



EUMETSAT SAF Wind Services

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OVWST, 20/11/'08



Status SAF activities

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- NWP SAF software
 - AWDP1.0 beta tested; being reviewed (ERS and ASCAT)
 - SDP2.0 beta tested; new version being reviewed (SeaWinds)
 - 2D-Var settings and NWP guidance
 - Coastal AWDP prototype (@25km, 12.5 km in 2009)
- OSI SAF winds and services
 - ASCAT Cal/Val
 - ASCAT 25 km since March 2007 (first L2); operational in Dec 2008
 - ASCAT 12.5 km – run experimentally at KNMI
 - Coastal product validation
 - Geophysical modeling (e.g., MLE) and campaign (TCs Hanna & Ike in 2008)
 - ASCAT equivalent neutral winds being implemented operationally **today** - CMOD5.n (0.2 m/s)
 - SeaWinds stream updated for new BUFR (after updated NOAA stream)
 - NetCDF
- EARS 30 minutes service
 - ERS data in ASCAT format
 - ASCAT 25 km & 12.5 km (ascending orbits)
- CM SAF ERS scatterometer ocean stress fields climexp.knmi.nl
- NWP and OSI SAF support European contribution ISCAT



OSI SAF ASCAT product release schedule

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Product	Coverage	Demonstration	Operational
25 km	Global	2007	2008
12.5 km	Global	2008	2009
Coastal 12.5 km	Global	2009	2011

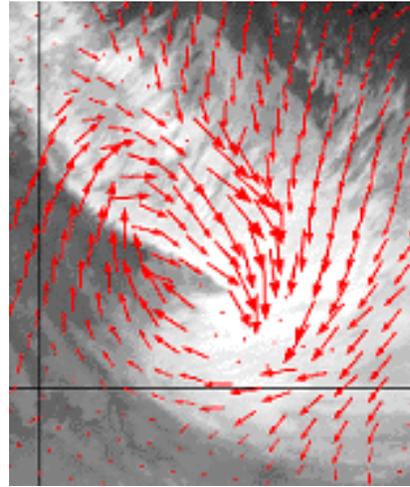
- Integration of regional EARS products into global OSI SAF products in 2009
- EUMETSAT will look into box filtering of L1B data to support coastal

www.knmi.nl/scatterometer

Scatterometer work

The scatterometer is a satellite radar-instrument which provides a measure of wind speed and direction near the sea surface.

We develop scatterometer processing software for operational use in weather and marine forecasting. More information on this is available under the 'Software' links on the right hand side of this page.



To preview our near real-time products and obtain access to them and our archive of off-line products, please follow the 'Wind Products' links.

Our activities are diverse and span

- Research on new types of scatterometer for future use
- Development of algorithms for wind retrieval and ice processing
- Wind product processing, quality control, and monitoring
- User support

Your contribution?

We seek beta users for our software and data products in order to get feedback and improve our services. Workshops are planned where users are invited for updating the evolving requirements. Moreover, our developments are supported by a Visiting Scientist scheme, which funds *exchange of people* between institutes. Topics could include for instance:

- Geophysical interpretation
- Inversion or ambiguity removal
- Data assimilation
- User support

Your suggested contributions are welcomed by [us](#).

Acknowledgement

Wind Products

[QuikSCAT 100-km winds \(OSI SAF\)](#)

Operational status

[QuikSCAT 25-km winds \(OSI SAF\)](#)

Operational status

[ASCAT 25-km winds \(OSI SAF\)](#)

Pre-operational status

[ERS-2 winds \(EARS\)](#)

Demonstration status

[Archived wind and stress products](#)

Software

[Wind processing software \(NWP SAF\)](#)

[CMOD5: C-band GMF](#)

[BUFR reader](#)

R&D work

[Activities](#)

[Publications](#)

Projects

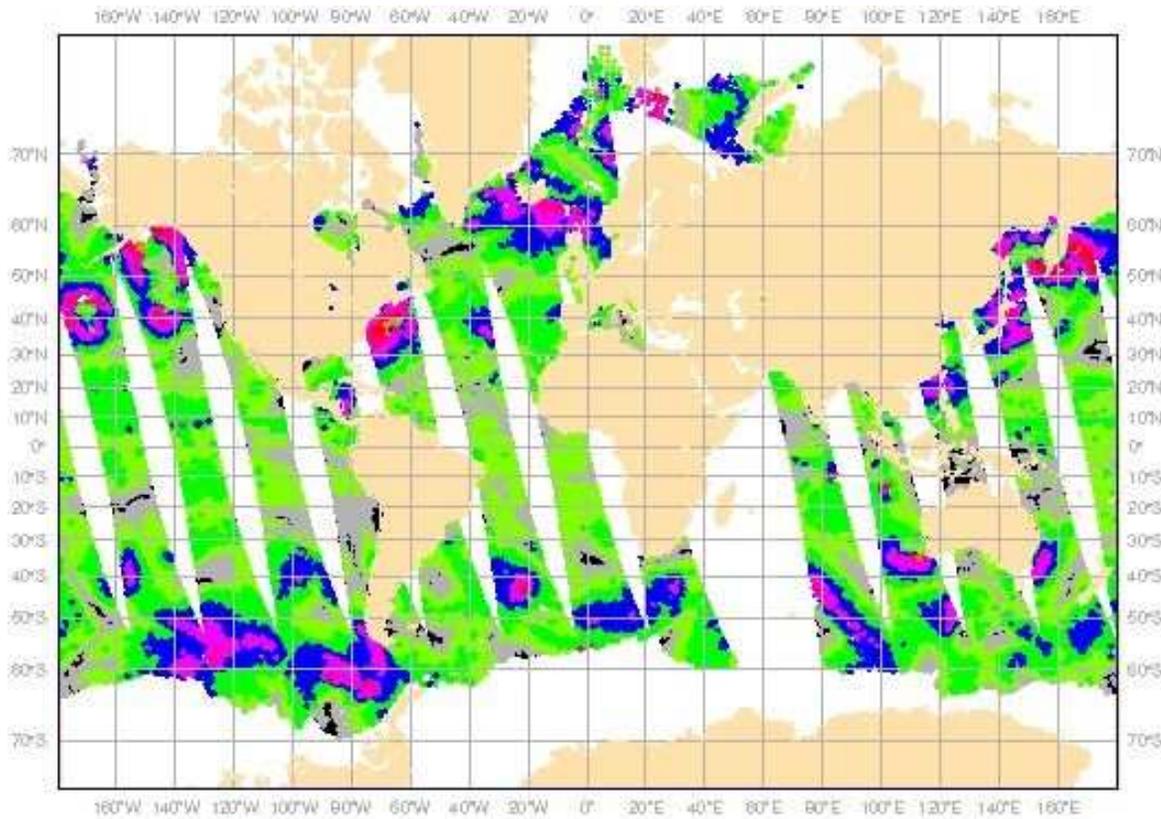
[OSI SAF: Global wind products](#)

[EARS: Regional wind products](#)

[CM SAF: Climatologic wind stress products](#)

[NWP SAF: Wind processing software](#)

[RFSCAT: Future scatterometer concept](#)

