EUMETSAT
Monitoring weather and climate from space

Ocean colour activities at EUMETSAT
Anne O’Carroll

www.eumetsat.int
• EUMETSAT overview and objectives
• Oceanography at EUMETSAT
• OSI-SAF, Post-EPS, MTG
• Ocean Group
• GMES Sentinel-3
EUMETSAT Objectives

- The primary objective is to establish, maintain and exploit European systems of operational meteorological satellites.

- A further objective is to contribute to the operational monitoring of the climate as well as the detection of global climatic changes.

- Furthermore, environmental issues which drive or are driven by meteorological conditions are considered.
EUMETSAT’s mission is:

- To deliver operational satellite data and products that satisfy the meteorological and climate data requirements of its Member States - 24 hours a day, 365 days a year, through decades.

- This is carried out taking into account the recommendations of the World Meteorological Organization (WMO).

- Operational oceanography and atmospheric composition monitoring.
Continuation of Mandatory Programmes (MSG, EPS) and future (MTG, Post EPS): including observations of SST or sea surface winds.

Continuation of EUMETSAT Ocean Surface Topography Mapping Optional Programme (Jason-3 and preparation of a post Jason-3 programme): uninterrupted sea level rise monitoring data set.

Participation of EUMETSAT in key ocean observation Programmes such as GMES Sentinel 3.

Access to relevant data from third-parties (preparation of Agreements with ISRO and SOA): EUMETSAT seeking access.
• **Sea Surface Temperature:**
  - OSI-SAF, EPS (AVHRR, IASI), MSG (SEVIRI), Sentinel-3 (SLSTR), members of GHRSST science team, ERNESST

• **Wind:**
  - OSI-SAF, EPS (ASCAT), ASCAT SAG (with ESA), Oceansat-II agreement, ASCAT soil moisture

• **Altimetry (3rd party missions):**
  - JASON, Sentinel-3 (SRAL)

• **Ocean-colour:** Sentinel-3 (OLCI)

• **Other:** OceanObs09, MyOcean, OSI-SAF, Future Missions
• MET/Ocean provides Ocean Scientific Support to OPS, MOD, LEO, GEO

• Ocean group (MET division)
  – Hans Bonekamp (Ocean Mission Scientist)
  – Craig Anderson (ASCAT calibration)
  – Anne O’Carroll (Ocean Scientist)
  – New recruit (Optical Scientist) See EUMETSAT/IOCCG webpage for vacancy details. Closing date: 14th Nov 2010
Ocean and Sea-Ice Satellite Application Facility (hosted by Meteo-France)

http://www.osi-saf.org

Products:
Wind, SST, Sea-Ice, Radiative fluxes

Sensors:
AVHRR, SEVIRI, ASCAT, (SSMI, AMSR-E, GOES-E)

Preparations for the next phase 2012 - 2017 are ongoing
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Post-EPS Programme Master Schedule

EUMETSAT Post-EPS Phasing

Phase 0 | Phase A | Phase B | Phase C/D | OPS
---|---|---|---|---
PAR | MDR | PRR | SRR I / II | PDR

2nd UC WS | 3rd UC WS | Post-EPS Full Programme Approval

Post-EPS Preparatory Programme Approval

Satellites Development

Phase 0 | Phase A/B1 | Phase B2/C/D
---|---|---
MTR FR | PCR | Satellite Prime Selection

ESA Post-EPS and GMES S-5 Programme Approval (in 2011)

Launch readiness Sat 1 / 2
MTG in Orbit Deployment Scenario

20 years of Operational Service – Imaging Missions

- MTG-I1
- MTG-I2
- MTG-I3
- MTG-I4

15.5 years of Operational Service – Sounding Missions

- MTG-S1 with S4
- MTG-S2 with S4
MTG Provides a Total of Five Missions Compliant to the User Needs

Full Disk High Spectral resolution Imagery (FDHSI), global scales (Full Disk) over a BRC = 10 min, with 16 channels at spatial resolution of 1 km (8 solar channels) and 2 km (8 thermal channels).

High spatial Resolution Fast Imagery (HRFI), local scales (1/4th of Full Disk) over a BRC = 2.5 min with 4 channels at high spatial resolution 0.5 km (2 solar channels), and 1.0 km (2 thermal channels).

InfraRed Sounding (IRS), global scales (Full Disk) over a BRC = 60 min at spatial resolution of 4 km, providing hyperspectral soundings at 0.625 cm\(^{-1}\) sampling in two bands: Long-Wave-IR (LWIR: 700 – 1210 cm\(^{-1}\) \(\sim\) 820 spectral samples) and Mid-Wave-IR (MWIR: 1600 – 2175 cm\(^{-1}\) \(\sim\) 920 spectral samples).

Lightning Imagery (LI), global scales (80% of Full Disk) detecting and mapping continuously the optical emission of cloud-to-cloud and cloud-ground discharges. Detection efficiency between DE=90% (night) and DE=40% (overhead sun).

UVN Sounding, implemented as GMES Sentinel-4 Instruments provided by ESA.
Global Monitoring for Environment and Security (GMES) – Sentinel-3 Programme is co-funded by ESA and EC

- A third party Sentinel-3 Programme has been established at EUMETSAT

ESA is leading the development of the S3 Ground and Space segments; EUMETSAT is supporting the Ground Segment development through ESA/EUMETSAT integrated teams and collaborative activities.

The Payload Data Ground Segment (PDGS) will be distributed: ESA will be responsible for producing land L2 products, while EUMETSAT will be responsible for producing the marine L2 products. Data will be disseminated from both agencies.

After the commissioning phase, EUMETSAT FOS will control the
The EUMETSAT Sentinel-3 Project Team (25 people)

Project Manager: Dany Provost

Sys&PreOps: Marco Buemi
PDGS: Hilary Wilson
MME: Michel Horny
FOS: Robert Cunningham
• Data dissemination of marine products:
  • Operational Near-real time
  • Freely available
  • Full resolution data over whole globe

• Marine data distributed from EUMETSAT via:
  • EUMETCAST
  • UMARF
  • Online rolling archive

• EUMETCAST robust and thoroughly tested system (used for Meteosat & EPS data dissemination)
PDGS - KO meeting with ESRIN/EUM in Sept (WAVE consortium)

System & Ops Prep, FOS, MME activities on-going

Sentinel-3 Mission Advisory Group
- Convened by ESA; EUMETSAT members
- Mission support and advice to agency
- First meeting scheduled Nov/Dec at ESTEC

Launch of Sentinel-3A: Scheduled 13th August 2013
• Oceanography an expanding commitment in EUMETSAT

• EUMETSAT Sentinel-3 project underway with dedicated team of 25 people
  – EUM responsible for L2 marine data processing

• Future programs of Post-EPS, MTG, JASON ensure commitment to oceanography continues