Status overview of the European scatterometer activities

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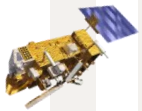
Outline

- MetOp/EPS status
- MetOp/EPS-Second Generation status
- 2016 scatterometer conference

- Other European ocean programme news

Outlook of European scatterometer

YEAR... 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

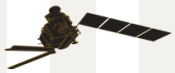


EUMETSAT POLAR SYSTEM (EPS)

METOP-A

METOP-B

METOP-C



METOP SECOND GENERATION

METOP-SG-A1

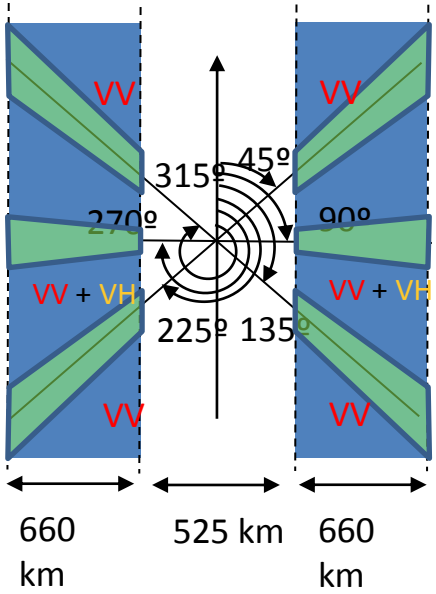
METOP-SG-B1

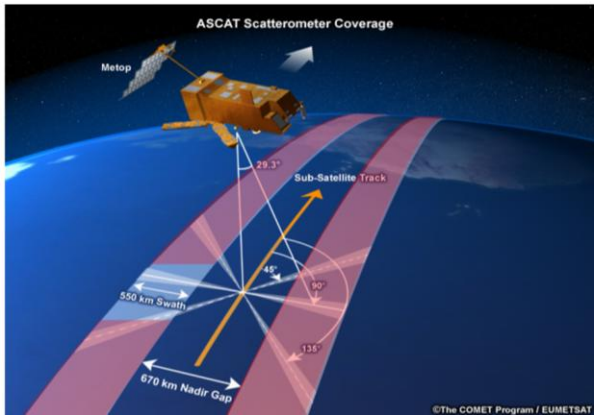
METOP-SG-A2

METOP-SG-B2

METOP-SG-A3

METOP-SG-B3





C-band scatterometer SCA has heritage from ASCAT on MetOp (frequency band, geometry) with

✓slightly improved coverage

✓Improved resolution (two times ASCAT's)

✓Additional information (HV measurement, less on-board processing)

MetOp/EPS Schedule and news

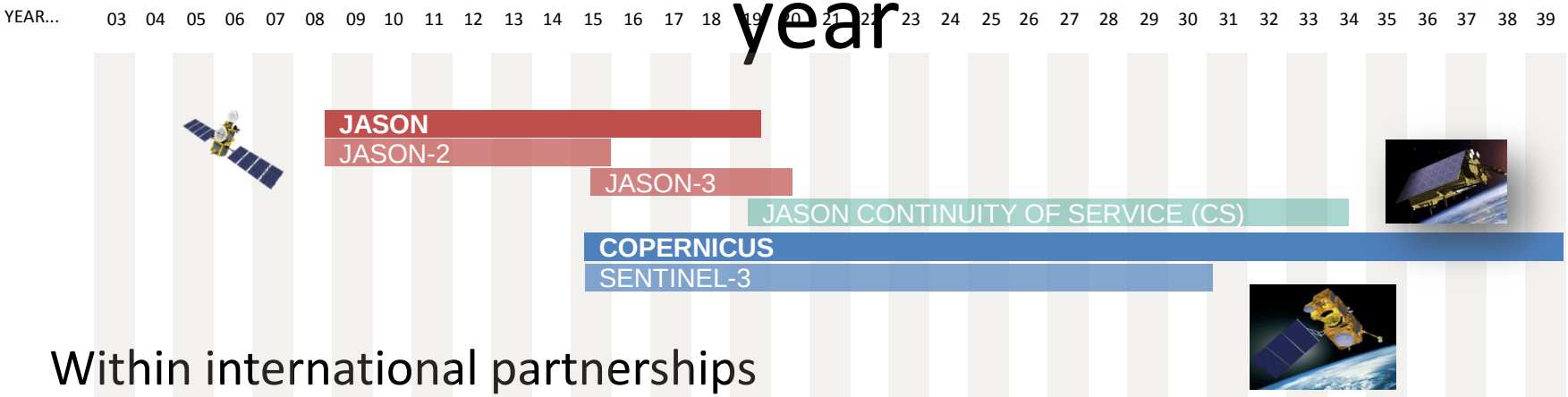
- Since last year:
  - MetOp-A EOL strategy defined: maintain MetOp-A/B phasing, improving the combined coverage
  - Availability of ASCAT-A NRCS FCDR (*)
  - Special attention to high resolution processing issues (*)
  - Prototyping of new dissemination system: EUMETCast terrestrial (using the National Research and Education Networks)
  - Release of ASCAT-A soil moisture CDR (H-SAF)
  - Release of a QuikSCAT wind CDR (OSI SAF)
  - ASCAT-A transponder calibration campaign and calibration monitoring (*)
- Outlook:
  - Release of a long term scatterometer wind CDR, including ASCAT, ERS (OSI SAF) (*)
  - New reprocessing of ASCAT-A/B NRCS to start in 2016
  - Release of a standalone ASCAT NRCS processor
  - Preparation for launch and commissioning of MetOp-C
  - Operational ground segment H/W upgrade