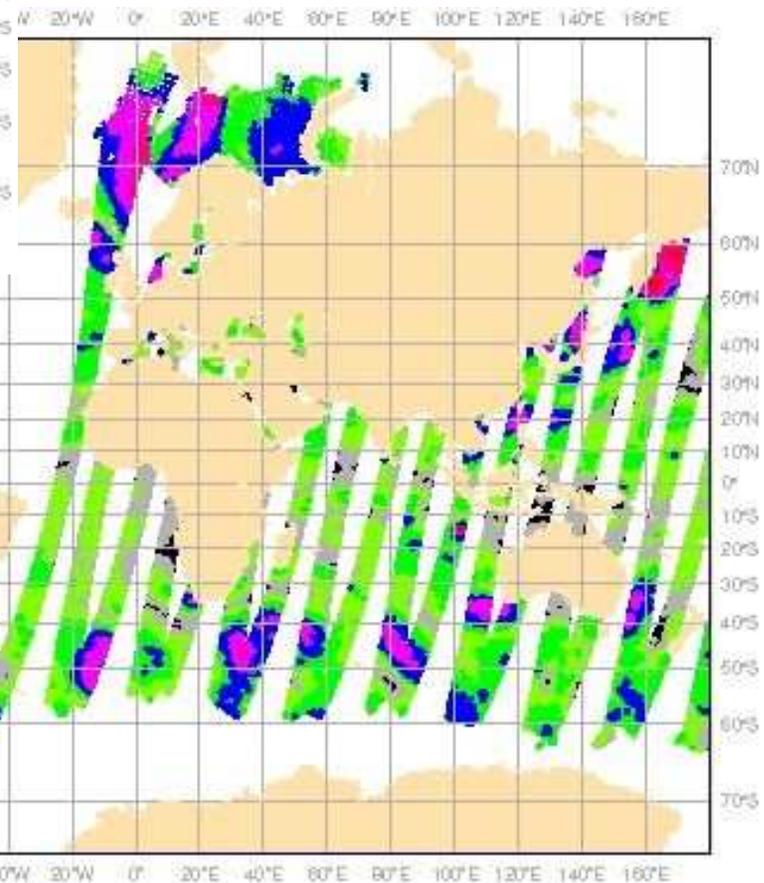


KNMI

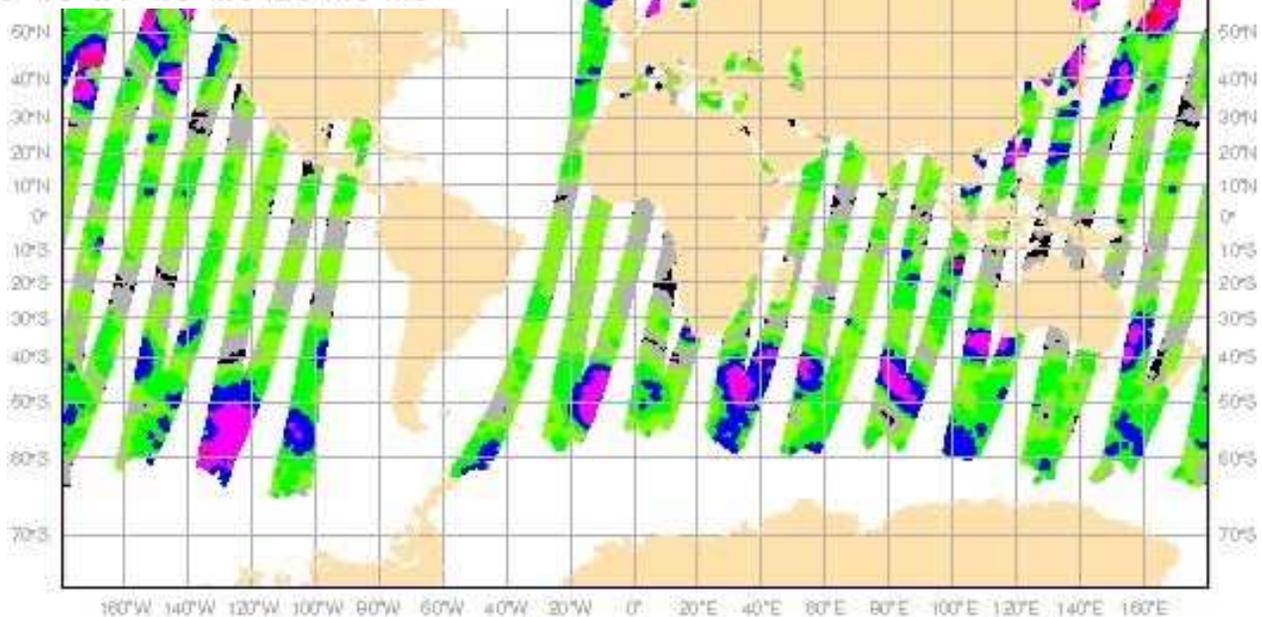
←KNMI SeaWinds
KNMI ASCAT ↓

25 km resolution, 22 hrs

Nov 20, 2008, 15:00 UT



[www.knmi.nl/
scatterometer](http://www.knmi.nl/scatterometer)





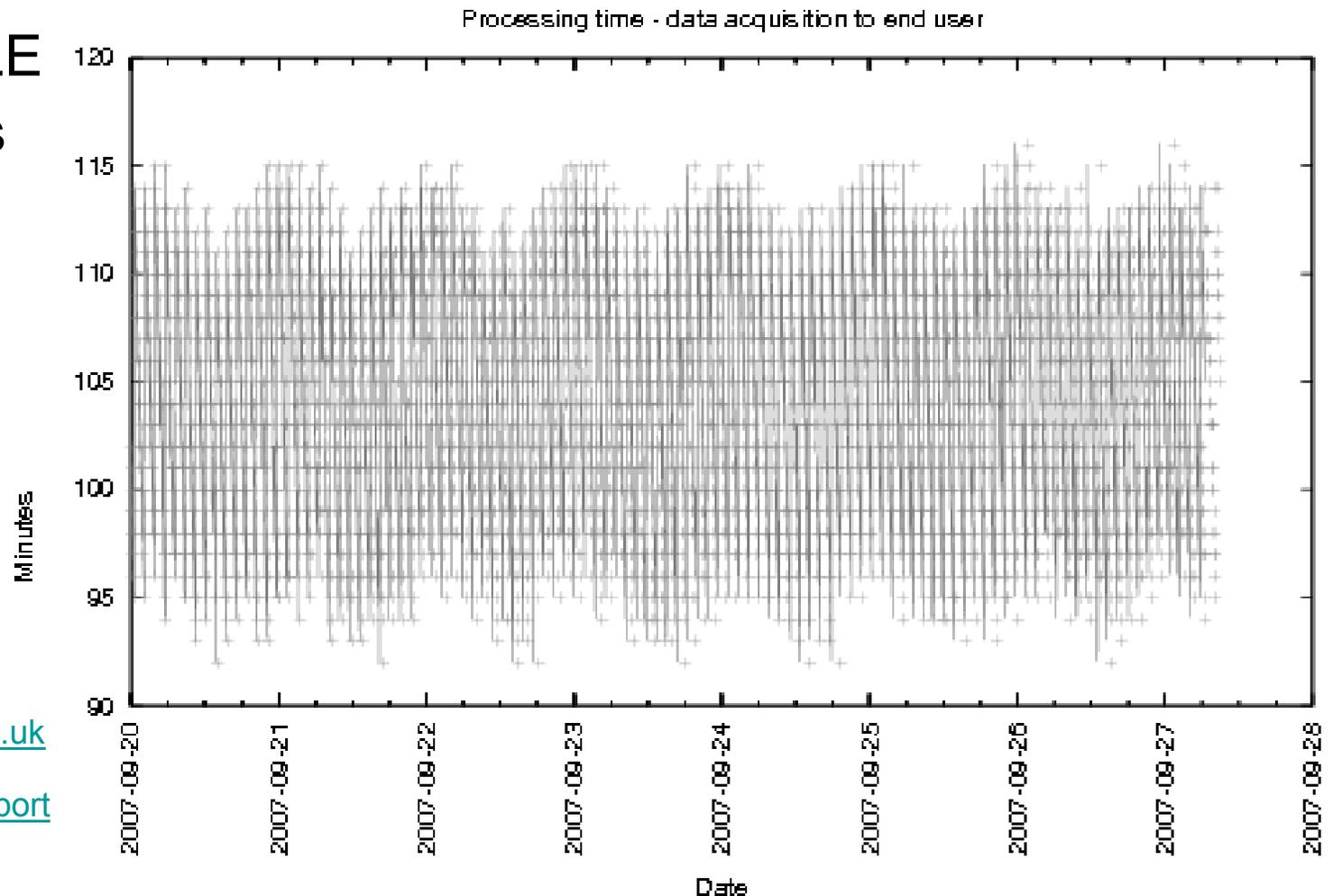
Monitoring of each product

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- 1st rank MLE
- Speed bias
- RMS u&v
scat - EC
- Timeliness

