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National, Regional and Global Optimization

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SUMMARY AND PURPOSE OF DOCUMENT

The document provides an overview concerning the use and development of optimization systems for aircraft observations and also offers some recommendations.

ACTION PROPOSED

1. The Panel is invited to note the information and recommendations contained in the document.

References:

1. Written contributions from NMHS:s in Australia, E-AMDAR, South Africa and the USA
 2. Final Report from the WMO Workshop on Aircraft Observation System Data Management (Geneva, Switzerland, 5 – 8 June 2012).
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NATIONAL AND REGIONAL ACTIVITIES

Australia

The Australian AMDAR Data Optimisation System (ADOS) had some refinements added to its optimisation process which has delivered improved efficiencies. More significantly, a web based graphical user interface for ADOS, known as 'ADOSMon' has been developed by the Bureau. It provides a user friendly means of monitoring the AMDAR fleet and the operations of ADOS in real time. It also provides a range of diagnostic, analytical and reporting functions.

Although AAA v.3 software has been installed on the Jetstar A320 aircraft, uplinking and optimisation (with ADOS) has not yet been implemented. In 2013 we hope to work with Jetstar to establish the Bureau-to-aircraft comms channel required achieve this.

Europe (E-AMDAR)

All cooperating airlines are connected to powerful optimization systems that offer a lot of flexibility in defining aircraft, airports, phase of flight for observations as well as areas and time periods for observations. This makes it possible to respond e.g. to request for targeted data as currently (4th September – 6th November) delivered to the ongoing HyMeX field campaign (Hydrological cycle in the Mediterranean Experiment. <http://www.hymex.org>).

It has not been possible, so far, to join all airlines in one single system as some airlines do not agree to such arrangement. All optimization systems are accessible through interfaces on Internet, making it possible to make adjustments also when the Management Team is not in office.

There is no new development to report on the systems. Negotiations with one additional airline is in progress and it is planned that this airline will be optimized through ARINC OpCentre.

South Africa

The South African AMDAR programme has looked at the optimization option. While the optimization is an ideal in particular where the data transmission is massive and implementation would cut on the costs of communications, SA is not yet in the position to implement this.

The data provided to SAWS would still need to be increased by getting additional airlines, including those within the region and parts of Africa, should the capability of the African airlines be confirmed to be fitted with the necessary equipment like ACARS.

In view of the above, optimization would be considered in future if more airlines participates.

USA

The FAA is in formal discussions with ARINC to start development of an optimization capability for MDCRS data. The intent of these talks is to examine the feasibility of entering into a contract for data optimization services.

Recommendation

1. The Panel should continue to stimulate members of national and regional AMDAR Programmes to develop and install optimization systems for the collection of AMDAR Data.

GLOBAL ACTIVITIES

The WMO Workshop on Aircraft Observing System Data Management (Geneva, 5 – 8 June 2012) discussed optimization from the viewpoint of data management, including data quality, and offered the following conclusions and recommendation.

The Role of Optimisation in the Aircraft Observations Data Management Framework

The Panel and the Secretariat hosted the Workshop on Aircraft Observations Data Management in June 2012 (see [Final Report](#)) in which the role of AMDAR data optimization was considered in the context of the wider Aircraft-based Observations Data Management Framework.

As described in the Workshop final report, the proposed design of the DMF was based on consideration of a range of factors and requirements including:

1. The Actions within the CBS Implementation Plan for Evolution of the Global Observing System (EGOS-IP);
2. The requirements for compliance with the WMO Information System (WIS); and,
3. The requirements for compliance with the WMO Integrated Global Observing System (WIGOS).

The Workshop final report says the following in relation to the action within the EGOS-IP related to AMDAR data optimization:

The 2nd action encompasses the extension and enhancement of AMDAR coverage through both the expansion of AMDAR fleets operating internationally and the wider use of AMDAR data optimization systems so as to facilitate production of data outside of national and regional boundaries with appropriate agreements and cost-sharing to be put in place. The AO Programme has several activities and initiatives associated with software and optimization capability development and standardization in line with this action. While optimization will act to reduce redundant data levels, overall these initiatives are expected to assist in AMDAR Programme expansion and increase data volumes.

The EGOS-IP also makes it clear that, in addition to facilitating a more efficient better optimized AMDAR Programme, global AMDAR data optimisation will also allow for the realization of the potential of the AMDAR Programme data to be utilized as an observing system that has the adaptability and functionality to provide “Targeted Data” (data provided in addition to routine observations on demand, in support of better monitoring and prediction of synoptic weather systems).

The Workshop developed a proposed Aircraft Observations Global DMF that is depicted in the figure below. In this diagram, the role and function of data optimization is assigned to the Aircraft-based Observations Data Processing Centre (AO DPC), which is envisaged to facilitate automated data optimization on either a national, regional or sub-regional basis. The AO DPC would likely be operated by a NMHS but some of the functionality, e.g. optimisation could also be provided by a 3rd party (3P AO DPC), which might be a private corporate entity, such as an Aviation Data Service Provider.

