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ON INTEGRATED OBSERVING SYSTEMS

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FIRST SESSION

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TRAINING AND OUTREACH

Report on Training and Outreach Activities

(*Submitted by Carl Weiss*)

ACTION PROPOSED

The Session is invited to note the information contained in the document.

2013 AMDAR OUTREACH/TRAINING ACTIVITY REPORT

Current Status:

1. The Aircraft-Based Observations Programme (ABOP) continues to promote AMDAR at various events and venues.

2. The ABOP also continues to seek new opportunities to promote AMDAR.

Development & Other Activities:

The AMDAR Panel Newsletter

1. As agreed at AMDAR Panel Session 15, biannual AMDAR Panel Newsletters have been issued and are available on the WMO Google web site that was established by the Secretariat to enable the compilation and publication of the Newsletters.

2. As of September 2013, five editions of the Newsletter have been published and can be accessed at,

   https://sites.google.com/a/wmo.int/amdar-news-and-events/newsletters.

3. Contributions to be made by AMDAR Team Members and the articles cover a wide variety of topics including data usage, sensor testing, national program status and developments in reporting formats.

4. The Newsletters are distributed by email using a WMO Google Groups email list, which people with Google accounts can self-subscribe to, otherwise, recipients are directly subscribed by the Secretariat.

5. The Newsletter continues to be an excellent AMDAR outreach tool that should be utilized by WMO Members to promote AMDAR both inside and outside their organizations and particularly to the Aviation Industry. Team Members should contact the Secretariat (Dean Lockett) for advice on the best way to subscribe their national colleagues and aviation partners or contacts.

6. The Newsletters are scheduled to be published on biannually during April and October.

Other Outreach Activities

1. At the 2013 Experimental Aircraft Association's (EAA) AirVenture (July 29 – August 4), the National Weather Service (NWS) again promoted AMDAR activities at its exhibit. An AMDAR poster was displayed at the NWS booth along with a WVSS-II unit. Response from the visitors again this year was very supportive of the program.

7. Carl Weiss (U.S. NWS) represented the Aircraft-Based Observations Programme at the Airline Electrical Engineering Committee – Data Link Users Forum (AEEC–DLUF), February 5-7, 2013 in Phoenix, Arizona, USA. The purpose of attending was to keep AMDAR issues in front of the airline engineers and to make contact with industry representatives.

8. Bryce Ford (SpectraSensors, Inc.) promoted AMDAR/WVSS-II at the following events:
   - American Meteorological Society (AMS) 93rd Annual Meeting, January 5-10; Austin, TX
   - Visit of South African delegation to the USA, February 5; Washington, DC

- Friends and Partners of Aviation Weather (FPAW) Summer Meeting, July 24; Washington, DC (Tammy Farrar [FAA] gave a talk on turbulence detection and Jeannine Hendricks [ARINC] spoke on MDCRS and WVSS-II)
- AMS Summer Meeting, August 12; Boulder, CO

4. SpectraSensors, Inc. has a presence on LinkedIn for their products including WVSS-II. More details can be found at:

http://www.linkedin.com/company/spectrasensors/wvss-ii-atmospheric-water-vapor-sensing-system-55524/product?trk=biz_product.

5. Stewart Taylor (UK Met Office, E-AMDAR Technical Coordinator) meets regularly with representatives of British Airways, Lufthansa, Scandinavian Airlines and Finnair to support the need for data optimization and to better define the benefits airlines receive from active participation in AMDAR. In these discussions, British Airways and Scandinavian Airlines have shown some early interest in the WVSS-II program.

6. In addition, Stewart promoted AMDAR and/or WVSS-II in the following ways:
   - Provided information regarding AMDAR data provision to Luxembourg's Findel Airport (ELLX) to Luxembourg Met Service.
   - Hosted British Airways management and operational staff and gave tour of UK Met Office Ops Centre. He participated in forecaster/NWP discussion on use of AMDAR data – this led to a better understanding of how the data are use; Exeter, UK
   - Gave an AMDAR presentation to Met Office Training Course, April 24; Exeter, UK

7. Southwest Airlines, in conjunction with ARINC and the U.S. National Weather Service (NWS), is finalizing production of a 2½-minute promotional video highlighting their participation in the WVSS-II program. The video begins with an overview on the manufacturing and installation of the sensor and then highlights the partnerships between NWS, ARINC and Southwest Airlines. The video concludes with how the WVSS-II system operates and how the water vapor data collected contribute to improved weather forecasts and the benefits the data offer.

   This collaborative effort will show the data's value (among other benefits) to
   - help improve on-time performance and safety
   - increase operational efficiency and
   - provide better customer service

   This video will be made available to Southwest Airlines employees and customers over various communication vehicles as well as social media. Accurately characterizing the distribution of atmospheric moisture through this innovative use of the nation's commercial aircraft ultimately will benefit the nation's air transportation system.

Training Activities

Development of an Online AMDAR Training Module

1. While interest remains in developing an online AMDAR training module, support to produce the module continues to be an issue.

2. This training module could be developed with the aim to provide both information and training on various aspects of the ABOP in order to meet the needs of several audiences, including weather forecasters, observational development groups, airline operational staff and managers and national meteorological services managers.

