Report from the International Winds Working Group

Presented to CGMS-45 Plenary session

Co-Chairs: Régis Borde (EUMETSAT)
Steve Wanzong (CIMSS)

Rapporteur: Jaime Daniels (NOAA/NESDIS)

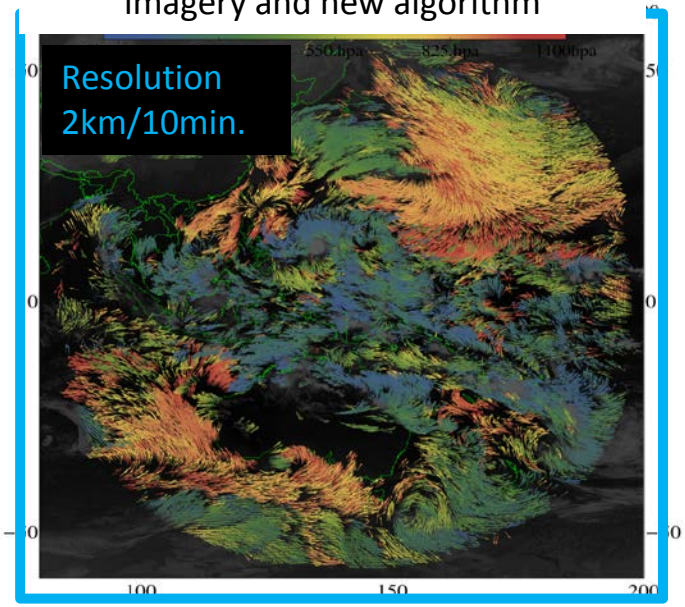
13th International Winds Workshop, main outcomes *(1/3)*

AMV Production

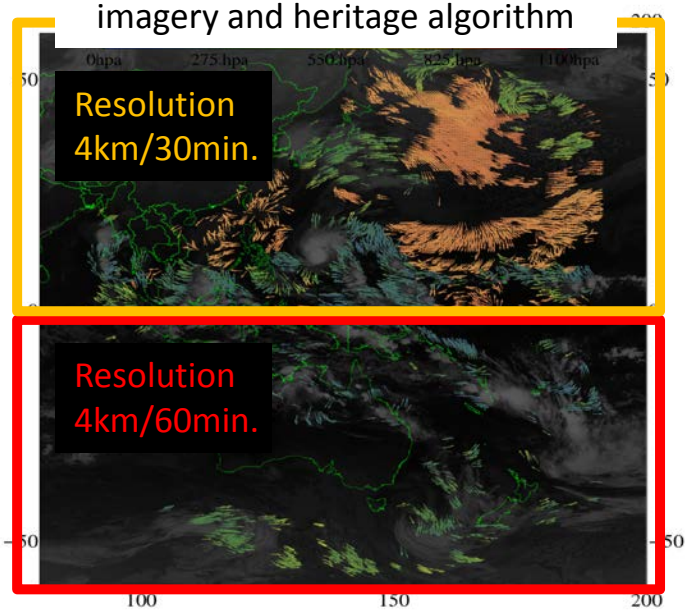
- **New generation of GEO satellites schemes/products (Himawari, GOES-R, MTG-FCI)**
  - More AMVs, better quality due to better spatial and temporal resolution, and spectral channels.

Himawari-8 B13 and MTSAT-2 IR AMV (QI>60, 2015 01 14 1700UTC)

