 2009	MSC	MSC Inspection and Maintenance Procedures for RCS Network Autostations	Some basic principles can be used for the Manual	Substantial amount of information which can contribute to Guidance.
3	MSC_Install_ENG.docx	MSC	Sensor Outages at MSC Auto8 Stations – Response time Guidelines Station Classification: RCS or SWx Category 1	Maybe a statement that there needs to be a consistent policy for response times.	Useful guidance material.
4	Siting Classification System - 2013 Dec (2).doc	MSC	Index of Sensor Siting Classification Criteria:	A supporting statement in Manual that siting classification should be completed.	Useful guidance material.
5	20131.pdf	BoM	OBSERVATION SPECIFICATION NO. 2013.1	Standards concerning the siting of AWS.	Guidance material to site AWSs.
	A2669-v6.0.pdf	BoM	Equipment Specification A2669, Digital Telemetry System Equipment, Data Formats Document		Guidance concerning algorithms for parameters measured by AWS
	g1 HW Specification v1 11.pdf	BoM	Equipment Specification A2693, Provision for Data Acquisition System Equipment – Hardware	Some regulatory material concerning AWS hardware	Mostly guidance material for AWS specifications.
	g2 SW Guidance Document v1 07.pdf	BoM	Guidance Document A2694,	Some regulatory	Mostly guidance

			Provision for Data Acquisition System Equipment – Software	material concerning AWS software	material for AWS specifications .
	ET-AWS-7 AWS Functional Specification_Karl_format.doc	ET-AWS	FUNCTIONAL SPECIFICATIONS FOR AUTOMATIC WEATHER STATIONS		Guidance material for functional requirements .
	Doc_11(2)_ET-AWS-7_AdvanceAWS-Third_Party_Warne_RAed.doc	ET-AWS-7	Review progress and advances in AWS technologies - Develop guidance to deal with integration of third party AWS networks		Guidance material for third party AWS networks.
	ET-AWS 7_ Doc 6.1_Robust AWS_Krishnaiah_Apr12.doc	ET-AWS-7	Requirements and standards for a basic, robust AWS suitable for less developed, remote and extreme climate conditions, taking advantage of advances in technology	Some regulatory material concerning AWSs in less developed and remote areas.	Some guidance material concerning AWSs in less developed and remote areas.
	Doc_11(1)_ET_AWS-7_AdvAWSTech_Sabatini.doc	ET-AWS-7	Review progress and advances in AWS technologies - Develop guidance to deal with integration of third party AWS networks	Regulatory material concerning advances in AWS technology	
	ET-AWS 7_ Doc 61 RemoteAWS_Feng_Apr12.doc	ET-AWS-7	Requirements for a basic, robust AWS suitable for less developed, remote and extreme conditions		
	et-aws-6-doc7 GBJF edits.doc	ET-AWS-6	Development of guidelines and procedures for the transition from manual to Automatic Weather Stations		
	Doc8.doc	ET-AWS-6	AWS METADATA CATALOGUES		
	Doc11.2.doc	ET-AWS-6	Advances in AWS Technology		

	Doc11.1.doc	ET-AWS-6	Advances in AWS Technology		
	Doc5.doc	ET-AWS-6	REQUIREMENTS AND STANDARDS FOR A ROBUST AWS SUITABLE FOR LESS DEVELOPED AND REMOTE AREAS		
	Proposal for AWS metadata catalog_instruments.doc Doc10(1) 2008.doc	ET-AWS-6	DEVELOPMENT OF THE RECOMMENDED FOUR CATALOGUES OF AWS METADATA		Some guidance material. Must be subject to TT_WMD
	Doc3.1_Leroy_rev1_MEETING_v1-1.doc	CIMO/WIGOS-PP-3	CLASSIFICATION OF SURFACE OBSERVING STATIONS WITHIN WIGOS, Siting Classification for Surface Observing Stations	Check updates in CIMO Manual.	
	Doc-3-2_Leroy_MEETIMG_V1-1.doc	CIMO/WIGOS-PP-3	CLASSIFICATION OF SURFACE OBSERVING STATIONS WITHIN WIGOS Classification for Performance Characteristics	Check updates in CIMO Manual.	
	WMO Bulletin - Observing the climate.doc		Observing the climate – challenges for the 21st Century		Guidance material relating to Climate requirements.
	Doc12.doc	ET-AWS-5	STANDARD AND OPTIONAL VARIABLES TO BE REPORTED BY AWS		
	Doc6(1).doc	ET-AWS-5	REQUIREMENTS FOR NEW SENSORS OR THE INTEGRATION OF SENSORS TO MEET THE DEFICIENCIES		

			OF AUTOMATIC WEATHER STATONS FOLLOWING THE MIGRATION FROM MANUAL OBSERVATIONS		
	Doc9(1).doc	ET-AWS-5	Development of guidelines for the implementation of new data types from either new sensors or following the successful integration of sensors		
	Doc4(1).doc	ET-AWS-5	REQUIREMENTS AND IMPLEMENTATION PLAN FOR A ROBUST, LOW POWER, CONTINUOUS COMMUNICATIONS PLATFORM FOR ALL AWS, PARTICULARLY THOSE IN REMOTE LOCATIONS		
	Doc 5(1).doc	ET AWS-4	ISSUES RELATED TO THE DEVELOPMENT OF STANDARDS FOR THE STANDARDIZATION OF AWS PLATFORMS		
	Doc 4(1).doc	ET AWS-4	REPORT ON THE DEVELOPMENT OF GUIDELINES ON QUALITY CONTROL PROCEDURES FOR DATA FROM AUTOMATIC WEATHER STATIONS	Refer also to Manual on GOS for approved version.	