

**WORLD METEOROLOGICAL ORGANIZATION**

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**WMO GLOBAL WORKSHOP ON RARS AND IGDDS**

**GENEVA, SWITZERLAND**

**31 AUGUST– 1 SEPTEMBER 2006**

**DRAFT REPORT**



## **PARTICIPANTS**

The Participants of the workshop came from Argentina, Australia, Brazil, China, EUMETSAT, GEO Secretariat, Korea, Japan, United States of America, and WMO. The contact details of all the participants are attached as Appendix III to this report.

### **1. WELCOME AND WORKING ARRANGEMENTS**

1.1 Dr Donald E. Hinsman, Director of the WMO Space Programme, welcomed the participants to Geneva and emphasised the importance of both the RARS initiative and the Integrated Global Data Dissemination Service (IGDDS) to WMO.

1.2 Prior to starting the workshop, the participants reviewed the provisional agenda and agreed that this should be adopted as the agenda for the workshop (the agenda is attached as Appendix I to this report).

### **2. RARS**

#### **2.1 Status of Actions on RARS from the 2<sup>nd</sup> Workshop**

2.1.1 Mr Jérôme Lafeuille presented the document entitled "Status of Actions and Recommendations on RARS from the 2<sup>nd</sup> Global Workshop". The status of these actions and recommendations is summarized below. In the text below, recommendations and actions from the second workshop will be numbered 2.x while new recommendations and actions arising from this 3<sup>rd</sup> workshop are numbered 3.x.

*Recommendation 2.1: Implementation of the South American RARS* – the status of this recommendation will be addressed under agenda item 2.4.

*Recommendation 2.2: Implementation of the Asia-Pacific RARS* – the status of this recommendation will be addressed under agenda item 2.3.

*Recommendation 2.3: Coordination of HRPT Station Identifiers* – the requirement to coordinate station identifiers has been included in the RARS Operator Standards.

*Action 2.1: Implementation of the WMO RARS website* – it is planned to implement the RARS website during 2007. This activity will be integrated within a more general initiative to update the WMO Space Programme website.

*Action 2.2: AAPP software version identifier* – it was confirmed that this information is not currently included in the AAPP products and it was not judged to be straightforward to include it in the BUFR format. It was concluded that it was not a critical requirement and that the originating centre would keep a record of the version used in the metadata.

**Action 3.1:** WMO, through the relevant CGMS working group, to investigate the possible impact of including this information within the BUFR format.

*Action 2.3: RARS GTS Bulletin Headings* – closed by the explanations given in the document entitled "Note on RARS GTS Bulletin Headings". Which addresses two scenarios:

- use of the GTS for data concentration (point-to-point);
- formal GTS traffic and the naming conventions for bulletins.

*Action 2.4: Product level for inter-regional data exchange* – AAPP level 1c was confirmed as the requirement by the ET-EGOS which also raised the importance of calibration and the need for consistency between regional and global products (see Action 5).

*Action 2.5: RARS Network Quality Monitoring* – Following communications between WMO and PR of the UK, together with approvals by the EUMETSAT Council, it has been agreed that the quality monitoring of the RARS network will be included within the scope of the NWP SAF activities.

2.1.2 It was also noted that the RARS Operator Standards version 1 has now been approved.

## **2.2 Update on EARS Operation and Development**

2.2.1 Michael Williams presented the status of the EUMETSAT Advanced Re-transmission Service (EARS) covering:

- the current status of EARS ATOVS;
- the new EARS services:
  - EARS AVHRR;
  - EARS ASCAT.

2.2.2 Concerning the evolution of the EARS station network it was noted that:

- (a) The following stations were added:
  - Lannion, France
  - Svalbard, Norway (Tromsø will be removed once Svalbard is validated)
- (b) The interface was modified for AVHRR and ASCAT with the implementation of 1 minute data segmentation, in order to improve timeliness:
- (c) Selected HRPT stations are being upgraded in preparation for the reception of Metop data.

2.2.3 The coverage of the network was summarised for each of the 3 EARS service types (ATOVS, AVHRR and ASCAT)

2.2.4 It was noted that EPSView is available to help users visualise the data from the Metop instruments.

2.2.5 Concerning the EARS AVHRR service, it was noted that:

- the timeliness of the EARS AVHRR will be 10 minutes (from sensing to user);
- the optimized network for EARS AVHRR takes the earliest available data from 5 HRPT stations (Maspalomas, Lannion, Svalbard, Greenland and Athens).

2.2.6 Following a question from JérômeLafeuille, Michael Williams confirmed that data segmentation (i.e. as used for EARS AVHRR and ASCAT services) is not applied to ATOVS data at the moment because it currently meets the NWP cut-off times. Jérôme Lafeuille reiterated the views of ET-EGOS that any improvement in timeliness would be welcomed.

