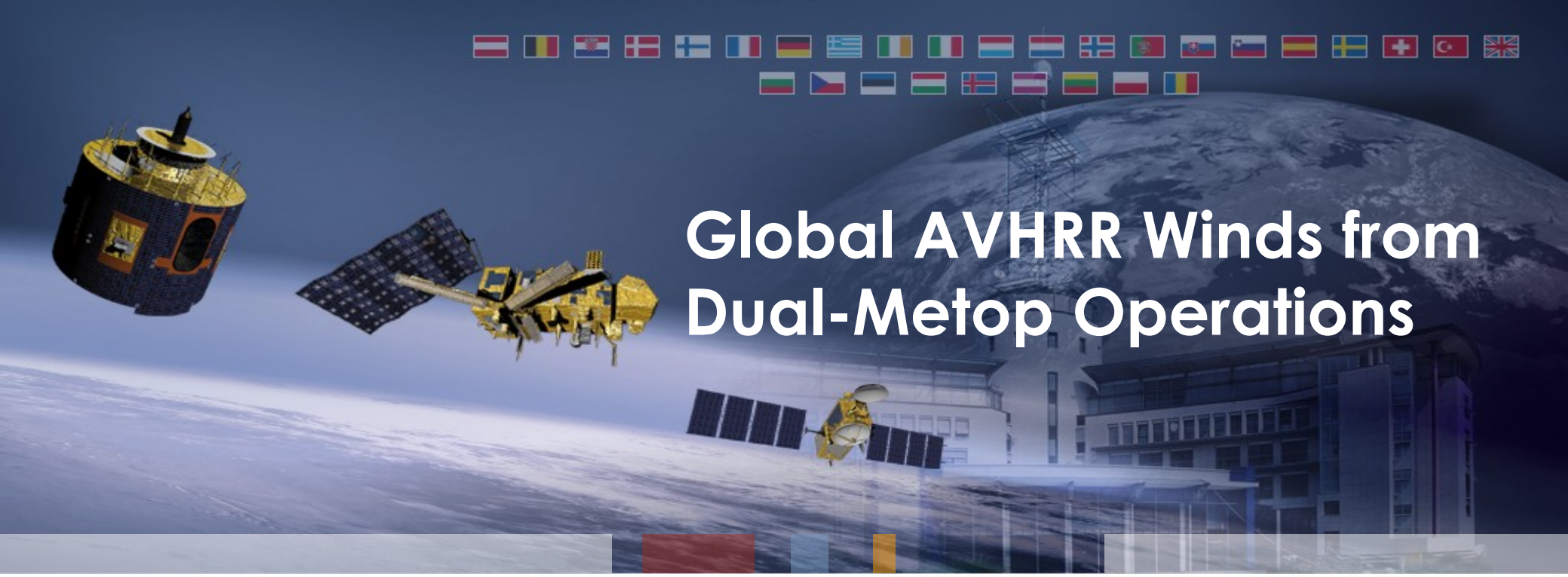


Global AVHRR Winds from Dual-Metop Operations

Ken Holmlund
Meteorological Operations Division
+ Greg Dew
Kenneth.holmlund@eumetsat.int

IWWS 10 February 2010, Tokyo, Japan

EUMETSAT

Content of talk:

Introduction

Justification for Global AVHRR Winds

Basic Approach

Conclusions

Why now

AVHRR has been flying for a long time, but

Now, with Metop-B coming along

Global full resolution AVHRR data from two spacecrafts in the same orbit plane will become available for the first time!

Optimal? separation of almost half an orbit 48.92 mins ensures half a swath overlap or better!

Fixed local equatorial crossing time (+/- 3 mins)

EUMETSAT

More details on derivation

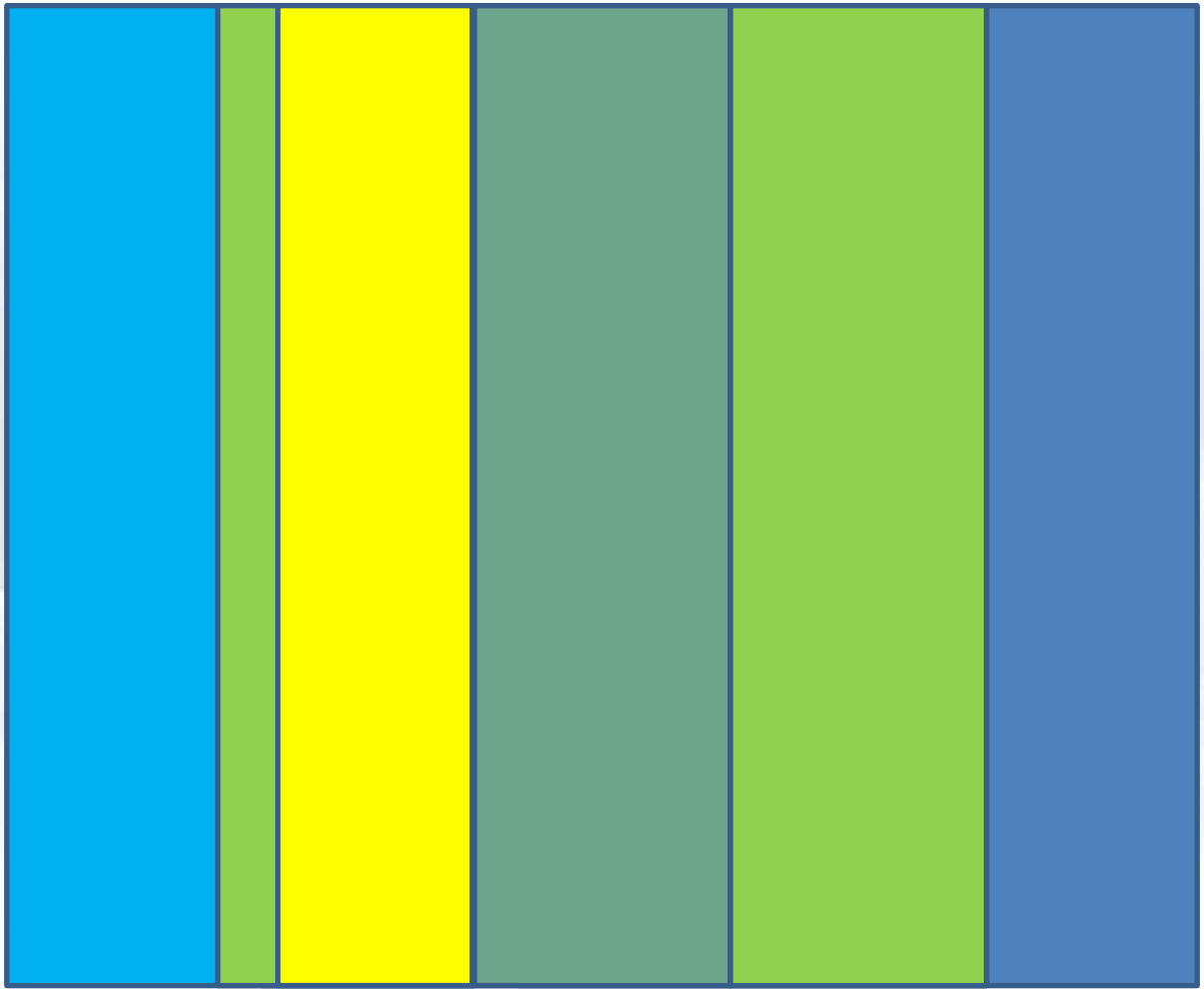
Work started a long time ago!

