

Geneva, Switzerland, 10-13 September, 2013

STATUS & PROGRESS ON ET-ABO WORK PLAN TASKS 2013-14

Global and Regional ABO & AMDAR Program Development

Development of AMDAR Regional Implementation Plan for RA IV

(Submitted by Gilles Fournier, Canada)

SUMMARY AND PURPOSE OF DOCUMENT

To propose and recommend key aspects and issues associated with the development of the AMDAR Regional Implementation Plan for Regional Association IV.

ACTION PROPOSED

The Session is invited to note and discuss the contents of the document.

References

1. *AMDAR Coverage & Targeting for Future Airline Recruitment in AMDAR data sparse regions*, Graham D Bruce & Darryl E. Jacobs. 24th January 2013.
 2. Canada AMDAR status report submitted to the first session of CBS ET-ABO, Geneva, 10-13 September, 2013.
 3. USA AMDAR status report submitted to the 15th session of the WMO AMDAR, Boulder, 6-9 November, 2012.
 4. WMO IOM Report 80
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DEVELOPMENT OF AMDAR REGIONAL IMPLEMENTATION PLAN FOR RA IV

1. Current status of AMDAR in Region IV

WMO RA IV comprises North America, Central America and the Caribbean

USA

As of November 2012, the USA programme consisted of 9 airlines with a fleet of around 2000 aircraft producing around 200,000 reports per day on the GTS in BUFR format. The FAA MDCRS contract with ARINC was in the first of four optional extension years. The Panel was advised of the interest of Hawaiian Airlines in developing an AMDAR Programme in cooperation with NOAA and within the USA MDCRS Programme.

The development of the AMDAR Programme with the Mexican meteorological service (SMN) and Aeromexico in collaboration with ARINC has progressed with the terms for a programme and contract largely agreed between ARINC and WMO/Aircraft Observation Unit, however, the process of meeting the requirements of the WMO Procurements and Contracts Committee was still to be concluded.

Canada

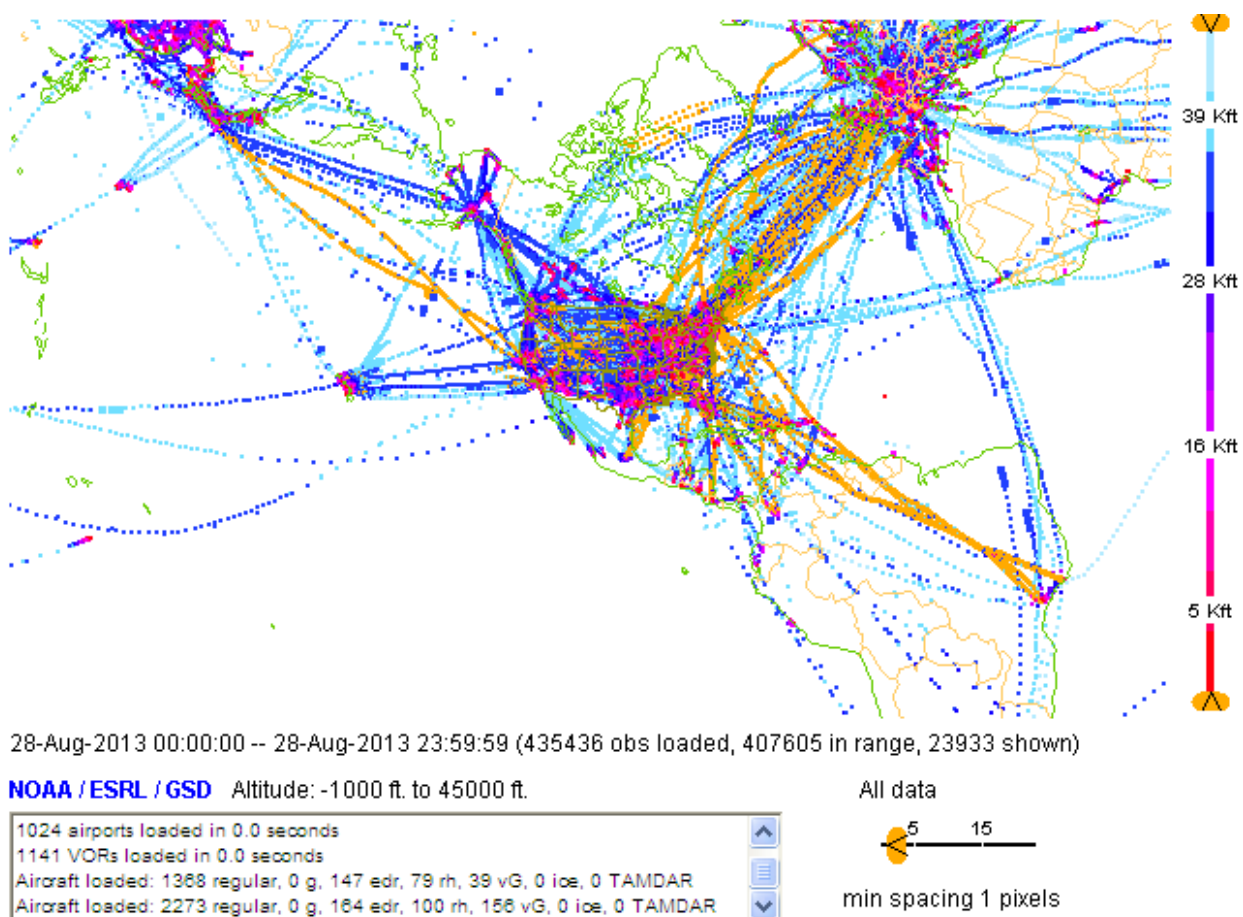
Currently NAV CANADA (2 CRJ-200 for flight inspection) and Jazz (26 CRJ-200ER), operated under Air Canada Express, continue to be the only active AMDAR data contributors to the Canadian AMDAR Programme.

