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OPEN PROGRAMME AREA GROUP
ON INTEGRATED OBSERVING SYSTEMS

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WORKSHOP ON RADAR DATA EXCHANGE

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CURRENT STATUS OF WEATHER RADAR DATA EXCHANGE

Regional Report on the current status of the exchange of weather radar data – RA IV
(Submitted by Paul Joe, Canada)

SUMMARY AND PURPOSE OF DOCUMENT

To report on the present status on the radar network and data exchange in Region IV.

ACTION PROPOSED

Workshop participants are invited to note the information contained in the document.

WRDE Report: Status of Radar Data Exchange in Region IV

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Introduction

Region IV consists basically of North and Central America. Table 1 shows the list of Region IV countries retrieved from the WMO web site. Information was derived from an internet search of NHMS web sites, the WMO Weather Radar database, a Google search for radar data exchange and two email requests for information.

Table 1: List of Region IV members

Country	Web Site	WRDB	WEB	Radar
Antigua and Barbuda	Meteorological Services	no	no	??
Bahamas	Department of Meteorology	no	yes	yes
Barbados	Meteorological Services	no	no	yes
Belize	National Meteorological Service	yes	yes	yes
British Caribbean Territories	Caribbean Meteorological Organization		yes	yes
Bermuda*	http://www.weather.bm/	no	yes	yes
Canada	Meteorological Service of Canada	yes	yes	yes
Curacao*	http://www.meteo.an/index.asp	no	yes	yes
Colombia	Instituto de Hidrología, Meteorología y Estudios Ambientales	no	no	no
Costa Rica	Instituto Meteorológico Nacional	no	no	no
Cuba	Instituto de Meteorología	no		yes
Curaçao and Sint Maarten (duplicate)	Meteorological Service		yes	yes
Dominica	Dominica Meteorological Services	no	no	no
Dominican Republic	Oficina Nacional de Meteorología	no	no	??
El Salvador	Servicio Nacional de Estudios Territoriales	no	yes	yes
French Guiana*				yes
Guadeloupe*		no	no	yes
Guatemala	Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología	no	no	no
Guyana	http://www.hydromet.gov.gy/	no	yes	yes
Haiti	Centre national de météorologie	no	no	no
Honduras	Servicio Meteorológico Nacional	no	no	no
Jamaica	Meteorological Service	no	yes	yes
Martinique*				yes
Mexico	Servicio Meteorológico Nacional	no	yes	yes
Nicaragua	Dirección General de Meteorología	no	no	no
Panama	Hidrometeorología	yes	yes	yes
Saint Lucia	Meteorological Services	no	no	no
St Maarten*	St Maarten Met Service	yes	yes	yes
Trinidad and Tobago	Meteorological Service	yes		yes
United States of America	National Weather Service	yes	yes	yes
Venezuela	Servicio de Meteorología de la Aviación	no	no	yes

Notes:

1. The “radar” column is to indicate whether radars are evident.
2. The * in the country column indicate those countries missing from the WMO Web page as belonging to RA IV.
3. United Kingdom and France were listed as part of RA IV but not included here.
4. Venezuela is also on the WMO RA IV and VI lists

Information Requirements

Information was sought on the following:

- radars in the NHMS
- radar networking within the country (intra)
- radar networking among neighbouring countries (inter)
- products or raw data exchanged
- mosaiced either in intra/inter
- why/why not and limiting factors

Information Gathering

Internet Search

Links to the NHMS web sites are incorporated in the WMO web site. If the web site pages indicate the presence of radar, then this is recorded in column 2 of Table 1. This provides a first order indication whether (i) there are radars available to the NHMS (belonging to NHMS, accessible by NHMS), (ii) if mosaics are available, this indicates whether intra-NHMS data exchange is occurring (iii) or inter-NHMS data exchange is going on, (iv) the nature of the integration (none or mosaiced) and (v)

This does not necessarily indicate that if data exchange is going on since there may be proprietary issues preventing this (as in Canada-U.S.). Also, this does not necessarily the best web site as the radar data exchange may be better expressed on other web sites (like NCDC or NEXRAD). Also, radars and the data may not be proprietary to the NHMS but owned by transport (aviation) or utilities (hydro-electric)

Web site URL, emails, contact names and phone numbers for follow-up were extracted (see separate worksheet).

WMO WR Database (Turkey)

The Turkish Met Service has developed a weather radar database. This database was consulted to examine to answer the same questions as the internet search described in the previous section. This is shown in the next column.

These two internet searches provided the bulk of the information in Table 1.

Email

Using the available email contacts (many were very generic), emails were issued to request more information about radar data exchange. Response was not plentiful but very fruitful. Two emails were issued.

