

***First Session***

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**STATUS OF WIGOS PILOT PROJECTS**

**Pilot project III  
Integration of AMDAR into WIGOS**

*(Submitted by Mr Frank Grooters, Chairman WMO AMDAR Panel)*

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**Summary and purpose of document**

This document provides information on the implementation of WIGOS Pilot Project III as defined by Cg-XV.

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**ACTION PROPOSED**

The Meeting is invited to note the information on activities and status of the Pilot Project III contained in this document when considering further implementation of WIGOS and the relevant update of WIGOS Development and Implementation Plan.

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- References:**
1. Abridged final report of the EC-LX (WMO-No. 1032)
  2. Final Report of the first session of the EC WG WIGOS-WIS
  3. Final Report of the first session of the Ad-hoc steering group on the WIGOS Pilot Project for AMDAR
  4. Final Report of the AMDAR Panel Management Group Meeting (23 May 2008)

- Annexes:**
1. Template of Pilot Project III
  2. WIGOS Pilot Project III – Sub Projects

## **Pilot Project III**

### **Integration of AMDAR into the WMO Global Observing System**

#### **1. Introduction**

1.1 Within the WMO Integrated Global Observing Systems (WIGOS) a WIGOS Pilot Project for AMDAR has been initiated with participation from the EUCOS and USA AMDAR Programmes. The Ad-hoc Steering Group on the WIGOS Pilot Project for AMDAR met in its first session on 2-3 July 2008 in Geneva, Switzerland. The Pilot Project will focus on the practices impacting AMDAR data collection, processing, archiving and dissemination.

#### **2. Integration of AMDAR into WIGOS**

##### **Governance Issues**

The first step in addressing the governance of WMO AMDAR Panel was the transfer of the AMDAR Technical Coordinator's responsibility to WMO. Following the implementation of the WMO Secretariat structure and organization change, a new Aircraft Observation Unit (AIR) was created, within the Observing and Information Systems Department (OBS) and its Observing Systems Division (OSD). The OSD now has the responsibilities for aeronautical observations. In this regard, the job description was developed with the agreement of AMDAR Panel Chairperson for the new post "AMDAR Technical Coordinator" within the OSD. The job description was evaluated and the respective post classified by the external evaluator. The Vacancy Notice for the post of the AMDAR Technical Coordinator was released on 20 May 2008 and, following the standard evaluation procedure, the post was offered to Mr Michael Berechree (Australia). Mr Berechree has started his work in this new post as of 1 November 2008. The AMDAR Technical Coordinator is the Secretariat lead for the Aircraft Observation Unit, with the responsibility for aeronautical observations.

The second step that addressed the governance was a recommendation of the CBS Implementation-Coordination Team (ICT-IOS-5), Geneva, 15-18 September 2008 to CBS-XIV (March 2009) to establish a CBS expert team on airborne observations and anchor the WMO AMDAR Panel to CBS. This proposal is subject to the approval of 11<sup>th</sup> AMDAR Panel (Malaysia, 17-21 November 2008).

##### **Technical Issues**

The AMDAR Panel Management Group met on 23 May 2008 in Geneva. In this meeting it was noted that there are several key components to the AMDAR system that require immediate attention, such as the standardization of AMDAR BUFR code, the essential updates to the AMDAR Reference Manual and the Standardization of AMDAR Software that should be included under the WIGOS Structure. These issues should be addressed by the WIGOS Pilot Project for AMDAR.

At the ad-hoc Steering Group Meeting the issues relevant to all three levels of WIGOS integration were discussed, namely: standardization of AMDAR BUFR Template, standardization of QC/QA requirements for AMDAR data, standardized specification for instruments, standardized Generation of data from all types of aircraft.

Based on the information provided by the participating experts, the Meeting developed a set project goals and objectives for the WIGOS Pilot Project for AMDAR, to assist with the integration of AMDAR into WIGOS. The AMDAR Pilot Project and the objectives are contained in Annex I.

Six Pilot Project aims and objectives were developed to assist with the integration of AMDAR into WIGOS (see Annex II). A business case will be explored, ideally together with the airline industry, for the development of the AMDAR software, based on the generic software specification.

