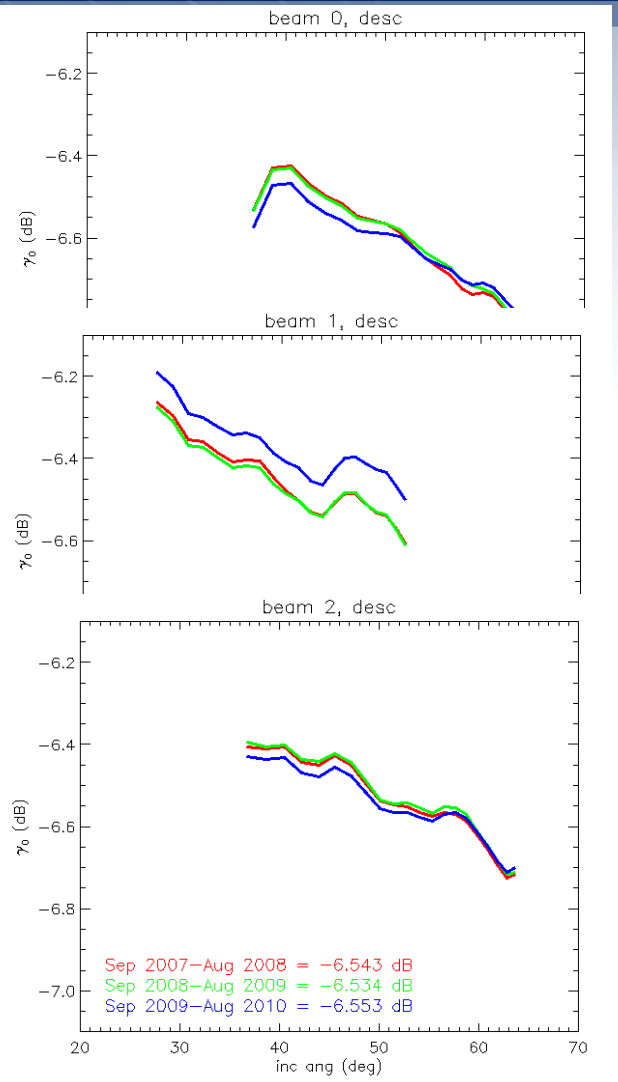
ASCAT - Metop A developments, Metop B preparations & EPS-SG

Hans Bonekamp, **Craig Anderson**, Julia Figa & Julian Wilson

ASCAT Metop A - overview

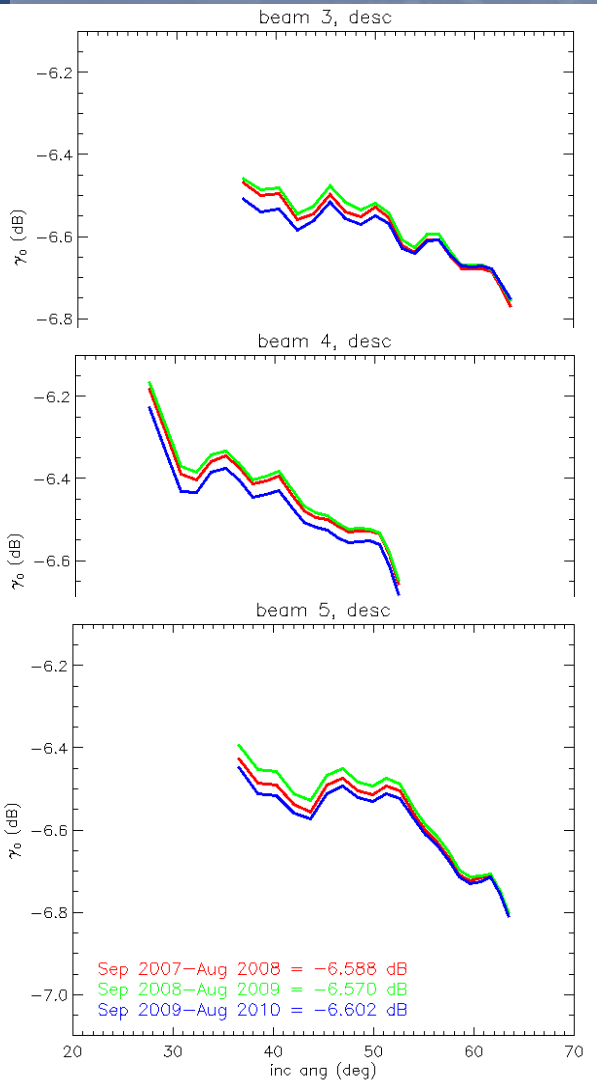
- Instrument operating nominally (minor incident in Jan 2011 when testing switch for back up electronics)
- Calibration report for 2010 campaign available
- Improved Kp estimation algorithms in ground processing
- ESA/EUMETSAT scatterometer science conference April 2011
- Full resolution data planned for NRT distribution
- Next transponder campaign planned Oct/Nov 2011
- 35th ASCAT SAG meeting likely in Nov 2011