- NWP SAF
integrated
monitoring
at

www.metoffice.gov.uk/research/interproj/nwpsaf/scatter_report

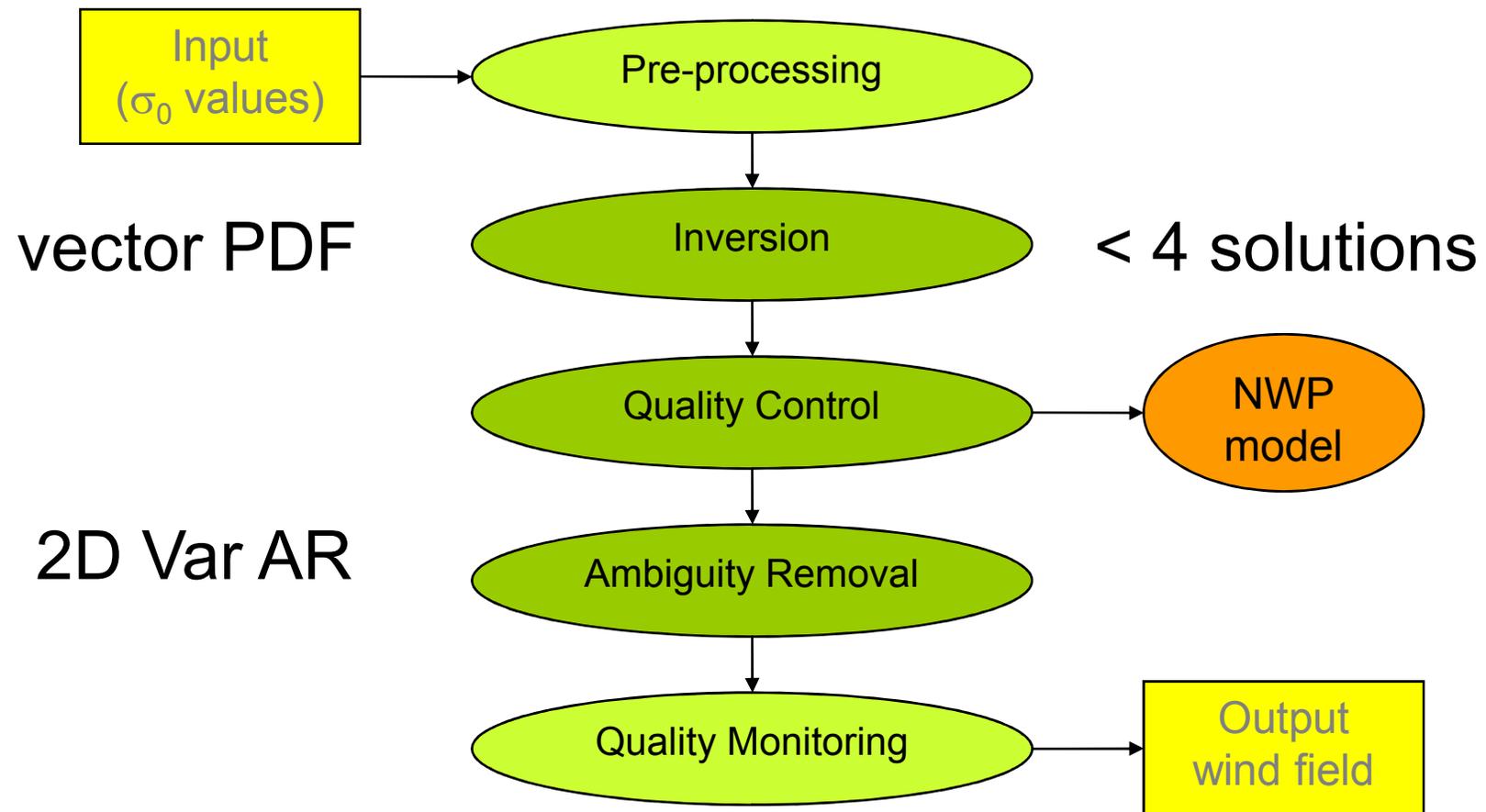




Generic processing

SCAT, SeaWinds, ASCAT

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ASCAT L2 calibration

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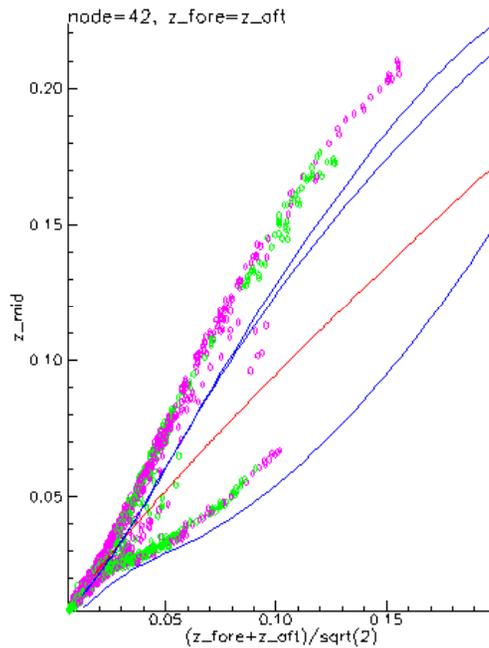
- Winds within spec. and stable since February 2007
- L1b calibration does not result in L2 wind discontinuities (parallel L1b streams)
- ERS compatibility can be largely achieved
- New swath parts provide good winds, but CMOD5.n may be slightly off for extreme winds
- After ASCAT L1b calibration, the z correction table should be removed from AWDP and remaining biases incorporated in CMOD6.n
- AWDP screening, K_p 's, MLE and $P(V)$'s set
- **CMOD5.n and accomodation of new z table today**



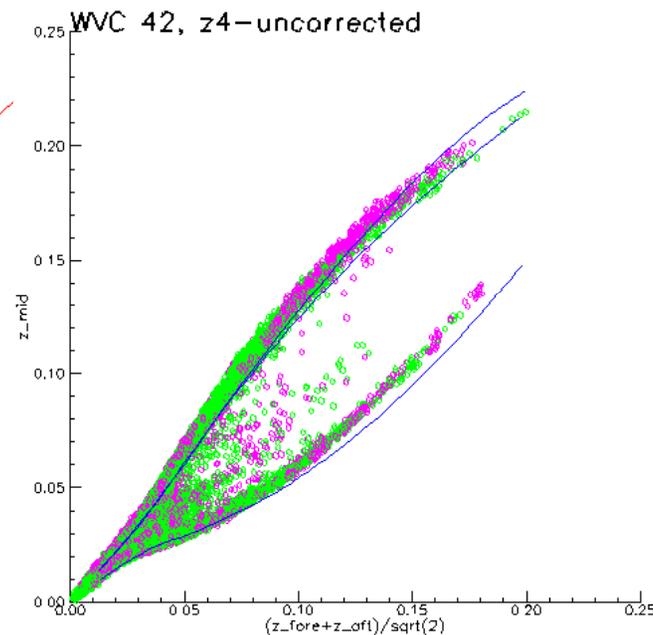
ASCAT Level 1b evolution versus OSI SAF corrections at KNMI

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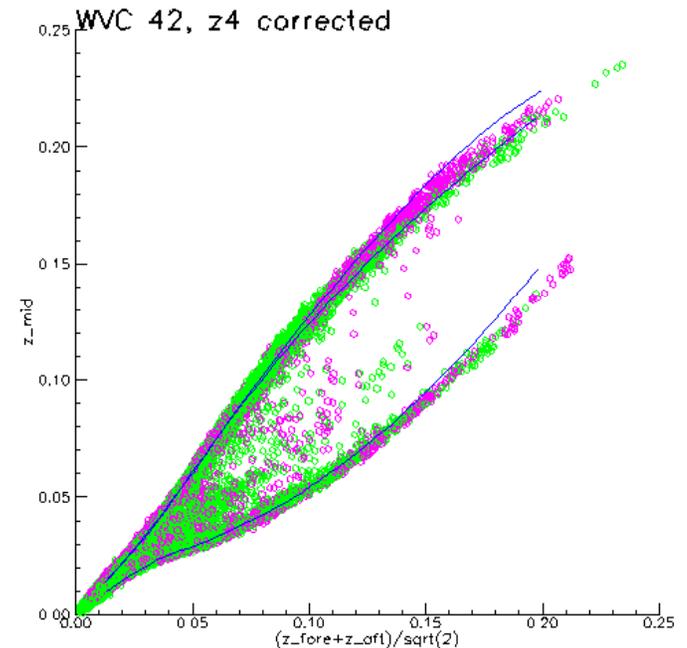
Vertical cut for WVC #42