Himawari-8 AMV using Himawari-8 imagery and new algorithm



MTSAT-2 AMV using MTSAT-2 imagery and heritage algorithm



Courtesy Shimoji et al. IWW13

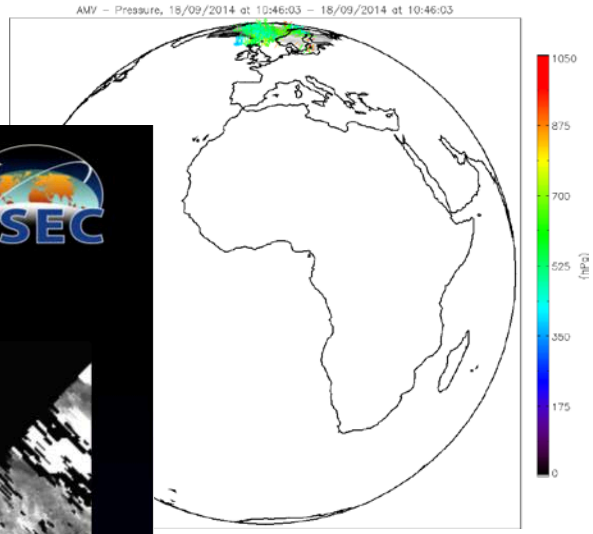
Colder color : upper level wind

warmer color : low level wind

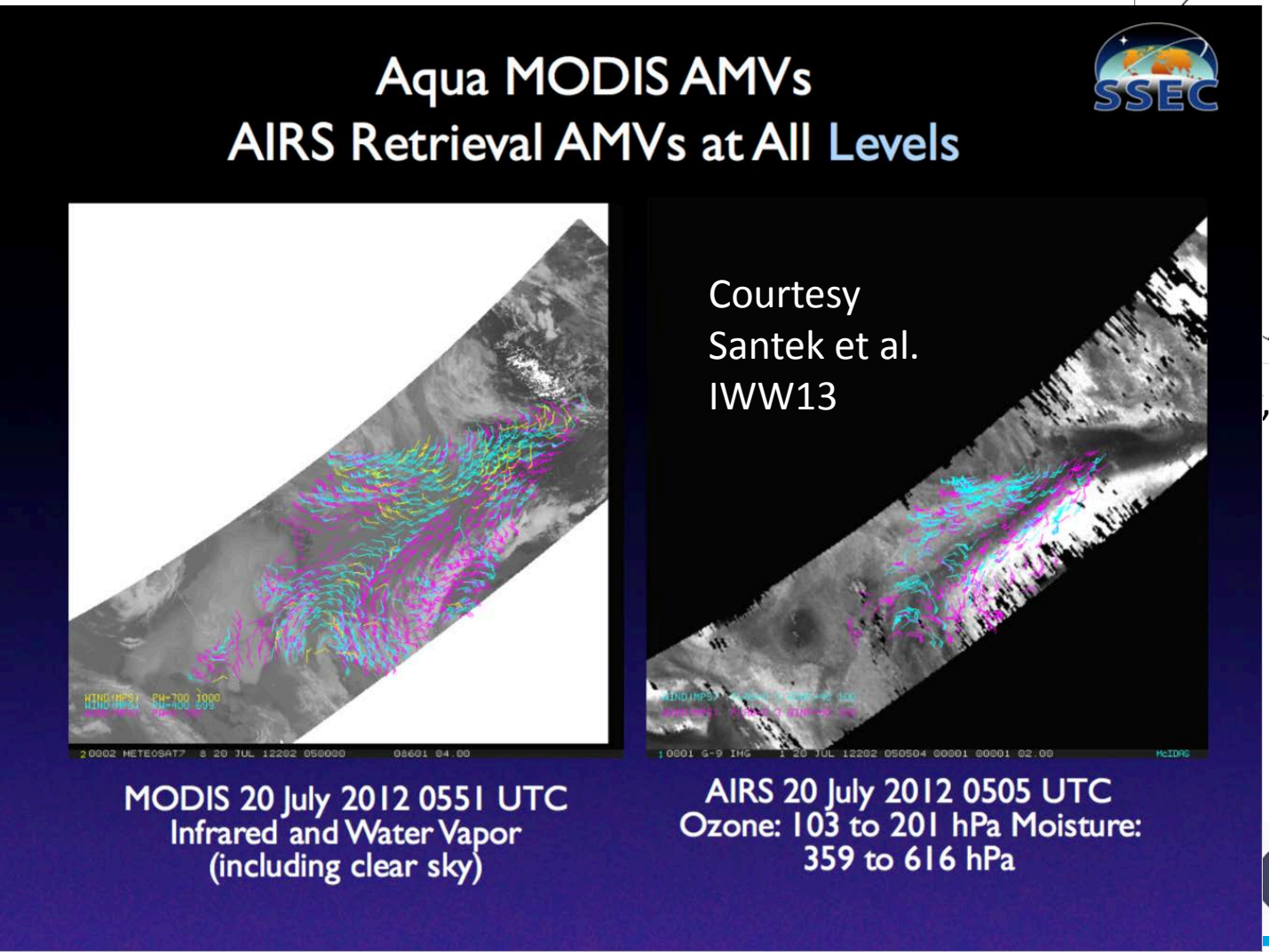
13th International Winds Workshop, main outcomes *(2/3)*

