

UPDATE ON THE GLOBAL RARS NETWORK

In response to CGMS Action 34.06 and to CGMS Recommendation 34.03

The paper describes the progress that has been made with the RARS initiative since CGMS-34.

It describes the establishment of a RARS Implementation Group and details the discussions and outcomes of the first meeting of that group. That meeting focussed on the need for active engagement with the user community, and on the outstanding challenges that remain to be addressed before the initiative can be thought of as achieving its goals.

The paper stresses the remarkable progress achieved by the RARS global network over the past year and draws attention to the ambitious actions, that the group have accepted, to take the initiative forward in the coming year.

The paper goes on to describe the views of ET-SUP which, among other issues, raise the important subject of the possible extension of the RARS planning to embrace both new satellites and new instruments into the scheme.

CGMS are invited to note this remarkable progress and to actively address the open issues that will take this important initiative towards its originally defined goals and beyond.

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1 BACKGROUND AND INTRODUCTION

At CGMS-34 the status of the RARS initiative was reviewed on the basis of the outcome of the previous joint IGDDS-RARS workshops and the deliberations of the ET-SAT and ET-SUP groups at their meetings in September 2006.

CGMS members strongly supported the planned RARS expansion as well as the proposal that WMO should establish a RARS Implementation Group (RARS-IG) for which they endorsed draft Terms of Reference.

2 REPORT OF ACTIVITIES SINCE CGMS-34

In accordance with the conclusions of CGMS-34, the WMO Space Programme established separate Implementation Groups for IGDDS and RARS (re: CGMS Action 34.06); and, noting the very close relationship of the two projects, the first meetings of the two respective Implementation Groups were convened by WMO on consecutive days in July 2007. The status of the IGDDS initiative is described in a separate paper.

In addition, the WMO Space Programme has established web pages for the RARS initiative, to serve as a central repository for project information and also to bring the project to the wider public attention. The web pages for the RARS project are located at <http://www.wmo.int/pages/prog/sat/RARS.html>.

2.1 THE FIRST RARS-IG MEETING

The first RARS Implementation Group meeting (RARS-IG-1) took place at WMO, Geneva on 3-4 July 2007. Participants included representatives of the Asia-Pacific RARS (Australia, China, Japan and Republic of Korea), the South American RARS (Argentina, with written contribution from Brazil), EARS (EUMETSAT) and WMO.

The RARS-IG recalled the main elements of their Terms of Reference which had been endorsed by CGMS-34, namely:

- To build upon the successful experience of EARS;
- To coordinate and facilitate:
 - The establishment of new RARS to expand the network towards global coverage;
 - The inter-regional data exchange of RARS data;
 - Standardization;
 - Consistency with the IGDDS concept;
 - The expansion of data types to be re-transmitted.
- To keep the RARS concept under review to ensure it fulfils the regional and global requirements for improved timeliness of critical LEO data;

- To meet nominally once per year and report on its activities to CGMS and WMO;
- Unless otherwise agreed, the RARS Implementation Group will cease its activities when its objectives have been completed or handed over to a new structure ensuring operational coordination of activities in the longer term.

The RARS-IG noted the importance of active engagement with the user community in order to establish and consolidate the user needs that will drive the project and also to provide feedback to data providers, particularly on the impact and benefits that result from the implementation of the project. In this respect the RARS-IG noted a possible role of the International TOVS Scientific Conference (ITSC) and also the important role of ET-SUP through its ongoing responsibility for reflecting user needs and providing guidance for enhancements to satellite data usage.

The group heard presentations on the current status and future plans for the three existing RARS, namely EARS, the Asia-Pacific RARS and the South American RARS and it expressed its appreciation for the very significant progress in the past year that was evident in all three systems. It noted that EARS had expanded to include new data types beyond ATOVS (ASCAT and AVHRR). The Asia-Pacific RARS had started operations in October 2006 with 10 stations and was extending further its geographical coverage through the involvement of additional stations. The South American RARS had performed successful testing activities and there were firm plans for initial operations covering Brazil and Argentina, including the Antarctic, by the end of 2007.

The group considered the complex but important subject of code and format harmonization. It recognized that this is a somewhat specialized subject which is nevertheless vital to address, particularly in the context of the implementation of the WIS. There is a need to ensure that the RARS project proceeds in a way that is consistent with emerging standards while, at the same time, influencing the evolution of those standards where appropriate. When the WIS is operational it will be necessary to store and disseminate metadata associated with all RARS products in accordance with an accepted standard; and hence it is vital that the adopted metadata standard is appropriately defined to accommodate the characteristics of RARS data. It may be considered logical that EUMETSAT assume a lead role in this since they have had some years of valuable experiences with EARS. The group assigned several actions to take this subject forward.