**Action 3.2:** EUMETSAT took the action to investigate the implications of segmenting the ATOVS data, and the possible timeliness benefits that could accrue.

## 2.3 Report on Asia-Pacific RARS Development

2.3.1 Dr David Griersmith provided an overview of recent progress towards the establishment of the Asia-Pacific RARS.

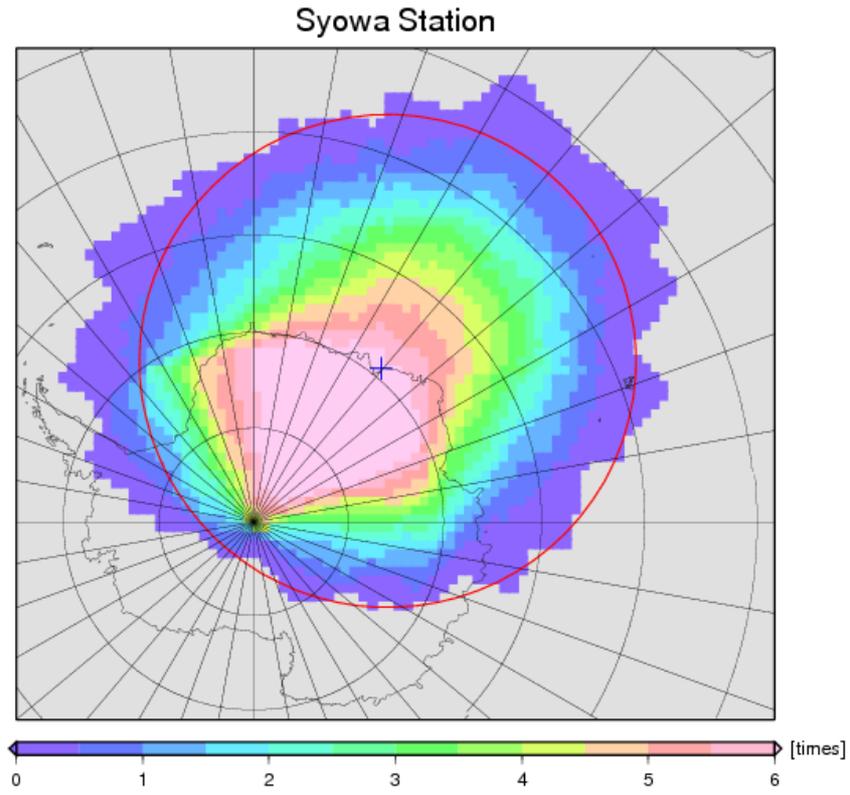
2.3.2 Table 1 shows the current system as at September 2006. The two main processing nodes (Tokyo and Melbourne) have data available for inter-regional dissemination via ftp over the GTS (current main communications method for the Asia-Pacific RARS).

**Table 1:  
Asia-Pacific RARS as at September 2006**

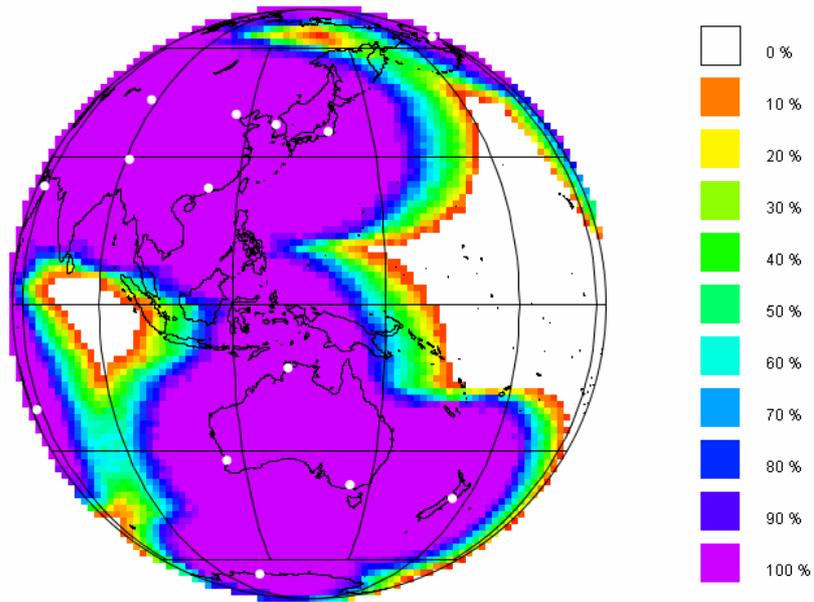
<b>Processing/ Dissemination Centre</b>	<b>HRPT stations from which data are made available from the Centre</b>	<b>Comments</b>
Tokyo	Tokyo-Kiyose Syowa, Antarctica Seoul Beijing, Guangzhou and Urumuqi	Seoul expected September 2006; CMA advises that in the single Beijing ATOVS files sent to Tokyo each file comprises an amalgamation of data from the three listed stations
Melbourne	Melbourne-Crib Point (2 stations) Darwin Perth	

2.3.3 Hence the system as at September 2006 comprises a core of 10 stations whose data are now exchanged and available via the GTS. It is especially pleasing to note the availability, via JMA, of Syowa Antarctica data. This is a major development – see Figure 1 below for coverage details.

