

WORLD METEOROLOGICAL ORGANIZATION

RA I DISSEMINATION EXPERT GROUP

FIFTH MEETING

JOHANNESBURG, SOUTH AFRICA

6-7 SEPTEMBER 2014

FINAL REPORT



WMO General Regulations

Regulation 42

Recommendations of working groups shall have no status within the Organization until they have been approved by the responsible constituent body. In the case of joint working groups the recommendations must be concurred with by the presidents of the constituent bodies concerned before being submitted to the designated constituent body.

Regulation 43

In the case of a recommendation made by a working group between sessions of the responsible constituent body, either in a session of a working group or by correspondence, the president of the body may, as an exceptional measure, approve the recommendation on behalf of the constituent body when the matter is, in his opinion, urgent and does not appear to imply new obligations for Members. He may then submit this recommendation for adoption by the Executive Council or to the President of the Organization for action in accordance with Regulation 9(5).

1. WELCOME

Mariane Diop Kane (ECOWAS) standing in for the Chair J. Kongoti (IGAD), opened the session at 14.00 on 6 September 2014 in the Kopanong Conference Centre, Johannesburg, South Africa, and welcomed all participants to the 5th Meeting of the WMO RA I Dissemination Expert Group.

During the Tour de Table, it was noted that on this occasion Estelle de Coning was in attendance, replacing the regular SADC representative Nico Kroese, who had sent his apologies for his absence due to personal reasons. In addition, it was noted that Ram Dhurmea was absent due to travel restrictions, however, his input to the actions and data requirements had been sent in advance. James Kongoti sent his apologies for his absence which was due to other WMO meeting commitments. Stella Aura (IGAD Training Centre) attended the group meeting for the first time.

It was noted by the Group that Etienne Kenne representing CEMAC retires at the end of the year and a replacement from the Central Africa region is required. WMO confirmed to initiate the necessary process.

S. Bojinski, WMO, in his opening remarks encouraged engagement by participants in the group discussion, thereby speaking for their sub-region and not only for their own service.

It was also noted that in the invitation to subsequent meetings, it should be explicitly indicated if support by the Centres of Excellence for Education and Training is required.

2. ADOPTION OF AGENDA

The Agenda (see Appendix I) was adopted with no modifications.

3. REVIEW OF ACTIONS FROM PREVIOUS MEETING

S. Wannop presented the review of actions.

Action #	Action item description	Status	Due date	Actionee
01/03	Establish a working group network - Members are invited to establish a communication network within their region/sub-region to identify specific requirements from both the NMHSs and from relevant non-meteorological users, e.g. RICs, AMESD thematic regions, research institutes, and to forge links with JCOMM, etc.	Group to increase their representation within the governance of the WIGOS and the Regional Association I subsidiary bodies. Standing Action.	Sep 2014	RAIDEG Members & WMO
01/04	Promoting the use of EUMETCast - Members are invited to promote the use of EUMETCast in support of specific projects within their region/sub-region, e.g. Severe Weather Forecast Demonstration Project, etc, and for other non-meteorological usage.	Members are encouraged to continue their efforts. Propose for closure.	Sep 2014	RAIDEG Members
02/01	NWC-SAF software installation – Members are encouraged to install the NWC-SAF (MSG package) for their own use and to support validation of the software. To ease regional implementation, ACMAD are invited to take the lead on this installation with the support from EUMETSAT. SAWS & DMN Morocco to offer their support in validation and product visualisation.	Whilst the installation of the software has proved successful in some centres, in others was noted by the group that the software output cannot be visualised by PUMA 2010 and the output in HDF5 was difficult to visualise and contained no country borders. Propose for closure see new action 05/02.	Sep 2014	ACMAD, Morocco, Senegal, Kenya
02/14	Identification of focal points within NMHSs - WMO to request each NMHS to provide a focal point to liaise with the regional representative on the Group.	Letter has been prepared. Distribution is pending the required endorsement of RAIDEG by RA I as a regional body within the WIGOS structure.	May 2015	WMO
03/03	System administration training in future MESA project - EUMETSAT through the project user group to inform the MESA Technical Project team of the needs expressed by RAIDEG for adequate levels of training in the area of reception station display and system administration: <ul style="list-style-type: none"> • Minimum of 10-days initial training • Periodic refresher training courses • Easy accessible and usable training materials 	The feedback from the group has been included in the high-level requirements document provided to the MESA project. Propose for closure	Sep 2014	EUM/RAIDEG

