

WORLD METEOROLOGICAL ORGANIZATION

CBS/OPAG-IOS/ET-SBO-1/6.1.3

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

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EXPERT TEAM ON SURFACE-BASED OBSERVATIONS
FIRST SESSION

ITEM: 6.1

Original: ENGLISH

Geneva, Switzerland, 9-12 July, 2013

AGENDA ITEM 6.1.3

Status of Previous Tasks: Wind Profiler Survey

(Submitted by Amaury Caruzzo, Brazil)

SUMMARY AND PURPOSE OF DOCUMENT

This document is a supplement to item 6.1 on the history of the Wind Profiler developed in CBS/Expert Team on Surface-Based Remotely-Sensed Observations (ET-SBRSO, 2009-2012).

ACTION PROPOSED

Implement the questionnaires of the surface based observations.

References

1. WMO - Commission for Basic Systems and Commission for Instruments and Methods of Observation. Joint meeting of CBS/Expert Team on Surface-Based Remotely Sensed Observations and CIMO/Expert Team on Remote Sensing Upper Air Technology and Techniques, Geneva, Switzerland, 23-27 November 2009 - FINAL REPORT.
 2. WMO - Commission for Basic Systems and Commission for Instruments and Methods of Observation. Joint Meeting of CBS/Expert Team On Surface-Based Remotely-Sensed Observations (Second Session) and CIMO/Expert Team On Operational Remote Sensing(First Session), Geneva, Switzerland, 5-9 December 2011- FINAL REPORT.
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DEVELOPMENT OF THE QUESTIONNAIRE ON THE CBS EXPERT TEAM ON SURFACE-BASED REMOTELY-SENSED OBSERVATIONS (ET-SBRSO)

1. History of Questionnaire

During the joint meeting of the CBS Expert Team on Surface-Based Remotely-Sensed Observations (ET-SBRSO), first session, and the CIMO Expert Team on Remote Sensing Upper Air Technology and Techniques (ET-RSUATT), second session, in November 2009, Mr. Stuart Goldstraw (ET-SBRSO chair) proposed a questionnaire to know the status of remote sensing systems in the WMO members (WPR, Lidaretc). Objective: status for integration of remote sensing systems into WIGOS and GOS. More information can be found in Work Plan ET-SBRSO: item 3 [1].

In 2010, the first version of the "Wind Profile Radar Questionnaire" was developed from previous versions (radar, lighting network satellite etc). This version was reviewed by Mr. Stuart Goldstraw and Mr. Ercan Büyükbas (ET-SBRSO vice-chair). In 2011, some considerations and contributions were included from Mr. Mizuno and Mr. Mizushima (ET-SBRSO members) to complete the first draft of the questionnaire.

2. Development of Questionnaire

In December 2011, during Joint Meeting of CBS/Expert Team on Surface-Based Remotely-Sensed Observations (ET-SBRSO), second session, and CIMO/Expert Team on Operational Remote Sensing (ET-ORS), first session, the working group (some members of the ETs) decided the following action plan for implementation of the questionnaires by ET-SBRSO. More information can be found in Final Report of ET-SBRSO [2]. The following points have been defined by the group (Breakout Session 4):

- Prepare only one (and small) questionnaire for each remote sensing system;
- Send a letter to Permanent Representatives (PRs) of WMO members to nominate an expert person (focal point) for contact. After that, it should be sent the questionnaire;
- Ask what the experience with the remote sensing system is and identify the members who intend to have an operational network in the future (p.s: without defining the concept of "operational network")
- Develop a questionnaire online (website) and in text format (MS Word)

Throughout 2012, the questionnaire was reviewed (included suggestions) by all members of the ET. The questionnaire final version was completed in August 2012 (in the annex of this report). Mr. Dean Lockett (WMO) suggested applying it online in the WMO Checkbox for surveys and utilising the Country Profile Database for the on-going collection of metadata from WMO Members.

- ✓ WMO checkbox (<https://duplicatus.wmo.int/Login.aspx>), for the section 1, 5 and 7 of questionnaire.
- ✓ WMO Country Profile Database (<http://www.wmo.int/cpdb/>) for the sections 2, 3 (as it depends on each system), 4 and 6 of questionnaire.

In September 2012 the activities of ET-SBRSO (2009-2012) was passed on to the next Work Plan of the ET-SBO (2013-2016).