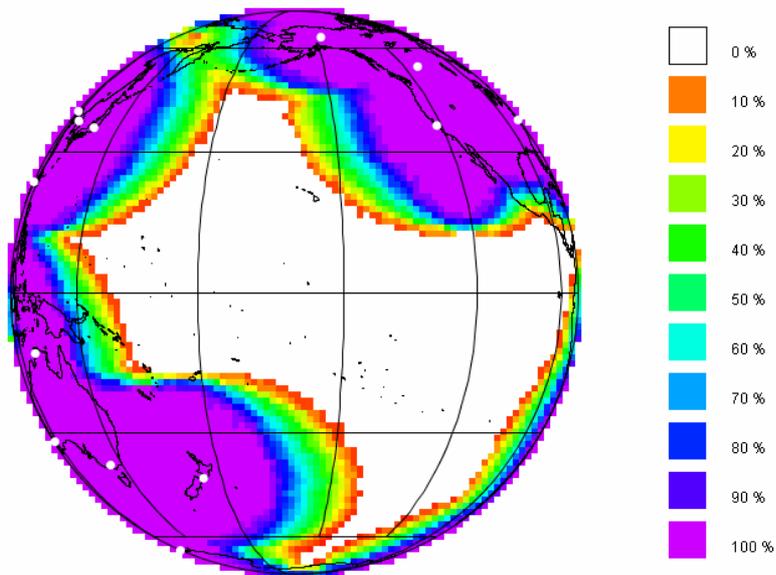
2.3.4 The approximate coverage for the 10 stations (assuming New Zealand is incorporated) is shown below in Figure 2. Figure 3 illustrates the current lack of data coverage over the Western Pacific.



**Figure 1:** Syowa Station Coverage



**Figure 2:** Approximate Asia-Pacific RARS coverage for ATOVS data



**Figure 3:** HRPT data availability - showing current lack of data coverage over the Western Pacific.

2.3.5 Table 2 below shows the status of other HRPT stations which are being requested to provide data.

**Table 2  
Developments and status of additional HRPT stations in the Asia-Pacific RARS**

<b>Country</b>	<b>Stations</b>	<b>Status (in the context of the Asia-Pacific RARS)</b>
Australia	Casey and Davis, Antarctica	Subject to communications both expected to be providing AAPP files by April 2007
Canada	n/a	Will be contacted around end of 2006 – they have expressed interest in accessing Asia-Pacific region ATOVS data
Singapore	Singapore	Trial exchange planned for September 2006 between Singapore and Melbourne, thereafter expect to go operational
Philippines	Quezon City	Station requires an upgrade plus AAPP
New Zealand	MetService station yet to be upgraded; NIWA station operational	Possibility of sourcing data from NIWA station
Fiji	Nandi – upgrade of station required and possible by early 2007	FMS is committed to contributing to RARS
USA	Honolulu Western Samoa Guam	Request for data exchange with Melbourne has been made
Antarctica	Dumont D'Urville McMurdo	Station operators yet to be contacted pending coverage requirement
Tahiti (France)	Tahiti	Station operator yet to be contacted pending coverage requirement
Russia	Vladivostok	Test exchange of data with Melbourne expected in September 2006
Hong Kong (China)	Hong Kong	Trial exchange to be requested for October 2006

2.3.6 Table 3 below shows the likely Asia-Pacific RARS configuration in December 2006.

**Table 3**  
**Expected Asia-Pacific RARS configuration of December 2006 – total of 15 stations anticipated.**

<b>Processing/Dissemination Centre</b>	<b>HRPT stations from which data are made available from the Centre</b>	<b>Comments</b>
Tokyo	Tokyo Kiyose Syowa, Antarctica Seoul Korea Beijing, Guangzhou and Urumuqi	Seoul expected September 2006; CMA advises that in the single Beijing ATOVS files sent to Tokyo each file comprises an amalgamation of data from the three listed stations
Melbourne	Melbourne Crib Point (2 stations) Darwin Perth Singapore Vladivostok Honolulu New Zealand Hong Kong	

2.3.7 JMA stated that they were very happy with the progress of the Asia-Pacific RARS. NWP centres in Japan have evaluated the impact of this data and seen positive effects and these centres would like to increase their utilisation of ATOVS data (e.g., with the inclusion of data from Europe and the Americas).