(*) will be covered by contributions to the IOVWST2015 mtg

MetOp/EPS SG schedule and news

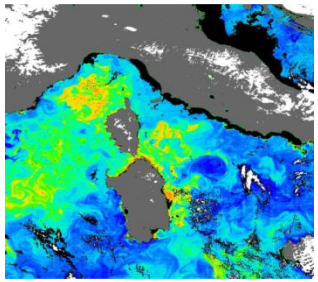
- Since last year:
  - Confirmation of innovative SCA features
  - SCA instrument industry contract kicked-off (Dec 2014)
  - System Preliminary Design Review was held in March 2015
  - Version ‘zero’ of algorithm and format specifications available
- Outlook:
  - SCA instrument PDR Sept-Oct 2015
  - Invitation To Tender (ITT) for the ground segment (including the SCA Level 1 ground processor) to be released early 2016
  - Issuing the SCA science plan, to guide in the instrument development, the processing specification and the cal/val preparation
  - Looking into feasibility of deriving ocean surface current information from measurement phase
  - Looking into the benefit of the cross-pol information to improve the vegetation correction in the scatterometer soil moisture retrievals

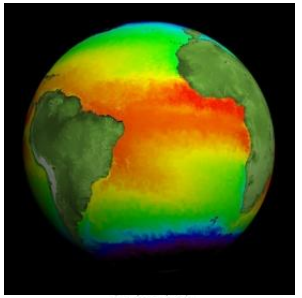
Other ocean missions launched this year

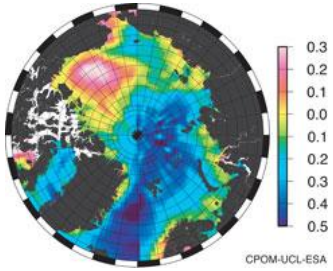


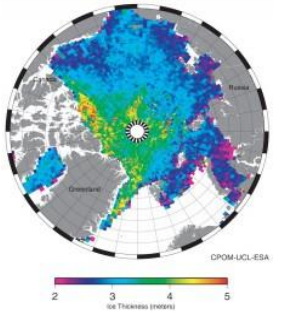
Within international partnerships

- Jason-3: launch July 22nd
  - Poseidon-3B altimeter
- Sentinel-3: launch October 30th
  - Sea and Land Surface Temperature Radiometer (SLSTR)
  - Ocean and Land Colour Instrument (OLCI)
  - SAR Radar Altimeter (SRAL)