Cuba and Belize provided very good information. Panama responded on the second email request.

Phone Contact

No phone calls were made (as of this writing) due to time but also due to potential oral language issues.

Comments/Results

The comments column in Table 2 represent the results of this analysis and is the current status.

Country	External Exchange
Antigua and Barbuda	No evidence of radar on web site.
Bahamas	Cuban and Puerto Rico radars on web site
Barbados	No evidence of radar on web site (but see CMO)
Belize	Only single radar, on web site; BUFR products are available on web site for download (pull); plans to include in a Caribbean mosaic as part of donor obligation; https://ra4-gifs.weather.gov/data/RMTN/RADAR/
British Caribbean Territories	Four new Doppler digital radars in Barbados, Belize, Guyana and Trinidad & Tobago as part of EC project 2003
Bermuda*	From T. Sutherland;
Canada	Canada has an open data policy though radar data has not made its way fully to the data portal yet. There was a change in policy about 5-10 years ago and cost of dissemination is shared with the requestor. Iris files sent via GTS, NCEP then NCDC; Canadian data is not available to others on NCDC site by agreement till Canada is able to provide radar data service to the public; U.S. L2, 3 and 4 products from WSI, NCDC or via LDM; Several L2 formats/structures; L3 and L4 from WSI and ftp are data-products; several L2 formats - LDM data is bundled by chunks; NCDC has "archive2" extra characters
Curacao*	From T. Sutherland; updated on WMO Web site
Colombia	Nothing on web site

Costa Rica	Nothing on web site
Cuba	Presented at various conferences; Open RPG system adapted to 40 year old Cuban radars which have been upgraded to Doppler and dual Pol; data in the U.S. L2-4 formats
Curaçao and Sint Maarten (duplicate)	Two radars on web site (single radar); Cuacao is sigmet/iris product. St Marteen is under maintenance
Dominica	No mention on web site
Dominican Republic	??
El Salvador	Web site shows 9 individual radars
French Guiana*	from T. sutherland
Guadeloupe*	from T. sutherland
Guatemala	Radar not mentioned in instruments list. Aviation forecasts are from NOAA.
Guyana	New radar installed;single Doppler by Selex; not exchanging data now but they would like to exchange all radar data with a view strengthen existing early weather warning system and also ensure Guyana's meets its commitment under WMO World Weather Watch Programme and Resolution 40; We are experiencing all of the challenges esp people with right knowledge and skills and processing of data. Among the main reasons that our radar was funded under EU project however, the training component of this project on the interpretation of products was cut, in addition our staff attrition rate is high - we have a number of young persons who don't have the necessary experience in radar meteorology or maintenance
Haiti	No observations (at all) on web site
Honduras	Nothing on web site.
Jamaica	One radar on web but down.
Martinique*	From T. Sutherland
Mexico	13 radars on web site; Links to Belize and NOAA radars
Nicaragua	Bad web link
Panama	1 radar, nicely animating; Owner of the radar is the Authority of the Panama Canal and NHMS is a user
Saint Lucia	Nothing evident on web site
St Maarten*	From T. Sutherland, combined with Caracao on web site; www.meteo.an
Trinidad and Tobago	Bad web link
United States of America	NWS has a open data policy and makes data available via multiple means; 3rd party data providers (NIDS) provide data-products - L3 and L4 data; L2 data is provided via university and other ftp sites on agreement with NWS; LDM access for special users; data is available from NCDC. Jeff Attor of NCEP is converting Iris format data to BUFR using the TRMM RSL data model to use their QM software.
Venezuela	From T. Sutherland

Summary

- 1 There are 31 countries within RA IV surveyed. France and UK were included as part of RA IV but not included here. Venezuela is included here as it is on the WMO web site but also included in another Region.
- 2 From the internet and Weather Radar database, there was evidence of weather radar in 20 countries. Note that some meteorological services have merged (e.g. Curacao is providing services to some neighbouring countries.)
- 6 Raw radar data exchange in native formats between the U.S. and Canada occurs though not fully used in operations. NCEP is converting data in nature format to WMO BUFR using the NASA RSL data model.

- 7 Intra-NHMS radar data exchange (i.e. national mosaics are evident in Canada, U.S. and Cuba.
- 8 Inter-NHMS mosaics are not evident as a NHMS product; research mosaics are produced at NSSL in the U.S. for Canada and U.S. radars.
- 9 Cuba indicates that it sends their national mosaic to NWS (Hurricane Center)
- 10 Cuba has offered technical assistance to other Caribbean countries
- 7 The European Commission Caribbean Radar project has the intent of exchanging radar products (assumed) in BUFR format for mosaicing.

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