03/08	Generic EUMETCast training - EUMETSAT to explore with the Centres of Excellence improvements in the orientation materials for users on: EUMETCast/GEONETCast, PUMA/AMESD/MESA, RETIM	EAMAC have installed the software but noted some limitations. McIDAS-V software is useful for training purposes, but not for operational purposes (too inefficient to process, requires significant RAM Capacity). Propose for closure	Sep 2014	EAMAC, CoEs
04/01	EUMETSAT to resend the configuration information to the PUMA 2010 users	Email resent. Propose for closure	June 2013	EUM
04/02	RAIDEG members to review the WMO survey results and to comment accordingly at the next meeting.	Action was discussed at 5 th meeting agenda item – WMO Survey. Propose for closure	Sep 2014	All Members
04/03	EUMETSAT to confirm the data policy associated with the Megha-Tropiques data and to provide sample data sets to RA I when these become available.	MADRAS instrument (designed for precipitation monitoring applications) is dysfunctional. Data policy states that these data are restricted to EUMETSAT Member State and ECMWF only. Propose for closure	Sep 2014	EUM
04/04	EUMETSAT to resend to PUMA 2010 users information on how to modify the preset display configurations.	Information sent. Propose for closure	June 2013	EUM
04/05	EUMETSAT to investigate if a representative from the RAIDEG community can participate in the MESA infrastructure procurement process	Action was discussed at 5 th meeting agenda item – Role of RAIDEG in MESA, and a potential representative was identified. Propose for closure	Sep 2014	EUM
04/06	EUMETSAT to circulate to RAIDEG the high-level station requirements	Action was discussed at 5 th meeting agenda item – Role of RAIDEG in MESA. Propose for closure	Sep 2014	EUM
04/07	EUMETSAT to investigate if representatives (system administrator and forecasting expert) from the RAIDEG community can participate in the PUMA 2015 Factory Acceptance Test (as per AMESD).	Action was discussed at 5 th meeting agenda item – Role of RAIDEG in MESA, and potential representatives were identified. Propose for closure	Sep 2014	EUM
04/08	RA I Members are encouraged to work with the RICs to ensure maximum benefit from the MESA project.	Action was discussed at 5 th meeting agenda item – Role of RAIDEG in MESA Propose for closure	Sep 2014	All Members
04/09	RAIDEG members are invited to engage with the climate communities within their region and the report back on any potential cooperation at subsequent meetings.	Feedback discussed at 5 th meeting. Propose for closure	Sep 2014	All Members
04/10	EUMETSAT to include a link to details of Arpege model in the Product	Details included. Propose for closure	June 2013	EUM

	Navigator.			
04/11	EUMETSAT to establish regular WebEx sessions for 2013/2014 and the Group to evaluate their usefulness at the 5 th Meeting.	One WebEx session held. Discussed under agenda item – Working relationships. Propose for closure	Sep 2014	EUM
04/12	EUMETSAT & WMO Secretariat to explore ways to enhance the visibility of RAIDEG through a web presence and to report on findings at the next meeting.	WMO has a web site for meeting documentation, to which an update is needed. Propose for closure	Sep 2014	EUM / WMO

During the discussion of previous actions, the following new actions were taken:

Action 05/01: EUMETSAT to explore with the NWC SAF the addition of graphical output formats to ease visualisation and the inclusion of country boundaries and/or geolocation information, within the product output.

Action 05/02: Noting the need for users to access new incoming data streams from their PUMA 2010 PC 1 and to fork these for use on other machines, RAIDEG request EUMETSAT to send information on how to perform this step.

The following recommendations were made:

Recommendation 05/01: RAIDEG notes the range of WMO formats and WMO-accepted formats. It also notes that gridded data are easier to manipulate in GRIB and netCDF and encourages data and product providers to take note.

Recommendation 05/02: Graphical Level 2 product providers are requested to provide clear colour scales in their product guides.

4. STATUS AND WORKING ARRANGEMENTS OF RAIDEG WITHIN RA I

Recommendation 04/01: RAIDEG should be, in its integrity, recognized within the RA I subsidiary structure, such as by the Working Group on Observations and Infrastructure; the RA I Management Group should take appropriate action in this regard. Status - Remains OPEN.

S. Bojinski informed about efforts through 2013 and 2014 to inform RA I management about RAIDEG (through the Chair and WMO secretariat). This is in order to prepare for the official recognition of RAIDEG by RA I at its upcoming 16th session, most likely to be held in early 2015 (meeting was originally scheduled for 8-14 October 2014 in Cape Verde).

