

ASDAR STATUS REPORT

(Submitted by WMO)

Summary and purpose of document

The document contains the latest ASDAR status.

ACTION PROPOSED

CGMS Members to note the project usage of the IDCS by ASDAR for the next 2-5 years.

Appendices: A. ASDAR Coverage
B. ASDAR Data

DISCUSSION

COORDINATION OF INTERNATIONAL DATA COLLECTION AND DISTRIBUTION

Introduction

1. The operational Aircraft to Satellite Data Relay (ASDAR) programme has continued to provide valuable observations over data sparse regions of South America, the central and southern Atlantic Ocean, Africa, the Indian Ocean, Asia and Eastern Europe. Much of this area is otherwise not covered by any *in-situ* upper air observations. However, this situation is expected to change in the near future as many of the existing ASDAR equipped aircraft will be converted or replaced by other aircraft fitted with conventional AMDAR systems.

Status of ASDAR Unit operations

2. The programme peaked early in 1998 with 21 operational systems (See Appendix B, Figure 1). However there has been a substantial reduction in the size of the ASDAR programme since January 2000 as all five remaining systems on board British Airways (BA) B747s were decommissioned and removed. These same aircraft have been fitted with AMDAR software along with 45 other aircraft in the B747-400 fleet. Approximately half of these aircraft were expected to be operational in August 2000. This completes the decommissioning programme with BA that has seen a reduction of 10 operational systems in 2 years. The decommissioned units will be checked and made available as spares to support the 12 remaining equipped aircraft belonging to other carriers. The last AMDAR Panel meeting held in 1999 noted the decline of the number of reporting ASDAR units as a result of faults occurring in the ASDAR software now becoming increasingly obsolescent and likely to be uneconomical to maintain in the future.

3. Although the programme is in decline, there are several units seen to have a priority and which should be kept operating for a few more years as they will still form the main source of aircraft observations in critical data void areas of the world. These include units on aircraft from Air Mauritius (2), KLM (3) and Aerolineas (2) that operate respectively over the Indian Ocean and South America. The South African units (2) will eventually be replaced by AMDAR systems as will be the 2 units operated by Saudi Arabia, but not for another year. In order to ensure that these units continue to operate, a routine maintenance contract with ASTRUM (formerly Matra Marconi Space Limited) was renewed until December 2000 with the possibility of further extension of the contract beyond that date. This contract is intended to continue to provide ongoing routine liaison and maintenance services with participating airlines to support the remaining operational ASDAR units.

ASDAR Data availability, quality and timeliness

4. Expected frequency of ASDAR reports is one report for every 7 minutes during level flight and one report for every 10 hPa or 50 hPa during ascent and descent with higher frequency applying to the lower part of the atmosphere. ASDAR reports are received via different collecting centres from one of three geostationary satellites in the space-based GOS depending on the location of the aircraft. Collecting centres transmit reports either in BUFR or in the AMDAR code. The quality evaluation of ASDAR data from April to June 2000 indicates that the average number of ASDAR units reporting per day was 9.9 out of 12 reporting ASDAR Units. During this period, the timeliness of ASDAR data was good with 94.2% of reports received within one hour of observation time and 99.4% within 115 minutes. An analysis of the quality of ASDAR observations is made on a monthly basis by using the difference between ASDAR observations and model forecast fields from the United Kingdom Met Office 30 level global forecast model. Means and standard deviations of differences of temperature, wind speed and direction are obtained for each ASDAR unit. The result of this analysis shows that overall the quality of ASDAR data are good and that ASDAR reports constitute a valuable source of information for numerical weather prediction