### **Funding of the Pilot Project and the Sub Projects**

It Ad-hoc Steering Group believed that the Pilot Project and the Sub Projects could not achieve the expected results without appropriate funding. The success can only guaranteed if some of the activities are accomplished trough a short term contract with appropriate experts. The Terms of Reference to the AMDAR Panel Trust Fund do not allow the use of funds for this type of activities and funding is expected from the Secretariat, especially from WIGOS/WIS Trust Fund. WMO was requested to commit the required funding for these activities.

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### The WIGOS Pilot Project for AMDAR

<b>Project Name:</b>	Integration of AMDAR into WIGOS
<b>Acronym:</b>	WIGOS-PP-AMDAR
<b>Project Type:</b>	Pilot
<b>Project Status:</b>	The WIGOS Pilot Project for AMDAR is currently in the initial stages of collaboration and planning.
<b>Project Overview:</b>	This Project will focus on the practices impacting AMDAR data collection, processing, archiving and dissemination. The standard practices used in observing the atmosphere need to be well documented to ensure sufficient detail accompany the observations so that users can interpret measurements correctly. In addition new methods and procedures will be required in preparation for the deployment of new operational instruments, such as WVSSII water vapour sensor.
<b>Project Aims:</b>	<p>Short-term:</p> <p>(1) Development of a standardised BUFR Template for AMDAR;  (2) Application of WMO Metadata relevant to AMDAR;  (3) Development of a standardised Quality Management Framework for AMDAR data; and  (4) Validation and preparation for intercomparison of available Water Vapour sensor performance.</p> <p>Long-term:</p> <p>(5) Update of the AMDAR Reference Manual WMO-No.958; and  (6) Development of the framework for generic software specification for AMDAR.  <i>Note: In case of lack of resources provided towards the WIGOS-PP-AMDAR, Project Aims will be prioritized accordingly.</i></p>
<b>Partners / Participants:</b>	AMDAR Panel E-AMDAR and USA AMDAR Programmes WMO Technical Commissions
<b>Project Cost:</b>	Estimated costs for meetings, consultants and publication CHF 125K
<b>Funding Source(s):</b>	This project will make optimum use of the expertise available from the AMDAR Panel and its WIGOS partners. Financial support shall be required through the WMO AMDAR Panel Trust Fund and WIGOS-WIS Trust Fund.
<b>Project Timescale:</b>	Will all be done in parallel and completed by December 2009
<b>Deliverables:</b>	<p>(1) Agreed BUFR Template for AMDAR;  (2) Published best metadata practice for AMDAR;  (3) Published best practice for Quality Management procedures for AMDAR;  (4) Published results from the validation of the available Water Vapour sensors;  (5) Updated AMDAR Reference Manual WMO-No. 958; and  (6) Agreed framework for generic software specification for AMDAR.  <i>Note: In case of lack of resources provided towards the WIGOS-PP-AMDAR, Deliverables will be prioritized accordingly.</i></p>
<b>Project Links:</b>	<a href="http://www.wmo.int/amdar/">http://www.wmo.int/amdar/</a>
<b>Project Summary:</b>	With the completion of the project aims, AMDAR will be better integrated into WIGOS by adhering to WMO standards for instrumentation, data exchange and for end products.
<b>Date of Last Update:</b>	3/07/2008
<b>Contact Person:</b>	AMDAR Technical Co-ordinator
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## The WIGOS Pilot Project for AMDAR – Sub Projects