2.3.8 Dr Griersmith also welcomed the report that he had received from Korea on the implementation status, and felt that it would be beneficial to propagate this reporting approach across the Asia-Pacific RARS initiative.

2.3.9 Concerning APSDEU, WMO expressed its appreciation for the opportunity to participate in the last APSDEU meeting (APSDEU-6) and was looking forward to participating in the APSDEU-7 meeting in September 2006 (Dr Griersmith will represent WMO at this meeting).

2.3.10 WMO expressed its appreciation for the rapid, and impressive, progress towards full implementation of the Asia-Pacific RARS.

## **2.4 Report on South American RARS Development**

### **2.4.1 South-American RARS (Brazil)**

2.4.1.1 Dr Sergio de Paula Pereira summarized the current status of the Brazilian contribution to the South American RARS, including:

- collection network [6 Brazilian Sites (Fortaleza, Natal, Cachoeira Paulista, Brasilia, Cuiaba, Manaus) + 2 foreign sites (Chile(depending on final agreement) and Peru)];
- the results of the investigation into using only TIP files at remote sites, and the conclusion that a substantial part of AAPP package will have to be run at the remote site to create the cloud mask (with transmission of level 1a files and cloud

mask to Central Site) with the result that the full AAPP package will be installed and run at each remote receiving site;

- the Pilot exercise to ensure AAPP software can be run on a variety of HRPT stations.

2.4.1.2 It was concluded that by February 2007 an operational system with 3 sites [Cuiaba and Cachoeira Paulista and Brazilia (INMET)] could be available. The central site will be at INPE Cachoeira Paulista.

#### **2.4.2 South-American RARS (Argentina)**

2.4.2.1 Dr Gloria Pujol summarized the current status of the Argentine contribution to the South American RARS.

2.4.1.2 Since the last WMO RARS workshop in December 2005, SMN and CONAE have been working to find an approach for the ATOVS data processing. Finally both institutions agreed on the implementation of the pilot phase of Sub-RARS for Argentina. As a result, the Córdoba Ground Station, situated at Falda del Carmen in the Province of Cordoba, has been selected for the location of both the receiving station and the main centre for processing and distribution of ATOVS data in the pilot phase.

#### **2.4.3 South-American RARS - Coverage**

**Action 3.3:** Following the status reports from Brazil and Argentina, Dr Hinsman requested that both South American RARS co-ordinators consider in their plans the possible extension of the HRPT station network to other countries in the region – e.g., Central America and Chile.

### **2.5 Discussion on RARS Network Implementation**

#### **2.5.1 On-going Implementation Activities**

##### *2.5.1.1 Asia-Pacific RARS (Coordinator D. Griersmith)*

For the Asia-Pacific RARS the main ongoing activities were identified as:

- Harmonization of current pilot operations (file naming, regular HRPT status reporting,..);
- Identification of National and inter-regional requirements for RARS data transfer on GTS;
- Provision of information to users and to the WMO Space Programme;
- Refinement of operations to meet RARS Operator Standards;
- Inclusion of additional stations.

##### *2.5.1.2 South-American RARS (Coordinators S. Pereira and G Pujol)*

For the South American RARS the main on-going activities were identified as:

- Completion of pilot project implementation, for example:
  - experimental implementation and testing (AAPP, OS.);M
  - communication trial for concentration and dissemination (FTP, GTS, EUMETCast);
- Operational implementation (products on GTS or equivalent);
- Provision of User Information;
- Extension to include additional HRPT stations (e.g. from Brazil, Chile, Antarctica, Peru and Central America);

- Establishment of updated project plans.

## **2.5.2 General Discussion on the Network**

2.5.2.1 Following a review of the current implementation status/activities of the RARS network, discussions turned to general network implementation issues, including:

- progress towards achieving global coverage;
- possible extension of the network to include:
  - advanced sounders (e.g., IASI)
  - sensors for priority NWP needs
    - AVHRR
    - ASCAT (e.g., for polar winds)
- global imagery (AVHRR)
- other satellites

2.5.2.2 Attention was raised to the fact that receiving Metop data requires new acquisition systems and that some HRPT stations within the current RARS may not be immediately ready to receive ATOVS data from Metop.

2.5.2.3 Concerning global coverage, it was noted that good progress has been made towards this goal, and the issue of station overlaps was discussed. Generally, it was felt that it was not appropriate at this stage to optimise the network to reduce overlaps as they provided a certain redundancy/robustness within the network, and the bandwidth cost was not excessive for ATOVS data. Once the network was fully operational this issue could be readdressed.

