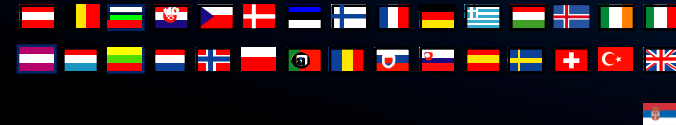
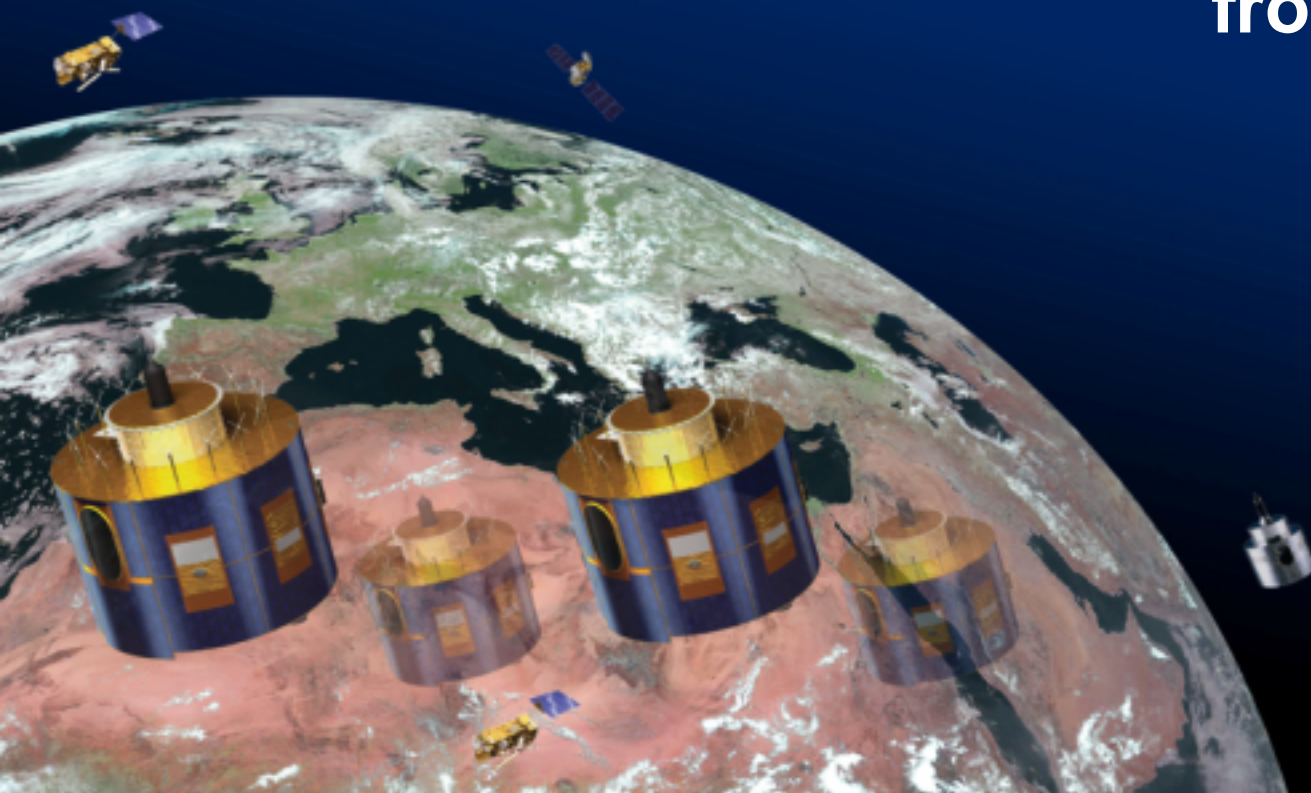


# Derivation of wind vectors from AVHRR on Metop

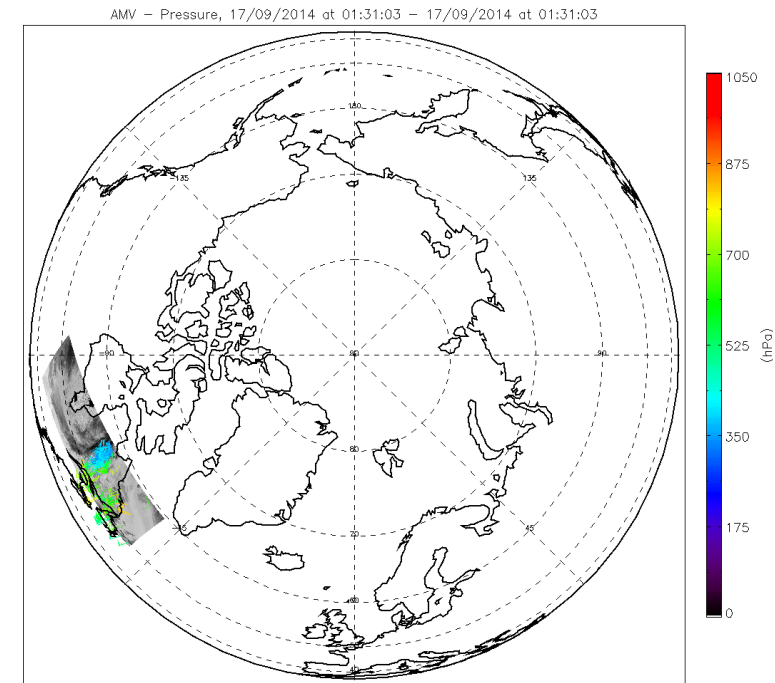
Olivier Hautecoeur  
Regis Borde



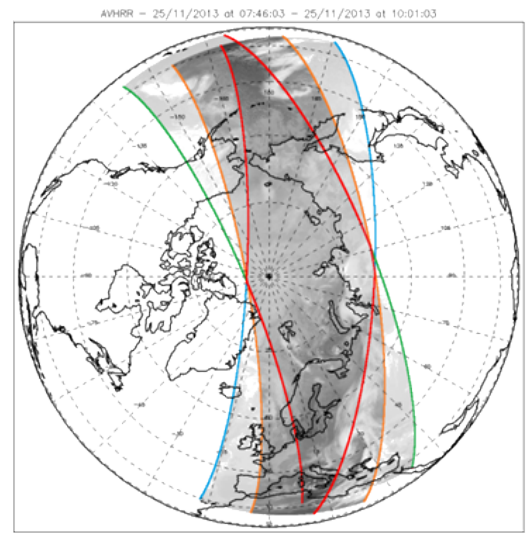
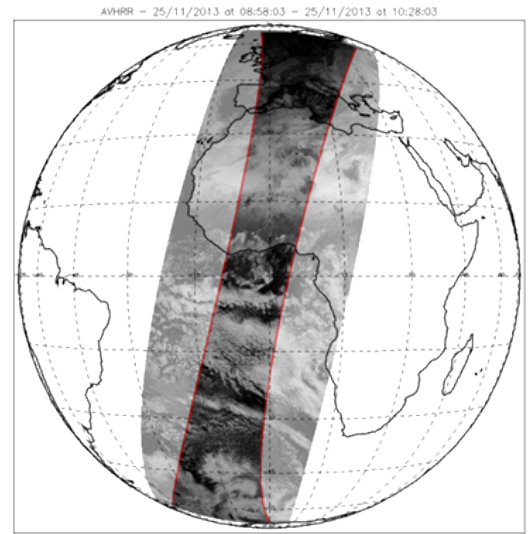
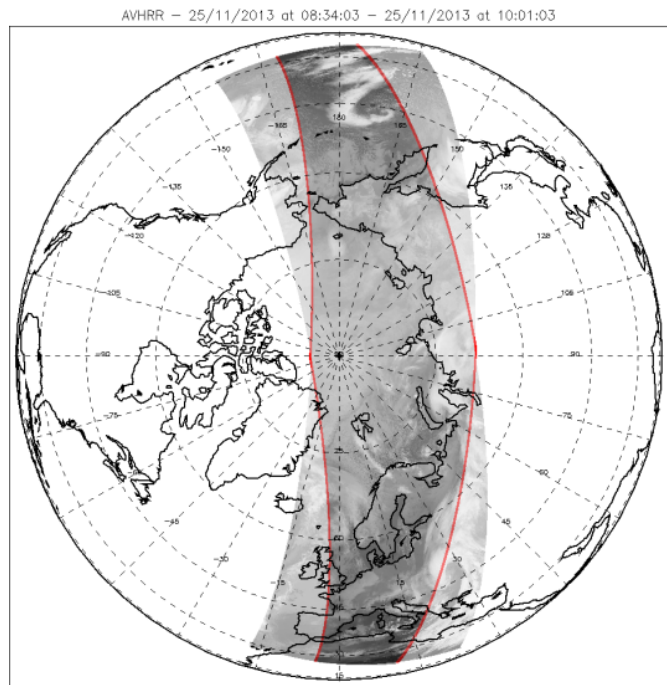
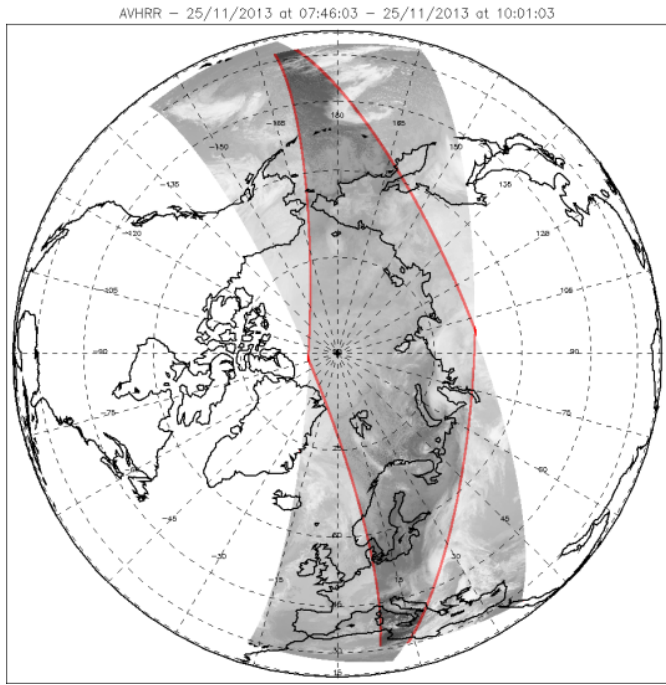
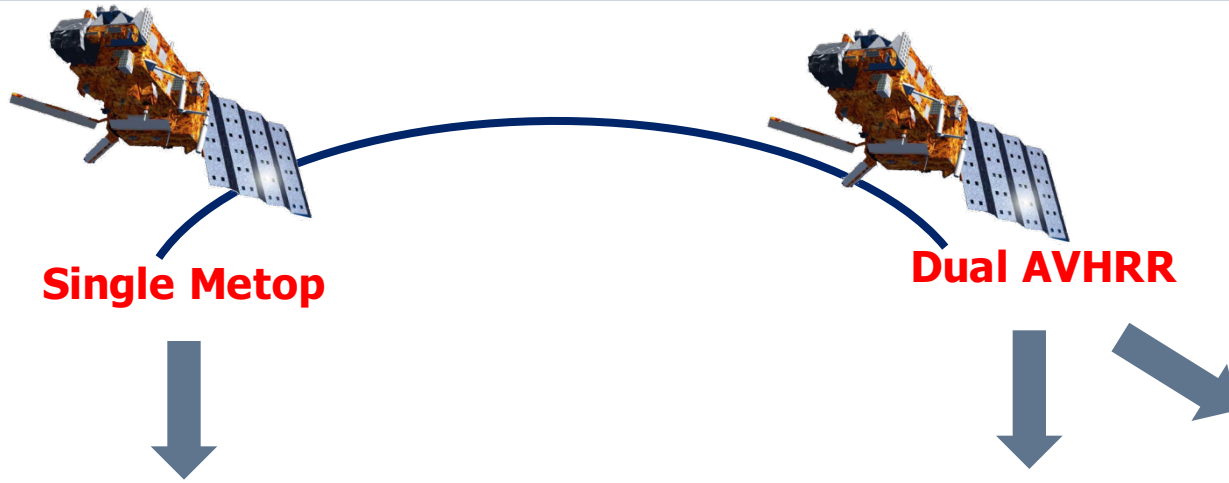
- Classical method



