

Status overview of the European scatterometer activities

S Linow, C Anderson

IOVWST 2021





Current and future European operational scatterometer missions

First Generation – ASCAT

- Frequency 5.255 GHz (C-band)
- Swath width 550 km
- Incidence angles
 - 25° to 53° (mid beams)
 - 34° to 65° (side beams)
- Polarization: VV

Second Generation – SCA

- Frequency 5.355 GHz (C-band)
- Swath width ~650 km
- Incidence angles
 - 20° to 53.7° (mid beams)
 - 28.4° to 65° (side beams)
- Polarizations: VV, HH + HV + VH on mid-beams for improved high winds retrieval







Classification



Current and future European operational scatterometer missions



Metop

- ASCAT-A (launched 19 October 2006), ASCAT-B (launched 17 September 2012), ASCAT-C (launched 07 November 2018)
- All three operational
- Metop-A end of life in November 2021

Metop-SG

- Scatterometer instruments (SCA) are on the SAT-B series
- SG-A1 launch planned for 2023
- SG-B1 launch planned for 2024



3 EUM/GES/TEM/07/2025, v2W, 5 March 2019

ASCAT operational status



Processing

Operational ASCAT Level 1 processor

- ASCAT v11 release had to be postponed for technical reasons
- Now scheduled for Q2/2021
- Reminder: native Level-1 format will be updated



ASCAT transponders

- New transponders are available since end of 2019
- Testing / validation is ongoing
- Calibration campaign will start with ASCAT-A, to have a calibration before de-orbiting in November







ASCAT-A end of life testing

- In Sep Nov 2019, a different sequencer table was used on ASCAT-A
- This allowed us to monitor the reflected powers at the antenna ports
- We also did this during commissioning in 2006

Purpose of the test:

- Characterise if the return loss has changed over the mission time life (e.g. due to ageing of thermal surfaces)
- Analyse the impact on the L1B products

Results:

- The largest change was observed in the left aft beam, with an impact corresponding to 0.02 dB. This is <0.47% of the reflected power in that beam.
- The observed changes over the entire ASCAT-A lifetime are below the level of change we can detect using the ASCAT transponders and well below the target calibration accuracy of 0.1 dB.

EPS-SG / SCA

- Hardware has passed critical design reviews, construction of flight models is well advanced
- Processing and format specifications and processor prototype are well advanced
- A first test data set (one full orbit of nominal data) is available
- A more extensive test data set (3 full orbits, nonnominal test cases) will be prepared



Source: Airbus

For more details see related presentation: "The European Next Generation Scatterometer (SCA) - Status of Processing and Products" by C. Anderson



Summary and Outlook

EPS / ASCAT	EPS-SG / SCA
 Past year Testing of the new ASCAT transponders (ongoing) Metop-A end of life test shows excellent long-term stability of the ASCAT-A antennas 	 Past year Our main focus during the past year was the development of the EPS-SG processing specs and processor prototype. Those are nearing completion. Initial version of SCA test data is available
 Upcoming Release of the v11 ASCAT Level-1 processor ASCAT Transponder calibration 	 Finalising the processing specs Preparing the next release of the SCA test data