5. REVIEW OF EUMETCAST-AFRICA DISSEMINATION BASELINE

S. Wannop gave an overview of the current EUMETCast-Africa dissemination baseline document, followed by the review of the current requirements table.

During the discussion, the following actions were noted:

Action 05/03: EUMETSAT to check the PUMA 2010 upgrade as users report difficulty in accessing NCEP GFS products and missing parameters in the ECMWF data since the upgrade was made.

Action 05/04: EUMETSAT are encouraged to include the NOAA-NCEP product in GRIB format at the next opportunity.

Action 05/05: At the request of ECOWAS, EUMETSAT is requested to resend the upgrade announcement information.

It was noted that there are a wide range of level 2 products provided by EUMETSAT and its SAFs, but that the usage and uptake of these products is unknown. RAIDEG members welcomed EUMETSAT's plan to evaluate usage of such products in 2015 and agreed to participate in this

process. Members are particularly interested to learn more about those products which can support Severe Weather Forecasting.

Noting the importance of NWP model output for all forecasting disciplines, the following recommendation was taken:

Recommendation 05/03: RAIDEG notes a growing need for training in the use of NWP products, in particular ensemble and probabilistic products, and the global forecasting centres are invited to take note.

S. Wannop presented the current RA I data requirements table, using the common format recommended by the WMO Expert Team on Satellite Utilization and Products (ET-SUP).

Details of recent requests were discussed and priority levels were set for each request. During the discussions the following changes were made to the requirements table (available on the WMO website):

- NOAA-NCEP GFS 0.5 grid deterministic (priority 2) and ensembles (priority 1) in GRIB format
- Met Office Africa LAM (priority 1)
- EUMETSAT to check the status of the ECMWF request implementation
- ACMAD to request any missing parameters/levels following EUMETSAT checks
- Altimeter data would be useful for IGAD, ECOWAS, SADC and most likely IOC (priority 1)
- AEMET Dust products of interest to most regions (priority 1) – and EUMETSAT to send a sample file.
- General interest in Copernicus data in future especially Sentinel-3 data (priority 2), see associated recommendation.

H. Hamidou, mentioned the issue of the data reception system (limited capacity, needs to purge files regularly) and therefore advocates for prioritization in datasets put on EUMETCast.

It was noted that at a later date, RAIDEG would need to explore in more detail the user requirements for GMES-Africa, taking into account:

- The process for requesting data
- There would be a need to check the GMES-Africa user requirements document
- There would be a need to demonstrate what is being used today and how future satellite data can enhance forecasting and other applications.

Noting the interest in GMES-Africa, the following recommendation was made:

Recommendation 05/04: The Chair of RAIDEG and EUMETSAT to liaise with the GMES Africa programme development team , to investigate whether a RAIDEG could be given the opportunity to review the user requirements elements of the programme proposal.

S. Aura expressed interest in ocean products from Sentinel-3 (SST, altimetry, SWH) given the project proposal being developed for a climate information system over the Indian Ocean by Kenya. Funding for dissemination of such data is currently not in place and would require some form of an EU-AU agreement. The Group made the following recommendation:

Recommendation 05/05: RAIDEG notes interest in the Sentinel data for operational users in WMO RA1, and for Sentinel-3 requests EUMETSAT to speak with the relevant institutions to develop options for data dissemination to Africa.

The Group will need to specify detailed requirements for Copernicus data in a subsequent meeting.

6. FEEDBACK FROM THE REGIONS

SADC: Due to the unexpected absence of N. Kroese, there was no feedback from Southern Africa. On his behalf, E. de Coning highlighted some issues SAWS have in gaining access internally to data on their reception station.

CEMAC: Feedback received from DRC and Gabon relating to the need for more information on new and existing products, and training support in their application. The reception station in Cameroon has not been relocated to where the NMHS moved and is currently not maintained. DRC reported using the Arpege model. No feedback has been received from Equatorial Guinea, Congo and Chad. (An offline discussion during the 11th UFA with the Director from Chad revealed that they had not performed their upgrade. EUMETSAT will resend all details to Chad).

Maghreb: No feedback from countries other than Morocco. Morocco has sent a letter to all NMSs in the region but with no response. Morocco NMHS is seeking support for the migration of Ku band system to DVB S2 with MSG station supplier and it expects to complete this migration before the end of the current year.