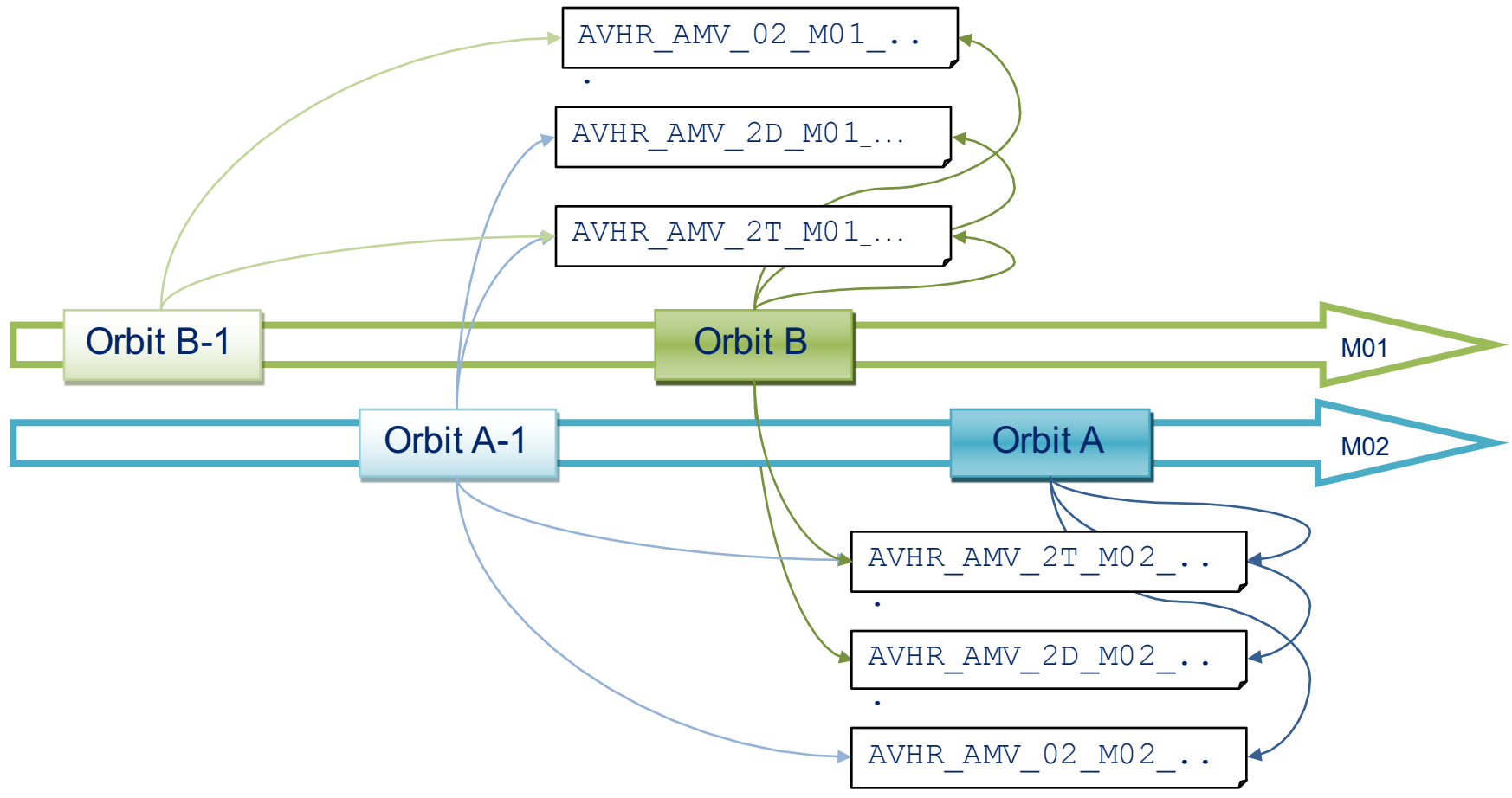
- Cloud tracking between successive images
- Feature tracking algorithm (local images correlation)
- Using one thermal infrared channel
- Height assignment:
  - EBBT
  - IASI CTP
- AMV is:
  - Wind speed
  - Wind direction
  - Altitude (pressure)
  - Quality Index



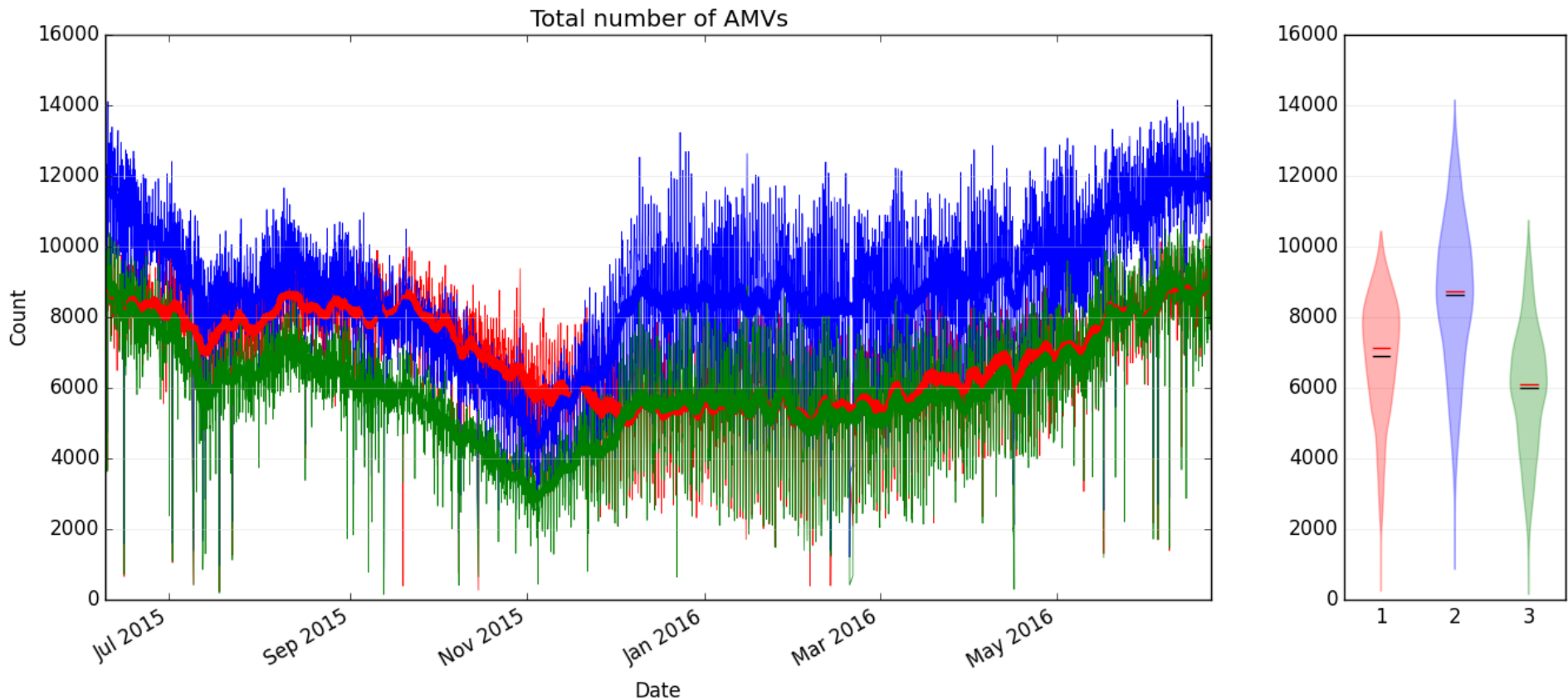
# Single and Dual platforms AMV products