First step enabling wind derivation based on image pairs and not triplets!

Current operational EUMETSAT AVHRR winds adapted for to spacecrafts

- Based on image pairs, not triplets!
- IASI height assignment
- CCC method included
- + all the other goodies (See next talk by Greg Dew)

But really, it is all simple

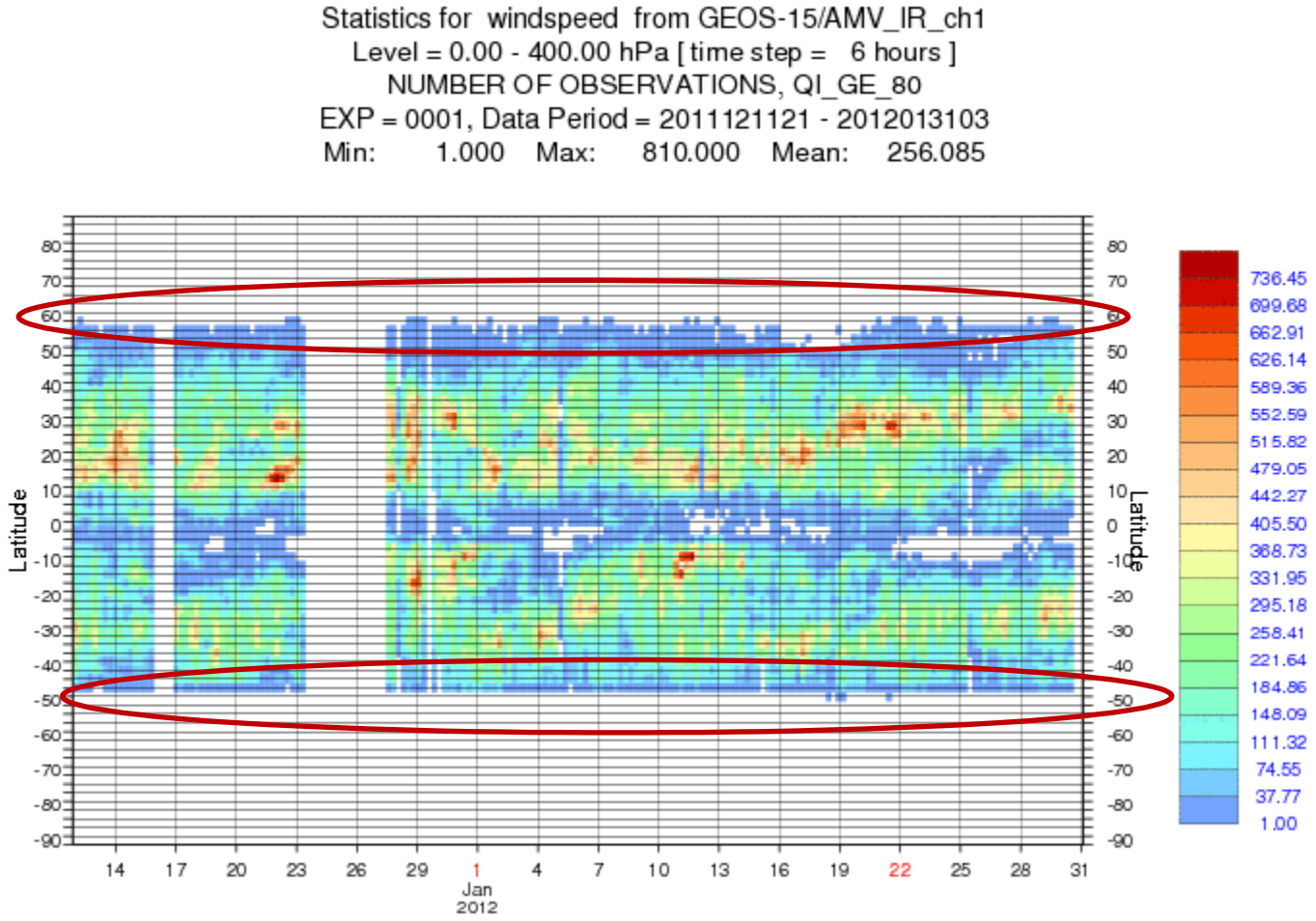


EUMETSAT

Two main benefits

1) Filling any potential gaps between GEO and LEO AMVs, currently only MISR provides a solution
2) Excellent tool for cross validation of GEO and LEO AMVs