ECOWAS: Only minimum feedback from the region (Benin). Senegal performed the upgraded and received ARPEGE, ECMWF wave models outputs and ATDNET but GFS and the training channel are not available (EUMETSAT will resend all details). Some ECMWF data like MSLP appear to be lost. MSLP from ARPEGE are also required. Senegal would like to ensure that products from the NWP centres extend 40 degrees west, 45 north and 20 east. Concerning timeliness, 3-6 hours is fine for the first 48 hours. After 48 hours, timeliness of 12-24 hours will be fine in order to get model outputs up to 10 days.

IOC: Input provided offline. They have some issues with field values in the UK ADTNet Lightning product.

EAMAC Training Centre: Legends are required on visual, quantitative products to identify values (GII e.g.). Establishing a network of focal points would be very useful to share the burden of station configuration, maintenance and data archiving/curation.

IGAD Training Centre: Four Synergy License keys have broken and need replacement. MFI demands costs for replacement are to be borne by the CoE; the CoE is not willing to do this since the training activity is for the benefit of the region; a more robust/solid design of key or a software version is required under MESA and arrangements should be made with MeteoFrance International in charge of the keys to waive fees for the PUMA 2010 Stations.

ACMAD: More interaction among RAIDEG members and forecasters in the Region is required to solve technical issues, especially in operations.

The following recommendations were made:

Recommendation 05/06: RAIDEG notes the cost issues with regard to the PUMA license keys replacement, particularly within training centres. This has a significant adverse impact on the training on the PUMA2010 system. RAIDEG requests AUC to speak with MFI to seek a waiver for replacement of the keys for the Training Centres.

Recommendation 05/07: In order to assist West African forecasting, the global forecasting centres are asked to extend their products to 40 degrees west, 45 North, 20 East.

Recommendation 05/08: ACMAD to follow up with ECMWF the requested data.

7. FEEDBACK ON PUMA 2010 SOFTWARE UPGRADES

S. Wannop showed a list of products included in the upgrade of Synergy. The Group welcomed the upgrade but a few members had noticed missing or not visible values in the ECMWF products, NOAA-NCEP, FY-2D products, ATOVS sounding products and potentially also the Met Office Africa LAM.

Action 05/06: EAMAC to provide screenshots of missing data.

Action 05/07: EUMETSAT to follow up with data providers and the manufacturer to restore any missing data following the PUMA upgrade.

The following recommendation was noted:

Recommendations 05/09: RAIDEG notes that it is essential to have good local ICT support in order to maintain data flows and operational use of data. PRs are strongly encouraged to ensure such people are in place and well trained, and noting that such training will be available under MESA.

8. EUMETCAST TRAINING CHANNEL

S. Wannop requested the group to provide feedback on the EUMETCast Training Channel. E. de Coning indicated that it was not being used at SAWS. H. Hamidou had had some success installing training modules on a computer separate from the PUMA station. Unfortunately, he was missing training modules in the French language on the following subjects:

- Image interpretation
- Derived product interpretation

Some members do not receive training material (ACMAD & ECOWAS) and they need to register for this service via their Earth Observation Portal (EOP) account and configuration PIDs accordingly.

Action 05/08: EUMETSAT to include additional modules in the French language on the Training Channel as requested by EAMAC.

9. FOLLOW-UP TO WMO SURVEY ON THE USE OF SATELLITE DATA 2012

G. Cheelo presented findings in investigating further challenges identified in the WMO 2012 Survey on the Use of Satellite Data. He has been engaged in collecting supplementary information from Kenya, Ethiopia, Mauritius, Cameroon, and identified areas of remedial action through WMO online resources (WMO Product Access Guide (PAG), Satellite Awareness User Portal (SATURN), Online Satellite Resource (OSCAR)), and through CGMS actions relating to preparedness for future satellite programmes. He briefly introduced guidance material that he had developed on the introduction of software in an organization, using the example of GIS software to be introduced in a NMS in Africa.

It was noted that general surveys may be able to generate trends, but that a more detailed analysis of a selected number of users can often provide a more constructive set of comments to support future service enhancements.

It was noted by the group that Members would benefit from a more detailed discussion on product characteristics especially when new additions are being considered for the baseline. In addition, further information on supporting software (GIS in particular) would be beneficial.