Level 1b 1st release



Level 1b current release



KNMI total correction

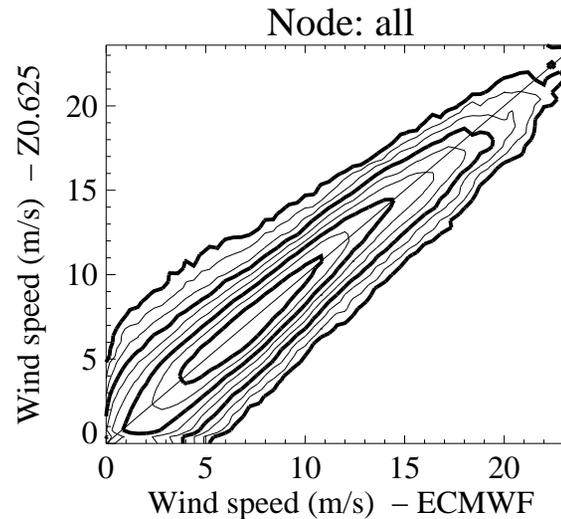
- The cone is used as calibration standard (see also Marcos yesterday)



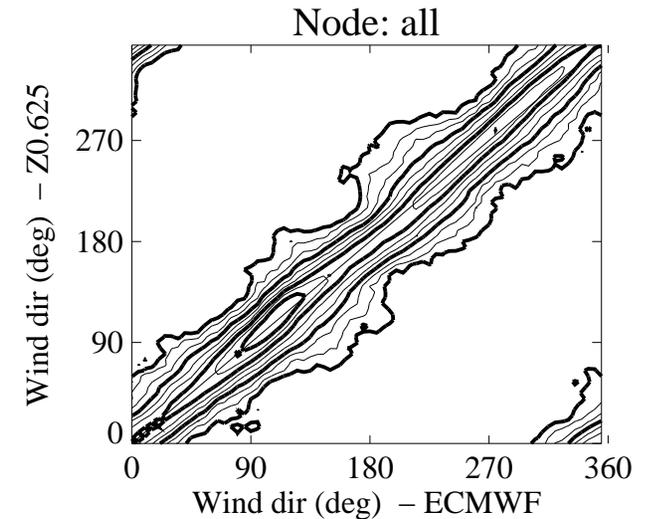
ASCAT

Unprecedented
overall wind
statistics after
ocean σ^0
correction

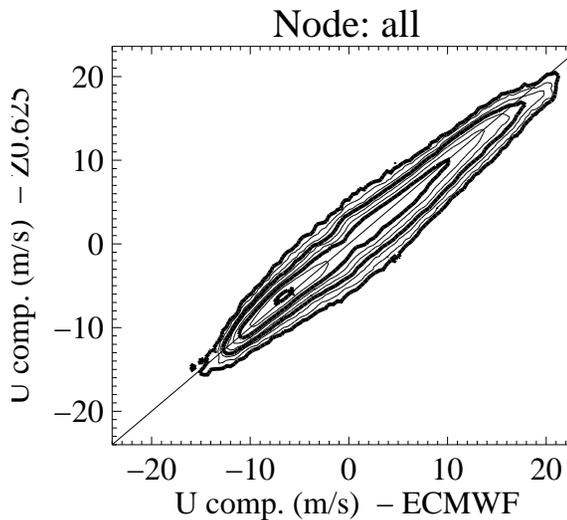
Both against
buoys and
NWP



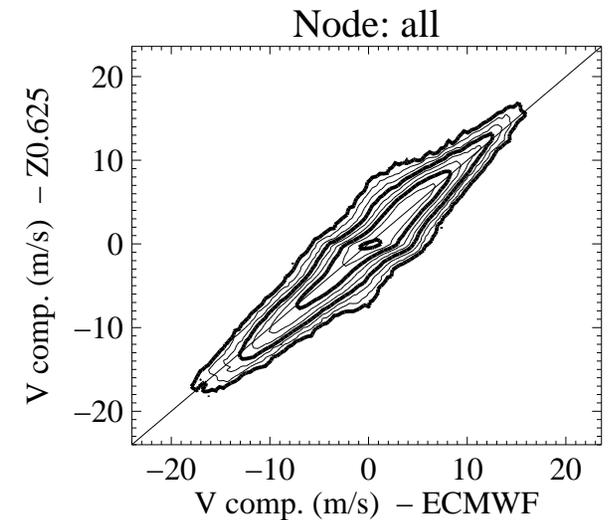
N=3267229
mx= 7.66 my= 7.64
m(y-x)= -0.02 s(y-x)= 1.26
cor_xy= 0.94



N=2792250
mx= 177.72 my= 178.57
m(y-x)= 0.86 s(y-x)= 14.94
cor_xy= 0.99



N=3267229
mx= -0.15 my= -0.26
m(y-x)= -0.12 s(y-x)= 1.45
cor_xy= 0.98



N=3267229
mx= 0.78 my= 0.73
m(y-x)= -0.05 s(y-x)= 1.62
cor_xy= 0.95

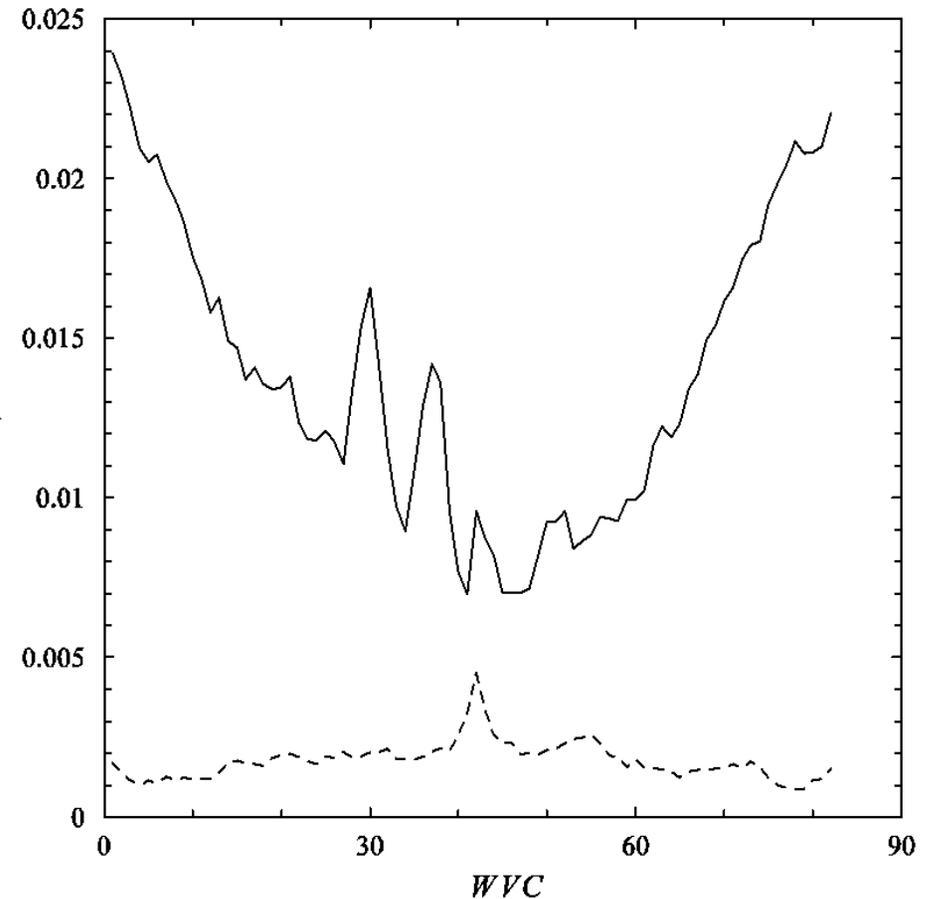
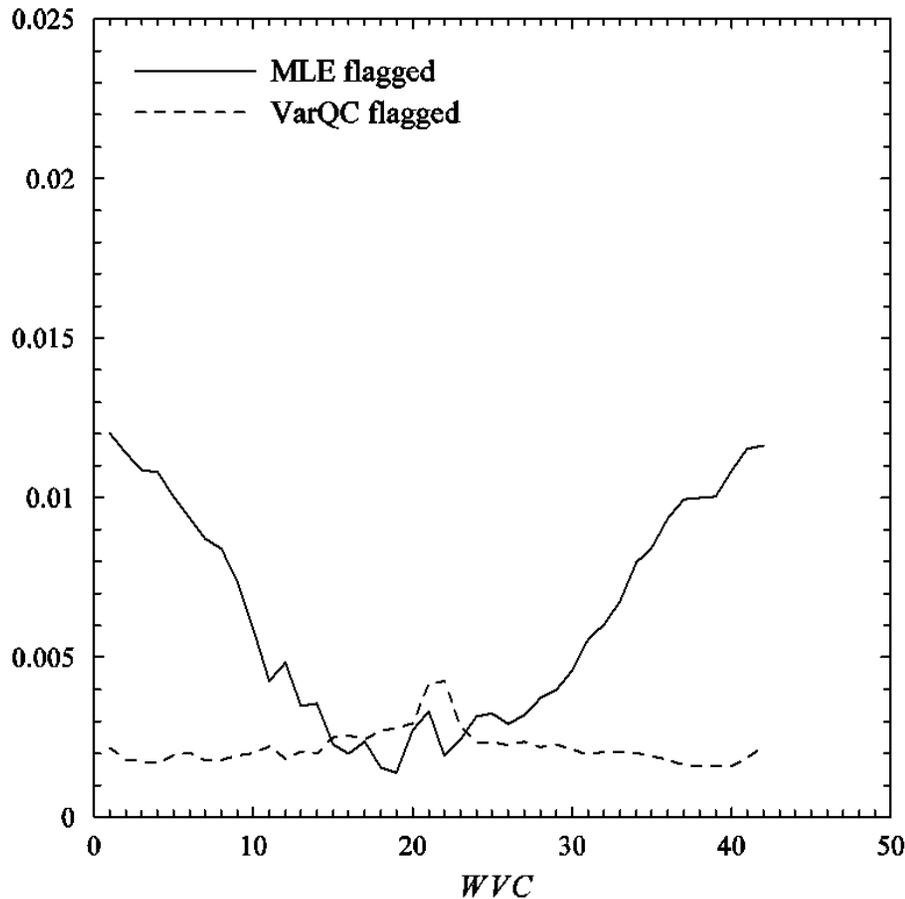