Current GEO Coverage

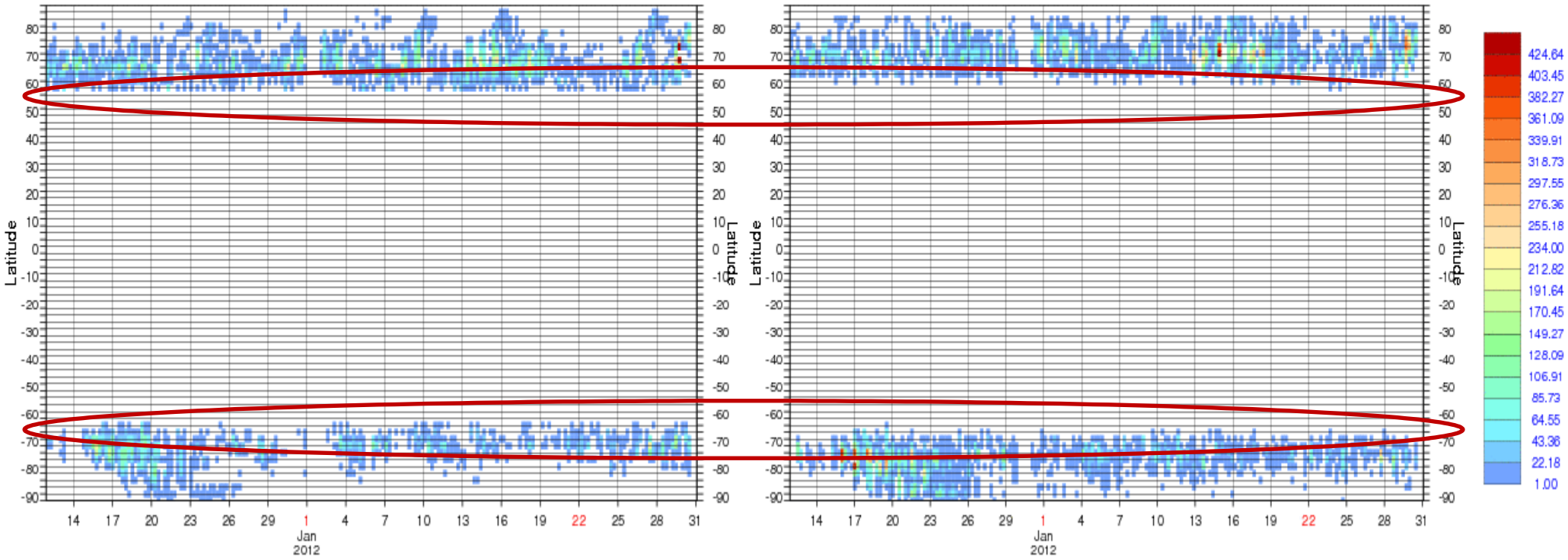


EUMETSAT

Polar orbiting coverage

Statistics for windspeed from NOAA-18/AMV_IR
Level = 0.00 - 400.00 hPa [time step = 6 hours]
NUMBER OF OBSERVATIONS, QI_GE_80
EXP = 0001, Data Period = 2011121121 - 2012013103
Min: 1.000 Max: 225.000 Mean: 42.224

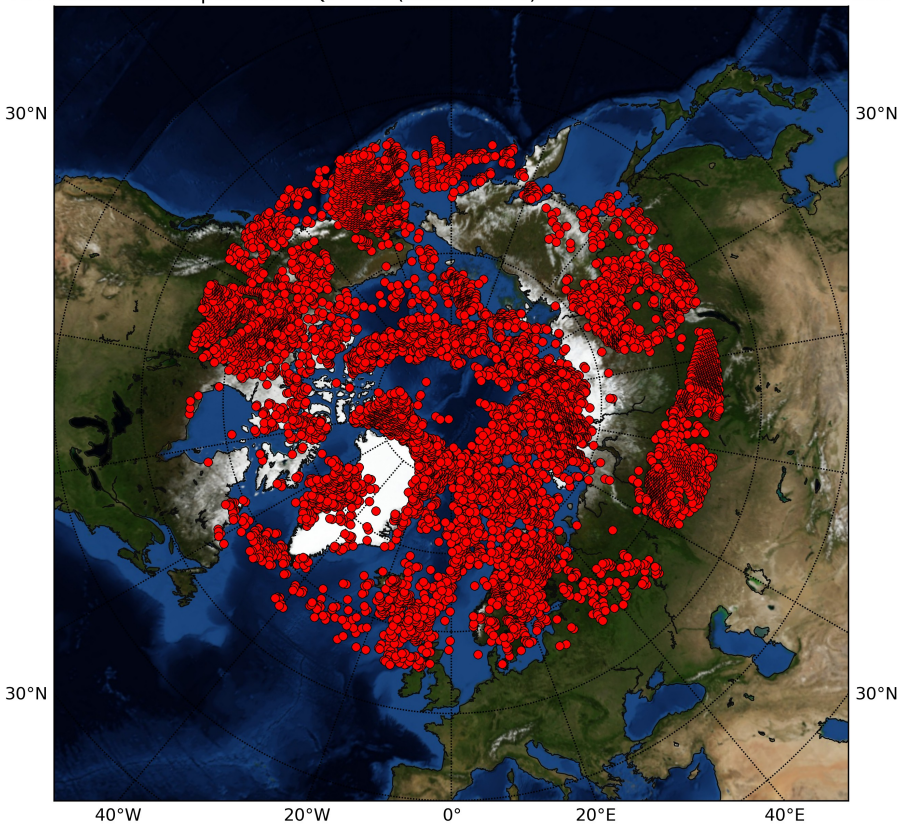
Statistics for windspeed from TERRA/AMV_WV_CLOUDY (Global)
Level = 0.00 - 400.00 hPa [time step = 6 hours]
NUMBER OF OBSERVATIONS, QI_GE_80
EXP = 0001, Data Period = 2011121121 - 2012013103
Min: 1.000 Max: 467.000 Mean: 115.925