M. Higgins noted that the domain Climate was missing from the PAG.

Action 05/09: WMO to include “Climate” as a Theme in the PAG and to point to climate gridded datasets include those available from providers outside space agencies, such as NMHSs.

Action 05/10: WMO to provide to the group the Software Introduction guidance document referenced by G. Cheelo in his presentation.

10. RAIDEG AND PREPARING FOR MTG

V. Gabaglio briefed the group on MTG preparations and referred to a session on Tuesday, 9 September, at 11th UFA which will be a starting point for many discussions to come on user preparedness and priorities. MTG raises many questions regarding users in Africa (e.g. Level-1 from the imaging instrument FCI alone would need 20 Mbps and the current bandwidth is 2.55 Mbps).

It was noted that RAIDEG should serve as an important feedback mechanism for preparing the African user community for MTG. It was also noted that EUMETSAT will begin a study to assess user needs and data access in 2015.

11. RAIDEG AND MESA

V. Gabaglio briefed on the plans for MESA. The Programme has published an ITT for the upgrade of all AMESD and PUMA2010 and the installation of new EUMETCast stations. This will include an upgrade of PUMA2010 to PUMA2015 and AMESD v1 to v2. The ITT includes high-level requirements and has been released, and a change in user software may be a consequence.

Roles of RAIDEG in the evaluation / acceptance process:

- The AU Commission is tasked to evaluate proposals, and it may call upon RAIDEG and its members as external experts in this evaluation;
- Factory acceptance test hosted by contractor and with participation by African users (i.e. RAIDEG members) should be considered essential.

The ITT will close in November 2014, with an expected contract award in early 2015. It is expected that it will take some six months to prepare for Factory Acceptance Tests with the likely start of Deployment in Oct 2015. Deployment is likely to be first to training centres (CoEs), with training on system administration (2-weeks), and application software (2-weeks). RAIDEG members should be introduced to the new system once available.

Action 05/11: EUMETSAT to circulate to the Group the high-level requirements document provided in the MESA ITT.

It was noted that there are problems with AMESD license keys and within the scope of MESA such problems should be avoided where possible.

It is the responsibility of each country to send suitable participants to the preparatory training. However, some advising or filtering for competent participants can be done.

Nominations for experts to support the ITT and FATs was requested and it was agreed that:

- For evaluation of bids: Mariane Diop Kane and an IT expert
- For participation in FAT: Mariane Diop Kane, Lee-Ann Simpson, Hama Hamidou, and an IT expert.

It was noted that although the replacement to E. Kenne was yet confirmed, this person could potentially join this effort as an IT expert from the Central African region.

Recommendation 05/10: RAIDEG is willing to assist AUC in the MESA Infrastructure contract evaluation with technical and operational experts. In addition, RAIDEG is willing to assist in the Factory Acceptance Testing (FAT) of the PUMA 2015 system.

Recommendation 05/11: RAIDEG should receive an introduction to the new MESA infrastructure, once the system has been selected and is available for demonstration and training purposes. The next meeting(s) of the Group should be scheduled accordingly.

12. LINKAGE OF RAIDEG WITH DATA EXCHANGE NEEDS OF WMO COMMUNITIES

Outside of the input provided by IOC, only a limited range of requirements from disciplines beyond general weather forecasting was identified, mainly from marine meteorology and aviation. The MESA theme could be approached to address broader requirements. However, there could be some immediate benefit if the Group contacted the SWFDP to address their specific data needs rather than diversify too far in scope.

12.1 MARINE METEOROLOGY AND OCEANOGRAPHY

It was noted that the involvement by a representative from JCOMM at a specific meeting or on a regular basis may assist in the gathering of oceanography requirements. It was also noted that MESA thematic areas, led by the University of Ghana and Mauritius Oceanographic Institute (MOI), could also contribute to RAIDEG sessions.

Action 05/12: EUMETSAT to discuss with the JCOMM president Johan Stander, the contribution JCOMM could make to RAIDEG meetings.

12.2 AGRICULTURAL METEOROLOGY

There was no feedback gathered by the Group regarding agrometeorology. The inclusion of a nomination from AGRHYMET could be considered in future, or a dedicated session at a future date. The process for such a nomination would require investigation.

The following recommendation was noted:

Recommendation 05/12: RAIDEG encourages those RICs and other organisations with an remit in agricultural meteorology to pass on their data requirements to regional representatives.

12.3 CLIMATE

ACMAD raised a request for operational CM SAF products monthly mean cloud cover, surface albedo, water vapour and other products. EUMETSAT will contact the SAF to explore the future dissemination of these on EUMETCast.