ASCAT QC properties

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25 km QC (tuned)

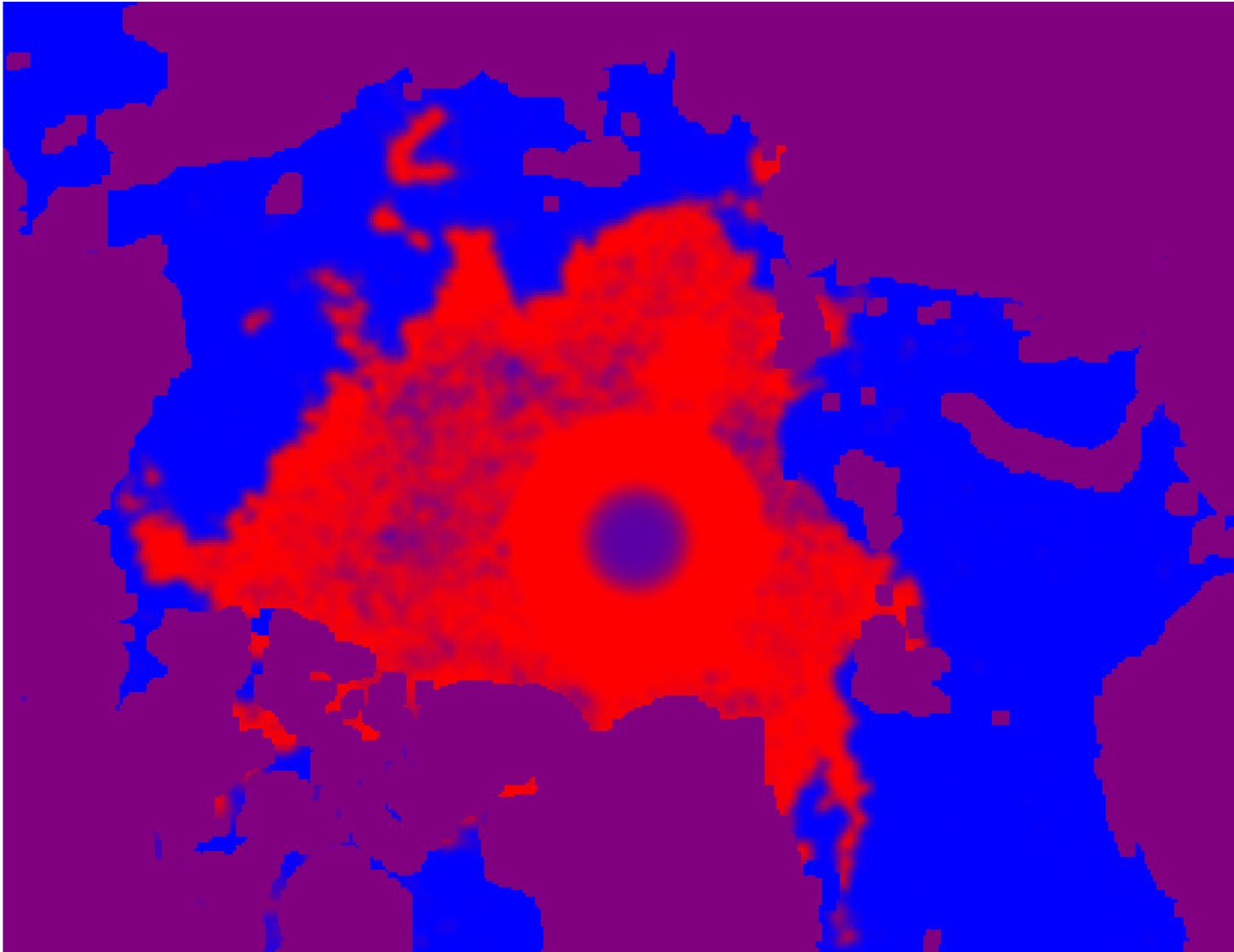
12.5 km QC (TBC)





Sea Ice - Wind discrimination

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Ice
posterior
probability

P=0

P=1

QuikScat

14/09/'08



User issues

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- ASCAT - ERS continuity after ESA's ERS reprocessing
- Box processing at EUMETSAT ?
- L2 "acceleration" product (Mark) ?
- Archive data format in BUFR/NetCDF/HDF;
 - Simple products ?
 - Same wind section for all scatterometers ?
 - Separate products for L2 soil moisture and sea ice
(co-exist in one BUFR record with backscatter data included)
- Accessibility and compatibility of archives at EUMETSAT, PODAAC ?
- User requirements MyOcean Wind TAC ? : higher level wind products to spatially and temporally contain eddy-scale winds (later presentation)
- ISRO SCAT at 12 LST nicely complements SeaWinds at 6 LST and ASCAT at 9:30 LST for providing temporally-resolved eddy-scale ocean winds; December visit ISRO
- SAR hi-res winds (sparse) using SAF scatterometer methodology



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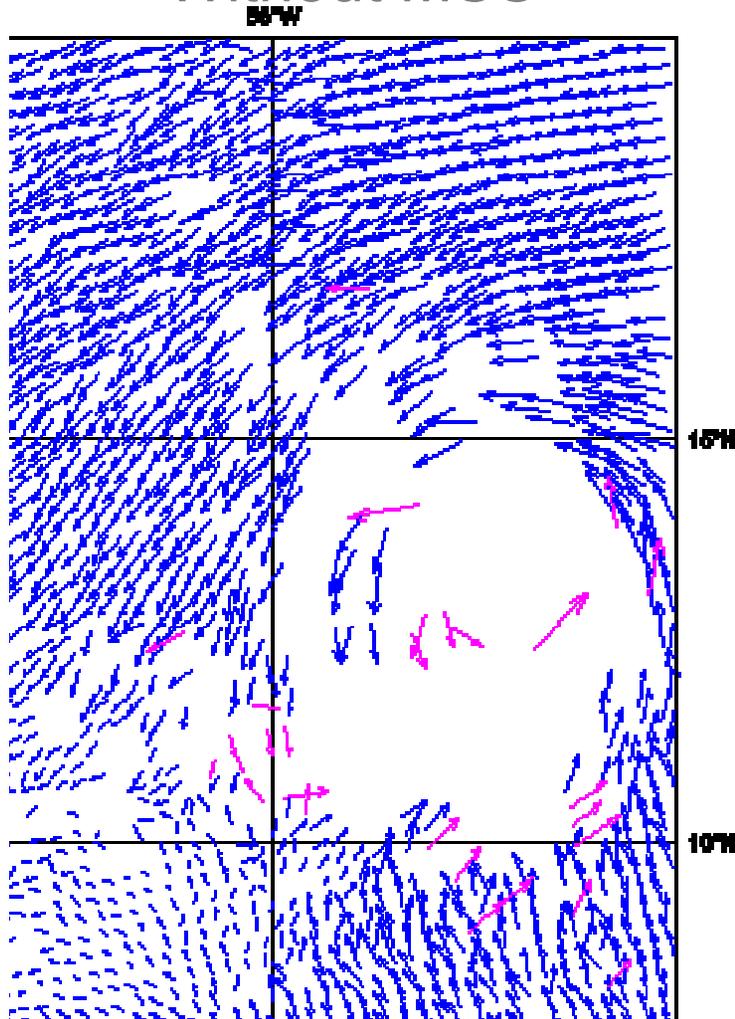