ASCAT Metop A - cal/val activities



- **First 3-transponder campaign in winter 2007/2008.**
- **Second in summer 2010**
- **Third in Oct/Nov 2011**

- **γ_0 over rainforest has stronger incidence angle dependence than ERS scatterometers.**
- **Implications for intercalibration, climate products.**



EUMETSAT

ASCAT Metop A – New NRT full resolution σ_0 product

Archive and NRT:

updated SZF product (more compact, lat/long grid)

CAF
SAF
Joint product

Archive and NRT:

SZO 50 km (Hamming window)	SZR 25 km (Hamming window)	"SZC" 15 km (box window)	? "SZL" 15 km (land averaging)
Level 2 Wind Soil Moisture	Level 2 Wind Soil Moisture	Level 2 Wind ? Soil Moisture	? Level 2 Soil Moisture
GLOBAL NWP , Operational		*Coastal Winds In demo*	*Soil Moisture In demo?*

EUMETSAT/ESA scatterometer conference

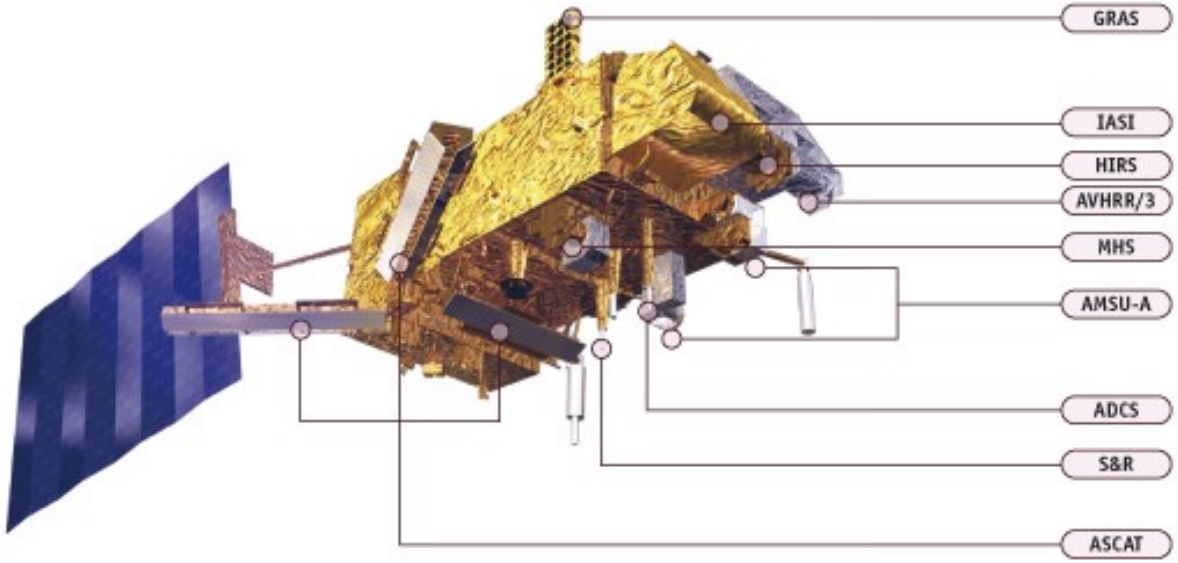
- highlight the successes achieved with ASCAT on Metop and the Active Microwave Instrument on ERS
- assess current and future challenges of processing, calibration and validation
- discuss applications in a multi-mission scatterometer context
- provide guidance on reprocessing, climate issues and intercalibration of the sensors with other scatterometers
- address scientific issues of the proposed ASCAT follow-on mission
- involve a wider scientific and user community