Action 05/13: EUMETSAT to investigate with the CM SAF the dissemination of operational monthly mean products as requested by ACMAD.

12.4 ATMOSPHERIC CHEMISTRY

There was no feedback from users in this area.

13. REQUIREMENTS FOR DATA VISUALIZATION

PUMA is not the only system available. A successor to MESA is under discussion, however, it will be geared toward climate services and does not have a visualization component/ upgrade for the PUMA2015 uses. So, in four years from now, support to PUMA2015 will be discontinued.

NMSs therefore need to prepare for a post-MESA scenario in terms of processing and visualization tools: this could consist of (i) national development based on open source, (ii) national investment in COTS, (iii) sub-Region-based centres and resources (iv) a coordinated national effort (v) or a combination of all options.

NMHSs may have to be more creative in their approach to visualization and data access in the future, and to investigate various solutions to meet all needs.

Solutions could use the GEONETCast Toolbox from ITC (the Ethiopia NMHS is an example of this). Free off-the-shelf software like DIANA (Met.No) and AWIPS-II (NOAA) could be other solutions. WMO maintains a webpage of software processing and visualization tools (free and COTS)¹.

It was noted that visualization aspects should form part of the MTG preparation study.

Recommendation 05/13: Noting the success of PUMA and AMESD in making data available for forecasters to interact with, RAIDEG further notes the continuation of this function in MESA, but with no follow on envisaged. PRs, RAIDEG members and EUMETSAT are strongly advised to develop a roadmap for preparing a solution for post MESA; this roadmap should extend to MTG.

14. NEXT MEETINGS

It was agreed to host a virtual meeting in first week of Dec 2014, with a following in 2015 if needed. It is expected that the next in-person meeting takes place in the April-May 2015 timeframe (c. 3-4 days) at EUMETSAT. The focus of this meeting will be on the MTG study, as well as on the system to be used in MESA.

15. AOB

There will be an implementation of GFCS in ACP countries which incorporates capacity building and infrastructure development in RCCs. RAIDEG is invited to note of this and any potential data requirements which may arise from this activity.

¹ http://www.wmo.int/pages/prog/sat/accessandtools_en.php#SoftwareTools

APPENDIX I - AGENDA

**5th Meeting of the WMO RAI
Dissemination Expert Group**

Draft Agenda

6-7 September 2014

Kopanong Conference Centre, Johannesburg, commencing 14.00

The **5th** meeting of the **WMO RAI Dissemination Expert Group** will be held on 6-7 September 2014 at Kopanong Conference Centre, Johannesburg, South Africa. Meeting will begin at 14.00 on 6 September.

Day 1

14h00	Welcome	Mariane Diop Kane – Acting Chair Stephan Bojinski – WMO Sally Wannop – EUMETSAT
14h15	Adoption of Agenda	
14h20	Review of Actions from previous meeting	Sally Wannop - EUMETSAT
14h30	Update on the integration of RAIDEG into the RA-I structure	Stephan Bojinski - WMO
14h45	Presentation & Discussion on EUMETCast- Africa Dissemination Baseline Update & review of existing requirements	Sally Wannop - EUMETSAT
16h00	<i>Coffee Break</i>	
16h15	Feedback on PUMA 2010 software upgrade activities & operational status of PUMA stations	Member feedback
16h45	Feedback from each region	Member feedback (c. 10-mins per region)
17h45	EUMETCast Training Channel	Sally Wannop/Mark Higgins - EUMETSAT
18h00	End of Day 1	Sally Wannop - EUMETSAT

Day 2

09h00	Role of RAIDEG in MESA Station Acceptance	Vincent Gabaglio - EUMETSAT
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09h30	RAIDEG & user preparation for MTG	Vincent Gabaglio/Sally Wannop - EUMETSAT
10h00	Follow-up to the WMO 2012 Satellite User Survey: Feedback by RA I Members	Gillie Cheelo – WMO Member Feedback
10h45	<i>Coffee Break</i>	
11h00	Gathering requirements for emerging user needs: <ul style="list-style-type: none"> - marine meteorology - oceanography - agro meteorology - atmospheric chemistry - climate 	Group discussion
11h45	Additional requirements for data visualisation	Group discussion
12h30	<i>Lunch</i>	
13h45	Improving working relationships within the region: <ul style="list-style-type: none"> - regional Points of Contact - websites - online meetings 	Group discussion
14h15	Chairman's Report to other bodies: <ul style="list-style-type: none"> - UFA 11 - WMO RA-I Meeting - AMCOMET 	Chair / WMO / EUMETSAT
15h00	AOB	
15h30	End of meeting	