MSS: full wind vector PDF on WVC level in 2DVAR

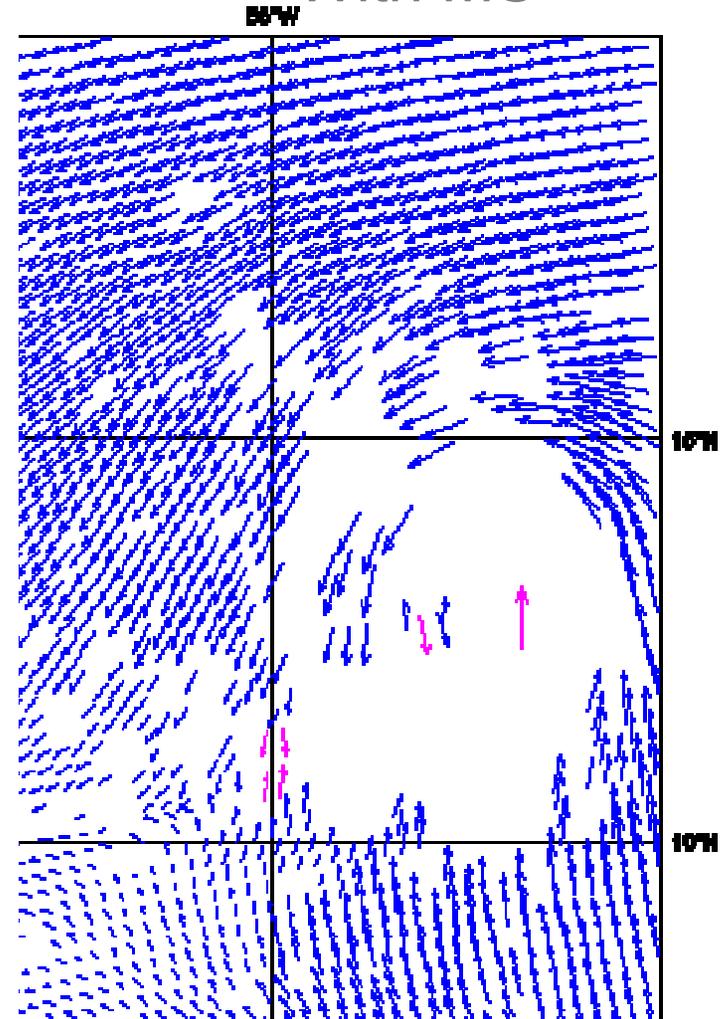
SeaWinds @ 25km, Hurricane Dean, 16 Aug 2007

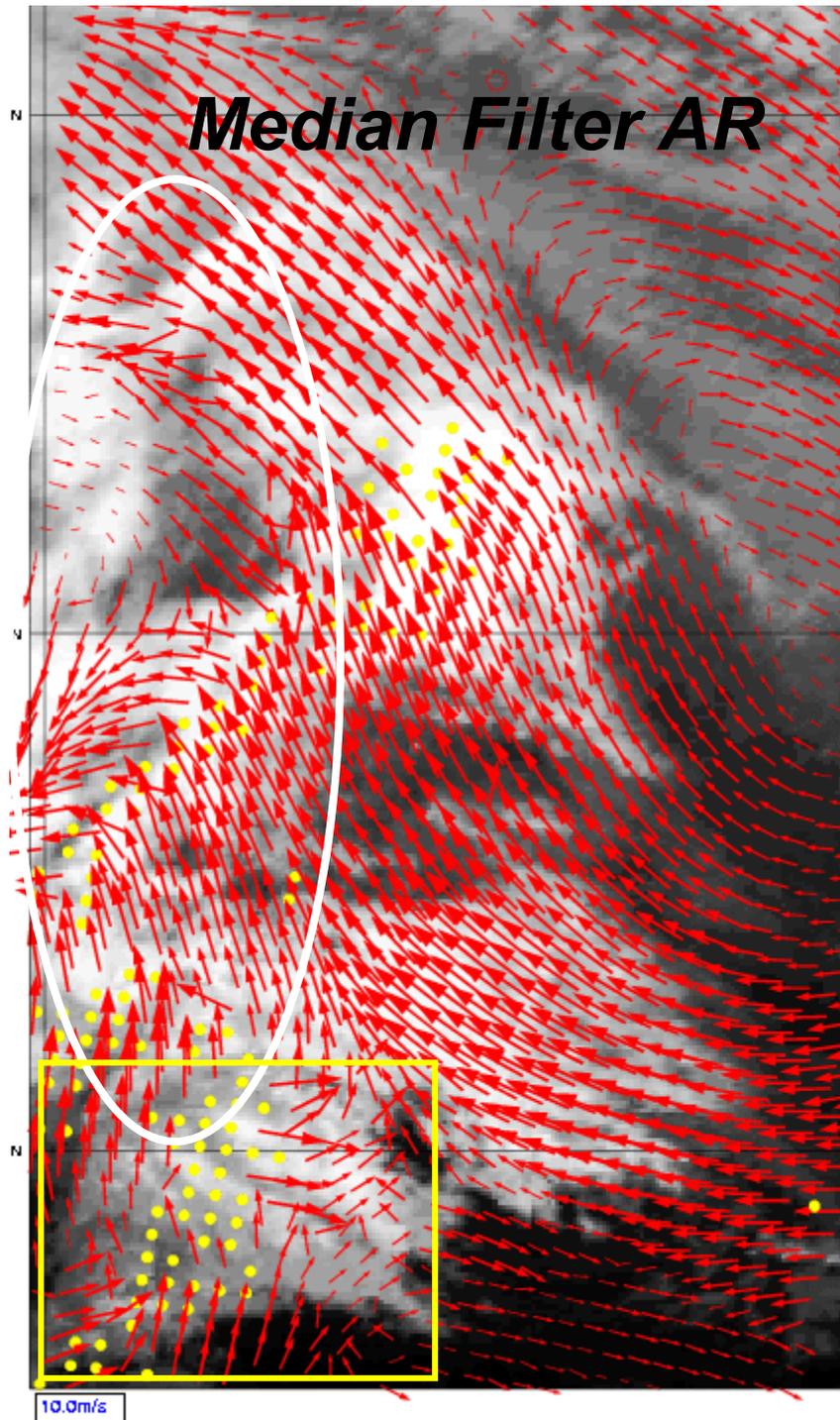
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Without MSS