3. Next steps and others questionnaire

Unfortunately, there was no time to carry out the first survey with the Wind Profiling Radar. However, the next steps are:

- Review the information of Country Profile Database
- Put the questionnaire on a website (WMO Checkbox)
- Receive responses from other countries and prepare the report

For the next questionnaires were defined the following sequence (annual questionnaires) at the last meeting of the ET-SBR SO:

- ✓ Year 1: Wind Profile Radar (WPR);
- ✓ Year 2: Water Vapor-Global Navigation Satellite System (WV-GNSS);
- ✓ Year 3: Microwave Radiometer;
- ✓ Year 4: Light Detection and Ranging (LIDAR)

WORLD METEOROLOGICAL ORGANIZATION

Commission for Basic Systems

Expert Team on Surface-Based Remotely-Sensed Observations

QUESTIONNAIRE ON WIND PROFILING RADARS (FINAL VERSION)

1. WMO MEMBER:

1.1. Country/ Territory:

1.2. Which organization within the Country / Territory is this response from?

NMHS

other organization

1.3. Institute/organization:

1.4. Contact person (responsible for completing this questionnaire):

name:

function/ position:

address:

phone:

e-mail:

2. WIND PROFILING RADAR SYSTEMS:

2.1. Does your Organization use wind profiling radars systems?

No

Yes

(If your answer is "no", you are invited to answer the following questions)

(If your answer is "yes", please jump directly to question 2.4.)

2.2. Do you plan to use wind profiling radars in the future?

No

Yes

(If your answer is "yes", you are invited to answer the following questions)

(If your answer is "no", you are invited to answer only question 2.3 and please jump directly to question 5.1.)

2.2.1. When?

this year

next 2 years

next 5 years

next 10 years

(If you answer this question, you are invited to answer only questions 2.3, 2.4 and please jump directly to question 5.1.)

2.3. What is the reason for not using wind profiling radars?

no identified needs

funding limitations

- the cost/benefit ratio doesn't justify such investment
- insufficient knowledge about these data
- other reasons *(please specify bellow)*

(after responding question 2.3, please jump directly to question 5.1.)

- 2.4. Why did your Organization decide to operate wind profiling radars?
- to improve the density of the upper air observing networks
 - research studies (e.g. to better understand atmospheric science)
 - substitution for radiosonde (e.g. to reduce operational costs)
 - application of new technology
 - to contribute to the safety of aircraft navigation
 - others*(please specify bellow)*

- 2.5. What was the main criteria considered for the site selection of wind profiling radars?
- infrastructure
 - gap in upper air network
 - customer specific requirement
 - critical weather for events
 - use on mobile platforms (WPR mobile)
 - frequency allocation constraints
 - others*(please specify bellow)*

2.6. How many WPR have been installed? *(numbers)*

2.6.1. Please, inform the location name, latitude (Lat) and longitude (Lon) of the WPR installed.

Location Name	Lat (N/S)	Lon (W/E)
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others*(please specify bellow)*

2.7. Do you have any plans to buy new wind profiling radars equipments?

No Yes

(If your answer is "yes", please jump directly to question 2.8.)

2.7.1. Why?

2.8. Does your Organization intend to have an operational WPR network in the future?

No

Yes

(If your answer is "yes", please jump directly to question 2.9.)

2.8.1. Why?

2.9. To support the introduction of wind profiling radars your organization obtained support from:

manufacturers

consultancy companies

research institutes

other NMHSs

none

others *(please specify below)*

2.9.1. What kind of support/ consultancy service did you hire?

3. CONFIGURATION SYSTEMS

3.1. Equipment in use:

(Please inform section 3.1 for each type of wind profiling radar system used by your Organization and location name, without latitude and longitude (indicated in section 2.6.1.))

location name:

manufacturer:

model/ type:

frequency range (e.g. GHz, MHz):

wind measurement methods: (e.g. DBS, SA, RASS):

max observable height:

vertical resolution:

data time interval:

others *(please specify below)*

3.2. Do you measure temperature through RASS?

No

Yes

3.3. Are there any components of the operating system which is not provided by the manufacturer?

No

Yes

(If your answer is "no", please jump directly to question 3.3.)

3.3.1. Which one(s)?

3.3.2. What is the main function of this component?

3.4. Does your Organization have real time (permanent network connection) access to wind profiling radar outputs?

No

Yes

(If your answer is "no", please jump directly to question 3.5.)

3.4.1. The communication type for real time data transmission between wind profiling radars and operating centres are:

satellite

terrestrial line (Leased line/Dial-up)

mobile phone (GSM, CDMA)

radio link

others(*please specify below*)

3.5. Are there any back-up communication methods in operation?

No

Yes

(If your answer is "no", please jump directly to question 4.1.)

3.5.1. Which one(s)?

4. OPERATIONS, MAINTENANCE AND TRAINING:

4.1. Who maintains the wind profiling radars?

manufacturer

organization itself

maintenance contract (local company)

others(*please specify below*)

4.2. Does your Organization make any changes in the measurement configuration for a specific purpose?

No Yes

(If your answer is "no", please jump directly to question 4.3.)