# EPS/AVHRR winds – 3 modes

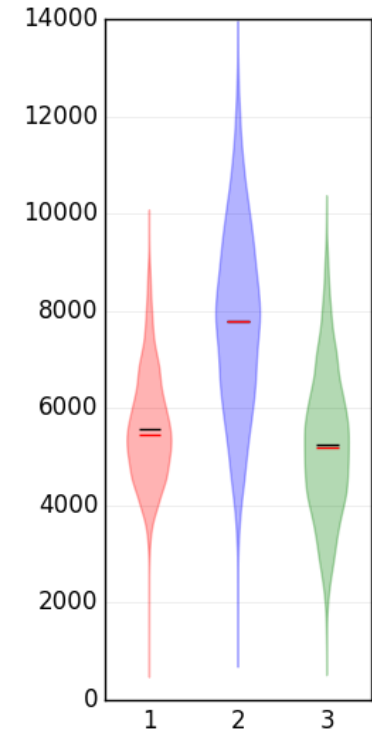
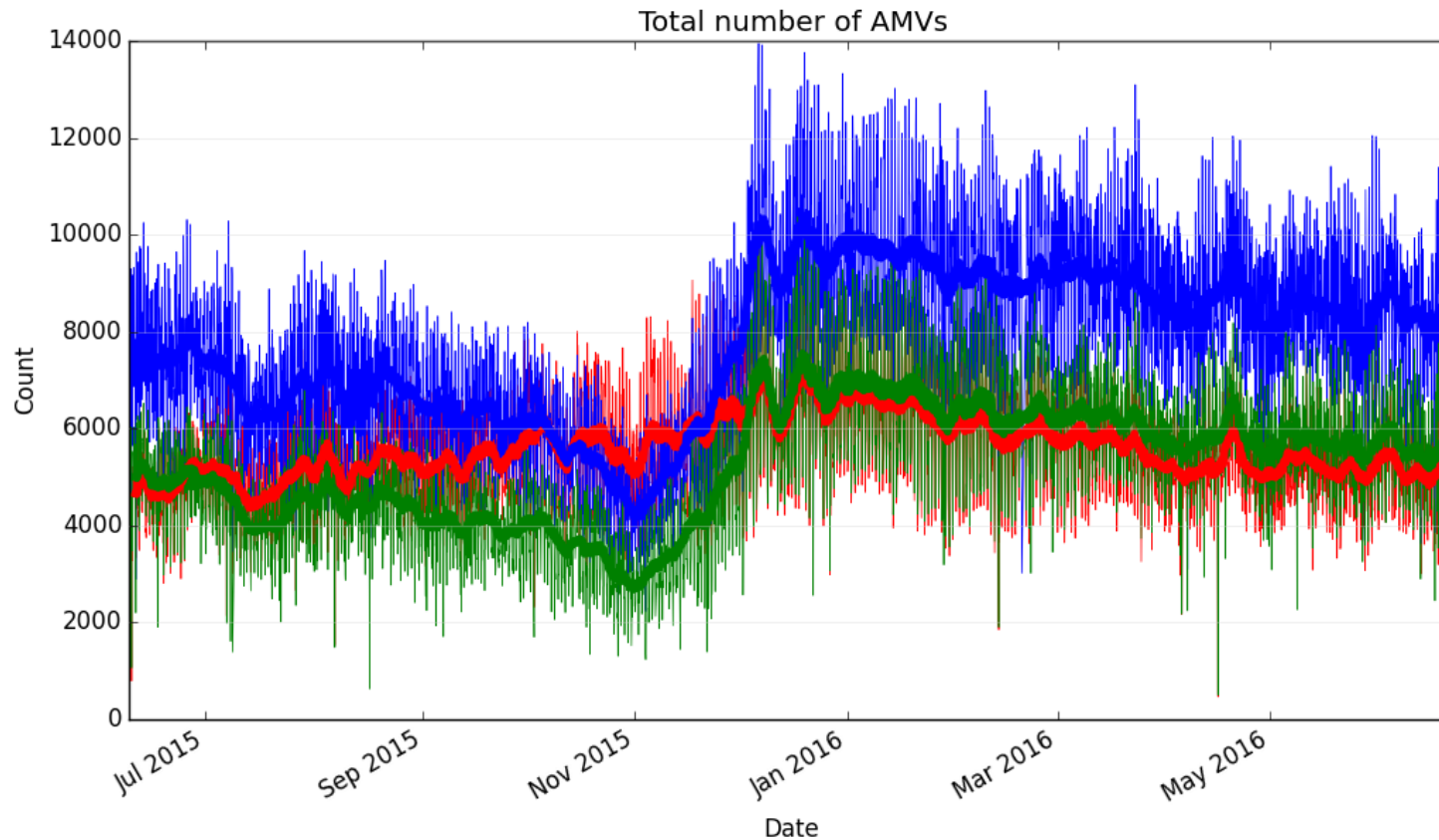


# Total number NH (lat > 50)



- **Total number of winds for dual platforms affected by differential orbit drifting**
  - **Fixed on December 2015**
- **Seasonal variation due to seasonal cloudiness variation**

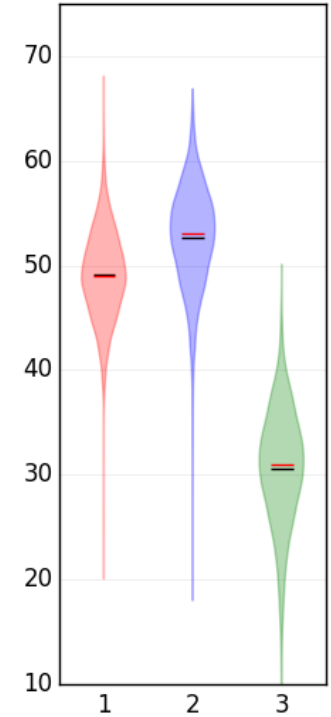
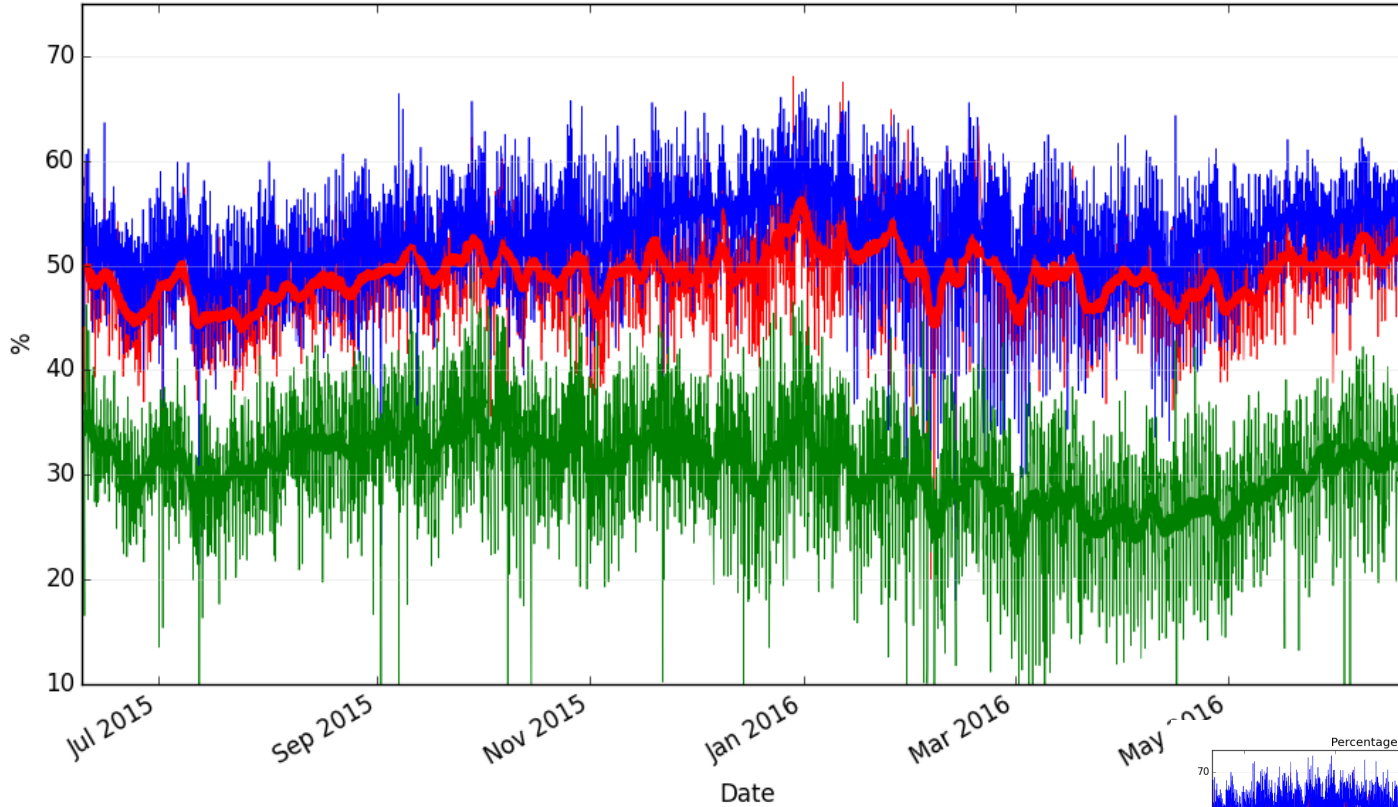
# Total number SH



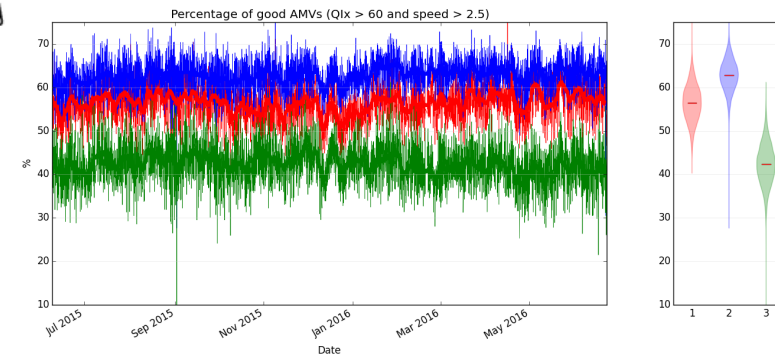
- **Seasonal effect less than for Northern Hemisphere**
  - **Opposite to NH**