3. The cost of over US$100K represented a significant investment that would be difficult to justify being covered solely from the AMDAR Trust Fund and that it likely would be

necessary to seek funding and sponsorship from alternative sources if this project is to go forward.

4. A first draft of a Description of Work (DoW) for the development of the training module has been written and is provided in Annex I of this document. The session is invited to review the draft DoW and discuss how this development might be progressed.

Other Training Activities

1. AMDAR data have been used in aviation weather training produced by COMET at the request of African nations to respond to WMO forecaster competency requirements. AMDAR soundings were used to show their utility in forecasting low stratus and fog, in addition to other applications.

Future Plans

1. As in 2013, NWS and the U.S. AMDAR program plans to continue promoting AMDAR, including WVSS-II, at EAA AirVenture and the National Business Aviation Association (NBAA) Convention and other appropriate events. Also, we hope take advantage of new outreach opportunities that present themselves during the upcoming year.
2. All ET members are encouraged to promote AMDAR in their activities and to notify me (*carl.weiss@noaa.gov*) of these events.
3. Rich Mamrosh (NWS Green Bay, WI) is planning a study to compare AMDAR data to aviation forecast products, specifically SIGMETs and AIRMETs issued by the U.S. Aviation Weather Center.

ANNEX I

DESCRIPTION OF WORK

Training Module: Introduction to AMDAR

Introduction:

The following provides a description of work required to be undertaken for and on behalf of the World Meteorological Organization (WMO) Aircraft Meteorological Data Relay (AMDAR) Program. The work may be offered to suitable a contractor under the terms of a Special Service Agreement with WMO.

This document does not necessarily constitute the full and complete scope and requirements of the work.

Motivation:

The WMO AMDAR Program, directed by the recently dissolved AMDAR Panel which was established in 1998 by interested WMO Members, is responsible for the development and maintenance of the WMO Global AMDAR Program in cooperation and collaboration with other WMO programs and affiliated international aviation organizations and companies.

The Global AMDAR Programme is a cooperative observing programme that aims to foster collaboration with international and national airlines for the provision of meteorological data measured and transmitted from commercial aircraft platforms. The Panel seeks to establish methods and standards for the operation of the AMDAR Programme through consultation with members, the aviation industry and other technical experts, appropriate organizations and partner airlines.

The benefits of AMDAR in improving and enhancing the quality of meteorological analyses and forecasts are well known and widely accepted. Evidence of the data's value is well documented in NWP impact studies, articles in meteorological journals and operational case studies.

More information on the AMDAR Panel, its Terms of Reference and its activities can be obtained at: *http://www.wmo.int/amdar/*

It has been recognized that a major challenge in recruiting candidate nations to participate in the WMO AMDAR Program is demonstrating to the key organizations within that nation,e.g., NMHSs, civil aviation authorities, airlines, etc., the importance of the aircraft data and the overall benefits it can provide. As a first step in developing a national AMDAR program, having an introductory training/informational module describing the AMDAR system and data in detail will make the recruitment process easier.

Task (DescriptionofWork):

The contractor will produce a web-based AMDAR training module that will be available to viewers via a web site. While the internet will be the primary delivery vehicle for this training, it also could be accessed via CD-ROM or USB Drive, if it is determined that such media would increase its reach.

The target audiences for this training will be

- Weather forecasters,
- Civil aviation authority managers,
- Observational development groups,
- Airlines operational staff and managers,
- National meteorological services managers

This training will cover the following points,

- Explain what AMDAR data collection and dissemination entails, and how this data is obtained and utilized.
- Describe the benefits of AMDAR for improving the quality of weather forecasts, for improvements in NWP, and for consequent improvements to airline operations.

- Demonstrate the value of AMDAR by relating the results of impact studies.
- Show the cost benefits of AMDAR to both national meteorological services and to airlines (providing a structure and data for framing a business case).
- Describe the quality of AMDAR data and its characteristic strengths and limitations as a meteorological data source.
- At a basic level, explain the technical aspects of AMDAR in terms of hardware, software, and communications technologies, and in terms of data quality management requirements.
- Describe requirements for contracts between NMSs and airlines for implementing and running AMDAR programs.
- Provide information and resources to module users to support their efforts to make a case for AMDAR programs in presentations to decision makers in their countries and regions.

No prior knowledge of, or experience with AMDAR programs, data or benefits is required. However, it is assumed the viewer has a basic familiarity with weather forecasting processes, weather impacts and aviation operations.
When the module is completed, the viewer will

- understand the characteristics, strengths, and limitations of AMDAR data.
- have a general understanding of how AMDAR programs can be implemented, in terms of technological requirements and formal agreements.
- choose to support AMDAR program development based on their understanding of the value of AMDAR data and its cost benefits.
- have a general framework for structuring a business case for an AMDAR program in their organization, country, or region.

Schedule:

Because of the varied audience for whom this training is intended, material will need to be gathered from a wide variety of locations. To collect the information, develop the training and document progress, the expectation is to have the course available online in 9 to 12 months following the activation of the contract.