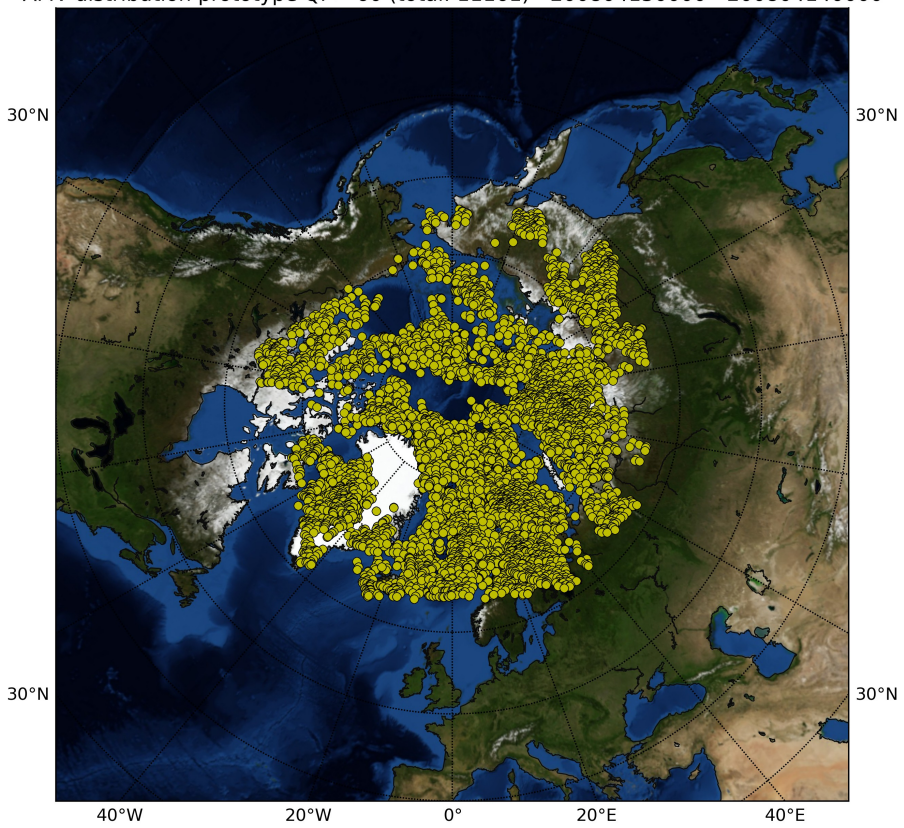
EUMETSAT

EUMETSAT operational vs prototype

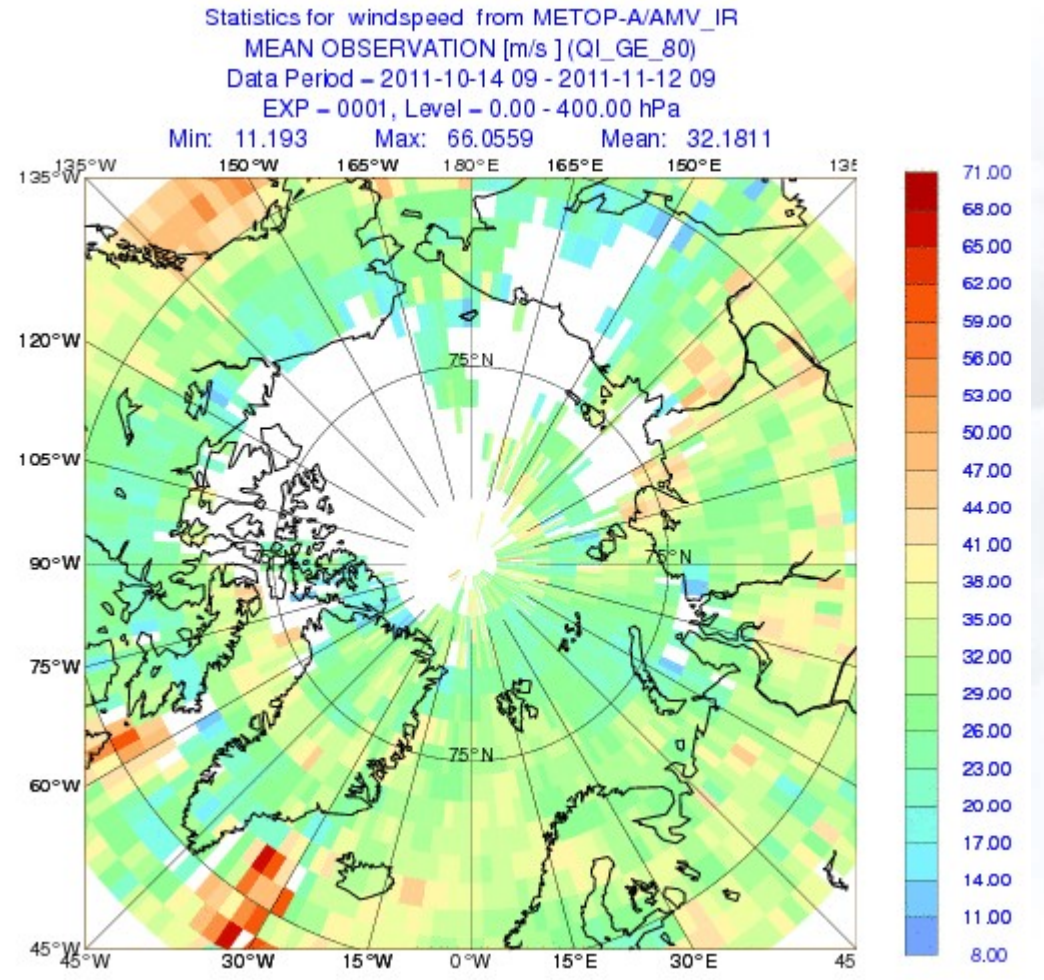
AMV distribution operational QI > 80 (total: 11144) - 200804130000 - 200804140000