# QI distribution: « Good winds »

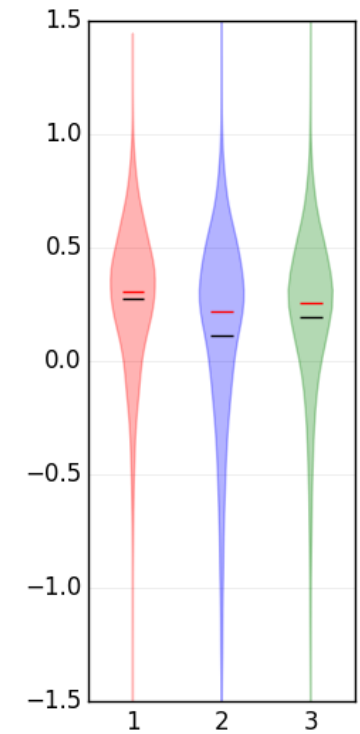
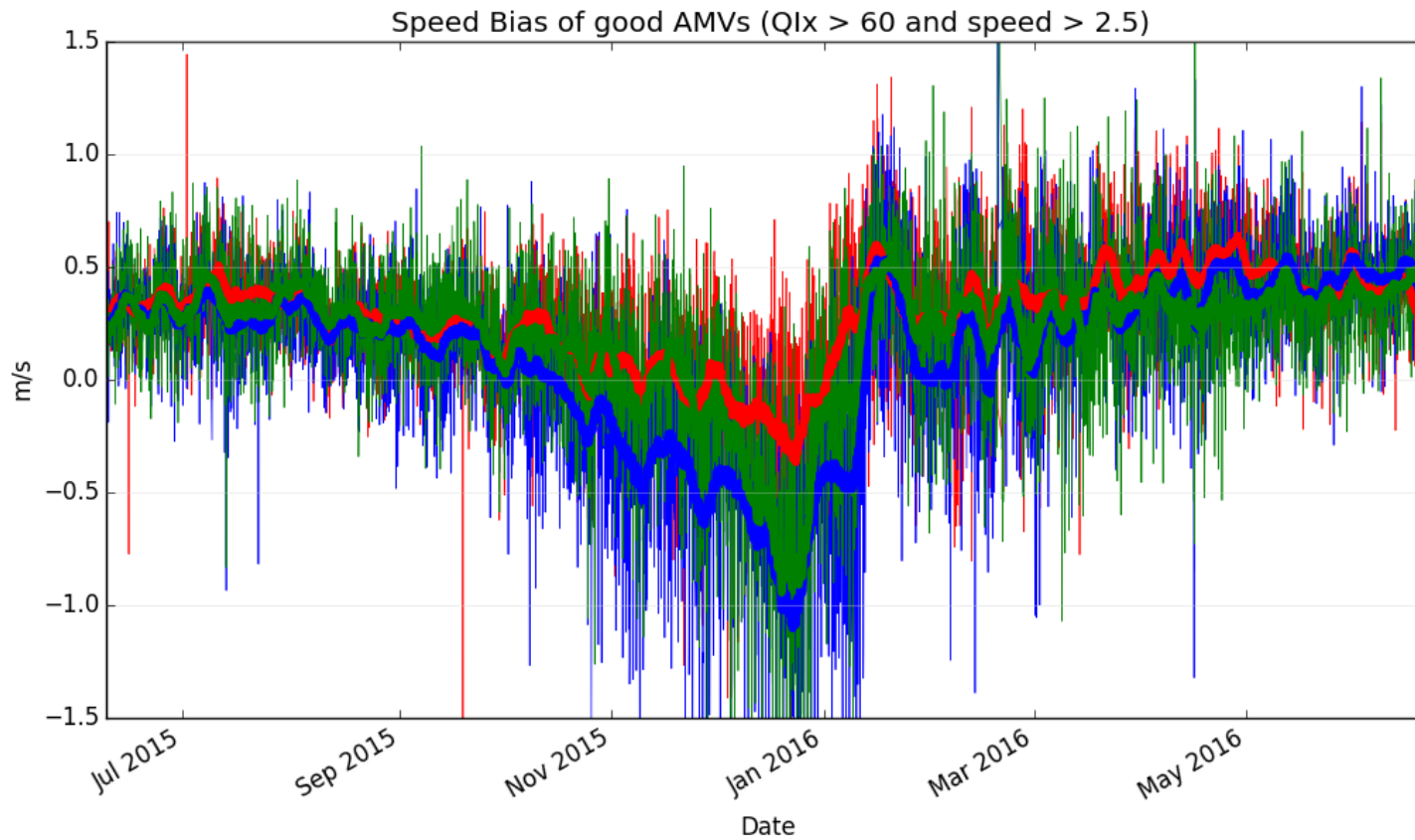
Percentage of good AMVs (QI<sub>x</sub> > 60 and speed > 2.5)



- No seasonal effect
- Percentage higher over SH



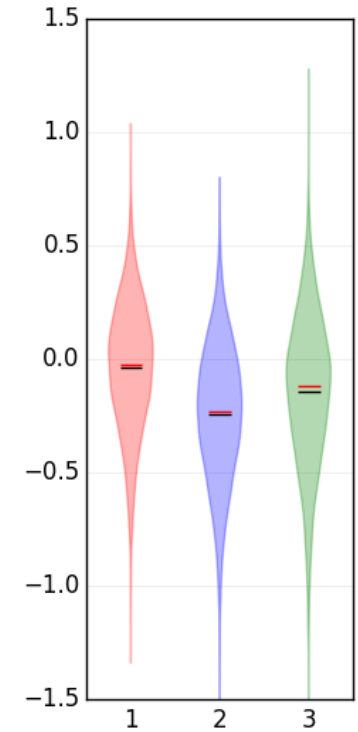
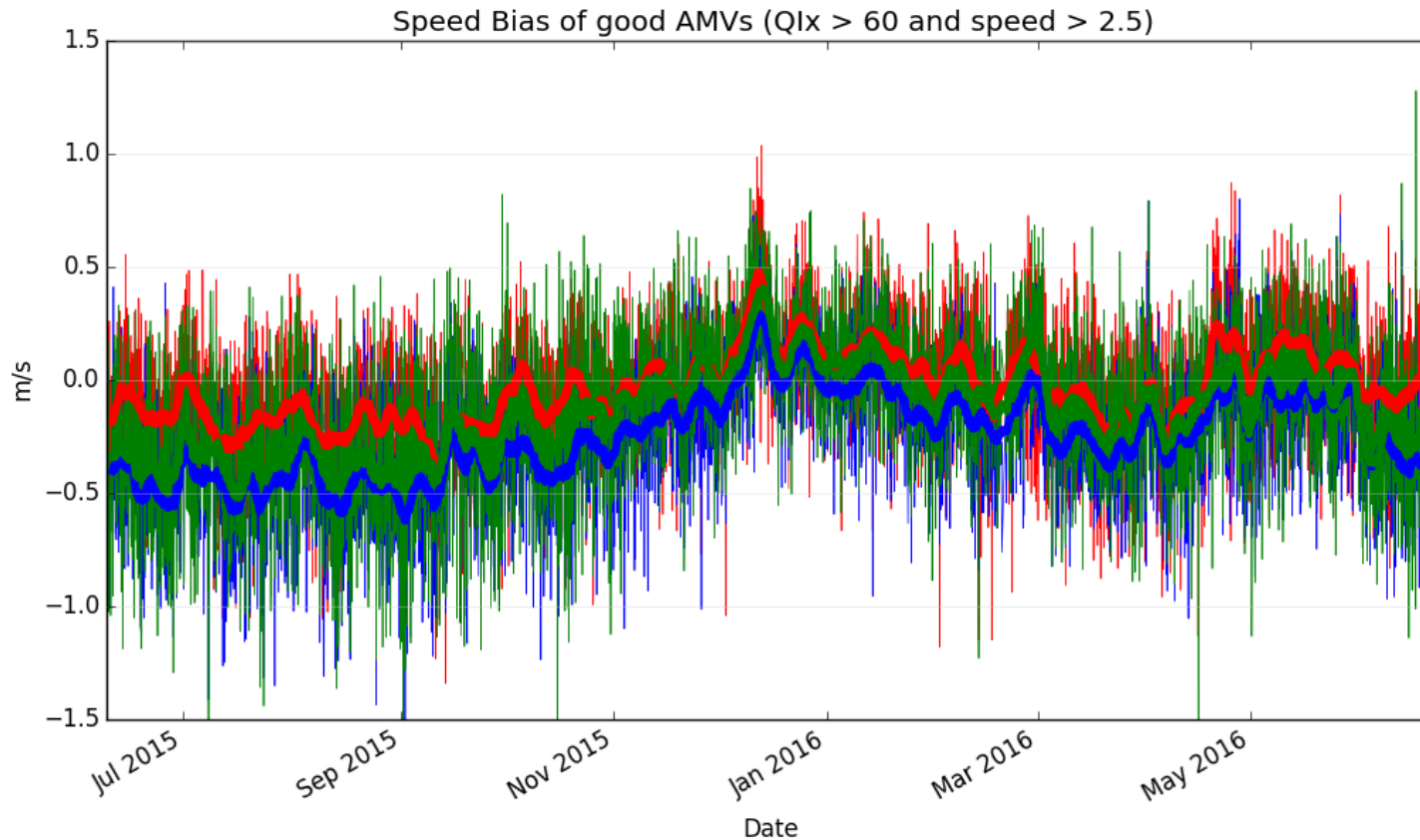
# O – B speed bias over NH