EUMETSAT/ESA
SCATTEROMETER
SCIENCE
CONFERENCE 2011

ASCAT Metop-B preparations

The Metop-B spacecraft is scheduled for launch on 2nd April 2012

ASCAT has passed all testing, has been installed on Metop B and currently in storage in Toulouse.



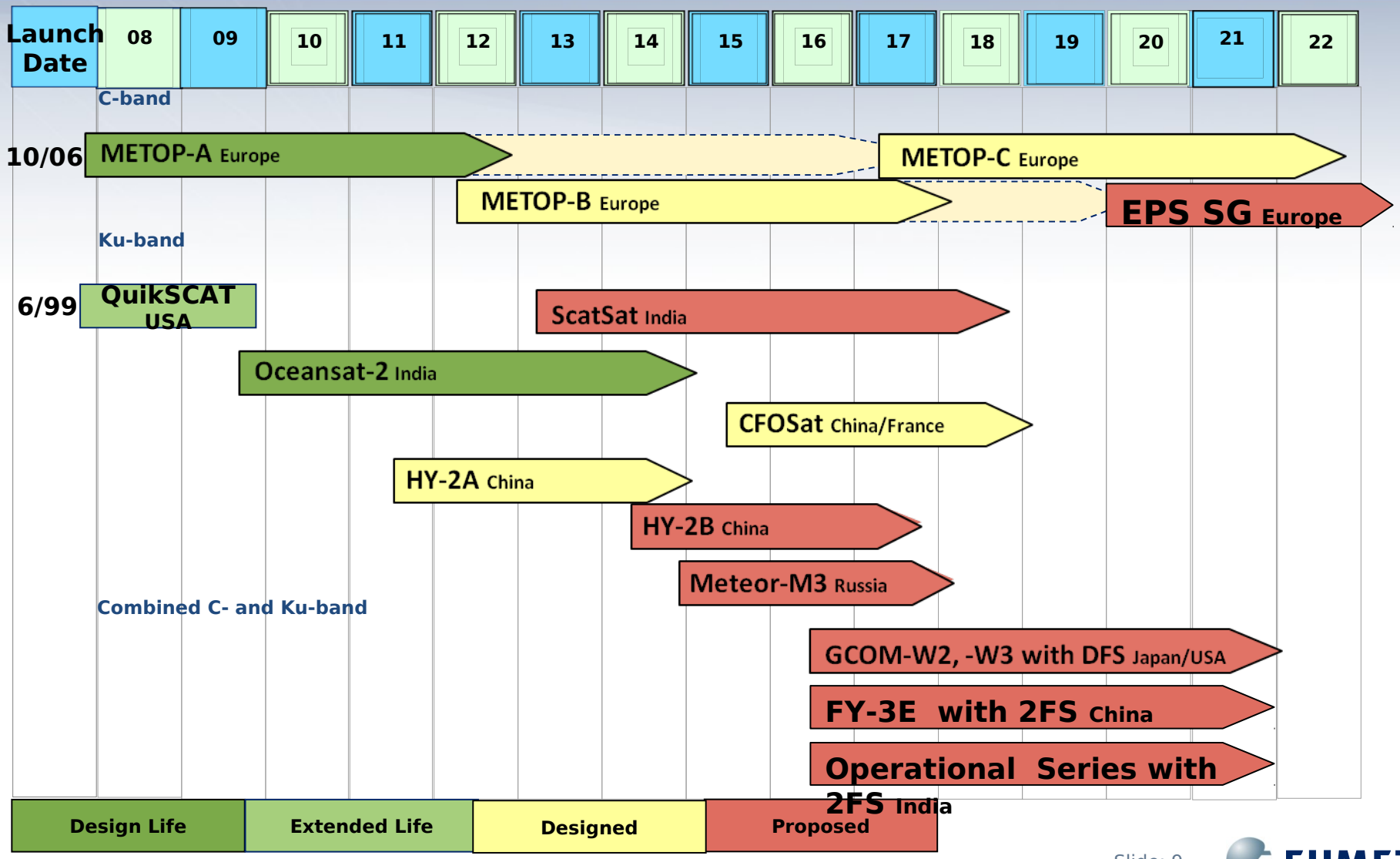
Metop-B summary information

- Metop-B identical to Metop-A
- Metop-B launch planned April 2012
- Commissioning planned to last 4 months
- Preparations under way
- SIVVRR successfully held in December 2010
- SIVVR planned in September 2011
- LORR in December 2011
- Launch campaign first quarter 2012
- Same orbit (9:30 AM descending node), phased 48.93 min apart from Metop-A.

Metop A and B orbit phasing