AMV Production

Global AVHRR , 18/09/2014, 9:04-9:46



, Hautecoeur et al.,



IWWG

CGMS

13th International Winds Workshop, main outcomes *(3/3)*

AMV assimilation

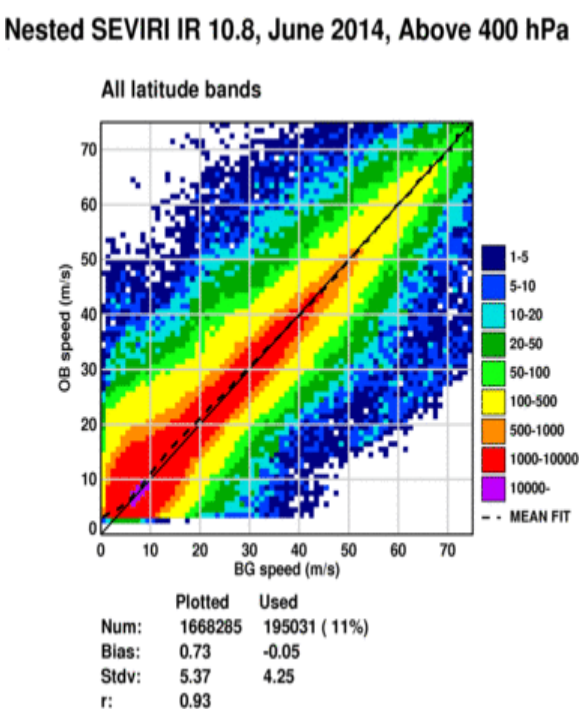
- **Neutral to positive impact noted for AMVs from Himawari, VIIRS, Leo-Geo, Global AVHRR in many centres**
  - New parameters available that can help NWP data assimilation (median pressure error, median optical depth)

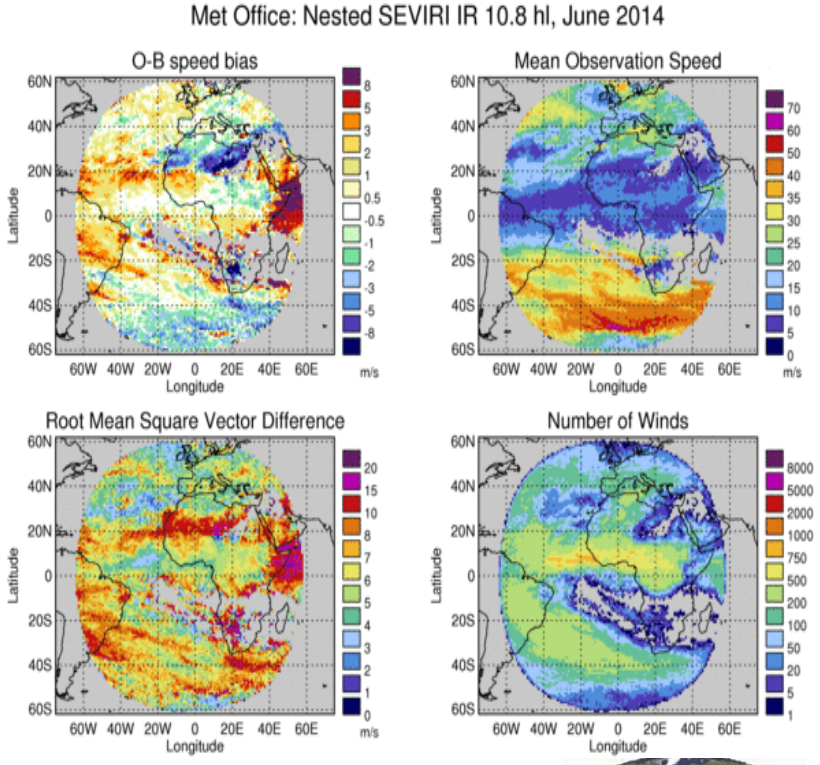
- **Positive impact for scatterometer winds (Rapidscat, OceanSat and HY-2A)**

Median cloud top pressure error

Courtesy , Warrick et al., IWW13

Many AMV producers moving to use of pixel-based cloud schemes developed by the cloud community, in some cases providing additional information e.g. estimates of height error, OE cost and cloud optical depth. Initial investigations show promise that these can help filter out poor quality data.





All data

Median cloud top pressure error

Courtesy , Warrick et al., IWW13

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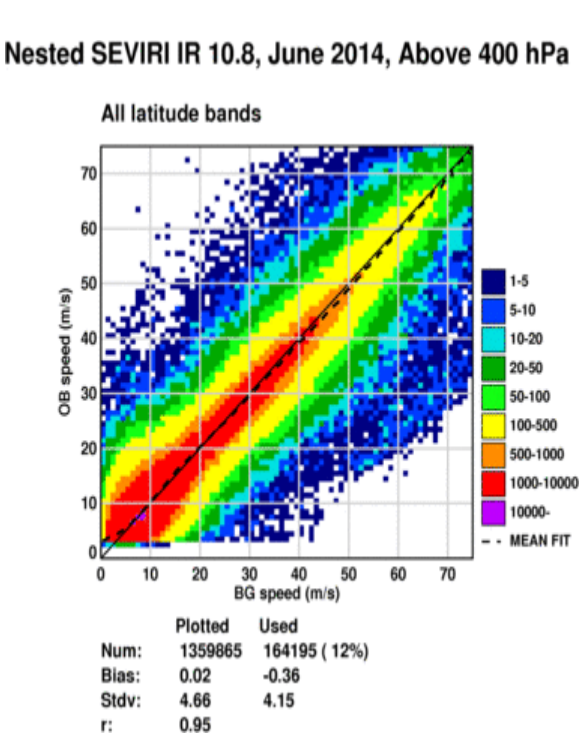