- Slightly positive
  - Single: 0,3 / Global: 0,2 / Triple: 0,2

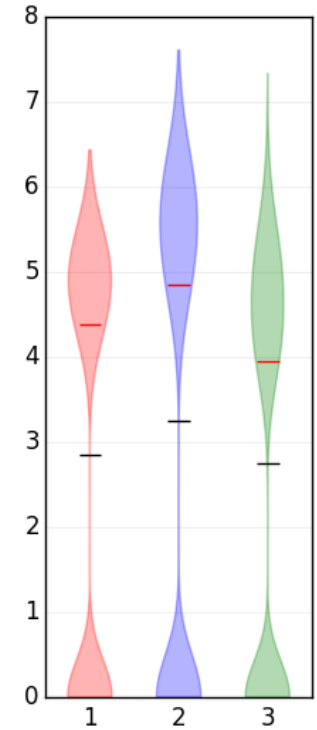
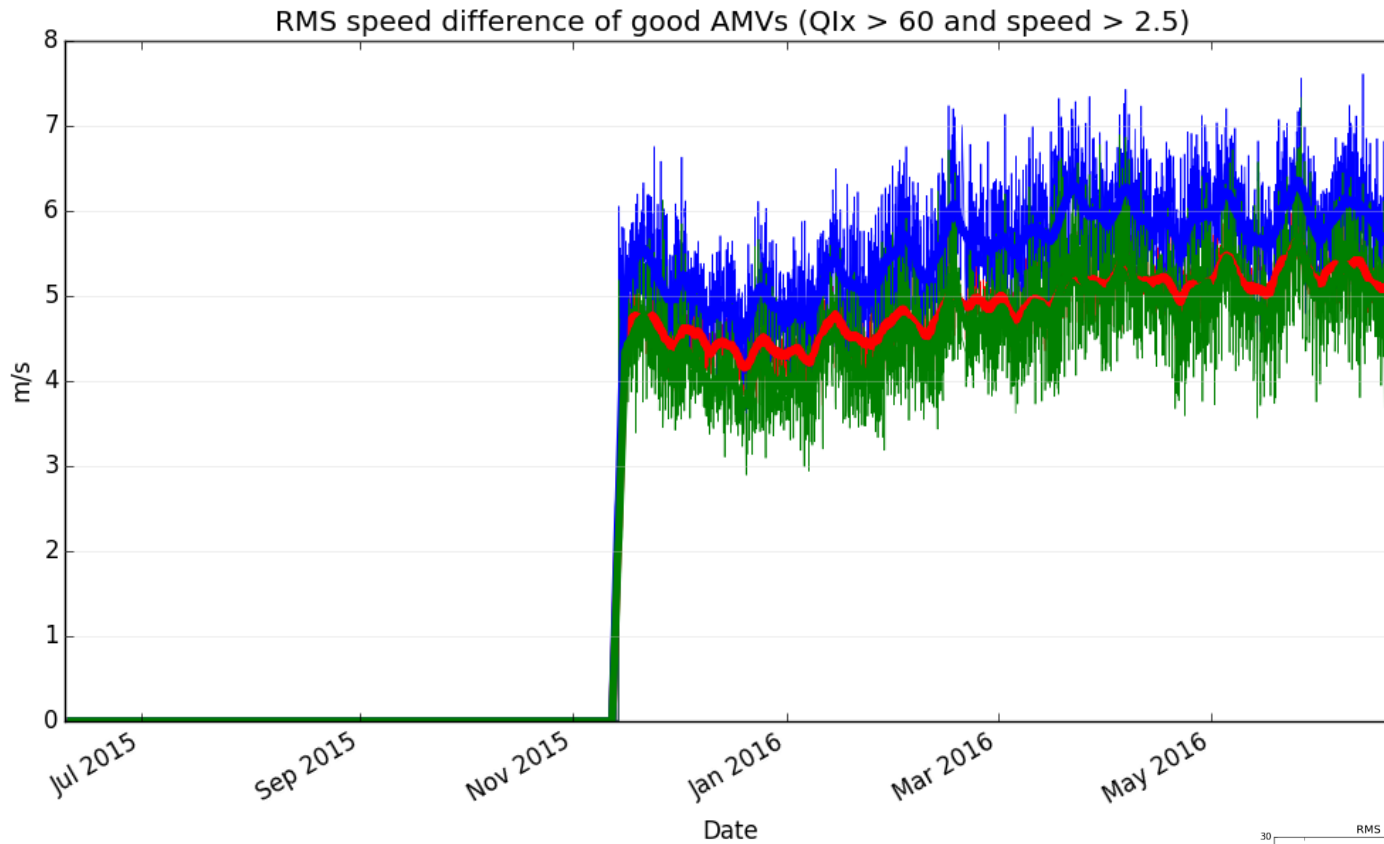


# O – B speed bias over SH

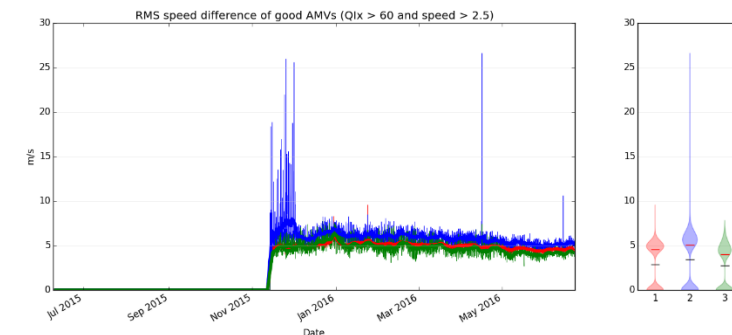


- **Slightly negative**
  - **Single: -0,05 / Global: -0,25 / Triple: -0,15**

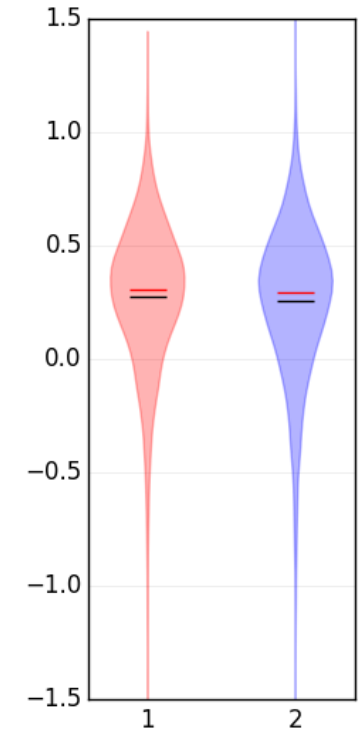
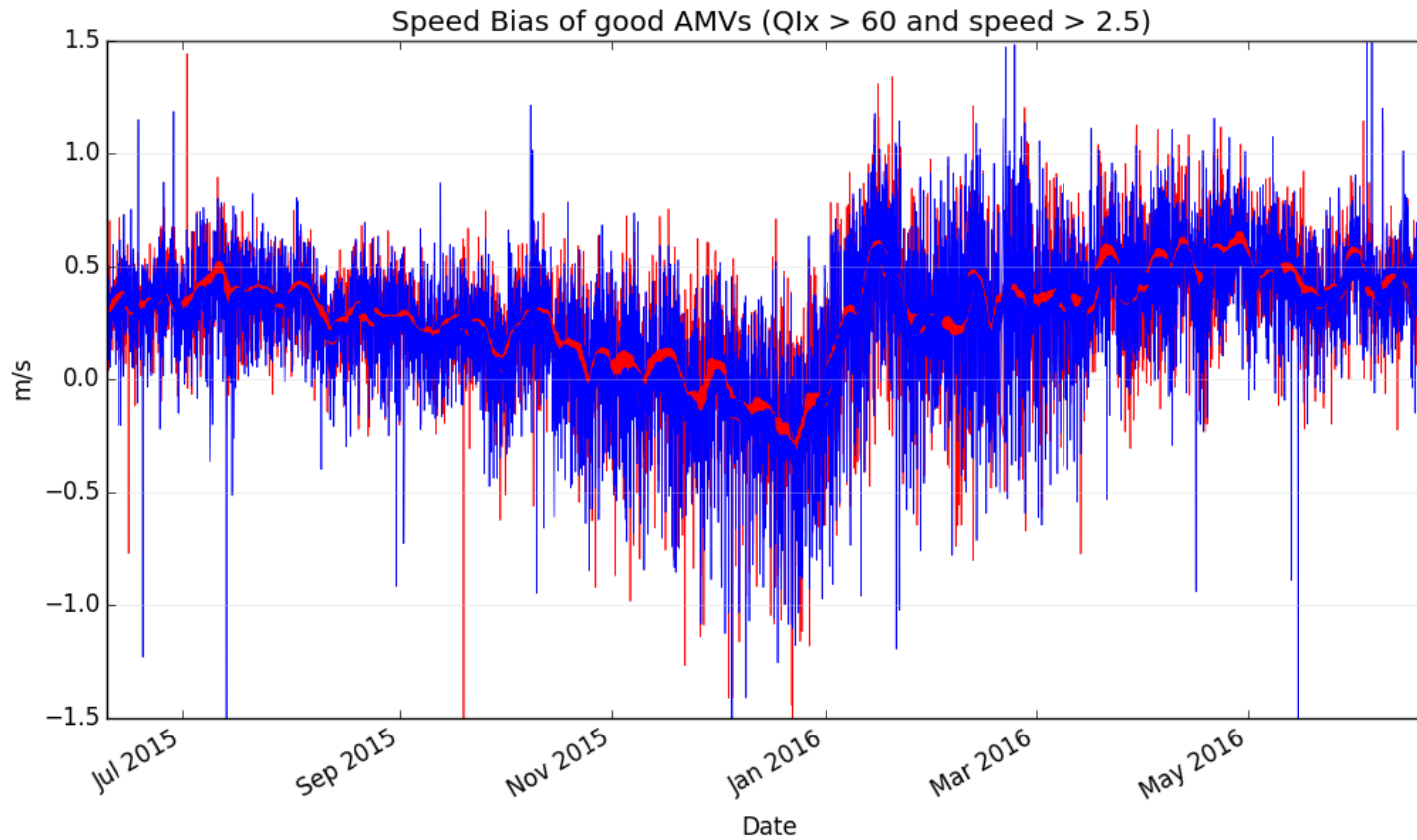
# AMV Quality – RMSVD