- Users want maximum coverage and optimised temporal sampling for NWP and climate monitoring
- Constraints
  - ground station (Svalbard) can only support one satellite at a time
  - RF interference of active instruments requires separation of at least 21 min
  - ASCAT transponders require exact repeat phasing, i.e. possible separation limited to 27.96, 31.46, 34.95, 38.45, 41.94, 45.22 or 48.93 min
- Adopted phasing is 48.93 min (approx 1/2 orbit, not optimum for ASCAT coverage but better for other instruments and ground segment)

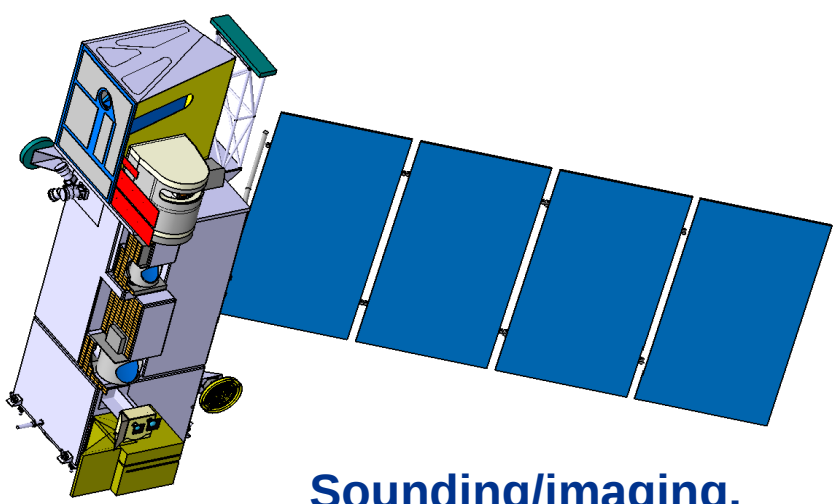
ASCAT Metop-B ocean vector winds constellation



EUMETSAT

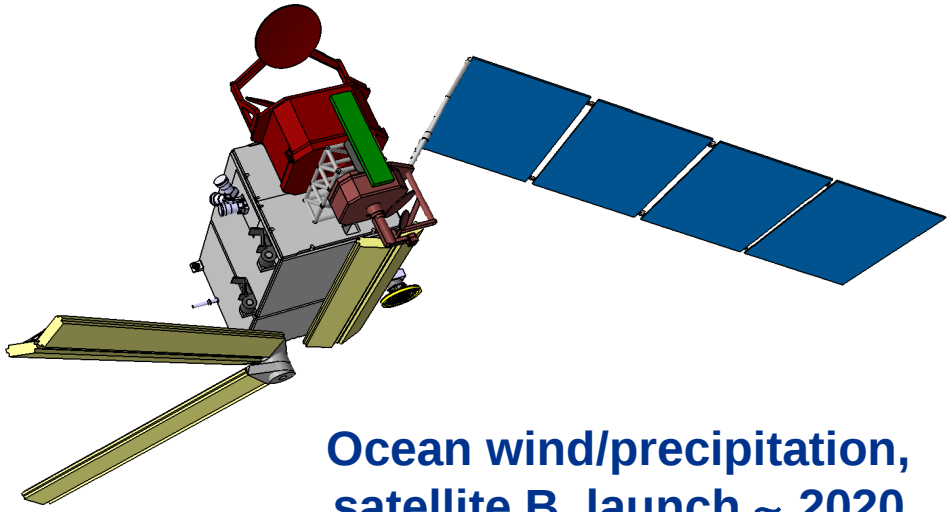
EPS Second Generation: satellite configurations