2.5.2.4 Concerning the possible extension of the network to include other data, it was concluded that extension of the network to include AVHRR data (such as EARS-AVHRR) could be very beneficial (noting that data volumes will be higher). Dr Griersmith particularly welcomed such an evolution.

2.5.2.5 In the previous workshop, emphasis/priority had been placed on the implementation of the Asia-Pacific RARS. In view of the evident progress that has now been achieved in this area, the Group felt that it would be appropriate to place an increased emphasis on the implementation status of the South-American RARS at the next workshop.

## **2.5.3 RARS Group Draft Terms of Reference**

2.5.3.1 Mr Jérôme Lafeuille introduced the document entitled “RARS Group Draft Terms of Reference” and described the proposed main objectives of the Group:

- Establishment of new RARS to expand the RARS network towards global coverage;
- Inter-regional data exchange of RARS data;
- Standardisation in the areas of e.g.:
  - product processing software usage;
  - product formats;
  - quality-tagging of data;
  - service management.
- Ensuring consistency with the IGDDS concept;
- Reviewing the RARS concept to ensure it fulfils regional and global requirements for improved timeliness of critical LEO data.

2.5.3.2 Following a review of the document, it was concluded that the draft Terms of Reference should be adjusted to:

- include the expansion of data types to be retransmitted as part of the global RARS network;
- address the need for a follow-on coordination group to coordinate the operation of the network (once the implementation is mature);
- clarify the reporting arrangements.

2.5.3.3 Regarding reporting, it was clarified by Dr Hinsman that the group will report to CGMS and the WMO Space Programme, and that participants of the group would not need to be part of CGMS. It was also clarified that this arrangement would not affect RARS discussions within the framework of APSDEU, and other data exchange fora.

2.5.3.4 Concerning archiving and retrieval of RARS data, it was noted that this was outside the scope of the RARS network, which is aimed at NRT applications.

2.5.3.5 Following these clarifications and the requested modifications, the group endorsed the revised RARS Group Draft Terms of Reference (attached as Appendix II).

### **3. ADM**

#### **3.1 Status of ADM-related Actions from the 2<sup>nd</sup> Workshop**

3.1.1 Mr Jérôme Lafeuille presented the document entitled “Status of Actions and Recommendations on ADMs from the 2<sup>nd</sup> Global Workshop”. The status of these actions and recommendations is summarised below.

*Recommendation 2.4: ADM Regional Trial in the Asia-Pacific Region* – this item will be addressed under item 3.5

*ADM Standards* – this item will be addressed under item 3.6

*Recommendation 2.5: Organization of an IGDDS/RARS Workshop* – recommendation implemented (this 3<sup>rd</sup> Global RARS/IGDDS workshop has been arranged).

*Recommendation 2.6: RARS/IGDDS Implementation Group* – it is now proposed to address the RARS and IGDDS activities separately (See section 2.5.2)

3.1.2 Concerning the IGDDS aspects, it is still felt advantageous to maintain a working group arrangement (noting that the WMO Space Programme will ensure coordination with CGMS activities and WIS).

3.1.3 Japan questioned the relationship between the 2 groups – Dr Hinsman clarified that these 2 activities would be handled separately (although the meetings could be combined for convenience).

#### **3.2 EUMETCast Status and Plans**

3.2.1 Michael Williams presented the current status of EUMETCast, including:

- Main components;
- Technical Approach and Standards;
- System Overview (system architecture);
- Geographical Coverage;
- Data and Products Disseminated;
- EUMETCast Network Connectivity;
- EUMETCast User Reception Terminal Costs;

- EUMETCast features:
  - operational nature,
  - capabilities.

3.2.2 During the presentation it was noted that the data transmitted on EUMETCast is becoming extensive, and making users aware of what is available is becoming an issue – solutions to this problem are under investigation (e.g., possible inclusion of a data navigation menu within the transmission, catalogue of available data on the EUMETSAT web site).

3.2.3 It was also noted that users such as the “one-stop-shop” approach and the, original, rather strict definition of user categories has been relaxed to reflect that the interests of users have become more wide-ranging.