- Triple mode add consistency

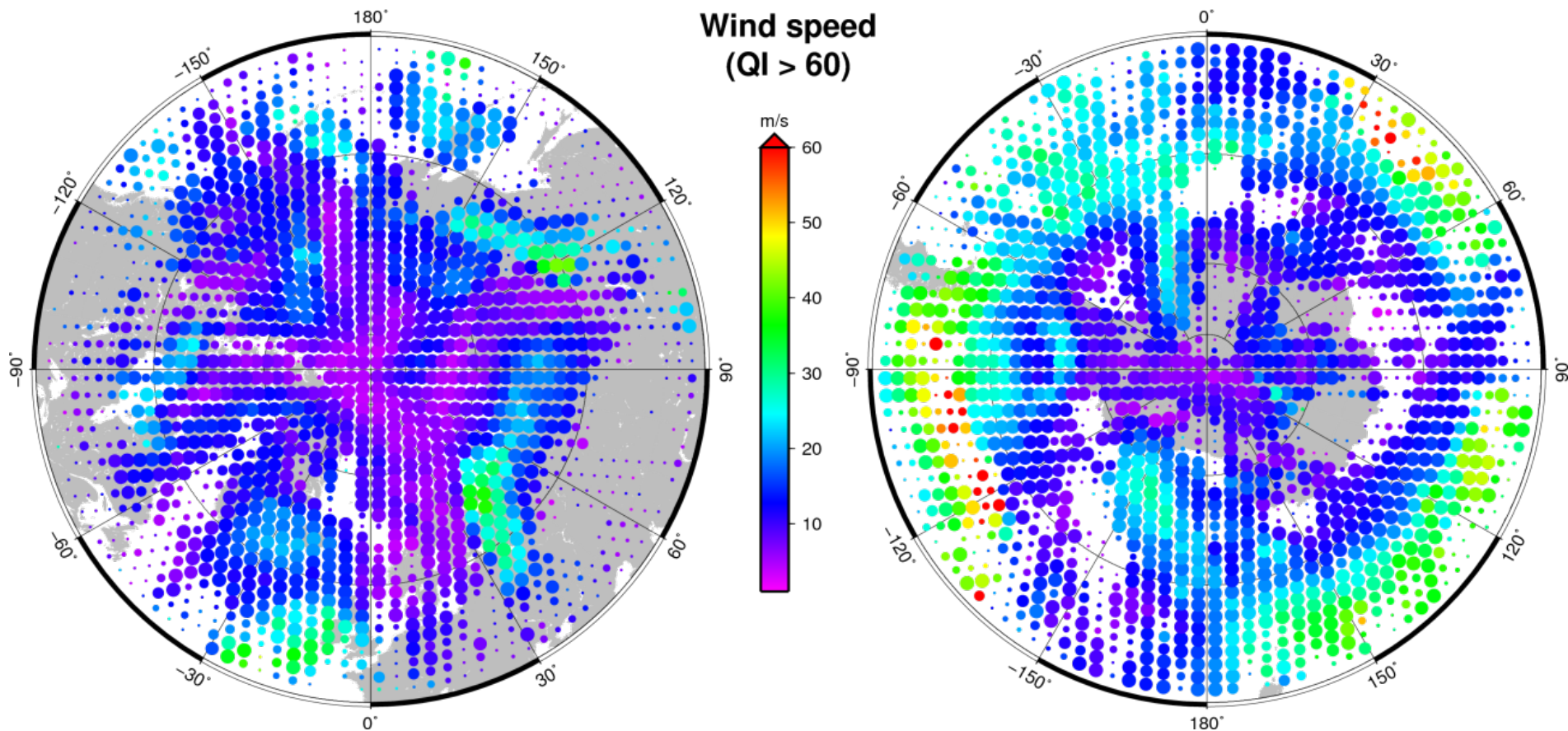


# Complementarity Metop-A / Metop-B



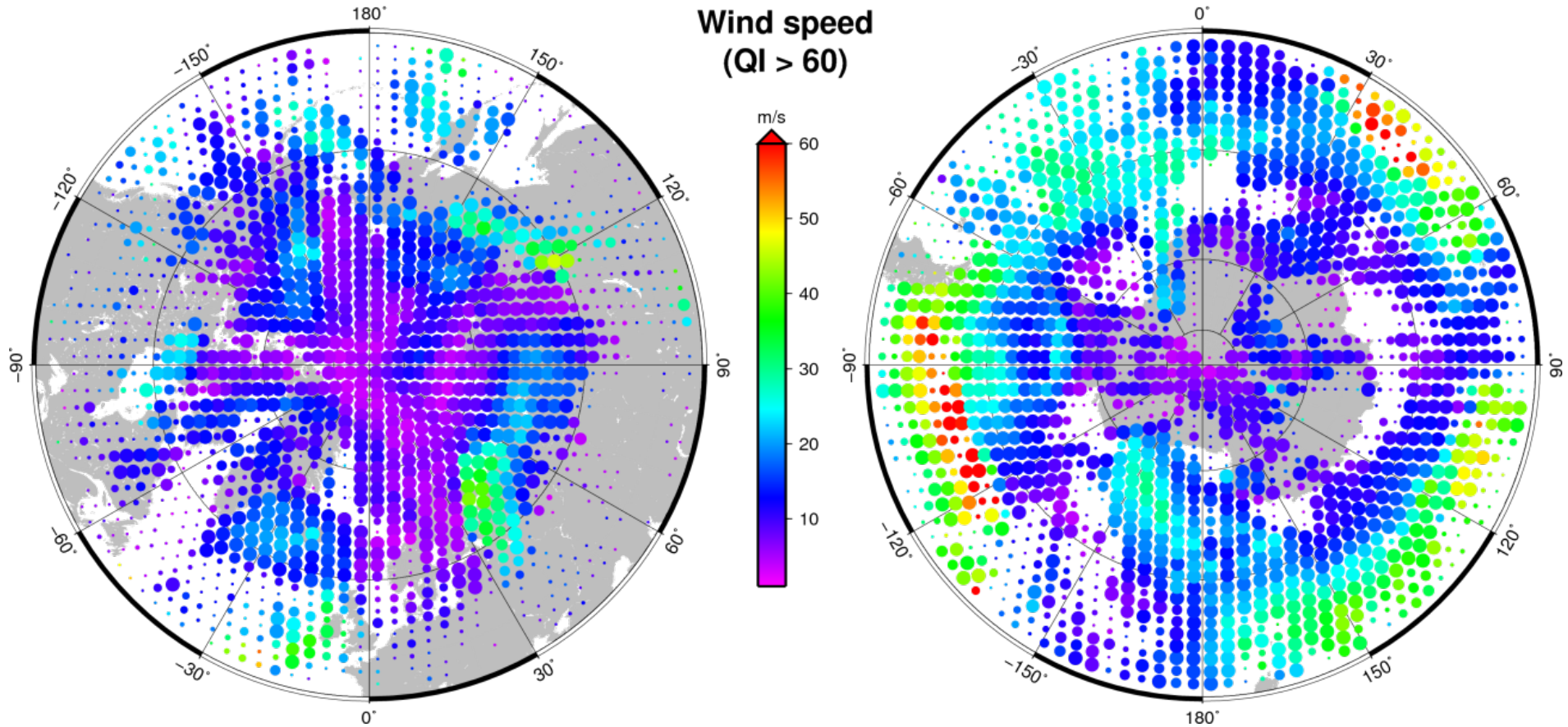
- **O-B speed bias for AVHR\_AMV\_02 product over NH**

# Intercomparison of the three modes 1/3



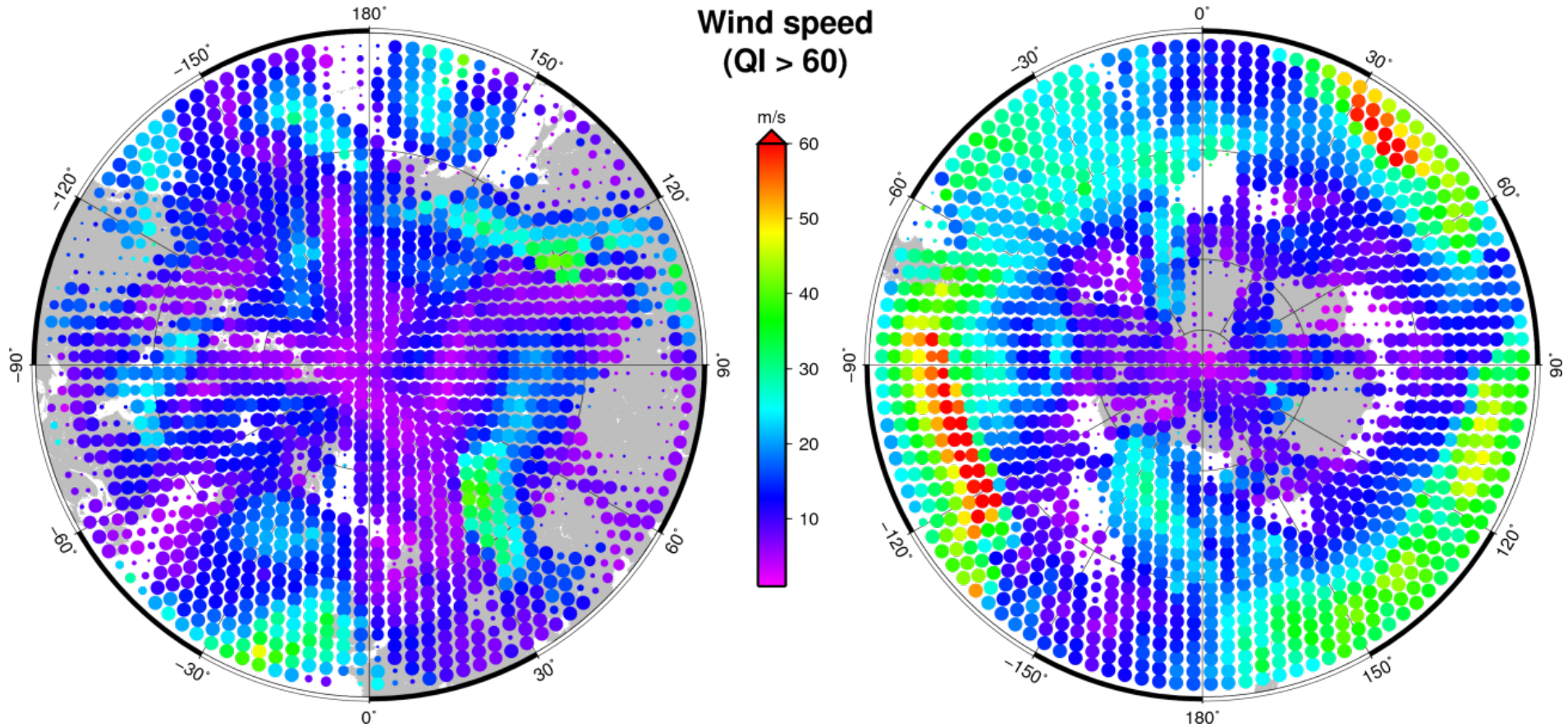
**AVHRR AMV, June 27<sup>th</sup>, 2015**  
**Single AVHRR wind Product, QI > 60**