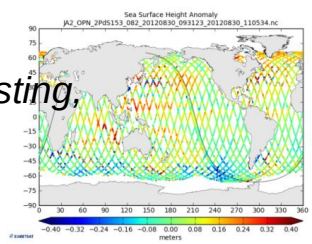


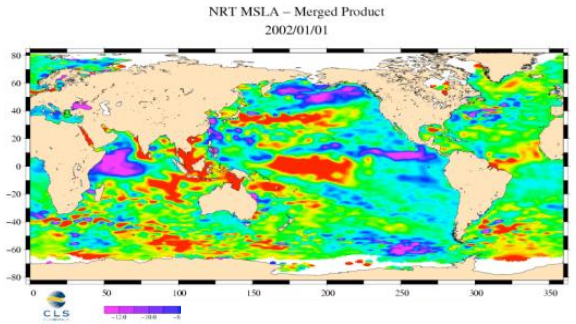
Sentinel-3 products and applications

3 h | 48 h | 30 d | ~1/2 y | time

NRT products

Weather and ocean forecasting, sea state forecasting



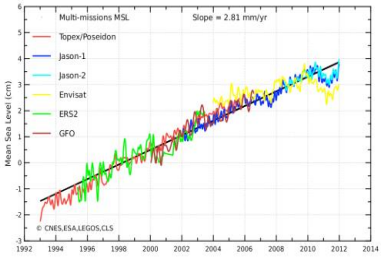


STC products

Operational ocean monitoring and forecasting

NTC products

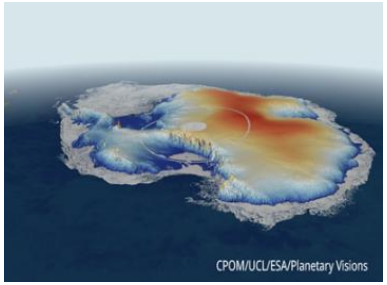
Climate monitoring
Oceanography



Reprocessing Campaign

NTC products

Climatology
Data exploitation for science



NRT: Near Real time

STC: Short Time Critical

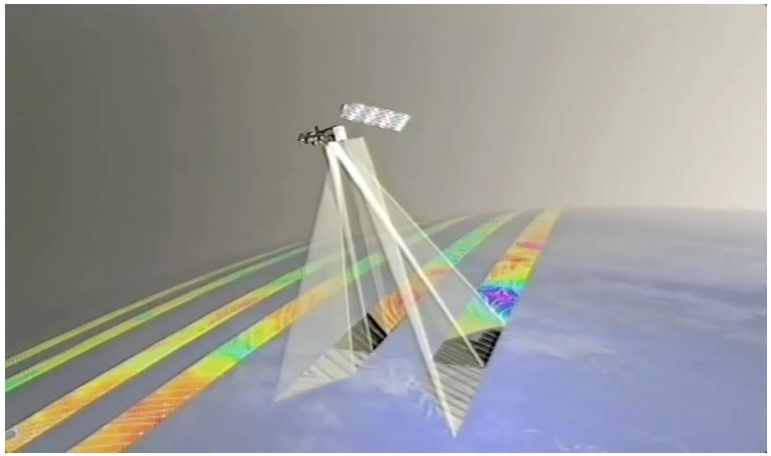
NTC: Non time Critical

2016 Scatterometer Conference

- 1998: “Emerging Scatterometer Applications: from Research to Operations Workshop”
- 2011: “Scatterometer science conference” in Darmstadt, Germany
  (Special Issue, IEEE TGARS, Vol. 50 No.7, July 2012:’Recent advances in C-ban Scatterometry’)
- **2016, February 2-4: “Scatterometer Science Conference 2016 – New challenges and opportunities” in ESTEC, Noordwijk, The Netherlands**

Themes

- Advancements in Scatterometer Systems
- Cal/val and performance monitoring methods and results
- Exploitation of the data for applications, over the ocean, land and sea ice
- Establishment of Scatterometer-based CDRs: standardisation of contents and validation standards



Thanks

Overview of Europe Scatterometer missions

- C-band fan-beam scatterometers flying on board MetOp/EPS (3 instruments) and planned for their Second Generation satellites (nominally 3 instruments, to be formally confirmed by EUMETSAT in 2014)
- All in sun-synchronous polar orbit, altitude 832 km, mean local solar time 09:30 (descending node), repeat cycle 29 days.
- ASCAT-A (2006-…) and ASCAT–B (2012-…) on MetOp/EPS in dual operations. ASCAT-C planned for launch in October 2018
- MetOp/EPS-SG consists of two series of satellites: “SAT-A” and “SAT-B” and target 21 years of operations. The scatterometer instruments SCA are in SAT-B, the first one planned for launch in 2023

SCA specifications

- Scatterometer specifications: ASCAT versus SCA

Parameter	ASCAT	SCA
Frequency	5.3 GHz	
Polarisation	VV for all beams	VV for all beams + VH for Mid-beams
Azimuth views	45°, 90° and 135° w.r.t. satellite track	
Min. incidence	25°	20° [G]
Horizontal resolution	Nom: $(50\ km)^2$ High res.: $(25 - 35\ km)^2$	Nom: $(25\ km)^2$ [G] High res.: $(17 - 22\ km)^2$
Horizontal sampling	Nom: $(25\ km)^2$ High res.: $(12.5\ km)^2$	Nom: $(12.5\ km)^2$ [G] High res.: $(6.25\ km)^2$
Radiometric resolution	≤ 3 % for $\theta_i \leq 25°$ at 4 m/s cross-wind (VV) $\leq (0.175 \times \theta_i - 1.375)$ % for $\theta_i > 25°$ at 4 m/s cross-wind (VV)	
Coverage	97 % in 48 hrs.	99 % in 48 hrs. [G]