EUMETSAT Satellite Programmes
Nowcasting Applications
Developing Countries

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WSN-12 Rio de Janeiro 06-10 August 2012
EUMETSAT Headquarters in Darmstadt / Germany
Geostationary Satellites: Nowcasting Instruments!

Meteosat-9 (0° Longitude)
Meteosat-8 (9.5° E)
Meteosat-7 (57.5° E)
Meteosat-10 (3.4° W)

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MSG Satellite Summary

MSG SEVIRI:
Spinning Enhanced Visible and InfraRed Imager

- 12 channels
- 3 (1) km pixel sampling distance
- 15 minute repeat cycle
- 5 min. in “rapid scan service”
MSG Scans

5 Minutes RSS: Meteosat-8

15 Minutes: Meteosat-9
Making Use of the Data

Visual Analysis

Detection and Classification

Quantitative Data Extraction

Input to Other Applications

Generally increasing complexity
Visual Analysis: Single Channel
Visual Analysis: Single Channels - Animations

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Visual Analysis: Single Channel HRV
Visual Analysis: ‘RGB’s’

‘NATURAL COLOUR’

Vegetation – 0.6/0.8
Cloud phase (water or ice) – 0.8/1.6
Visual Analysis: ‘RGB’s’

‘DUST’

Desert dust – 8.7/11
Thin ice cloud (Cirrus) – 8.7/11
Cirrus thickness – 8.7/11/12
Cloud altitude – 11/12

RGB
Visual Analysis: Other RGB Applications

More application / examples can be found in the MSG Interpretation Guide and in the "Image Gallery" on www.eumetsat.int

Fog

Slide: 14
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Visual Analysis: Monitoring Stages of Convection

23. September 2009
Mediterranean Sea
Visual Analysis: Monitoring Stages of Convection

23. September 2009
Mediterranean Sea
Visual Analysis: Monitoring Stages of Convection

"Sandwich Product"
The IR3.9 channel shows "hot spots" for wild fires (which are considerably smaller than one pixel).
Quantitative Data Extraction: Monitoring the Pre-Convective Atmosphere

Information on the atmospheric vertical stability is derived from the image data combined with forecast data in cloud free areas.

MSG SEVIRI IR + Weather Prediction → Convective stability
Instability Indices - Example
Instability Indices – Example (DWD)
Convection Monitoring – Forecasting – Research Areas

Convective Initiation: Detection of growing Cu at an early stage

Location of Overshooting Tops

Cold rings, cold U/V shapes
Quantitative Data Estimation: Precipitation

The cloud top temperature, as measured by MSG, is blended with microwave precipitation information from polar orbiters, combining accuracy and temporal evolution.
Precipitation estimates are most useful where there are no Radar observations.
This SAF delivers a software package, to be run LOCALLY on MSG data (and other ancillary information as e.g. model forecasts), delivering a number of nowcasting "products":

- Cloud information
- Wind information
- Stability information
- Image interpretation
- Specific thunderstorm product

http://www.nwcsaf.org – software is freely available (license agreement)
MSG Applications for Nowcasting

... this presentation only showed the "tip of an iceberg"

More information on http://www.convection-wg.org, Best Practice document of the Convection Working Group
How Does All this Information Get to Your Desk?

EUMETCast
EUMETCast Data Delivery

Key Features:

- Off-the-shelf, commercially available DVB reception components
- One-stop-shop - many data streams via one station
- Secure delivery – multicast to a specific user, or group of users
- Handling many file formats, high and low volume data and supporting high-timeliness delivery requirements
- Worldwide coverage through GEONETCast partnership

EUMETCast Status end June 2012:
- 37 Data Providers
- 276 Different Data Collections
- 100 GB data disseminated per day
Reception Station Equipment

Antenna

PC(s)

EKU

Software

DVB Router

DVB PCI Card

DVB USB
EUMETCast User Community

EUMETCast Users Worldwide end June 2012

- 2736 users in Member States
- 14 users in Cooperating States
- 3217 users world-wide
GEONETCast Global Data Service

June 2012
### Services available on EUMETCast

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<td>Third Party Products</td>
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**Level 2 Products:**
- Atmosphere – 195
- Marine – 88
- Land – 138

*June 2012*
Product Navigator – EUMETSAT Data at your Fingertips

Key Features:

Product Navigator provides metadata descriptions, data provider and data access information.

Includes all EUMETSAT products and third-party products on EUMETCast.

Uses open standards (e.g. OGC, Inspire) for catalogue interoperability with other organisations.

http://navigator.eumetsat.int
EUMETSAT HelpDesk: ops@eumetsat.int
The End

Thank you for your attention!

Merci pour votre attention!

Danke für Ihre Aufmerksamkeit!

official EUMETSAT languages

"my" language