APPENDIX II: LIST OF PARTICIPANTS

RAIDEG Regional Representatives	
De CONING, Estelle (standing in for N.Kroese)	Chief Scientist: Nowcasting and very short range forecasting South African Weather Service Tel: 012 367 6015 Email: estelle.deconing@weathersa.co.za
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APPENDIX II

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APPENDIX III

Ongoing requirements from WMO RA I

#	Date of entry	Product name	Data provider	Data characteristics	Format	Data distribution	Geographical area	Frequency	Size	size comment	Format expected in the Future	FINAL Size (compressed) - kB	Requesting Region	Basic Application (identified by User)	Priority	Timeliness (min)	Required data rate (kb/s)
1	01/06/2011	Combined Instability Index(CII)	SAWS	CII is a product that combines the average of 4 Instability indices (KI,LI, PW,TT) to indicate the probability of convective development later in the day. This product is useful as a nowcasting tool for early warning of convective activity.	Binary	?	Africa - South of Equator	Between 0300 and 1400 UTC- every 15 minutes. 44 (per day)	0.2 MB (Zipped)	~	Binary	~	SADC	Sever weather warning & nowcasting	?	15	~
2	01/06/2011	Hydro-Estimator (HE)	SAWS	HE is a Quantitative Precipitation Estimation (QPE) technique combining the MSG-satellite and numerical model precipitation estimation. The MSG 10.7 µm brightness temperature is used together with the Unified Model (UM) from the UK-Met Office.	Binary	?	Africa - South of Equator	every 15-mins, 96 per day	0.2 MB (Zipped)	~	Binary	~	SADC	Sever weather warning & nowcasting	?	15	~
3	01/06/2011	Southern Africa Limited Area Model (LAM)	SAWS	UK Met Office- Unified Model (UM) output for Africa South of the equator in a 12 x 12 km spatial resolution, 3 hour temporal resolution for a 48 hour Forecasting period . Plans are to increase the forecasting period to 72 hours to coincide with the WMO definition of Short Range Forecasts	GRIB	?	Africa - South of Equator	1 per day	tbc	~	GRIB	~	SADC	General weather forecasting	?	15	~
4	01/06/2011	Cumulonimbus Tracking and Monitoring (Cb TRAM)	German Aerospace Center (DLR)	Early detection and tracking of convection. This product is useful as a now casting tool for disaster management purposes.	XML	?	Africa	96 per day	2 MB	~	XML	~	SADC / North Africa	Sever weather warning & nowcasting	?	15	~
5	01/06/2011	Geostationary Nowcasting products	NWP SAF	Three products derived from the Geostationary NWC SAF software package - Cloud Mask, Cloud Top Temperature & Height, Cloud Type	HDF5	none	Meteosat 0 deg full disk	96 per day	5MB, 11.5MB, 5MB	~	HDF5	5MB, 11.5MB, 5MB	ACMAD	Sever weather warning & nowcasting	?	15	~
6	01/10/2012	Microwave instrument data	NASA, NOAA, ISRO	Microwave instrument data to support precipitation monitoring. Potential sources could be SSMIS, TRMM, Megha-Tropiques.	~	Web, Downloaded	Africa - Regional	~	~	~	~	~	IOC	?	?	?	~
7	01/10/2012	Ocean current and significant wave height	ESA, NOAA, CLS-AVISO, ISRO, NSOAS	Ocean current and significant wave height information from missions like Cryosat-2, SARAL, HY-2A & Oceansat-2	netCDF, BUFR	EUMET Cast	Africa - Coastal	14 orbits per day	~	~	~	~	IOC	Marine Forecasting	?	?	~