Mexico

With the support of the US NOAA National Weather Service and hosted by the Comisión Nacional del Agua (CONAGUA) with the support of its Servicio Meteorológico Nacional (SMN), a scientific and technical workshop on AMDAR took place in Mexico over 8-10 November, 2011. This effort is part of a bilateral agreement between the United States and Mexico to improve the meteorological observing system in Central and South America. ARINC, SMN and Aeroméxico, the national airline targeted for AMDAR participation, had demonstrated that development of a programme within its fleet was viable so that, during the workshop, the results of this prototype Mexican AMDAR Programme were discussed and plans made for its advancement. The workshop programme also included discussion with and advice to the representatives of four nations (Mexico, Peru, Argentina and Brazil) on how to initiate and operate a national AMDAR programme and how the WMO AMDAR Panel can support and coordinate this development.

Other countries of Region IV

No activities on AMDAR or interest on the development of national AMDAR programme is known from the other members of WMO RA IV, i.e.: Antigua and Barbuda; Bahamas; Barbados; Belize; British Caribbean Territories; Colombia; Costa Rica; Cuba; Curaçao and Sint Maarten; Dominica; Dominican Republic; El Salvador; 'France'; Guatemala; Haiti; Honduras; Jamaica; Mexico; 'the Netherlands'; Nicaragua; Panama; Saint Lucia; Trinidad and Tobago; 'United Kingdom of Great Britain and Northern Ireland'; and Venezuela



2. Key areas where coverage requires improvement

Most of Region IV except USA and most populated areas of Canada (i.e. within 200 km north of the US-Canada border).

The Caribbean

The Caribbean region accounts for roughly 1% of the Global AMDAR data. This is distributed amongst 18 airports in the region. San Juan, Puerto Rico accounts for more than a quarter of this data with 120 soundings over a week. This region gets considerable tourist traffic throughout the winter months. The total number of observations is therefore expected to vary seasonally, depending on the carriers flying to specific destinations. AMDAR data is provided by European and American carriers rather than local, inter-island airlines.

Central America

The Central American region also accounted for approximately 0.3 % of the Global AMDAR soundings, even though the area of this region is much smaller than that of South America. Soundings were received from only 6 cities. It appears that the majority of the data was transmitted by US carriers.

Central America/Caribbean Region



Figure 23: Routes of VHF ACARS Equipped Airlines based in Central America/Caribbean.