The group considered issues related to coverage optimization, reducing overlap and redundancy as well as gaps in coverage, bearing in mind the objective of near-global coverage. One instance of redundant locations of HRPT stations was highlighted; however, there were several geographical areas that were seen to be not covered. For each of these areas actions were assigned to investigate possible corrective measures.

The capability of the contributing HRPT stations to receive ATOVS data from Metop as well as from NOAA satellites was discussed and it was agreed that operational RARS are most effective if this capability is present. RARS operators will pursue the goal of achieving this capability in all contributing HRPT stations.

The group agreed on the need to promote the increasing availability of ATOVS data through implementation of the various RARS and to seek feedback from NWP operators. The group felt that one effective way to achieve this would be via the various WMO Regional Associations.

The RARS-IG considered the subject of RARS operations monitoring and concluded that the monitoring function could be conducted both within the respective RARS (monitoring data availability, timeliness, etc) and also centrally through the NWP SAF (monitoring data quality and consistency). It was noted that the NWP SAF were already committed to such an activity in their Continuous Development and Operations Phase (CDOP) agreement. It was also agreed that monitoring information should be routinely published on web pages, in the case of the NWP SAF using the existing approach for EARS and for the RARS regions using appropriate web pages to be developed in the coming months.

The prototype RARS project web pages were presented and discussed. It was noted that the originally agreed structure had to be modified owing to the constraints imposed by embedding the pages in the new WMO web site. Following a discussion the group reached a consensus on what needed to be done to improve the effectiveness of the web pages and asked that they be updated to reflect this consensus.

The question of extending the RARS concept to cover data from future satellites (e.g. FY-3, NPP/NPOESS) and from other instruments (e.g. IASI and ASCAT) was considered and the group agreed to embark on some exploratory activities and to reconsider the situation at their next meeting.

The RARS-IG urged members to keep up the strong momentum currently in place and assigned several actions to take the project towards its goals. They agreed to target May 2008 for their next meeting, subject to available funds.

2.2 THE VIEWS OF ET-SUP

ET-SUP, at their third session in September 2007, reviewed the outcomes of the first meeting of the RARS-IG and agreed the following:

- ET-SUP took note of, and welcomed, the progress of the RARS project as stated in the report of the first meeting of the RARS Implementation Group;
- ET-SUP noted that the RARS project has been formulated with the needs of WMO Members as a key goal.

The group noted the recommendation as stated in the RARS-IG report that all HRPT stations should also be capable of receiving Metop data (A-HRPT standard). They recognized that this upgrade will involve some cost to the station operator and wondered whether advice could be provided. The group noted that EUMETSAT, NOAA and WMO maintain a list of equipment manufacturers and that there may be benefit in providing some centralized support to users confronting this problem (e.g. through the RARS project web pages).

The group noted the current and planned RARS coverage maps and also took note of the actions raised by the IG to address the gaps in coverage. They were broadly

content that activities were in hand to evolve to quasi-global coverage but expressed some concerns that the foreseen coverage at “end of 2008” had not significantly evolved from the “end of 2007”. It was explained to the group that these maps showed only what was firmly planned and could be enhanced to show also what was under consideration – which would indicate a much more complete coverage picture. The group requested that this aspect be made clear on the coverage maps.

ET-SUP considered the question of extending the RARS concept to include data from instruments other than ATOVS, noting that EUMETSAT have introduced an EARS service for AVHRR and ASCAT. They felt that such an extension was an attractive and logical way forward in the medium term because it improved the timeliness in comparison with global orbit data, and because data from a limited number of direct readout stations could be shared across a whole region. They especially noted the potential value in considering hyperspectral sounding instruments in this context. This would have the potential to benefit two sectors of the user community:

- The collection, concentration and pre-processing of level 1 hyperspectral sounder data, in line with the RARS approach, followed by their dissemination via GTS or via satellite (similar to the current processing of ATOVS) would improve the timeliness of reception of these data for NWP centres;
- As concerns users in areas with poor upper air networks, in particular in Developing, Least Developed Countries and ocean areas, there would be also a strong interest in level 2 products (e.g. atmospheric profiles) from these data, if some processing centres could make them available in a timely fashion.

3 CONCLUSIONS

CGMS members are invited to take note of the status of the RARS initiative and to note the steps still required for the activity to reach its ultimate goal. In particular, those CGMS members who are operating a RARS system are encouraged to:

- Support the expansion of the coverage as agreed within the RARS-IG;
- Through the RARS-IG coordinate the conformance of the RARS data content as it is presented for distribution with the emerging standards and practices of the WMO WIS;
- Actively consider the enhancement of the RARS systems to include data from new satellites (e.g. FY-3, NPP and NPOESS) and to include data sets from instruments other than ATOVS, provided a firm user requirement is established.