

Regional Satellite User Groups

RAI Dissemination Expert Group (RAIDEG)

Summary and Purpose of Document

This document provides an overview of the current work of the WMO RAI Dissemination Expert Group (RAIDEG) which was established in 2010, to discuss and review data access requirements for the Region I. In particular, the Group focuses on updates to the EUMETCast-Africa Dissemination Baseline. Current topics of key importance to the Group are:

- Endorsement by Regional Association I
- Start of the MESA Maintenance and upgrade
- MTG for Africa Study
- Status of EUMETCast-Africa service and baseline.

The next meeting of the Group is scheduled for August 2015.

ACTION PROPOSED

The eighth session is invited to:

- (a) Take note of the status of RAIDEG activities and comment accordingly.
- (b) WMO Secretariat is invited to prepare a letter informing PRs about RAIDEG, and invite them to nominate country focal points to liaise with their sub-regional representatives in RAIDEG.

Appendix A. Data Requirements List

DISCUSSION

1. RAIDEG Composition

The WMO RAI Dissemination Expert Group (RAIDEG) comprises of the following Members:

- Regional NMHS's representation:
 - CEMAC – Congo-Brazzaville
 - IGAD – Kenya
 - IOC – Mauritius
 - North African Countries – Morocco
 - ECOWAS – Senegal
 - SADCA - South Africa
- Continental representation: ACMAD
- Regional training representation:
 - EAMAC, Niger – aviation
 - Kenya, South Africa & Morocco VLab 'Centres of Excellence'
- JCOMM representative
- EUMETSAT Secretariat representative
- WMO Secretariat representative

A representative from JCOMM has now been invited to join the Group to assist in the requirements gathering for ocean applications. The CEMAC representative from Cameroon has been replaced by a new member from Congo-Brazzaville, and the Kenyan representative has been replaced following the departure of James Kongoti (Chair) from the Group. A new Chair will be appointed at the next meeting.

RAIDEG aims to meet in person once per year and via virtual meeting arrangements outside of the standard meeting schedule.

2. RAIDEG within WIGOS

The Regional Association I (Africa) at its 16th session (February 2015) endorsed the RA I Dissemination Expert Group for satellite data as a technical advisory body of the RA I Working Group on Observations and Infrastructure. This means that RAIDEG now has an official mandate to operate as the regional body responsible for gathering and coordinating user requirements for data and evolutions to data access mechanisms. PRs in all RA I Countries should be notified about RAIDEG through a WMO letter, and be invited to nominate country focal points that would ensure regular liaison with their sub-regional representatives on the Group.

3. MESA and RAIDEG

Following on from the success of the AMESD project, MESA, funded by 10th European Development Fund and implemented by African Union Commission will provide the majority of RA I users with station upgrade and maintenance support for the period 2013-2017.

The supply contract for the maintenance and upgrade is expected to be signed in March 2015 and comprises an upgrade of all existing PUMA2010 and AMESD eStations, plus the installation of 50 new stations. Three of these new stations will be allocated for meteorological use:

- South Sudan NMHS
- Somalia NMHS
- ASECNA Dakar, Senegal

The functionalities of the integrated meteorological display and product generation software suite to be upgraded from PUMA2010 to "PUMA2015" shall be at least equivalent to the functionality offered by

the current software suite. Each installation shall include user training (system administrator and forecaster training) and be accompanied by a comprehensive set of user guides. In addition to hardware and software warranty, the supply contract foresees an allocation of funds for software enhancements.

A representative from RAIDEG participated in the technical review of the bids received in response to the supply contract ITT. In addition, RAIDEG representatives will be invited to support the Factory Acceptance Test (FAT) in the September 2015 timeframe. The first installations will start shortly after FAT and will follow the prioritisation plan identified by the Regional Implementation Centres (RICs).

3. Status of EUMETCast Africa Service

The EUMETCast Africa contract is available until mid-2018. The service has an allocated net bandwidth of 2.55Mbps.

