

UPDATE ON THE GLOBAL RARS NETWORK

This document reports on the progress of the global network of Regional ATOVS Retransmission Systems (RARS) that currently includes 10 stations for the EUMETSAT Advanced Retransmission System (EARS), 13 stations for the Asia-Pacific RARS (AP-RARS), and five stations for the South America RARS (SA-RARS). The resulting coverage is about 60% of the surface of the globe and is expected to reach 78% at the beginning of 2009 and 82% in early 2010. With the implementation of additional stations on Pacific islands and in coastal regions that is planned in 2009, the coverage will significantly expand over oceanic areas which are of primary importance for the use of RARS data for NWP. Furthermore, contacts have been made with operators of stations in central and southern Africa which could ultimately contribute to the objective of covering 90% of the globe.

Quality monitoring of RARS data is performed at the global level by the EUMETSAT SAF for NWP and at the regional level by the RARS operators. Information and links are provided on the WMO Space Programme RARS web pages www.wmo.int/pages/prog/sat/RARS.html.

The 16th International Scientific TOVS Conference (ITSC-16) strongly encouraged to pursue the implementation of the network and to consider the extension of the concept to include advanced sounding instruments. Discussions have been initiated about the extension of the RARS project to include ATMS and CRIS sounding data from the NPP and NPOESS-C1 sounding missions since the timeliness requirements of global NWP cannot be guaranteed otherwise on these missions that will not benefit from the full SafetyNet implementation. This new phase of the RARS project would involve an optimized subset of stations without aiming at 90% of global coverage.

Action/Recommendation proposed:

CGMS Members are invited to:

- Continue to support the implementation and operation of the current phase of the RARS;
- Support the initiation of a new phase of the RARS project for advanced sounders from NPP and NPOESS-C1.

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1 BACKGROUND

The present report summarizes the status and current plans for the global RARS network.

In July 2007, the RARS Implementation Group held its first meeting (RARS-IG-1). It noted that the Asia-Pacific RARS (AP-RARS) had started to operate and that the Brazilian part of the South America RARS (SA-RARS) was in test mode. A number of actions were identified regarding the harmonization of data coding, RARS operations monitoring, implementation of RARS web pages on the WMO website, information of the user community, and expansion of the network.

In May 2008, the RARS Implementation Group held its second meeting (RARS-IG-2) and noted that considerable progress had been achieved on all these points.

The final reports of RARS-IG-1 and RARS-IG-2 are available online at URL:

<http://www.wmo.int/pages/prog/sat/Reports.html#RARSIG>

2 PROGRESS

2.1 Global network coverage

The objective of the current RARS project is to ensure that ATOVS sounder data from at least 90% of the globe are made available for NWP users worldwide within 30 minute timeliness.

As of September 2008, 10 stations are operating in the EUMETSAT Advanced Retransmission System (EARS), 13 stations in the Asia-Pacific RARS (AP-RARS), and five stations in the South America RARS (SA-RARS) with an overall resulting coverage of about 60% of the surface of the globe.

According to current plans, the overall coverage is expected to reach 78% in 2009 and 82% early 2010. It is worth mentioning that with the planned implementation of additional stations on Pacific islands and coastal areas in 2009, the coverage will significantly expand over oceanic areas, which is of primary importance for Numerical Weather Prediction. Contacts should be pursued with parties operating stations in central and southern (e.g. Libreville, Pretoria) which could ultimately allow reaching the objective of covering 90% of the globe.

2.2 Monitoring

Global RARS operations are now monitored on an operational basis by the NWP Satellite Applications Facility of EUMETSAT led by the Met Office, United Kingdom. Monitoring results can be found on the NWP SAF website (<http://www.nwp.saf.org/>) when looking at "Monitoring Reports" then "the NWP SAF EARS Monitoring Report" and then "EARS/RARS Monitoring Page").

Quality monitoring is also being provided by the RARS operators themselves. The Japan Meteorological Agency (JMA) web site provides eloquent illustration of the improvement in timeliness allowed by the RARS with respect to the NWP model cut-off.