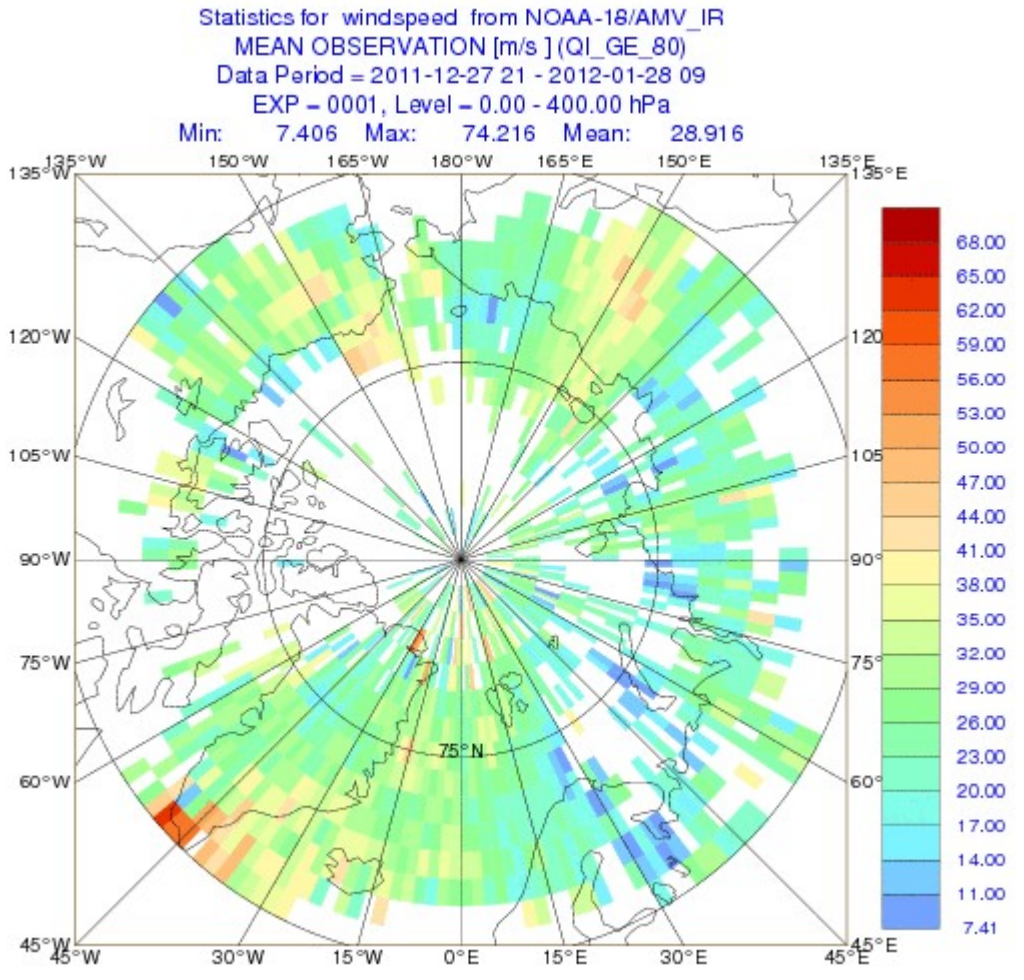


AMV distribution prototype QI > 60 (total: 11161) - 200804130000 - 200804140000



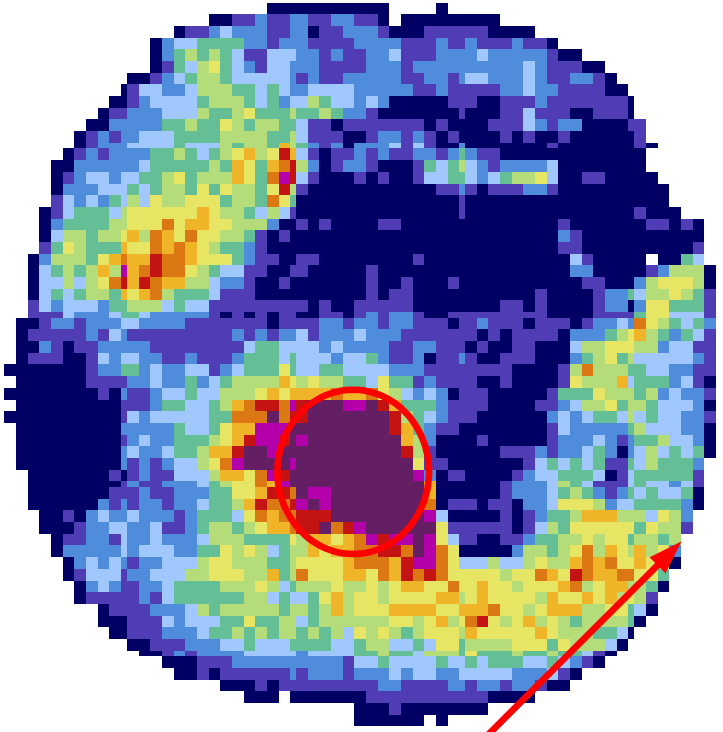
Current Polar Wind Coverage

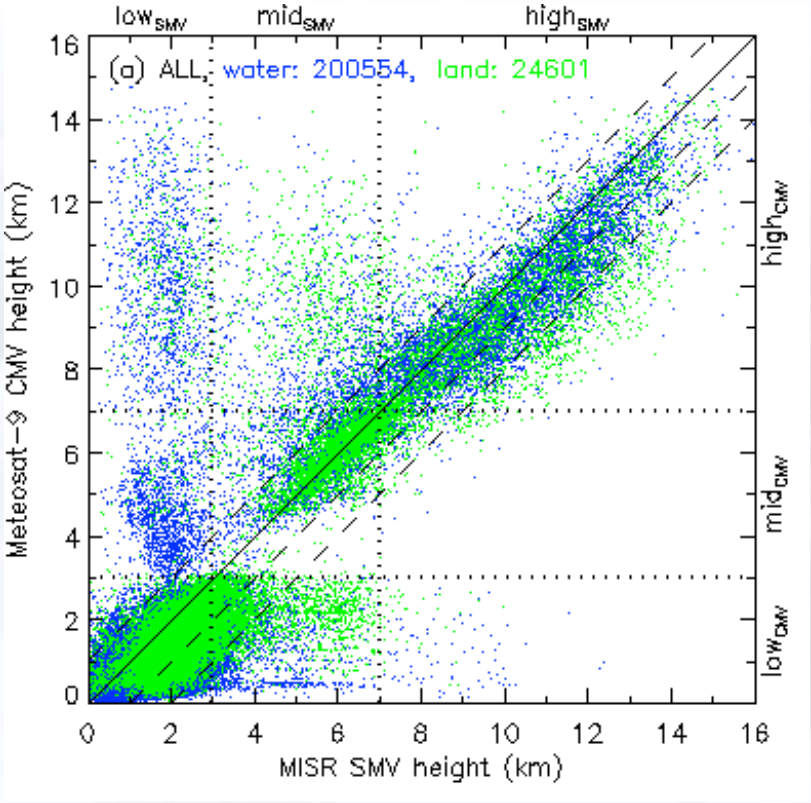




EUMETSAT

Cross validation
- see work on MISR validation by Lonitz and Horvath