Sub Project	Objective	Who	Action	Deadline	Cost (CHF)
1.	Development of a BUFR Template for AMDAR	<b>Dean Lockett</b> (Jitze v. d. Meulen, Stewart Taylor, Magali Stoll and Dave Helms) in collaboration with the ET-DR&C Validation Centres (to be nominated)	<ol style="list-style-type: none"> <li>1. Investigate the various versions of BUFR templates for AMDAR and their elements currently in use by national and regional AMDAR Programs. Provide specification to ET DR&amp;C;</li> <li>2. Develop a standardised BUFR Template for AMDAR that includes all the new extensions supporting parameters for AMDAR;</li> <li>3. Validation of the AMDAR BUFR Template; and</li> <li>4. Approval of the AMDAR BUFR Template.</li> </ol>	<ol style="list-style-type: none"> <li>1 &amp; 2. Q3 2008</li> <li>3. Q4 2008</li> <li>4. Q1 2009</li> </ol>	20K (2008)
2.	Application of WMO Metadata relevant to AMDAR	<b>(Frank Grooters)</b> Contractor TBD under the guidance of the AMDAR Panel Chairperson, ad-hoc support from WIS Project Office, IPET-MI	<ol style="list-style-type: none"> <li>1. Classify components of metadata associated with AMDAR. In particular, identify metadata needed for describing data and products, metadata needed for usage of data and metadata needed for the operation of the AMDAR observing system;</li> <li>2. Identify metadata for quality control and administration. Also identify relevant policies for the sharing and usage of the metadata, data and products;</li> <li>3. Describe the metadata utilising WMO profile of ISO 19115 to ensure appropriate compatibility with WIS and WIGOS; and</li> <li>4. Create examples and best practice guides for inclusion in the AMDAR Reference Manual and relevant CIMO documents.</li> </ol>	<ol style="list-style-type: none"> <li>1. &amp; 2. Q4 2008</li> <li>3. Q1 2009</li> <li>4. Q4 2009</li> </ol>	20K (2009)
3.	Development standardised procedure for Quality Management of AMDAR data	<b>Jitze v. d. Meulen</b> E-AMDAR QEv in coordination with the AMDAR Science Sub Group, other AMDAR Data Monitoring Centres	<ol style="list-style-type: none"> <li>1. Examine the requirements for Quality Monitoring and Quality Assurance of AMDAR Data;</li> <li>2. Develop a Quality Framework and procedure in support of high quality AMDAR Data to users; and</li> <li>3. Identify potential AMDAR archive centres (DCPCs for WIS).</li> </ol>	<ol style="list-style-type: none"> <li>1. Q4 2008</li> <li>2. Q3 2009</li> <li>3. Q4 2009</li> </ol>	10K (2009)
4.	Validation and preparation for intercomparison of available Water Vapour sensor performance	<b>Dave Helms</b> E-AMDAR Programme in coordination with CIMO ET-UASI	<ol style="list-style-type: none"> <li>1. Perform calibration and flight test and report; and,</li> <li>2. Organize preparatory meeting to define the rules and procedures for the intercomparison of AMDAR and other upper-air data.</li> <li>3. Take part in the WMO Radiosonde Intercomparison, China, 2010</li> </ol>	<ol style="list-style-type: none"> <li>1. Q2 2009</li> <li>2. Q3 2009</li> <li>3. Q2 2010</li> </ol>	40K (2009) 40K (2010)

5.	Update of the AMDAR Reference Manual, WMO-No.958	<b>(Frank Grooters)</b> Contractor TBD under the guidance of the AMDAR Science Sub Group, CIMO Rapporteur	<ol style="list-style-type: none"> <li>1. Review those sections of the AMDAR Reference Manual as identified (ensure the full suite of water vapour sensors and their measurements are included, turbulence and icing and future requirements for AMDAR;</li> <li>2. Update to both technical and scientific components of the AMDAR Reference Manual and propose changes to the <i>CIMO Guide</i>; and</li> <li>3. Incorporate input from other sub projects.</li> <li>4. Draft new version of AMDAR Reference Manual</li> </ol>	<ol style="list-style-type: none"> <li>1. Q4 2008</li> <li>2 &amp; 3. Q3 2009</li> <li>4. Q4 1010</li> </ol>	<p>25K (2009) 25K (2010)</p>
6.	Development of the framework for generic software specification for AMDAR	<b>(Frank Grooters)</b> Contractor TBD under the supervision of Stewart Taylor in coordination with AMDAR Panel Technical Sub-Group, Aviation Industry Groups.	<ol style="list-style-type: none"> <li>1. Review all versions of current software specifications currently in use by operational AMDAR Programs; and</li> <li>2. Provide framework for the development of the generic software solution for AMDAR.</li> </ol>	<ol style="list-style-type: none"> <li>1. Q1 2009</li> <li>2. Q4 2009</li> </ol>	<p>10K (2009) 20K (2010)</p>