Central America/Caribbean Airlines with ACARS Aircraft			
Country	Airline	Rating	ACARS Aircraft
Panama	Copa Airlines	High	33
Trinidad and Tobago	Caribbean Airlines	High	11
Jamaica	Air Jamaica	Medium	9
Costa Rica	LACSA	Low	1
Panama	Air Panama dba Parsa	Low	1

Mexico

As of November 2012, work had progressed on the development of the Mexican AMDAR Programme in cooperation with Aeromexico and ARINC. It was expected that the required agreements will be in place in the last quarter of 2012 with data quality to be tested before the programme becomes operational shortly after.

Aeroméxico fleet:

- 29 Boeing 737-700
- 17 Boeing 737-800
- 0 Boeing 737 MAX 8 (60 orders; 30 options)
- 5 Boeing 767-200ER (2 orders)
- 2 Boeing 767-300ER
- 4 Boeing 777-200ER
- 1 Boeing 787-8 (8 orders)
- 0 Boeing 787-9 (6 orders; 4 options)

Aeroméxico Connect:

- 35 Embraer ERJ 145
- 3 Embraer 170
- 2 Embraer 175
- 19 Embraer 190

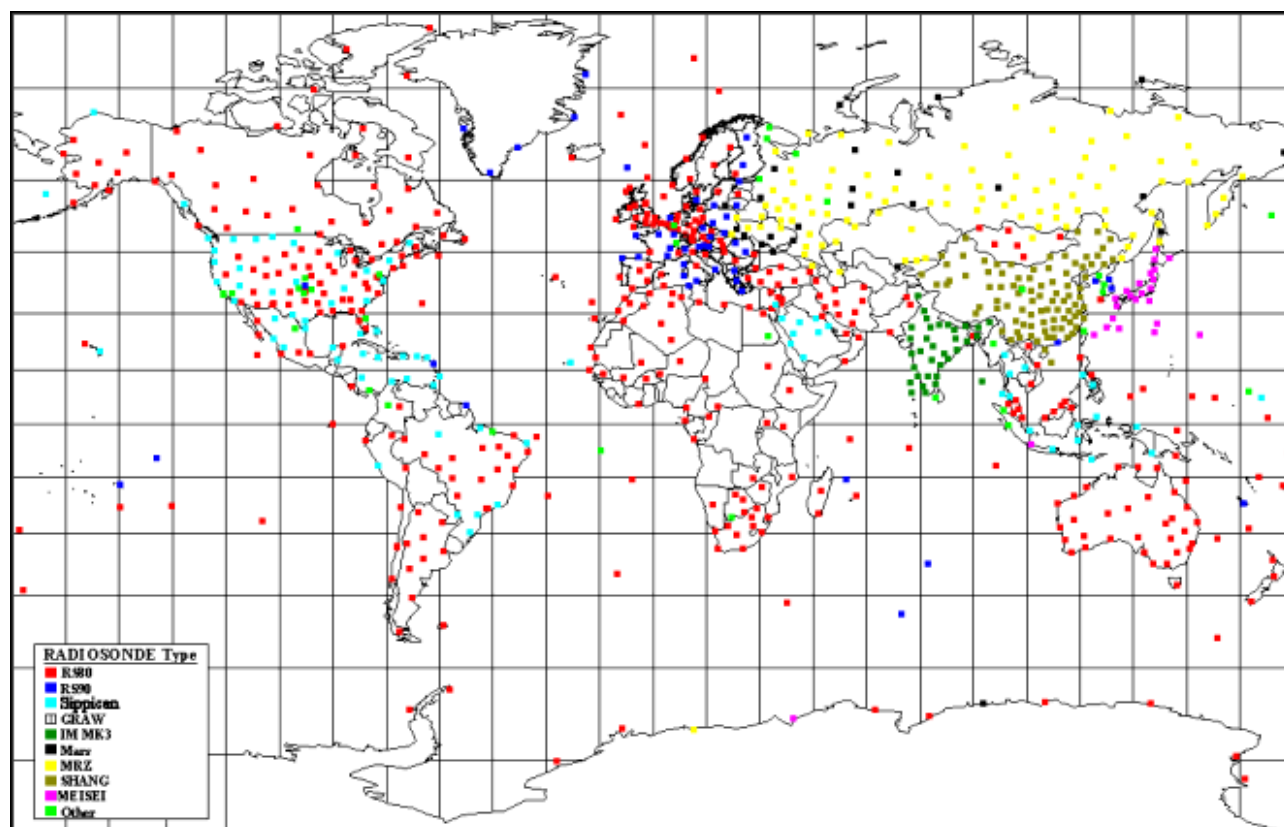
Canada

In Canada there is potential to sustain and expand coverage of AMDAR. A development on Westjet B737-NG aircraft could be relatively easy with the support of Westjet officials and would open an opportunity for some WVSS-II and EDR turbulence algorithm deployment. Development on Air Canada and Air Transat fleets could also be relatively easy but, apart from the frequent profiles at major Canadian hubs, most of the coverage would be international. As Jazz's 26 Bombardier DHC-8-300 and 34 Bombardier DHC-8-100 are already fitted with AMDAR, they could be potentially brought back in the AMDAR fleet if Jazz upgraded their Unilink software. There would also be the possibility to develop AMDAR out of Jazz's 16 Bombardier CRJ 705, and Air Canada's 45 Embraer 190AR and 13 Embraer 175SU. Again, coverage restriction would be major hubs in Canada. For coverage in the north, involvement of airlines such as Canadian North and First Air would have to be reassessed and new innovative solutions sought. Benefits of involving FLYHT (AFIRS), AirDat (TAMDAR) and ARINC/SITA will have to be explored further.

It is noted that Air Canada, Air Canada Rouge, Westjet, Air Transat and Canjet Airlines all operate modern Boeing and Airbus aircraft and, if they were AMDAR-enabled, could deliver target observations over Mexico and the Caribbean.