### **3.3 NOAA Plans for ADMs**

3.3.1 Mr Marlin Perkins presented NOAA’s plans for ADM implementation, including:

- ADM Task Description
  - Communication Trunks
  - ADM User Terminal
- Multiple Architectural Views of ADM
  - Internet
  - Commercial Satellites
  - Land lines
- ADM Ground Terminal
- Progress 3.3.1 Mr s report on the development of the NOAA ADM system ( ??? )

### **3.4 Information on GEONETCast Demo**

3.4.1 Ms Linda Moodie presented the GEONetcast demonstration, covering:

- overall concept;
- major GEO-NETCast participants;
- typical receiver configuration;
- interface to GEO;
- GEO-NETCast implementation group;
- GEO members and organisations interested in participating;
- work for 2006;
- GEO-NETCast live demonstrations;
- Samples of GEO-NETCast Demonstration Products from NOAA and EUMETSAT;
- Live GEO-NETCast Demonstration;
- GEO-NETCast Demonstration Updates for GEO Meetings in Seattle;
- Current Satellite Infrastructure and Coverage;
- Current GEO-NETCast Dataflow to Seattle;
- Participants’ Meeting;
- EUMETCast Coverage;
- Proposed US/NOAA coverage;
- Proposed Chinese Coverage;
- Challenges for 2007.

3.4.2 It was also clarified that China, in view of the progress of FengyunCast, (see next section) will be added to the GEO-NETCast implementation group.

### **3.5 Report on the Asia-Pacific ADM Trial**

3.5.1 Mr Dongfeng Luo then presented the status of FengyunCast, covering:

- Basic Concept;
- Advantages;
- Disseminated Data;
- Technical Specification;
- Coverage;
- User Terminal;
- Reception PC;
- Processing software;
- Data management;
- User terminal distribution;
- C-band upgrade plans.

3.5.2 CMA clarified that the new C-band uplink site would be ready in September 2006, and that the emphasis at the moment is on getting the necessary infrastructure in place to support the regional trial. It is expected that this infrastructure will shortly be ready to support the full implementation of recommendation 4 (as described in the 2<sup>nd</sup> Global RARS/IGDDS Workshop Report).

3.5.3 Dr David Griersmith stated that the Australian Bureau of Meteorology (BoM) would welcome the possibility of participating in the regional trials of the upgraded system.

**Recommendation 3.1:** The group welcomed the progress that had been achieved and, noting that the implementation of Recommendation 4 is ongoing, recommended that it should be retained, and its implementation status revisited at the next workshop

3.5.4 During the discussions, Mr Michael Williams suggested that RARS data and selected geostationary data sets could be good candidates for global dissemination.

3.5.5 Dr Hinsman emphasized the need to identify requirements for inter-regional data exchange to improve data availability and data management.

### **3.6 Preliminary Review of ADM Standards**

3.6.1 Dr Robert Husband presented some possible topics for inclusion in the ADM standards. It was felt that, prior to the presentation of the first version draft ADM standards at the next workshop, the standards should be discussed with the ADM operators in the relevant technical fora.

**Action 3.4:** WMO to propose a set of draft ADM standards in conjunction with the ADM operators at the next workshop.

### **3.7 Discussion on Short-term ADM Plans**

3.7.1 It was noted that the main short-term ADM plans involved:

- the implementation of the Asia-Pacific ADM trial (see section 3.5);
- consolidation, then implementation, of the NOAA ADM plans for the Americas (see sections 3.3 and 3.4).

#### **3.7.1 Asia-Pacific regional ADM trial**

The main implementation activities involved in fulfilling Recommendation 4 from the 2<sup>nd</sup> RARS/IGDDS Global Workshop were identified as:

- Contacting neighbouring countries to establish a collaborative regional approach;
- Collecting initial requirements for data;
- Identifying data providers from various countries in the region and beyond;
- Ensuring availability of user stations in participating countries within the region;
- Making complementary use of terrestrial links;
- Reporting on progress to the next workshop.

### **3.7.2 ADM for the Americas**

Taking advantage of the progress made with NOAA-ADM studies, EUMETCAST/America, and NOAA plans for GEO-NETCAST, the main activities were identified as:

- Consolidate plans for an ADM over Americas to ensure continuity beyond current EUMETCAST/America;
- Minimize transition impacts for users.

## **4. OVERALL IGDDS IN THE FRAMEWORK OF WIS**

### **4.1 IGDDS-WIS Articulation**

In order to describe the relationship between WIS and the IGDDS, Mr Jérôme Lafeuille presented a document entitled "Note on IGDDS and its Relations to WIS". The items addressed included:

- Main functions of the IGDDS;
- IGDDS, an integral part of the WIS;
- Relevance of an IGDDS Project;
- High-level requirements for IGDDS;
- IGDDS Baseline;
- Key activities of the IGDDS Project;
- IGDDS Project Control.

### **4.2 Report on WIS Development**

4.2.1 Mr Jean-Michel Rainer then presented the WMO Information System (WIS), including:

- current users of the existing system;
- current situation (GTS + existing systems);
- WIS Concept;
- New features and opportunities provided by WIS;
- Structure of WIS (NCs, DCPCs and GISCs);
- European Virtual GISC Project;
- Interoperability;
- Implementation;
- IGDDS within the WIS;
- On-going pilot projects.
- Implementation Plan – Initial Phase.