4.2.1. Which one(s)?

- depending on weather conditions
- only for extreme weather conditions
- only for research studies
- others *(please specify below)*

4.3. What is the frequency of Preventive Maintenance for the main parts of the wind profiling radars? *(per month or per year)*

4.4. What are the main problems faced by your wind profiling radar engineers in operating it and which are the respective solution methods adopted? (e.g. vandalism, lightning, mechanical or electronical problems, communication, etc)

4.5. Do you carry out any verification on your wind profiling radar?

No Yes

(If your answer is "no", please jump directly to question 4.6.)

4.5.1. Please specify how the verification is carried out and how frequently it is carried out:

4.6. Do you have any estimate of the quality of the wind profiling radars data?

No Yes

(If your answer is "no", please jump directly to question 4.7.)

4.6.1. The estimates are based on:

- theoretical estimation based on the wind data themselves
- statistics based on independent verification data
- direct comparison with other equipment
- feedback from forecasters and the network operators
- NWP monitoring statistics
- manufacturer estimation
- others *(please specify below)*

4.7. Do you agree to provide WMO with any results (or references) of studies related to wind profiling radars performances?

No

Yes

4.8. Do you have an estimation of the annual maintenance cost (amount spent on preventive and corrective maintenance)?

4.9. Do you collaborate with other countries or manufacturers for training?

No

Yes

(If your answer is "no", please jump directly to question 4.10.)

4.9.1. Which one(s)?

4.10. What types of training have been carried out for operating wind profiling radars?

4.11. Do you have any recommendations about operation of wind profiling radar or about training?

5. DATA EXCHANGE:

5.1. Does your Organization use wind profiling radars data from other institution?

No

Yes

(If your answer is "no", please jump directly to question 7.1.)

5.1.1. Is data provided by?

public organization

private organization

5.2. Please indicate if you exchange/ disseminate wind profiling radar data with other organizations (same country)?

No

Yes

(If your answer is "no", please jump directly to question 6.1.)

5.2.1. Is data provided via?

cooperation agreement

commercialization process

others *(please specify bellow)*

6. APPLICATIONS AND DATA USE:

6.1. In which parameters, generated by your wind profiling radars, the users are most interested?

- horizontal winds
- vertical winds
- temperatures
- secondary products *(please specify bellow)*

6.2. Prioritize the use of wind profiling radars data in your Organization (if more than one, please grade each item respect to its priority as 1, 2, 3, 4)

- climate research
- global NWP
- high resolution NWP (regional)
- synoptic meteorology
- seasonal& inter-annual monitoring
- nowcasting
- atmospheric chemistry
- aeronautical meteorology
- agricultural meteorology
- hydrology and water resources
- others *(please specify bellow)*

6.3. Do you use wind profiling radar data along with other instruments or data sources (satellite, weather radar etc.)?

- No Yes

(If your answer is "no", please jump directly to question 7.1.)

6.3.1. Can you describe your joint use of wind profiling radars with other instruments and data sources?

7. ADDITION INFORMATION:

7.1. Please, write your opinion on quality of this questionnaire:

7.1.1. Please, grade this questionnaire respect to its quality.

- 1 2 3 4 5

(Quality increases from 1 to 5. For example if you think, this questionnaire is very good, choose 5 or if you think it is very bad, choose 1)

7.2. Please use this section to add any information which can be useful but not included in the questionnaire:

7.3. Please nominate an expert person (focal point) for further contact:

Full name:

Institution:

Position:

Address:

Telephone:

Telefax:

E-mail:

URL / http:

Please, return the completed questionnaire, as soon as possible, but not later than XX November 2012 to the WMO Secretariat, preferably as an e-mails attachment (word document):

**Mr Dean Lockett
Observing Systems Division
Observing and Information Systems Department
World Meteorological Organization
Tel.: +(41 22) 730 8323
Fax: +(41 22) 730 8021
Email: dlockett@wmo.int**

Prepared by CBS on Expert Team on Surface-Based Remotely-Sensed Observations (ET-SBRSO)

Mr Stuart Goldstraw
Chairman ET-SBRSO
Met Office – United Kingdom
E-mail: stuart.goldstraw@metoffice.gov.uk

MrErcanBuyukbas
Vice-chair ET-SBRSO
Turkish State Meteorological Service - Turkey
E-mail: ebuyukbas@dmi.gov.tr

MrAmaury Caruzzo
Member of ET-SBRSO
National Institute of Meteorology– Brazil
E-mail: acaruzzo@gmail.com