3. Technical issues for Region IV

To be developed...



Global distribution of radiosondes, IOM report 80, early 2002

Expected that funding is the main issue... strong business cases to present to stakeholders would be required...

Aircraft equipment (avionics, communications, navigation)...

Development on regional airlines would generate great benefits (e.g. Canada). For Canada, a major breakthrough would be to find a permanent solution to the Bombardier's factory temperature probe installed on all DHC-8 aircraft, including the Q400s. Development on Embraer, ATR, DHC-8...

4. Use of Study on Data Coverage and Targeting for Future Airline Recruitment

To be developed...

Study on Data Coverage and Targeting for Future Airline Recruitment:
http://www.wmo.int/pages/prog/www/GOS/ABO/AMDAR/resources/AMDAR_Coverage_Recruitment_Study.html

5. Possible aspects, ideas and approach for strategy for the A-RIP

To be developed...

Plan to be in phase with CBS Implementation Plan for Evolution of the Global Observing System (EGOS-IP). EGOS-IP actions on AMDAR are:

G19: Improve AMDAR Coverage.

G20: Extend coverage of existing programs outside national boundaries and extend optimization capability.

G21: Work towards extension of AMDAR into aviation standards and systems (avionics and airframes).

G22: Validation and implementation of water vapour measurement.

G23: Implementation of turbulence and icing capability.

G24: Extend AMDAR to regional airlines and general aviation (GA) aircraft, and regional airports.

Contact RA IV President (Juan Carlos FALLAS SOJO, Costa Rica) and Vice-President (Dr. Albert A. E. MARTIS, Curaçao and Sint Maarten). Present IP, business cases, impact studies... Request their views and assistance on a proposed path forward. Participate in annual meetings of RA IV to present IP and status of the work...

Build list of contacts and SMEs for Region IV...

Work with established programmes to study the potential to target data over data sparse areas...

WVSS-II...

AirDat/TAMDAR...

FlyHt/AFIRS...

ARINC/SITA...

6. Requirements for assistance and involvement of the WMO Regional Association (possible through the Regional WIGOS Implementation Plans)

To be developed...

Reg WIGOS-IP : <http://www.wmo.int/pages/prog/www/wigos/documents.html>

ET-ABO...