Information and links to the relevant web sites are available on the WMO Space Programme RARS web pages: www.wmo.int/pages/prog/sat/RARS.html.

2.3 Harmonization of data coding, bulletin headings and filenames

RARS-IG-2 thoroughly discussed the harmonization of RARS data coding and description for exchange over the GTS and the WIS, with a view to ensure compliance with current standards and to facilitate worldwide access to these data. The Implementation Group agreed on a common implementation of BUFR code and of GTS and WIS standards and rules for RARS data. The outcome of this discussion is provided in WMO-WP-09 submitted to CGMS-36 Working Group II under agenda item II/8 (Coordination of code forms).

Early September 2008, the proposals from RARS-IG-2 regarding RARS data coding were reviewed and agreed with minor amendments by the joint meeting of the Expert Team on Data Representation and Codes and the Migration Team on Table Driven Code Forms (ET-DRC/MT-TDCF).

Later in September 2008, RARS-IG-2 proposals on abbreviated headings and filenames for RARS data exchange over the GTS and WIS were reviewed and agreed by the joint meeting of the Implementation Coordination Meeting of the Main Telecommunication Network (ICM-MTN) and the Expert Team on Operation and Implementation of the Global Telecommunication System and the WMO Information System (ET-OI).

Once endorsed by the Commission for Basic Systems, these updates will be incorporated in the Manual on Codes and the Manual on the GTS as appropriate.

2.4 User interaction

The status of RARS was presented at the 16th International Scientific TOVS Conference (ITSC-16) held in Brazil in May 2008. The Conference supported the current objective of covering 90% of the globe and strongly encouraged WMO and the relevant operators to pursue the implementation of the network as well as to consider the extension of the concept to include advanced sounding instruments.

3 FUTURE DEVELOPMENTS

Discussions have been initiated about the extension of the RARS project to include ATMS and CRIS sounding data from the NPP and NPOESS-C1 sounding missions. Indeed, these missions will not benefit from the SafetyNet and thus cannot guarantee the provision of global sounding data with tight timeliness requirements. It is recognized that the inclusion of these datasets would involve X-band stations and that the collection and retransmission of CRIS data would require significantly higher bandwidth. Considering both the potential cost of this development and the benefit of expanding the real time use of this sounding mission, it is suggested to initiate as soon as possible a new phase of the RARS project aiming at the collection and retransmission of ATMS and CRIS data from an optimized



subset of X-band stations – still to be determined - though without aiming at 90% of global coverage.

Consideration shall also be given to IASI data, depending on the availability of HRPT on METOP, and to FY-3A sounding data.

4 CONCLUSION

CGMS Members are invited to:

Continue to support the implementation and operation of the current phase of the RARS;

Comment on the proposed extension of RARS to advanced sounders from NPP and NPOESS-C1;

Consider supporting this new phase of the RARS project.

ANNEX

RARS HRPT STATION STATUS AND ANTICIPATED EVOLUTION (2008)

■ ATOVS/NOAA reception ■ ATOVS/Metop reception

Area	Regional RARS Centre	HRPT Station Name	Latitude	Longitude	2008				2009				2010			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Asia Pacific (A-P RARS)	JMA Tokyo	Kiyose	35.77° N	139.53° E	■	■	■	■	■	■	■	■	■	■	■	■
		Syowa	69° S	39.58° E	■	■	■	■								
		Seoul	37.48° N	126.92° E	■	■	■	■								
		Jincheon	36.99° N	127.43° E					■	■	■	■	■	■	■	■
		Beijing	39.93° N	118.28° E	■	■	■	■								
		Guangzhou	23.13° N	113.3° E	■	■	■	■								
		Urumuqi	43.78° N	87.6° E	■	■	■	■								
		Hong Kong	22.3° N	114° E	■	■	■	■								
	BOM Melbourne	Melbourne Crib Point	37.88° S	144.96° E	■	■	■	■	■	■	■	■	■	■	■	■
		Darwin	12.46° S	130.84° E	■	■	■	■	■	■	■	■	■	■	■	■
		Perth	31.95° S	115.89° E	■	■	■	■	■	■	■	■	■	■	■	■
		Singapore	1.3° N	103.83° E	■	■	■	■								
		Vladivostock	43.0° N	131.54° E					■	■	■	■	■	■	■	■
		Honolulu	21° N	157.5° W					■	■	■	■	■	■	■	■
		Guam	13.47° N	144.78° E					■	■	■	■	■	■	■	■
		Kelburn, New Zealand	41.3° S	174.5° E	■	■	■	■								
		Casey	66.26° S	110.53° E					■	■	■	■	■	■	■	■
		Davis	68.58° S	77.97° E					■	■	■	■	■	■	■	■
		Fiji	17.7° S	177.6° E					■	■	■	■	■	■	■	■
		Townsville	19.28° S	147.05° E	■	■	■	■	■	■	■	■	■	■	■	■
		Noumea	22.27° S	166.45° E									■	■	■	■
		Tahiti/Papeete	17.56° S	149.61° W									■	■	■	■



