COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMME AREA GROUP
ON INTEGRATED OBSERVING SYSTEMS

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EXPERT TEAM ON AIRCRAFT-BASED OBSERVING SYSTEMS

FIRST SESSION

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ITEM: 3.1

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STATUS OF THE AIRCRAFT-BASED OBSERVATIONS PROGRAMS

Reports of Operational National & Regional Programs

(*Submitted by Junichi Ishida, Japan*)

SUMMARY AND PURPOSE OF DOCUMENT

Provides a status report on the national AMDAR Program of Japan.

ACTION PROPOSED

The Session is invited to review and discuss the content of the document.

Appendices

1. Program Metadata

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PROGRESS AND ACTIVITY REPORT

Current Status

1.   Since April 2003, the Japan Meteorological Agency (JMA) has been receiving AMDAR weather data of airplanes in the Japan domestic airspace from the two Japanese airlines, All Nippon Airways (ANA) and Japan Airlines (JAL). While ANA airplanes report observation data only in level flight, JAL airplanes report during all the flight phases including ascent and descent.

2.   Approximately 18,970 reports (about 3,440 and 15,530 reports from ANA and JAL, respectively) are collected from 220 airplanes per day over Japan via the VHF data link. The data are generally of satisfactory quality, although they usually show slight high temperature biases.

3.   JMA started to disseminate AMDAR data operationally in April 2006 and also in the BUFR format in December 2006, in which QNH-corrected altitudes are converted to flight levels.

4.   Temperature and wind AMDAR data are used to make the initial field of the Global model (GSM) with a horizontal resolution of 20km, Mesoscale model (MSM) with a horizontal resolution of 5km, Local model (LFM) with a horizontal resolution of 2km, as well as the Hourly Analysis which is a real-time product to monitor the atmospheric condition around Japan. The data make positive impacts on these products.

5.   The quality control (QC) procedure for the GSM data assimilation (DA) system is as follows. The QC system corrects temperature biases of each aircraft by using previous one month statistics and rejects the data if the bias exceeded 2.5K. The data are thinned so that distance between each data is at least 100 km.

6.   The QC for the MSM DA system is as follows. We don't perform any bias correction based on the MSM DA system. The distance to thin the data is 50km and 15km for the data higher than 500hPa and the data lower than the height, respectively.

7.   The QC for the LFM DA system is almost the same as that for the MSM, but the distance to thin the data is 28km at all levels.

8.   Forecasters use the AMDAR data to issue aerodrome and area forecasts. The data are also important for investigation by forecasters.

APPENDIX 1

PROGRAM METADATA

Operational Fleet

Airline	Country of Airline	Aircraft Type (e.g. B737-400)	Number of Aircraft	AMDAR Software	Format On GTS (BUFR / FM42)
ANA	Japan	B777-200/300/300ER B767-300/300ER B747-400D	80	ACMS	BUFR and FM42
JAL	Japan	B777-200/300/300ER, B767-300, B737-800, B787	157	ACMS	BUFR and FM42

Program Coverage

[A summary estimate of the national or regional AMDAR program coverage as at June 2013. Indicate in the last column which measure is being used as necessary. Information should ideally be based on 1 month of data.]

Airport Country	Airport Name	Airport ID (IATA)	Profiles per day
JAPAN	TOKYO INTERNATIONAL AIRPORT	HND	388
JAPAN	NARITA INTERNATIONAL AIRPORT	NRT	96
JAPAN	NEW CHITOSE AIRPORT	CTS	67
JAPAN	OSAKA INTERNATIONAL AIRPORT	ITM	50
JAPAN	FUKUOKA AIRPORT	FUK	48
JAPAN	NAHA AIRPORT	OKA	32
JAPAN	CHUBU CENTRAIR INTERNATIONAL AIRPORT	NGO	25
JAPAN	KANSAI INTERNATIONAL AIRPORT	KIX	25
JAPAN	HIROSHIMA AIRPORT	HIJ	17
JAPAN	KUMAMOTO AIRPORT	KMJ	16
JAPAN	KAGOSHIMA AIRPORT	KOJ	15
JAPAN	MIYAZAKI AIRPORT	KMI	12
JAPAN	NAGASAKI AIRPORT	NGS	12
JAPAN	OITA AIRPORT	OIT	12
JAPAN	AOMORI AIRPORT	AOJ	12
JAPAN	TAKAMATSU AIRPORT	TAK	11

JAPAN	MATSUYAMA AIRPORT	MYJ	11
JAPAN	KOCHI AIRPORT	KCZ	10
JAPAN	OKAYAMA AIRPORT	OKJ	10
JAPAN	KITAKYUSHU AIRPORT	KKJ	10
JAPAN	IZUMO AIRPORT	IZO	9
JAPAN	OBIHIRO AIRPORT	OBO	8
JAPAN	YAMAGUCHI-UBE AIRPORT	UBJ	8
JAPAN	AKITA AIRPORT	AXT	8
JAPAN	ASAHIKAWA AIRPORT	AKJ	7
JAPAN	HAKODATE AIRPORT	HKD	6
JAPAN	MEMAMBETSU AIRPORT	MMB	6
JAPAN	KUSHIRO AIRPORT	KUH	6
JAPAN	SENDAI AIRPORT	SDJ	4
JAPAN	AMAMI AIRPORT	ASJ	4

Notes

a) Since Japanese aircraft make a report every 30m from the ground to 150m above the ground, the 30m reports are counted up for the nearest airports. The airport locations are picked up from WMO flatfile (Pub9volA130708.flatfile). If there were no 30m reports from the same aircraft in five minutes, the 60m or 90m reports are used alternately.