# Intercomparison of the three modes 2/3



**AVHRR AMV, June 27<sup>th</sup>, 2015**  
**Triplet mode Product, QI > 60**

# Intercomparison of the three modes 3/3



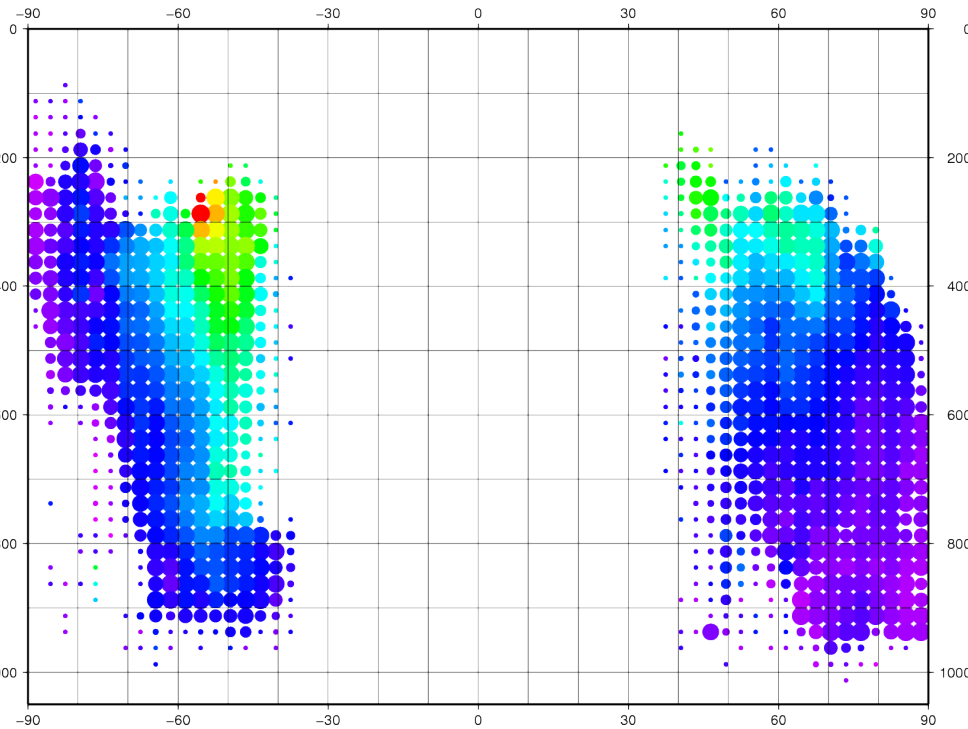
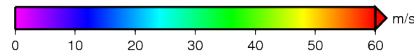
**AVHRR AMV, June 27<sup>th</sup>, 2015**  
**Global AVHRR wind Product, QI > 60**

# Wind speed and speed bias for triple mode product

AVHR\_AMV\_2T\_M0x\_20150627

HA method= 0

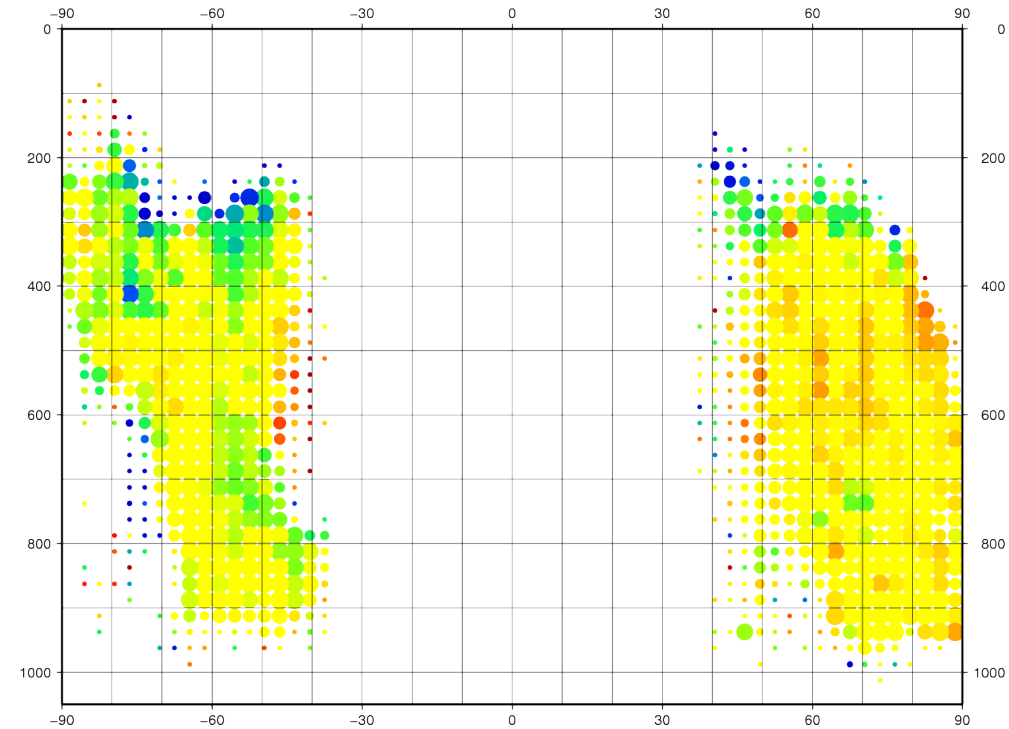
Wind speed (QI > 60)



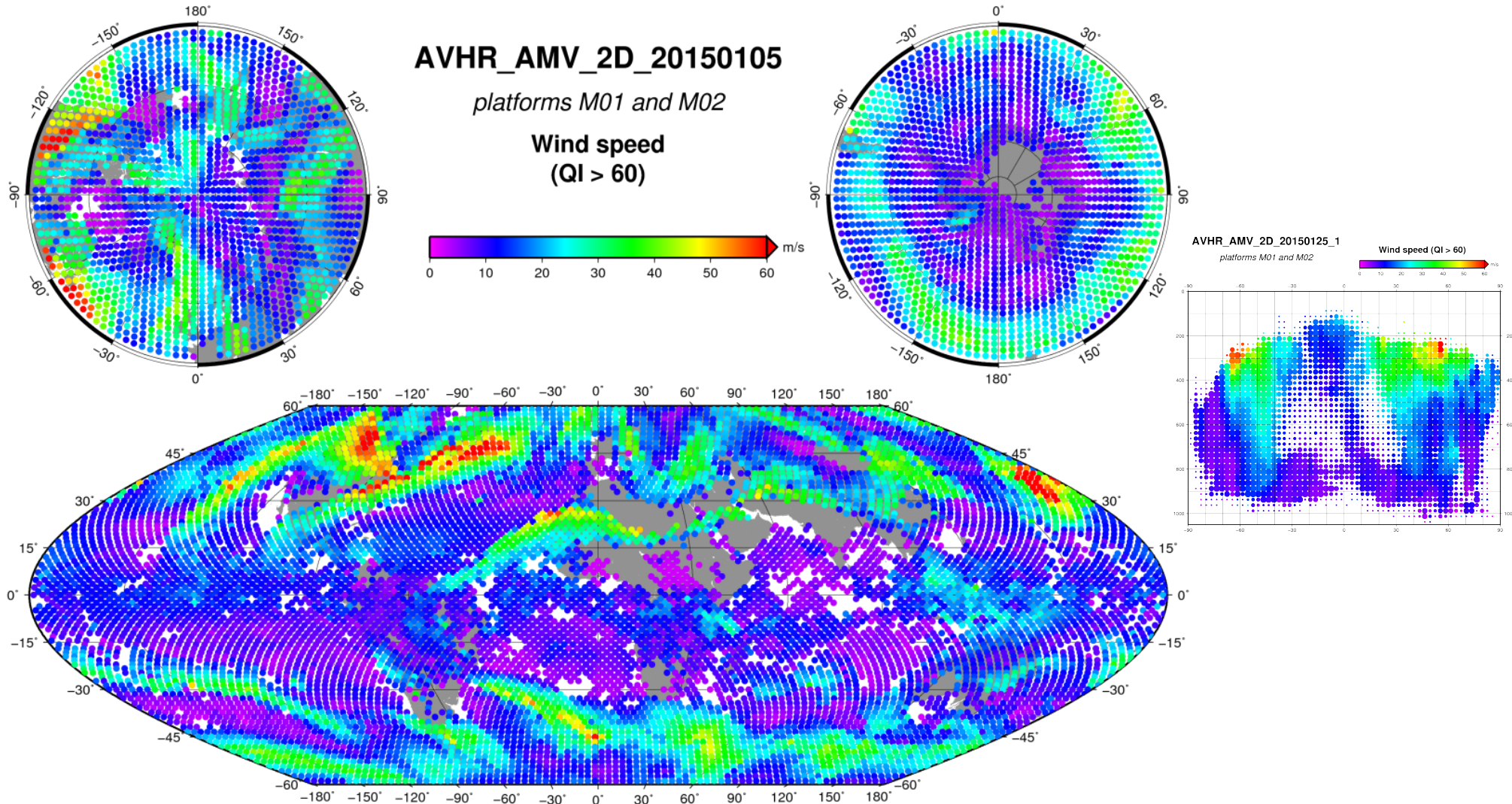
AVHR\_AMV\_2T\_M0x\_20150627

HA method= 0

Bias (QI > 60)