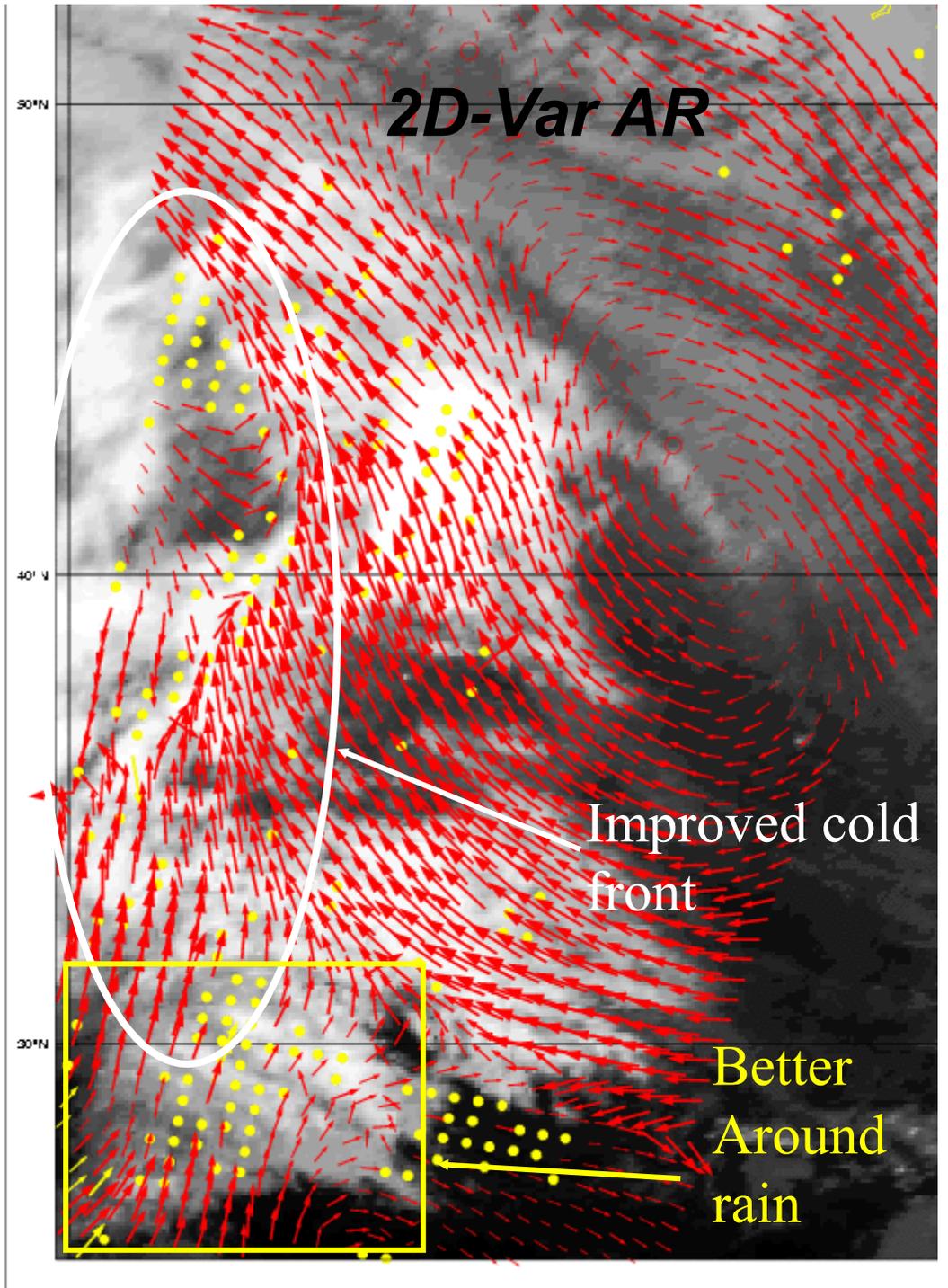


With MS





10.0m/s

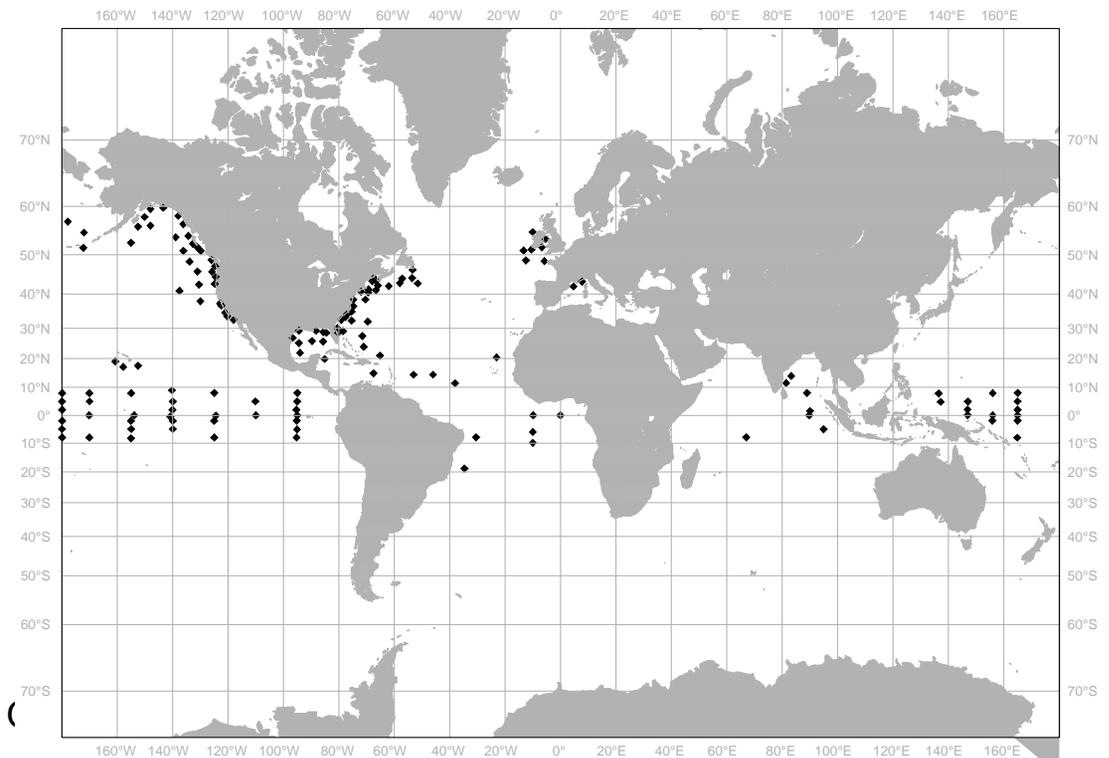


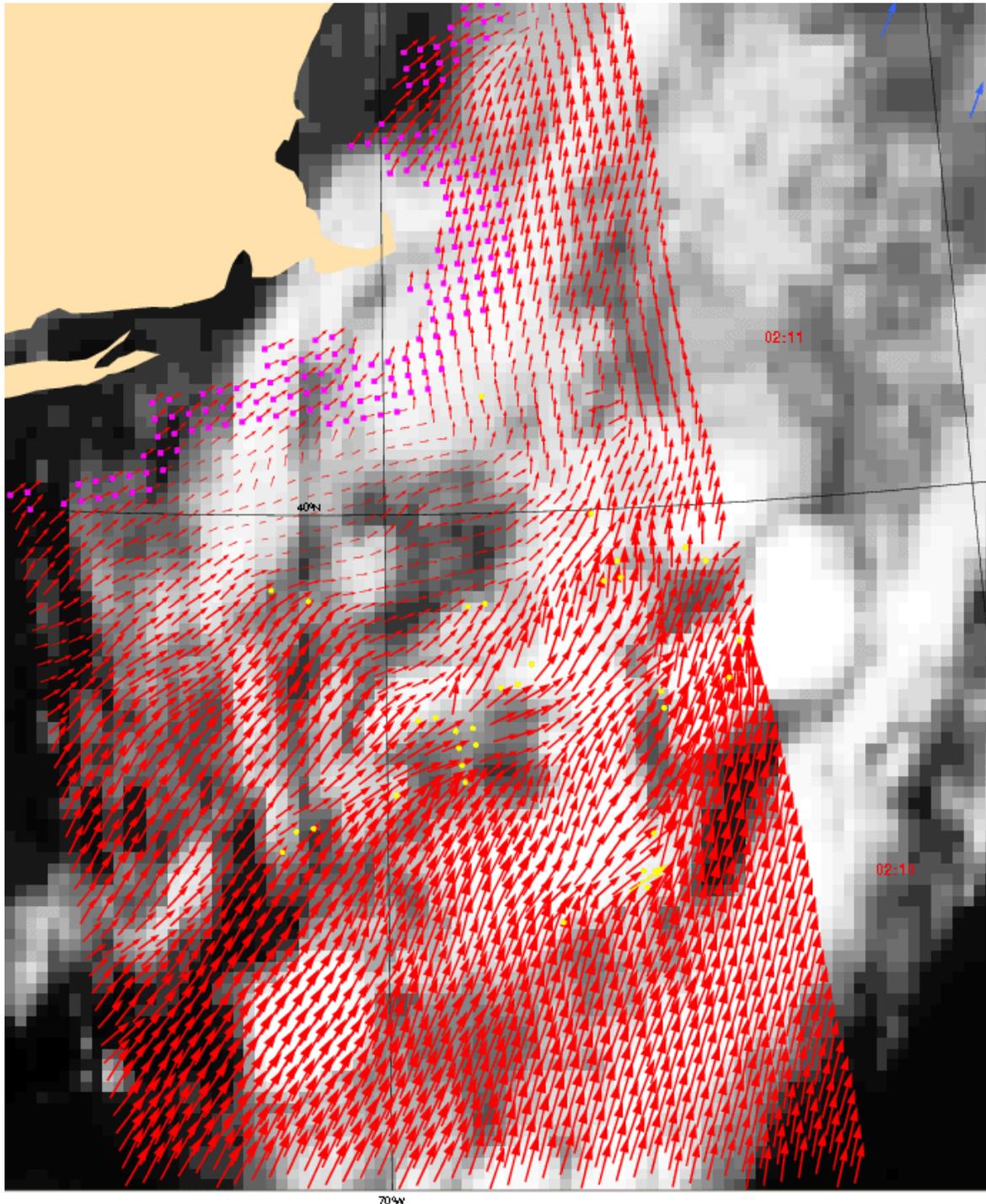


Buoy and NWP verification **NWP** **SAF**

- ASCAT 25 compares best to buoys;
ASCAT 25 compares best to ECMWF as well
- SeaWinds 25 is slightly noisier than ASCAT 25;
SeaWinds 100 compares much better to ECMWF winds than SeaWinds 25
- Low-res products good for global NWP; **Hi-res for ocean applications and nowcasting**