4.2.2 Concerning the functions of the various WIS elements, the point was raised that Satellite Operator Data Collection and Product Centres (DCPCs) also perform inter-regional data exchange (which is nominally a GISC function in the WIS reference architecture). Jean-Michel Rainer clarified that the functional split between elements did not need to be adhered too dogmatically (and such data did not need to flow through a GISC and could flow from DCPC to DCPC, provided that it was co-ordinated).

### **4.3 Outcome of Expert-team on WIS and GTS Communication Technique and Structure (ET-CTS)**

4.3.1 Concerning the entities involved in WIS, it was clarified that the ICG-WIS coordinate WMO development across all WMO programmes, and that three CBS expert teams are also involved [ET-WISC (Centres), IPET-MI (Metadata Implementation) and ET-CTS (Communications Structure and Techniques for GTS and WIS)].

4.3.2 The ET-CTS, in Tokyo 2006 (April), was informed about the progress of IGDDS and the draft IGDDS Implementation Plan.

### **4.4 Draft IGDDS Implementation Plan**

4.4.1 Before presenting the Draft IGDDS Implementation Plan, Mr Jérôme Lafeuille provided some contextual information, including:

- the rationale for an Implementation Plan;
- GEO-NETCast within the Context of the GEO-ISS.

4.4.2 The IGDDS Implementation Plan was then presented with a brief introduction of the main sections, consisting of:

- Background;
- Scope of IGDDS;
- GDDS High-level Requirements;
- IGDDS Baseline;
- Current Assets;
- Implementation Actions;
- Risk Management;
- Document Plan;
- Resources;
- Project Steering;
- Implementation Schedule

4.4.3 During the presentation, clarifications were made concerning the implementation plan, in particular:

The "Rolling Requirements Review" is a process that is currently established and has been followed for some 10 years now to formulate and update detailed observation requirements for all WMO application areas, to guide the evolution of the Global Observing System. For IGDDS; the intention is to follow a similar mechanism of systematic user consultation in order to determine and regularly update the requirements for data dissemination, taking into account user priorities and availability of telecommunication resources within each Region.

4.4.4 It was noted that the reporting mechanism should be further considered in order to ensure a proper visibility on IGDDS progress to both the CGMS and the overall WIS project.

4.4.5 JMA also noted that they plan to provide all satellite data (instead of IR 1 data only), other observational data and re-analysis data, via the Internet to NMHSs by early 2007 (possibly by the end of March).

## 4.5 Discussion on Further Steps and Priorities for IGDDS Implementation

### 4.5.1 Actions

Following a review of the implementation plan, the following table identifies the main actions (and actionees) defined in the implementation plan.

<b>IGDDS Implementation Plan Actions</b>	<b>Actionee</b>
<b>1. Data Requirements</b> (a) Consolidate initial data requirements and estimate future data rates (b) Set up an RRR process at regional level	(a) ET-SUP, APSDEU, NA-EUR (b) RA-x WG-WWW
<b>2. Data Concentration</b> (a) Implement RARS in Asia-Pacific and South America (b) Enhance real-time access to relevant R&D satellite data (c) Enhance inter-regional exchange between (Sat) DCPC	(a) RARS Implementation Group – see specific RARS implementation actions/projects (b) WSP + ET-SAT, ET-SUP, CGMS (c) CGMS and WSP
<b>3. Data Dissemination</b> (a) Complete quasi-global ADM coverage (b) Ensure availability and affordability of HW and SW receiving devices (c) Ensure robustness of dissemination architecture (d) Agree harmonized formats and other standards as appropriate	(a) & (b): See specific ADM projects/actions (c) CGMS, (ET-CTS, ET-SUP, ET-SAT) (d) CGMS WG Codes, IPET-MI, ET-CTS
<b>4. Management and Quality of Service</b> (a) Support user service enhancement (b) Ensure compatibility with overall WIS data management requirements (metadata, catalogue standards...) (c) Agree quality of service targets and monitor their achievement	(a) Satellite operators running ADM, ET-SUP (b) CGMS + ET-WISC (c) IGDDS/RARS workshop, CGMS
<b>5. Coordination, Information</b> (a) Inter-regional coordination (b) Reporting to CBS, CGMS, CM (c) Communication to Users (d) Coordination with relevant GEO activities (GEO-NETCast) (e) Demonstration Activities	(a) CGMS, WSP (b) WSP (c) WSP, Operators (d) WSP (e) Operators

### 4.5.2 Meetings

The next meetings of relevance to the IGDDS were identified as:

- ET-SUP-2, 4-8 September, Geneva;
- ET-SAT-2, 4-8 September, Geneva;
- ICG-WIS, 5-8 September, Beijing;
- CGMS 34, 2-7 November, Shanghai;
- CBS WIS Technical conference, 6-8 November, Seoul;
- CBS, 9-16 November, Seoul;
- 4<sup>th</sup> RARS-IGDDS Implementation workshop.

