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World Meteorological Organization

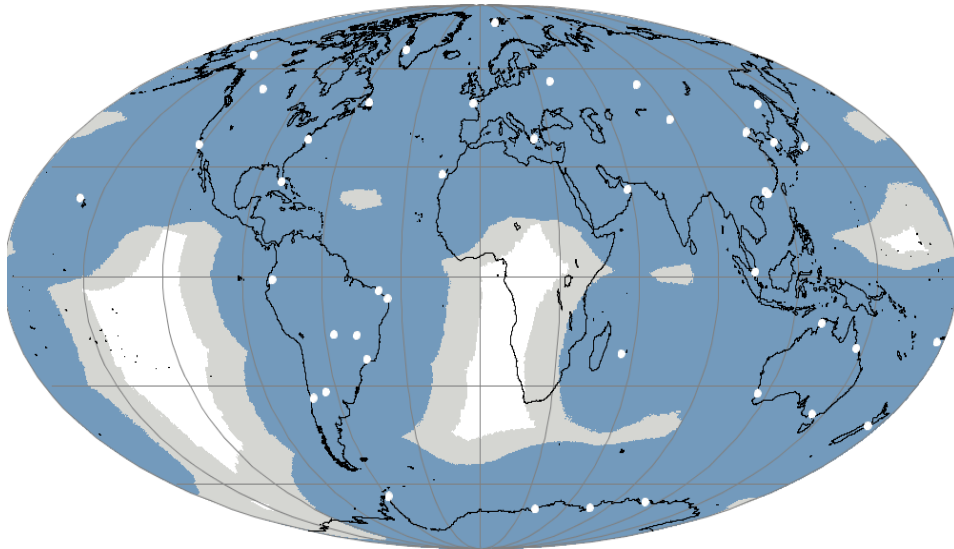
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# Direct Readout Acquisition and Relay System for LEO Satellite Data

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# Initial WMO RARS concept and objective

- Sharing polar-orbiting satellite data received by a collection of Direct Readout stations distributed around the world
- Dissemination by the WMO GTS or otherwise (DVB-S broadcast)
- Ensuring data consistency by common pre-processing software (AAPP), common product definition, common coding and filenaming, and quality monitoring



- Initial objective:  
ATOVS sounding data (L1b)  
from NOAA and Metop series  
over 90% of the globe  
available on the GTS in 30 min

ATOVS= HIRS, AMSU-A, AMSU-B, MHS

# Background (1/4): Workshops and Implementation Group

- In 2001, EUMETSAT initiated the EUMETSAT ATOVS Retransmission Service (EARS) project to improve timeliness/availability of ATOVS data in Europe
- **WMO Global RARS workshops in Dec 2004, Dec 2005, Sept 2006:**
  - Discussed the requirements for a global ATOVS retransmission service
  - Planned and initiated a RARS in Asia-Pacific through APSDEU discussions
  - Planned and initiated a RARS in South America through RA III discussion
  - Established a RARS Implementation Group
- **RARS Implementation Group meetings** (often joint with IGDDS IG)
  - July 2007: agreed file naming convention, BUFR identifiers, data categories/subcategories
  - May 2008: implementation plan for global coverage, software (AAPP)
  - Feb 2009: guidance for filling gaps, monitoring
  - Mar 2010: plan for extension to hyperspectral sounders, user outreach (RARS Poster at ITSC-17, Monterey)



# Background (2/4) : Collocated meetings

- **May 2011: RARS ad-hoc meeting at APSDEU-NAEDEX in Boulder**
  - Monitoring and operational coordination issues
  - Extension to hyperspectral sounders and FY-3 sensors
  - Need more feedback from ITWG
- **March 2012: RARS Technical Subgroup at ITSC-18 (Toulouse)**
  - RARS/ATOVS products are used by an increasing number of NWP centres
  - Supported the extension of RARS to advanced sounders of METOP, NPP and FY-3
  - Stressed that RARS products should be as close as possible to the global products
  - Defined a roadmap for integrating METOP/IASI and NPP/CrIS
- **Oct 2012: RARS IG-6 at Exeter, collocated with APSDEU-NAEDEX**
  - Reviewed the roadmap for integrating IASI and CrIS,
  - Outstanding coding issues
  - Discussed data volumes and dissemination issues



## Background (3/4) : interest from CGMS and NOAA

- **July 2013: CGMS-41 (Tsukuba) discussed RARS and the NOAA DB initiative**
  - Action 41.17: CGMS members to nominate representatives in the Task Team to work on RARS related aspects
  - Action 41.54: NOAA and WMO to discuss the relation of the Direct Broadcast Data Initiative (see NOAA-WP-13) to RARS, and how RARS can take advantage of this initiative



# Background (4/4): ITSC-19

- **April 2014: RARS Technical Subgroup at ITSC-19 (Jeju)**
  - Action: NOAA to review what is needed in BUFR format for CrIS, ATMS and IASI and determine if they could use AAPP BUFR (i.e. RARS format) instead of NCEP BUFR
  - Action: NOAA to send samples of NCEP BUFR data to Nigel Atkinson
  - Action: WMO will inform the group on the data rates supported by the GTS links
  - **Action: SSEC, NOAA, EUMETSAT, WMO should coordinate on data formats, software versions, and latency requirements and come up with a plan to provide the DBRTN products for inclusion in RARS**
  - **Action: The draft Guide on RARS which defines the RARS procedures, software, formats, data exchange convention, service requirements, etc. should be finalized, published, and shared widely with potential data providers**
  - **Action: There is a need for reactivating the RARS Implementation Group within WMO with a broader scope to include NOAA DBRTN**
  - **The present DRARS meeting is convened to address these actions**



# RARS/ATOVS implementation

Regional components	January 2009	March 2014	March 2015 (TBC)
<b>EARS</b>	10 stations 23%	18 stations 40%	19 stations 41%
<b>Asia-Pacific</b>	14 stations 28%	16 stations 30%	19 stations 36%
<b>South-America</b>	5 stations 10%	8 stations 14%	9 stations 17 %
<b>Overall network</b>	29 stations 61%	42 stations 77%	47 stations 84%

The percentages are the fraction of the globe's surface (except polar caps) above which the DB signal emitted by a satellite is received by at least one station of the RARS network



# From RARS to DRARS

- The RARS concept is excellent and must be pursued
- This concept must however be:
  - **expanded** to other sensors
  - **broadened** to accommodate the NOAA DBRTN initiative if agreement is reached on common high-level requirements and specifications
  - **documented** to be fully operational and sustainable
  - **integrated** into the WMO Information System (WIS)
- The new branding «**DRARS**» is meant to reflect this evolution
- The Commission for Basic Systems (CBS-Ext(2014), Asunción) *«welcomed the steps taken to develop the Direct Readout Acquisition and Relay of Satellite Data (DRARS) which will follow and enhance the Regional ATOVS Retransmission Services (RARS) and recommended to complete a Guide to DRARS as part of the WIS reference documentation»*





# Objectives of the meeting :

## to address the requests of CGMS, ITSC-19 and CBS

- Review status of RARS and address any outstanding issues
- Have reports on pilot initiatives of EUMETSAT and NOAA , lessons learnt, and discuss whether these initiatives can be a model for DRARS
- Define high-level specifications for DRARS
  - inclusive of new sensors, living with evolving user needs
- Review draft *Guide to DRARS* in order to document the system, support integration into WIS, and recognition by CBS
  - Should contain high-level technical specifications to be complied with
  - Should provide guidance to the DRARS providers and users
  - Should address organizational aspects as well (coordination and governance)
- Discuss implementation issues