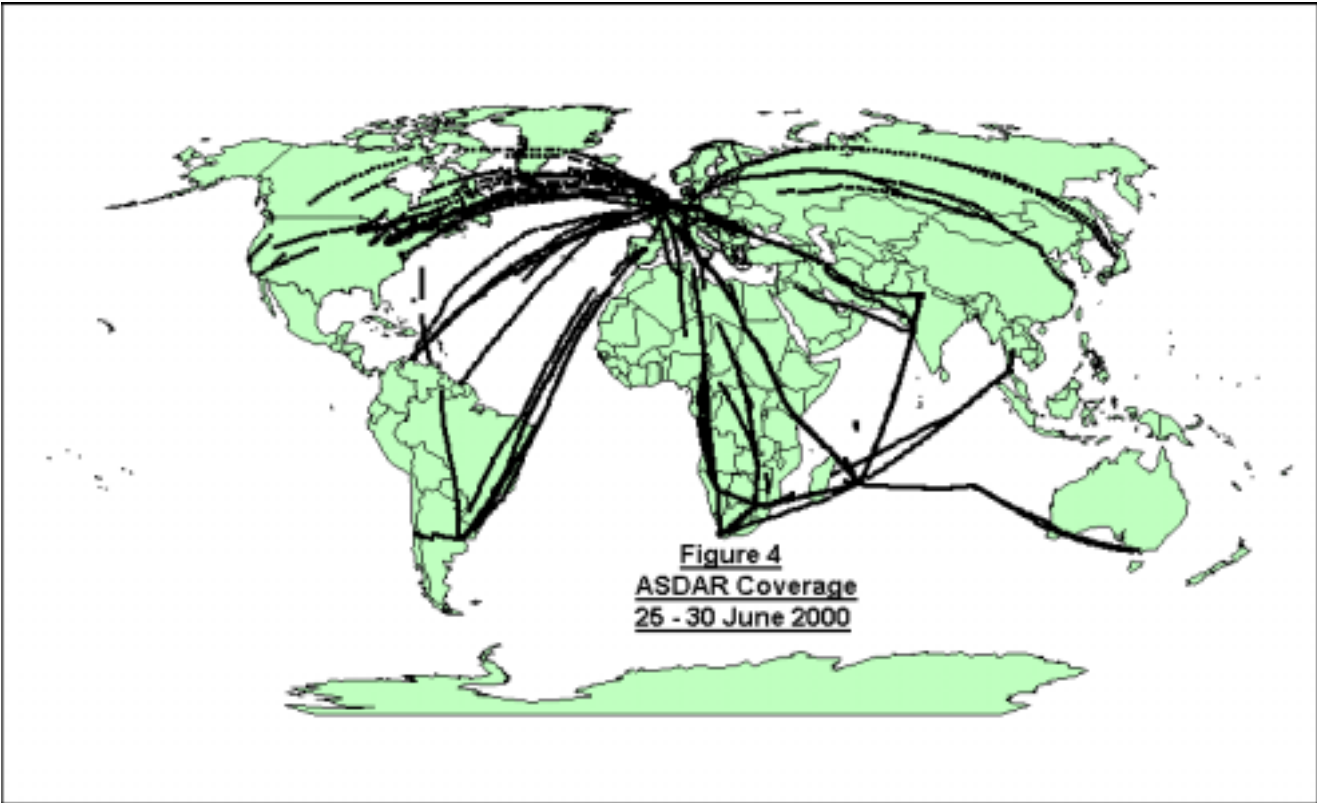
models, including the aviation models run by the two World Area Forecast Centres, London and Washington.

5. The Quality Evaluation Section of the Met Office plays a vital role in monitoring ASDAR data availability receipt delays, reporting frequency and checks on the consistency and quality of meteorological data. All irregularities are reported to the Met Office's ASDAR Technical Centre tasked with informing relevant entities for appropriate actions. The quality of evaluation of ASDAR data is reported and published in a quarterly report. Some of the long term problem associated with the operations of ASDAR units included, among others, large apparent temperatures bias, occasional missing aircraft position information, missing reports that can occur at all stages of flights and reports of large numbers of turbulence values by some aircraft.

6. The plot shown on Appendix A to this document is a typical coverage obtained by the current equipped aircraft reproduced from the April to June 2000 Report of the Quality Evaluation of ASDAR Data showing ASDAR data coverage from 25 to 30 June. Appendix B shows the evolution of operational ASDAR units (Figure 1), the average number of aircraft reporting per day (Figure 2) and the timeliness of ASDAR data (Figure 3).

7. The operational and management responsibilities for ASDAR have been transferred from the Operating Consortium of ASDAR Participants (OCAP) to the AMDAR Panel as of 1 January 2000. At its meeting in October 1999, the AMDAR Panel created an ASDAR sub-group tasked, among other things, to manage the operation of the remaining ASDAR flight units including aspects of system maintenance and repair.

8. The operational ASDAR programme will continue for a further two years (until December 2002) but will be reviewed annually. The AMDAR Panel will be in a better position in 12 months time to assess the possibility of any further extensions of up to 3 years beyond 2002. The ASDAR programme will continue to use up to 15 of the 30 currently available time slots in international channel number 18 of the IDCS for the next 2 to 5 years of operation. There is no further requirement to use the remaining 15 time slots which would be available for use by other programmes.



CGMS-XXVIII/WMO WP-9, APPENDIX B