Two satellites concept: Sun-synchronous orbit (~817 km altitude) 09:30 descending node



Sounding/imaging, satellite A, launch ~ 2019

Payload	METimage
	IASI-NG
	ATMS (or MWS)
	3MI
	Sentinel-5
	CERES
	RO



Ocean wind/precipitation, satellite B, launch ~ 2020

Payload	SCA
	MWI-Precipitation
	MWI-Cloud
	ARGOS-4
	S&R
	SEM
	RO

EPS-SG scatterometer chronology

2005: EPS-SG Phase 0 process started at EUMETSAT

2008/2009: ESA's industrial Phase 0 studies (Astrium SAS and Thales Alenia Space Italy)

Output: 2 satellites concept (SCA on Satellite B)

2010: EUMETSAT Phase A process started

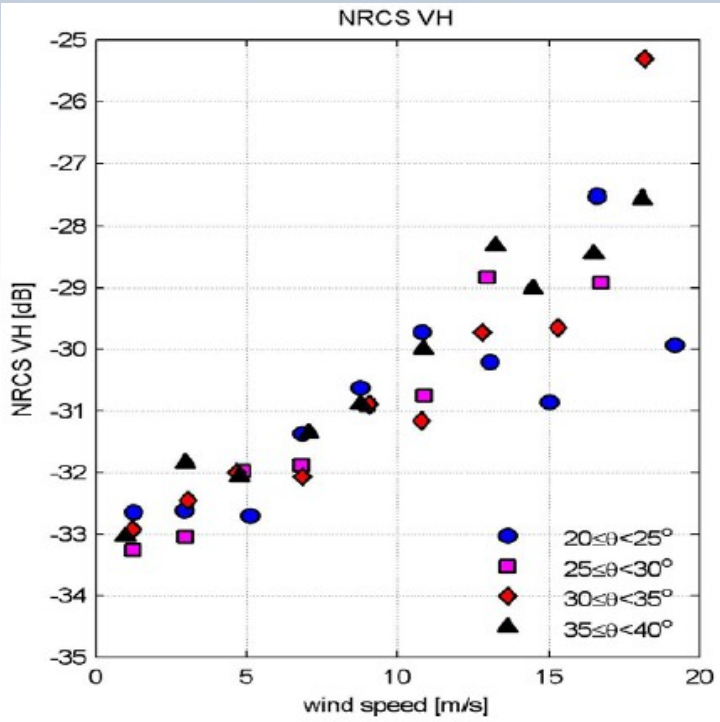
2011: ESA's industrial Phase A studies started (Astrium SAS and Thales Alenia Space France)

2019: Projected launch of 1st Satellite A

2020: Projected launch of 1st Satellite B

EPS SG scatterometer – way forward

- **High-resolution level 1b product with 6.25 km sampling, resolution TBD (but shall not drive the instrument design or cost)**
- **Addition of VH or HH polarisation. Various options under consideration include**
  - **VH on fore and aft beams**
  - **VH on mid beams**
  - **HH on fore and aft beams**
  - **HH on mid beams**
- **Model functions for C band HH and VH required for high wind speeds (airborne campaigns?)**



B Zhang, W Perries & P Vachon (SeaSAR 2010)

ASCAT Metop A, Metop B, EPS SG

Questions and further information from

hans.bonekamp@eumetsat.int
craig.anderson@euemtsat.int
julia.figa@eumetsat.int