The bandwidth on EUMETCast Africa is frequently saturated during daytime hours, leading to frequent increased delays of more than 20 min compared to nominal timeliness. These delays are particularly noticeable in the timeliness of the MSG Nowcasting Products (GEO-NWC). Guaranteed bandwidth is needed to achieve better timeliness for these products and therefore it is proposed to increase the bandwidth on EUMETCast Africa. The minimum bandwidth upgrade option is 300 kbps (240 kbps net). Assuming an endorsement by the EUMETSAT Council at its 83rd session (23-24 June 2015), the upgrade would be implemented in the July 2015 timeframe.

An increase of bandwidth will also enhance the timeliness of lower priority services on EUMETCast Africa, as long as higher priority services are not added. Without allocation of additional guaranteed bandwidth, the service timeliness will deteriorate when new products are added.

4. Status of Data Requirements and EUMETCast Africa Baseline

RAIDEG have established a rolling table of requirements for inclusion on EUMETCast-Africa. In the 2012-2014 timeframe, a range of enhancements to the EUMETCast-Africa have taken place, namely general product evolutions, requirements identified by RAIDEG and some additional requirements through AMESD.

These include:

- enhanced central facility products e.g. IASI L2 v.6, NWC SAF cloud products & the extension of ASCAT Soil Moisture to Africa;
- enhanced OSI SAF and the inclusion of two new OSI SAF products;
- enhanced Met Office, ECMWF and Météo-France model output;
- new NCEP forecast products for Africa;
- SARAL OGDR;
- introduction of the Training Channel;
- AMESD products from SADC Thema;
- FP7 AGRICAB products, bandwidth funded by the EC;
- products whose bandwidth is funded through the Copernicus Global Land Service.

The service currently has a total of 229 data collections from 24 data providers.

The current list of Data Requirements is provided in the Appendix.

5. Future Perspectives

The bandwidth requirements needed to support future services like a new Indian Ocean Data

Coverage (IODC), Sentinel-3 and MTG for Africa are the subject of ongoing analysis by EUMETSAT.

- IODC: internal analysis ongoing;
- Sentinel-3: subject to discussion with European and African Union Commissions;
- MTG Africa: address within the framework of the MAPS study.

5.1 Indian Ocean Data Coverage

The current Indian Ocean Data Coverage (IODC) service provided by EUMETSAT will terminate at end 2016, followed by an end of life-time re-orbiting of the Meteosat-7 satellite in early 2017.

Noting the continued interest in an IODC service expressed by EUMETSAT Member States and the WMO RA I (and II) communities, EUMETSAT is currently analysing a potential follow-on scenario. This scenario is to rely on the operational capability provided by ISRO (INSAT-3D at 82°E and INSAT-3DR at 74°E) and by CMA (FY-2F and follow-on at 86.5°E). In addition, assuming a successful MSG-4 launch and commissioning, extended operations of Meteosat-8 at around 40°E could be envisaged to support the acquisition of images in the Western part of the Indian Ocean on a best effort basis.

Note: WMO launched by email a survey among RAIDEG, RAII WIGOS Project Group, RA V TT-SU and key users in the Indian Ocean region, on their satellite data requirements. Responses are due 30 March. This is to support a CGMS action related to IODC continuity.

The service specification for the follow-on IODC service will be presented for approval to the EUMETSAT Council in November 2015.

RAIDEG will have the opportunity to review the proposal in the July/August timeframe. Any additional bandwidth requirements needed to support a follow-on IODC service for Africa will need to be addressed within the scope of the service specification.

5.2 Copernicus Sentinel-3 Data

EUMETSAT is addressing an action to look at the impact of disseminating Sentinel-3 data to Africa through EUMETCast. The analysis is on-going, with the first assessment provided to the EC in February 2015. The next course of action is to re-engage with the African user community to re-examine their needs versus capabilities. This topic may be discussed in the upcoming African Union – European Commission to Commission (C2C) meeting, March 2015, in Brussels. If the feasibility is demonstrated, and if there is a political support for this approach, some funding from Copernicus might be made available to establish a service in the latter half of 2016.