APPENDIX III

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8	01/10/2012	NWP output	ECMWF	Vertical vorticity; Theta Prime W; Dew Point Temperature for standard pressure levels (925 down to 200) - Every 6-hours. Temperature, Wind & RH products for standard pressure levels (925 down to 200). Every 6-hours. Surface cyclone tracks. Model outputs for Significant Wave Height, wave mean period, wave mean direction. Seasonal SST. (See request sent by ACMAD)	GRIB2	?	Africa	6-hours	17.5MB	~	GRIB2	~	ECOWAS /EAMAC / ACMAD /IOC	General weather forecasting	1	6-hours	~
9	01/10/2012	NWP output	DWD	GME output - contents tbc	~	?	Africa	6-hours	~	~	~	~	ECOWAS /EAMAC / ACMAD	General weather forecasting	?	6-hours	~
10a	06/09/2013	NWP output	NOAA-NCEP	GFS model output with regional African coverage including the Indian Ocean - Ensembles	GRIB	Web, Download	Africa & Indian Ocean	2 per day	GRIB	~			ECOWAS / EAMAC / ACMAD / IGAD / CEMAC / IOC	General weather forecasting	1	1 perday	~
10b	06/09/2013	NWP output	NOAA-NCEP	GFS model output with regional African coverage including the Indian Ocean - Deterministic	GRIB	Web, Download	Africa & Indian Ocean	2 per day	GRIB	~			ECOWAS / EAMAC / ACMAD / IGAD / CEMAC / IOC	General weather forecasting	2	1 perday	~
11	01/06/2013	NWP output	Met Office	Enhancement to the current LAM: extend the domain to 40W, 45N and 20E in order to better capture the weather systems that affect west Africa; improved time interval 6hrs for the first 24-48hrs and 12hrs after that up to 10-days; products needed include divergence, dew point temperature, vertical velocity	~	?	Global / Africa	6-hours	~	~	~	~	ECOWAS /EAMAC / ACMAD /IOC	General weather forecasting	1	6-hours	~
12	01/06/2013	NWP output	ECMWF	ACMAD additional data - Vertical vorticity; Theta Prime W; Dew Point Temperature - Inclusion of missing 300 & 400 hPa	~	?	Africa	6-hours	~	~	~	~	ECOWAS / EAMAC / ACMAD	General weather forecasting	1	6-hours	~
13	01/08/2014	Altimeter data	EUMETSAT	Dissemination of a light text version of the OGDR from SARAL, Jason-2, HY2A & Cryosat-2. (This could potentially be applied for the future Jason-3 and Sentinel-3 altimeter data)	BUFR & netCDF	EUMET Cast	Global	3-hours	~	~	ASCII	~	(Latvian NMS, Morocco DMN) SADC/ ECOWAS / IGAD	Marine Forecasting	1	3-hours	~

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14	01/08/2014	Dust products	AEMET	Atmospheric sand and dust forecasts provided by the Barcelona Dust Forecast Center, jointly managed by AEMET and the Barcelona Supercomputing Center. Prediction of 5 variables are daily available (dust surface concentration, dust load, dust optical depth, dry and wet deposition) from H+0 to H+72 . See http://dust.aemet.es/	GIF	?	Africa and Middle East	3-hours	70 KB		other image formats possible	~	Initial interest expressed through capacity building	Mainly targeted to NMHSs. Potential users in various sectors: air quality, public health, aviation, ground transport, agriculture, solar power generation, etc.	1	?	~
15	01/08/2014	Wave model	DMN Morocco	Wave Watch Model (WW3)	GRIB	?	West Africa	?	?	?	?	~	(Marine Meteorology Service - DMN Morocco)	Marine Forecasting	1	?	~
16	01/08/2014	Ocean colour	EC via EUMETSAT	Copernicus Sentinel-3 OLCI L1b ocean colour data and potentially other Sentinel-3 products	SAFE	EUMET Cast Europe, Download	Global	14 orbits per day	Full 21.47GB per orbit; Reduced 1.76GB per orbit	~	SAFE	~	(UCT, S. Africa) IOC / IGAD / ECOWAS	Continuation of MERIS data usage	2	?	~
17	07/09/2014	Climate Products	CM SAF	Operational monthly mean products - cloud cover, surface albedo, water vapour, radiation.	TBC	FTP Download	Africa						ACMAD	Climate monitoring	1	?	~
18	07/09/2014	NWC SAF Products	NWC SAF	NWC SAF to consider implementing a graphical output format for their software products	GIF /TIFF/ PNG	~	Africa	~	~	~	~	~	EAMAC / SADC / ACMAD	General weather forecasting	2	?	~
19	10/09/2014	NWP Centres	Various	Regional centres explore the potential use of EUMETCast for the delivery of model boundary condition information (including data from ACMAD) to the wider NMHS community in Africa. UFA 11 Rec #7	~	~	Africa	~	~	~	~	~	ACMAD	DRR	3	?	~