Area	Regional RARS Centre	HRPT Station Name	Latitude	Longitude	2008				2009				2010			
					Q	Q	Q	Q	Q	Q2	Q3	Q	Q	Q	Q	Q4
E u r o p e a n d N o r t h- A m e r i c a (E A R S)	EUMETSAT Darmstadt	Athens	38.0° N	23.44° E	█	█	█	█	█	█	█	█	█	█	█	█
		Edmonton	53.33° N	113.5° W	█	█	█	█	█	█	█	█	█	█	█	█
		Gander	48.94° N	54.57° W	█	█	█	█	█	█	█	█	█	█	█	█
		Gilmore Creek	64.97°N	147.40° W	█	█	█	█	█	█	█	█	█	█	█	█
		Kangerlussuaq	66.98° N	50.67° W	█	█	█	█	█	█	█	█	█	█	█	█
		Lannion	48.7°N	3.5° W	█	█	█	█	█	█	█	█	█	█	█	█
		Maspalomas	27.78°N	15.63°W	█	█	█	█	█	█	█	█	█	█	█	█
		Monterey	36.35° N	121.55° W	█	█	█	█	█	█	█	█	█	█	█	█
		Svalbard	78.13° N	15.23° E	█	█	█	█	█	█	█	█	█	█	█	█
		Wallops Island	37.8°N	75.3° W	█	█	█	█	█	█	█	█	█	█	█	█
		Oman	23.61° N	58.54° E					█	█	█	█	█	█	█	█
		Moscow (TBC)	55.75° N	37.62° E					█	█	█	█	█	█	█	█
		Miami Ewa (TBC)	25.6 N	80.26 W					█	█	█	█	█	█	█	█
		Hawai (TBC)	21 N	157.5 W					█	█	█	█	█	█	█	█
		La Reunion (TBC)	20.88 °	55.50 ° E					█	█	█	█	█	█	█	█
		Khabarovsk	48.47° N	135.35° E									█	█	█	█
		Novosibirsk	54.8° N	83.13° E									█	█	█	█

Area	Regional RARS Centre	HRPT Station Name	Latitude	Longitude	2008				2009				2010						
					Q	Q	Q	Q	Q	Q2	Q3	Q	Q	Q	Q4				
South America	INPE Cachoeira Paulista	Fortaleza	3.73° S	38.56° W															
		Natal	5.785° S	35.22° W															
		Cachoeira Paulista	22.33° S	45° W															
		Brasilia	15.78° S	47.92° W															
		Cuiaba	15.55° S	56.7° W															
		Manaus	03.02° S	60.05° W															
		Boa Vista	02.75° N	60.75° W															
	CONAE Cordoba	Córdoba	31.52° S	64.45° W															
		Marambio	64.23° S	58.63° W															
		Santiago de Chile	33.26° S	70.41° W															
		Punta Arenas	53.02° S	70.51° W															
		Base Presid. Frei	62.2° S	58.93° W															
		Cotopaxi	0.82° S	78.63° W															
		Juan Fernandez	33.37° S	79.5° W															