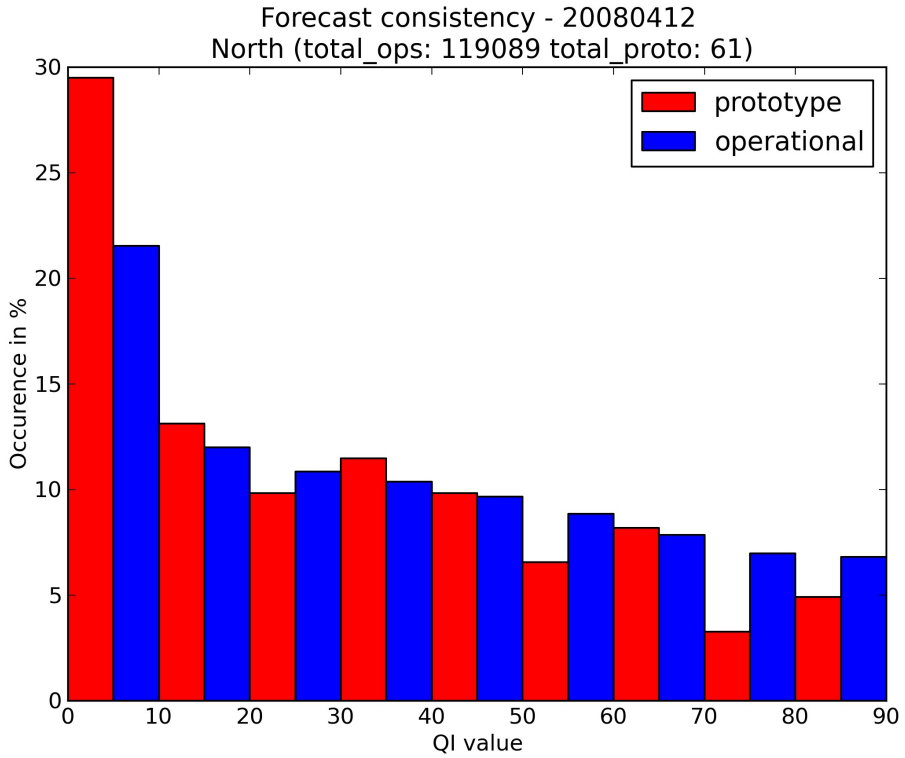


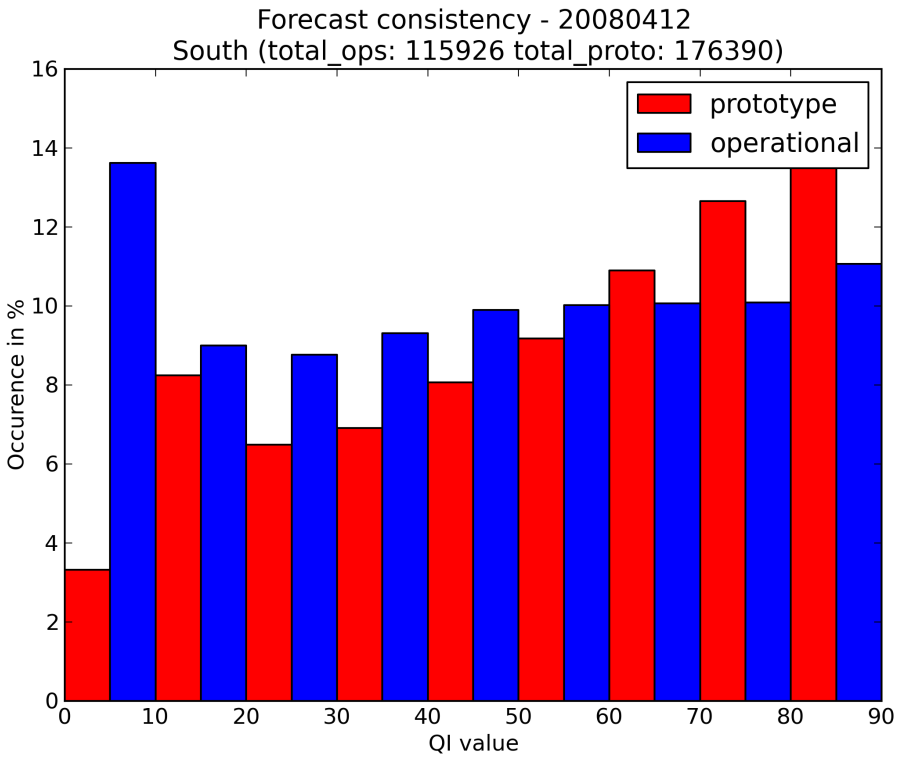


> 200 collocations

EUMETSAT

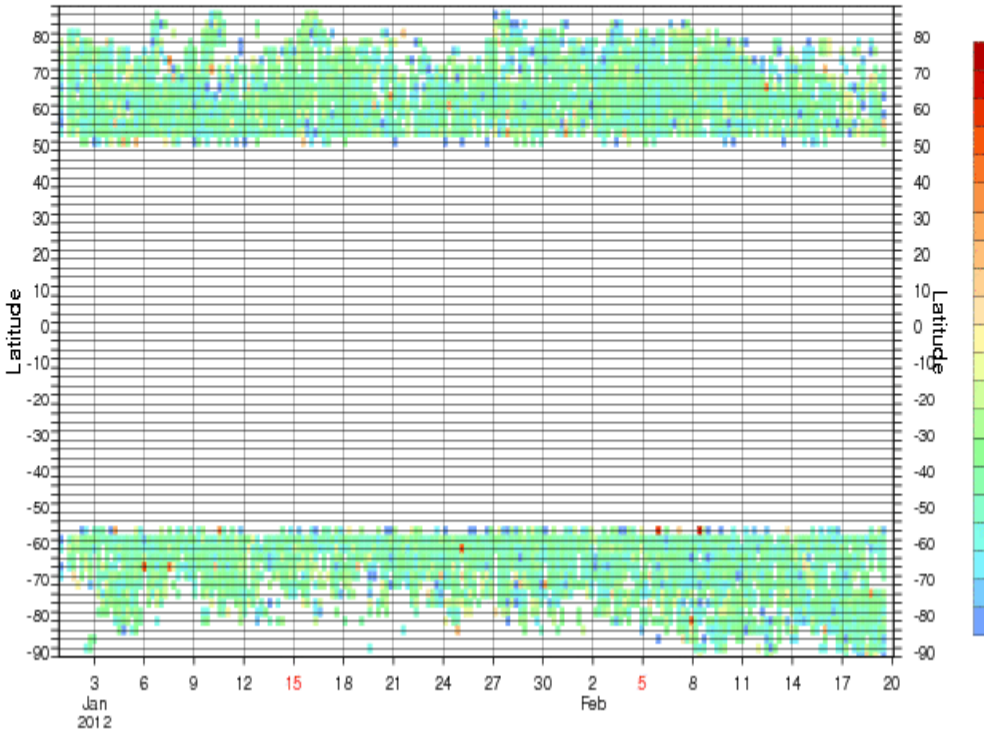
But is this realistic...i.e. are the winds good enough
Forecast consistency of reprocessed winds