5.3 MTG for Africa

The Meteosat Third Generation (MTG) should guarantee access to space-acquired meteorological data until at least the late 2030s. With MTG, the user community can look forward to continued visible observations from geostationary orbit, as well as the use of observations from infrared and ultraviolet/visible sounding instruments. Together with the improved imagery at 10-minutes full disc repeat cycles, the provision of data from the MTG infrared and ultraviolet/visible sounding missions will be crucial for the derivation of quantitative products in future.

The transition from MSG to MTG raises a number of challenges (data dissemination, user preparation, transition, etc). Therefore EUMETSAT initiated the “MTG Africa Preparation Study” (MAPS), whose purpose is to articulate a concept for:

- making available relevant MTG data and products to African users;
- ensuring user readiness to access to these data and start using them (user preparedness).

The MAPS shall be based on and take into account the existing technical, programmatic and financial

aspects of the MTG programme, as well as the needs and priorities of the African meteorological community.

The African needs will be expressed through RAIDEG. At its next meeting (not before August 2015) the MAPS consultants will meet with RAIDEG members to define and priorities the type of data to be disseminated via EUMETCast to Africa.

5.3.1 MAPS Overview

The MAPS ITT was launched in February 2015 and it is hoped to have a contract in place by end May 2015.

The outline tasks of the contractor will be to provide an independent support into the following four main work packages:

- WP 1. To prepare customised “MTG” information documentation for interaction RAIDEG;
- WP 2. To interact with RAIDEG in order to determine needs and priorities (in terms of MTG applications) and transition approach from MSG to MTG;
- WP 3. Produce a preliminary high-level assessment (MTG for Africa Concept) of the technical and financial implications of the user needs and priorities;
- WP 4. To prepare inputs for some follow-on activities, that could be (partially) implemented via external funding:
 - a. MTG preparatory projects in Africa during the pre-MTG period (2016-20);
 - b. Large “user capacity building project” (PUMA for MTG) as of 2020.

The aim is to complete the project and to have the final outputs available by end Q1/2016.

6. Conclusion

IPET-SUP 1 is invited to take note and comment upon the current status of RAIDEG and the provision of data to WMO RA I user community.

Appendix: Data Requirements List

INFORMATION FROM PROVIDERS												
#	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
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	~
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	~
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	~
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	~
5	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, Download	Africa - Regional	~	~	~	~	~
6	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	EUMETCast	Africa - Coastal	14 orbits per day	~	~	~	~
7	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	~
8	01/10/2012	NWP output	DWD	GME output - contents tbc	~	?	Africa	6-hours	~	~	~	~

9a	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	~		
9b	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	~		
10	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	~	~	~	~
11	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	~	~	~	~
12	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	EUMETCast	Global	3-hours	~	~	ASCII	~
13	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	~
14	01/08/2014	Wave model	DMN Morocco	Wave Watch Model (WW3)	GRIB	?	West Africa	?	?	?	?	~

15	01/08/2014	Ocean colour	EC via EUMETSAT	Copernicus Sentinel-3 OLCI L1b ocean colour data and potentially other Sentinel-3 products. See DM PDF 3180 for details	SAFE	EUMETCast Europe, Download	Global	14 orbits per day	Full 21.47GB per orbit; Reduced 1.76GB per orbit	~	SAFE	~
16	07/09/2014	Climate Products	CM SAF	Operational monthly mean products - cloud cover, surface albedo, water vapour, radiation.		FTP Download	Africa					
17	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	~	~	~	~	~
18	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	~	~	~	~	~
19	02/02/2015	MODIS Ocean colour	NASA / PML?	Additional Ocean Colour parameters for MESA (ECOWAS and IOC) Kd940, SST & PAR	~	~	Global	~	~	~	HDF5	~
20	02/02/2015	MODIS Ocean colour	NASA / PML?	RIC generated products for fish zone monitoring based upon Mercator model.	~	~	West Africa	~	~	~	PNG,BUFR, JPEG, netCDF	~
21	01/03/2015	Model update	UK MO	Enhanced global model	GRIB	~	Africa	~	~	~	GRIB2	~
22	01/03/2015	Model update	UK MO	Enhanced 4km Lake Victoria	GRIB	~	Africa	~	~	~	GRIB2	~