## **5. AOB**

It was agreed that the 4<sup>th</sup> RARS-IGDDS Implementation workshop will be held in June 2007 at a location to be defined, in the Northern Hemisphere.

## **6. CONCLUSIONS**

In closing the meeting Dr Hinsman expressed his deep appreciation to all the participants for their contributions to both the RARS initiative and the implementation of the IGDDS.

Both activities were progressing well and, once the implementation is complete, the benefits for the user community will be substantial.

## **APPENDIX I**

**PROVISIONAL AGENDA**  
**3<sup>RD</sup> GLOBAL WORKSHOP ON**  
**REGIONAL ATOVS RE-TRANSMISSION SERVICES (RARS)**  
**and the**  
**INTEGRATED GLOBAL DATA DISSEMINATION SERVICE (IGDDS)**  
**31 August- 1 September 2006**  
**WMO Headquarters, GENEVA**

### **1. INTRODUCTION**

Welcome and working arrangements

### **2. RARS**

- 2.1. Status of actions on RARS from the 2<sup>nd</sup> workshop
- 2.2. Update on EARS operation and development
- 2.3. Report on Asia-Pacific RARS development
- 2.4. Report on South-American RARS development
- 2.5. Discussion on RARS network implementation

### **3. ADM**

- 3.1. Status of ADM related actions from the 2<sup>nd</sup> Global RARS workshop
- 3.2. EUMETCAST status and plans
- 3.3. NOAA plans for ADMs
- 3.4. Information on the GeoNetcast demo
- 3.5. Report on the Asia-Pacific ADM trial
- 3.6. Preliminary review of ADM standards
- 3.7. Discussion on short-term ADM plans

### **4. OVERALL IGDDS IN THE FRAMEWORK OF WIS**

- 4.1. IGDDS - WIS articulation
- 4.2. Report on WIS development
- 4.3. Outcome of Expert-Team on WIS and GTS Communication Technique and Structure (ET-CTS)
- 4.4. Draft IGDDS Implementation Plan
- 4.5. Discussion on further steps and priorities issues for IGDDS implementation

### **5. ANY OTHER BUSINESS**

### **6. SUMMARY OF ACTIONS AND CONCLUSIONS**

## APPENDIX II

### DRAFT TERMS OF REFERENCE OF THE CGMS-WMO RARS IMPLEMENTATION GROUP

1. A RARS Implementation Group is established by the WMO Space Programme in order to support the development and implementation of a global network of Regional ATOVS Retransmission Services (RARS) as discussed by the Consultative Meeting on High-level Policy on Satellite Matters<sup>1</sup>, the Commission for Basic Systems<sup>2</sup>, the Executive Council<sup>3</sup> and the CGMS.
2. Building on the model of the EUMETSAT ATOVS Retransmission Service (EARS) the goal of the global RARS network is to improve availability and timeliness of critical polar-orbiting satellite data from the global domain through the collection and redistribution of data sets acquired from multiple receiving stations that are co-ordinated and inter-connected. The WMO Space Programme is pursuing RARS activities as part of the IGDDS project.
  - The objective of the RARS Implementation Group is to co-ordinate and facilitate:
  - Establishment of new RARS to expand the RARS network towards global coverage;
  - Inter-regional data exchange of RARS data;
  - Standardisation in the areas of e.g.:
    - product processing software usage;
    - product formats;
    - quality-tagging of data;
    - service management.
  - Ensuring consistency with the IGDDS concept
  - Expansion of data types to be retransmitted as part of the global RARS network
  - Reviewing the RARS concept to ensure it fulfils regional and global requirements for improved timeliness of critical LEO data
3. The RARS Implementation Group shall be composed of technical experts designated by organizations contributing to the global RARS network, planning or considering to contribute to it, and of supporting staff from the WMO Space Programme.
4. The RARS Implementation group meets nominally once a year and reports on its activities to CGMS and WMO.

Unless otherwise agreed, the RARS Implementation group will cease its activities when its objectives will be completed. Thereafter a new structure will be established to ensure operational coordination of activities of the global RARS network.

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<sup>1</sup> CM-5, January 2005

<sup>2</sup> CBS XIII, St Petersburg, February-March 2005, item 6.10

<sup>3</sup> EC 57, Geneva, June-July 2005, item 3.10.7

**WMO GLOBAL WORKSHOP ON RARS AND IGDDS**

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