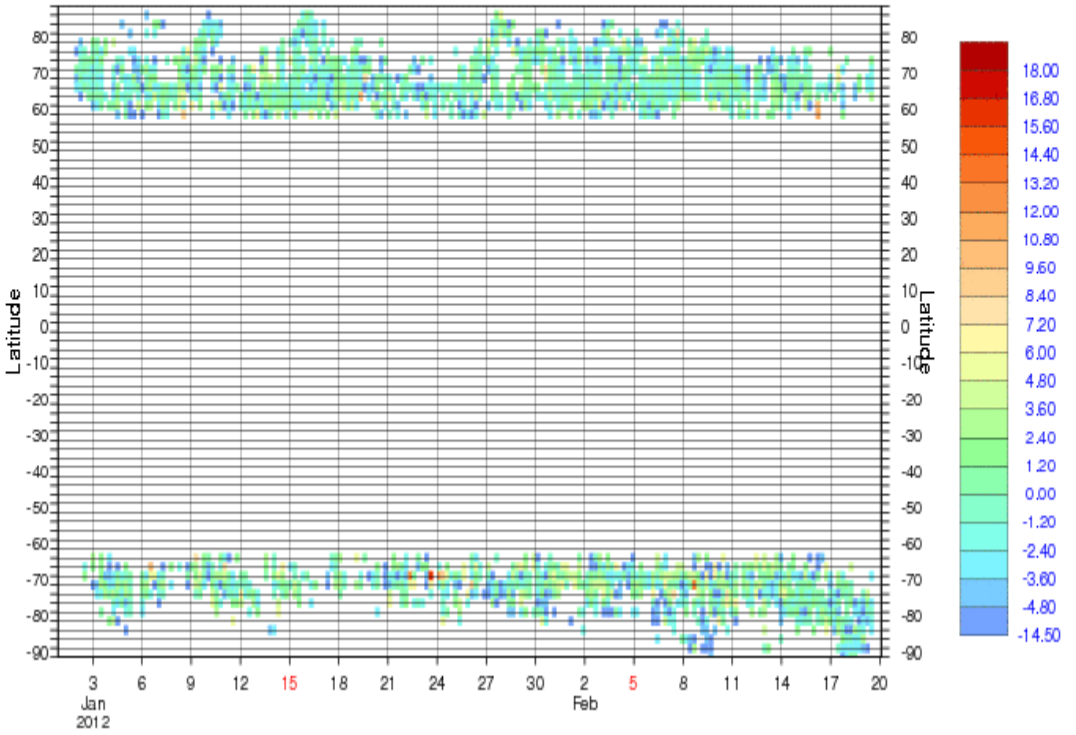


First guess departures by ECMWF

Statistics for windspeed from METOP-A/AMV_IR
Level = 0.00 - 400.00 hPa [time step = 6 hours]
MEAN FIRST GUESS DEPARTURE (OBS-FG) [m/s], QI_GE_80
EXP = 0001, Data Period = 2011123121 - 2012022003
Min: -14.520 Max: 17.467 Mean: 0.439