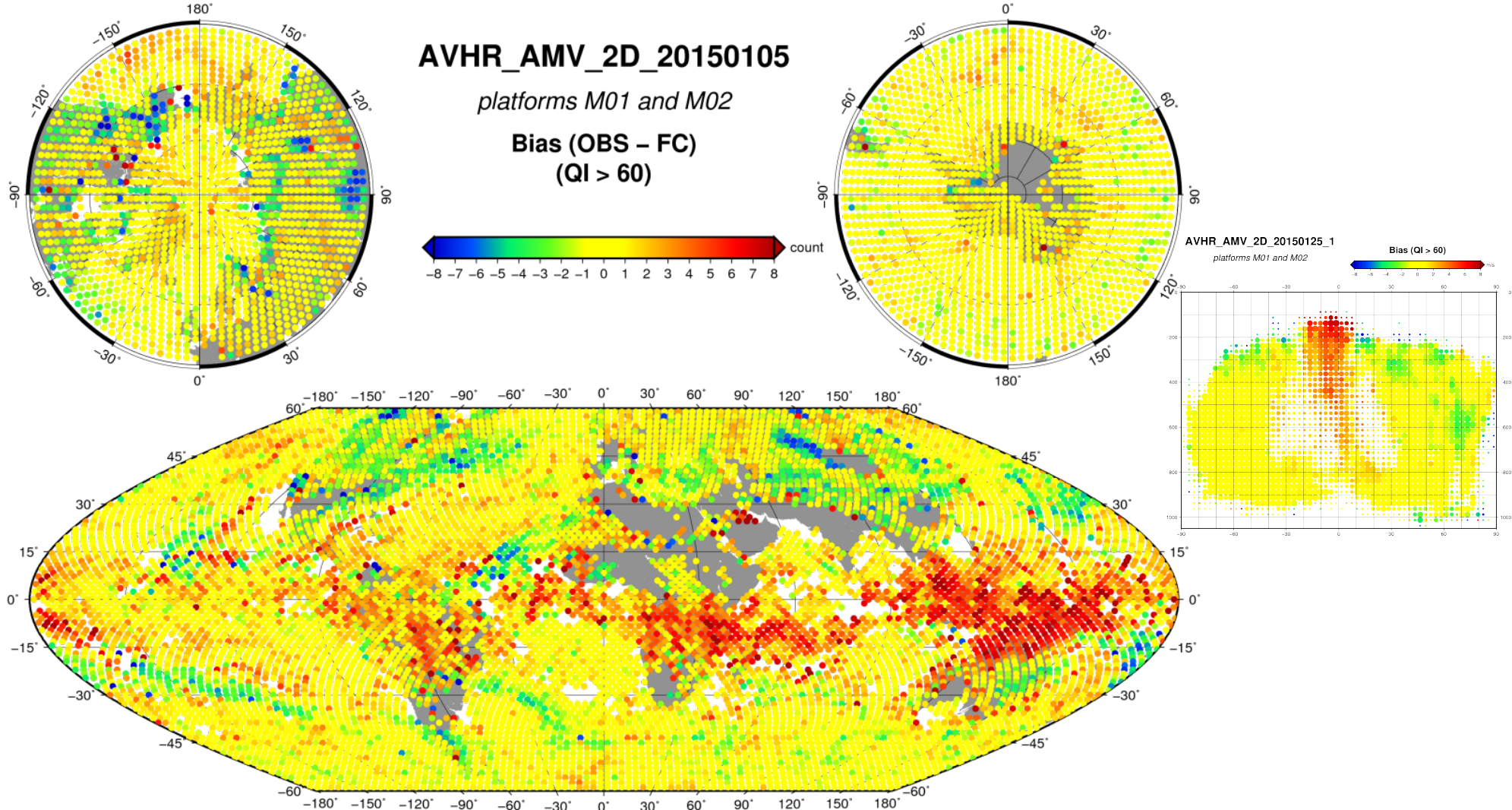


# Daily global coverage for dual mode products



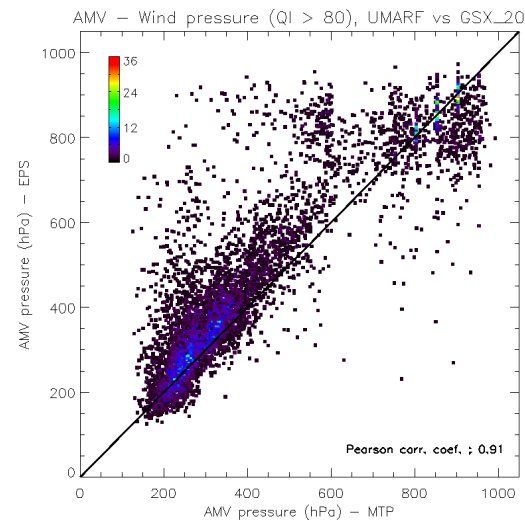
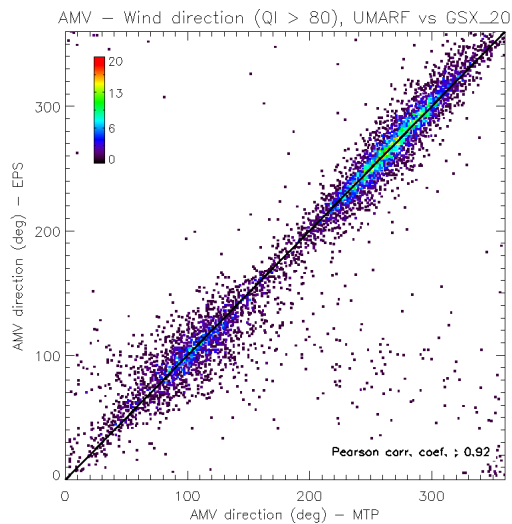
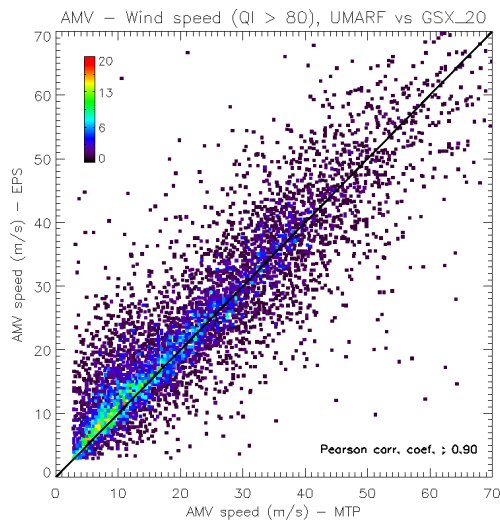


# Fast bias over tropics (along ICTZ) for 2D products

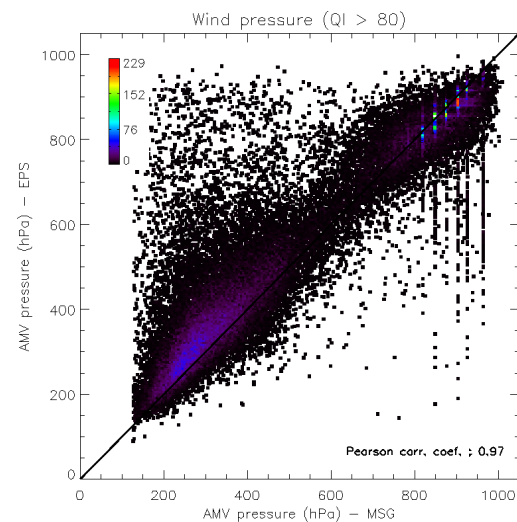
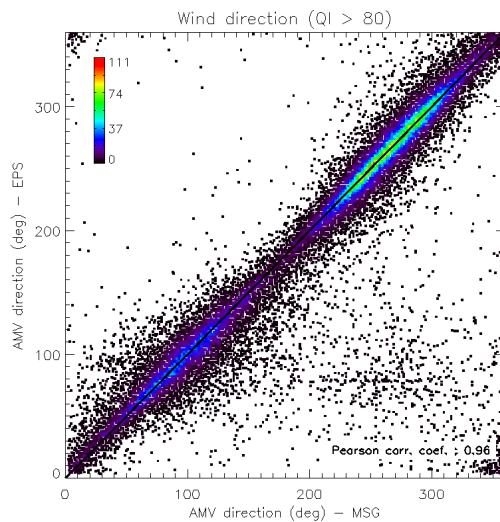
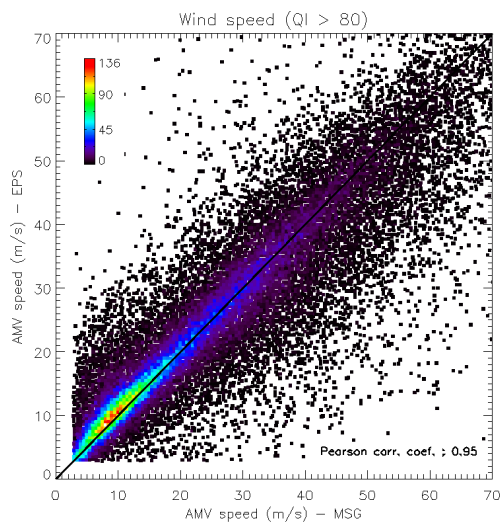


# Intercomparison against geo-winds

EPS vs MFG



EPS vs MSG



- Current version:
  - PPF-AVHRR-WINDS v3.1
  - Extracts 3 different wind Products.
- AMV production similar for AVHR\_AMV\_02 and AVHR\_AMV\_2T, larger for AVHR\_AMV\_2D
  - Percentage of good winds (QI>60) dropped for AVHR\_AMV\_2T but the quality (RMS) is slightly better
- Polar jets apparently well detected
- Large positive O-B bias in the tropics to be investigated
- Good agreement with collocated MFG and MSG AMVs