ASCAT 25		SeaWinds 25		SeaWinds 100	
SD u [m/s]	SD v [m/s]	SD u [m/s]	SD v [m/s]	SD u [m/s]	SD v [m/s]
1.76	1.79	1.84	1.83	2.19	2.00





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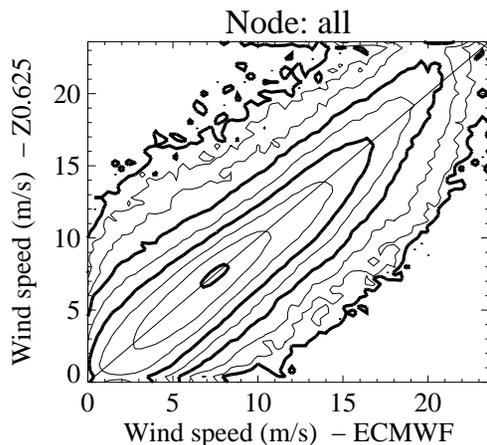
Experimental 12.5-km product

➤ See
yesterday's
talk

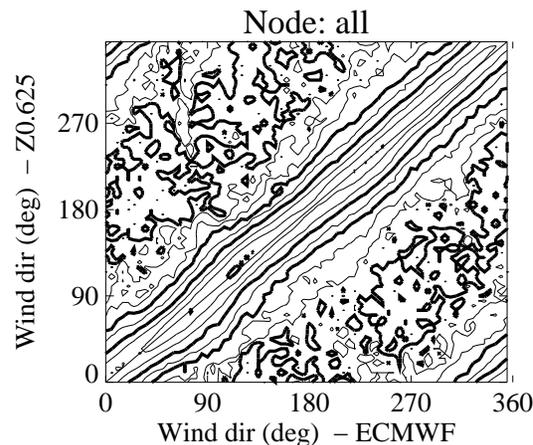


QuikSCAT vs ECMWF

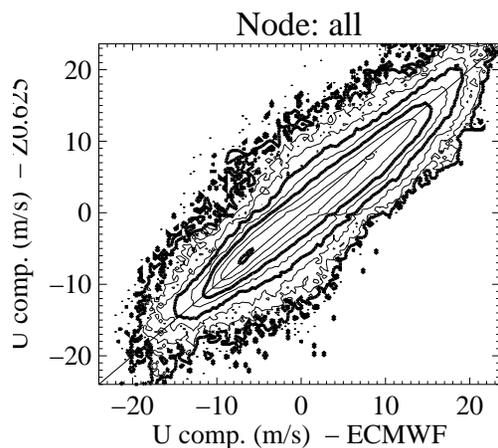
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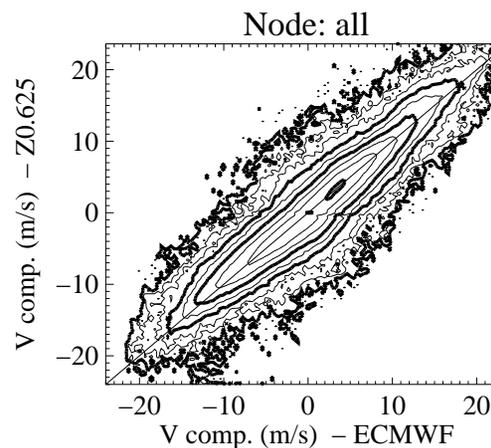
N=4540535
mx= 7.50 my= 7.26
m(y-x)= -0.24 s(y-x)= 1.49
cor_xy= 0.91



N=3855708
mx= 177.46 my= 177.88
m(y-x)= 0.42 s(y-x)= 14.12
cor_xy= 0.99



N=4540535
mx= 0.23 my= 0.13
m(y-x)= -0.10 s(y-x)= 1.60
cor_xy= 0.97

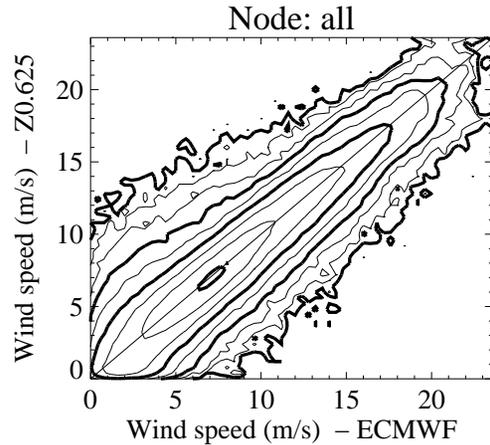


N=4540535
mx= 0.74 my= 0.70
m(y-x)= -0.04 s(y-x)= 1.58
cor_xy= 0.96

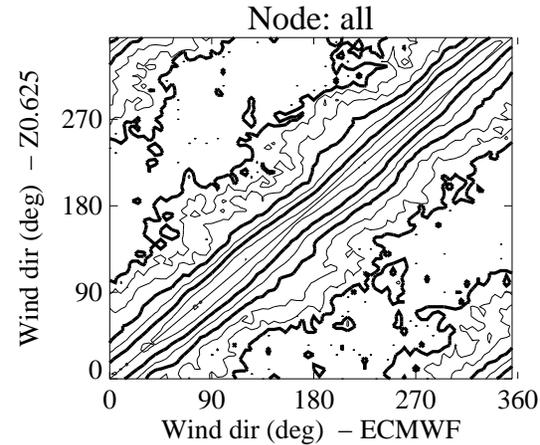


ASCAT vs ECMWF

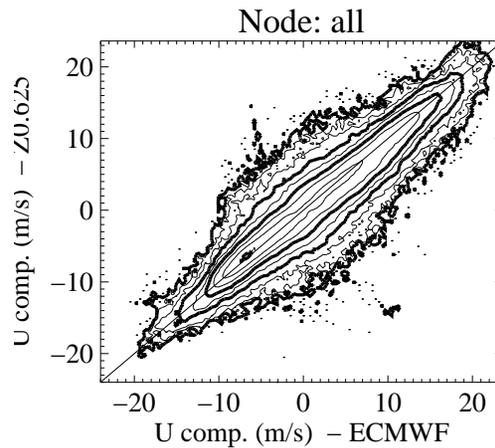
NWP
SAF



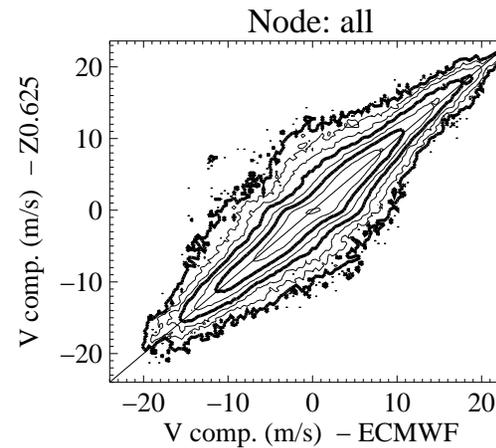
N=2305231
mx= 7.59 my= 7.55
m(y-x)= -0.05 s(y-x)= 1.28
cor_xy= 0.94



N=1965456
mx= 177.57 my= 177.86
m(y-x)= 0.29 s(y-x)= 15.75
cor_xy= 0.99



N=2305231
mx= 0.23 my= 0.11
m(y-x)= -0.12 s(y-x)= 1.52
cor_xy= 0.97



N=2305231
mx= 0.75 my= 0.72
m(y-x)= -0.03 s(y-x)= 1.62
cor_xy= 0.96