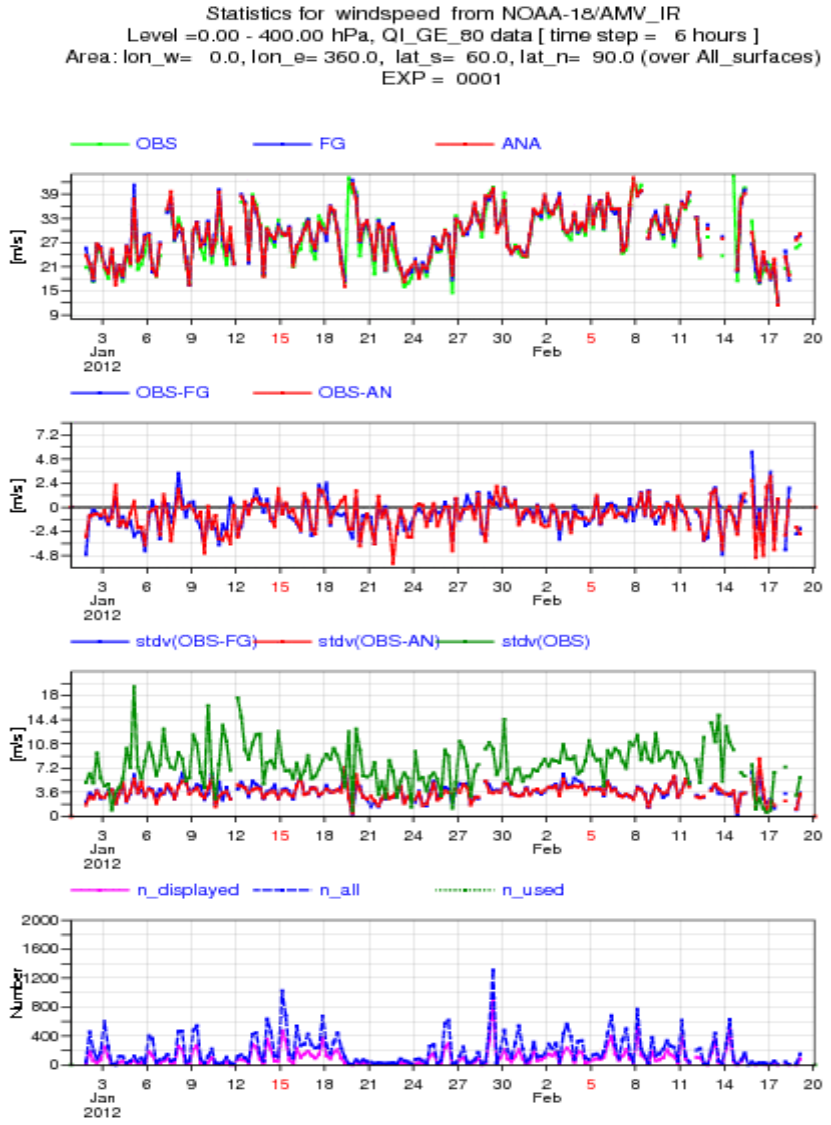


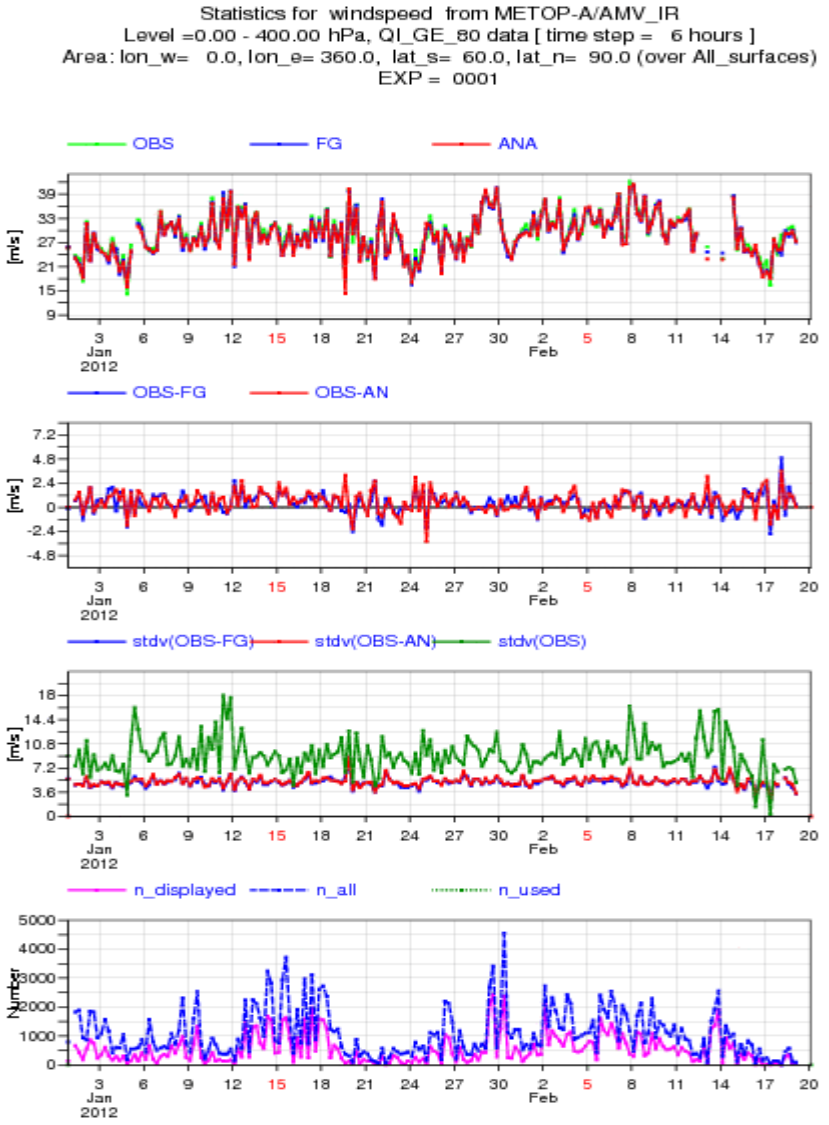
Statistics for windspeed from NOAA-18/AMV_IR
Level = 0.00 - 400.00 hPa [time step = 6 hours]
MEAN FIRST GUESS DEPARTURE (OBS-FG) [m/s], QI_GE_80
EXP = 0001, Data Period = 2011123121 - 2012022003
Min: -14.503 Max: 16.017 Mean: -0.042



EUMETSAT

Not a beauty contest!!





Status and plans

BIG PLAN: Launch Metop-1 aka Metop-B successfully!

Adaptations for dual-metop operations completed, but not tested

Final adaptations to be done during commissioning

Early test data second half of 2012

Lets hope for a successful launch!