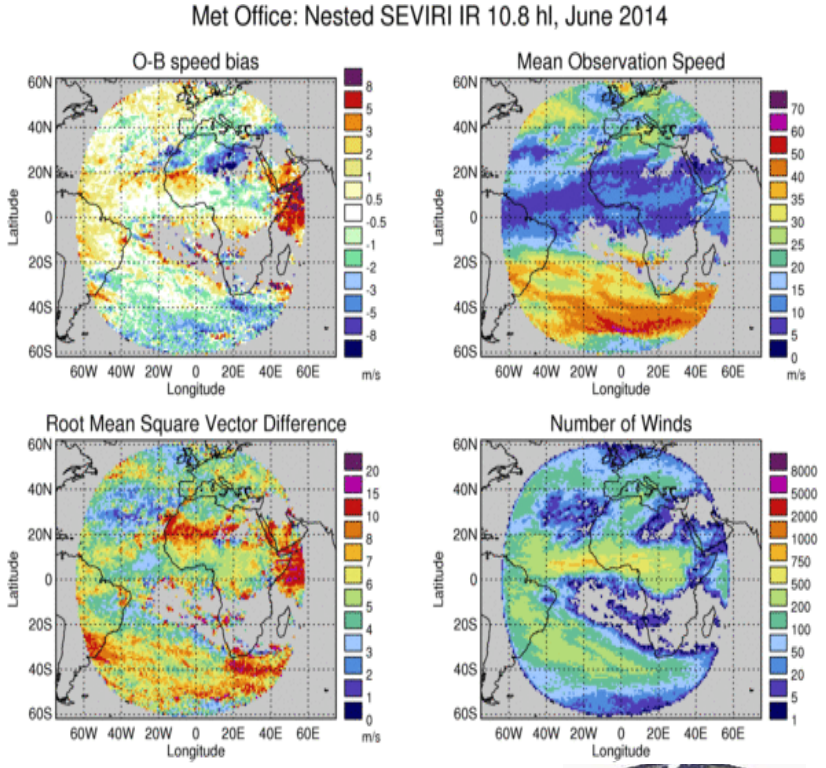

Pressure error < 140 hPa

Status of CGMS-A44.11

CGMS.A44.11 - Plenary session: IWWG to develop a detailed plan for the 3rd wind intercomparison, including concept and deliverables, and an estimate of the required resources)

- Use image triplets from Himawari-8/AHI, date 21 July 2016 (common with ICWG).
  - collocation with Radiosonde observations at 12:00 UTC and with A-Train and MISR winds around 05:23 UTC.
- Two sets of tests.
  - All wind producers use a prescribed configuration
  - Each wind producer can use their own configuration
- Schedule and fundings.
  - Results expected by IWW14 (April 2018)
  - Analysis funded by NWCSAF through a VS contract (idem 2nd Intercomparison study). Budget available corresponds to 4 mm, (~23 kEur). Needs to be supported by CGMS in future

Rec. for consideration to CGMS: IWWG suggests that the CGMS consider planning a budget for funding the analysis of the future AMV International Intercomparison studies, based on the former experiences with the workload required.

Status of IWW13 and CGMS-44 Recommendations

IWW13 WG2 Rec. 8 to space agencies: to implement satellite missions that allow the provision of wind profile information with global coverage (e.g., DWL, hyperspectral IR with high temporal frequency and spatial resolution).

ADM-Aeolus mission

- Launch foreseen in January 2018, 3 months commissioning.
- HLOS winds are expected to have a positive impact on forecast skill
- No follow on mission presently planned (only 3 years operations planned)

Hyperspectral IR Missions

- Demonstrational 3D winds product from AIRS (Santek et al., 2016) available at CIMSS. Derived in high latitudes (poleward of 70º latitude). Good impact of AIRS moisture AMVs per observation when assimilated in GEOS-5.
- 3D winds extraction from IASI L2 product actually in development at EUMETSAT. Use 3D optical flow method allowing a dense wind field retrieval. Demonstrational product expected by end of 2017. To be continued in framework of MTG-IRS.
- Several missions of micro-satellites or cubesats have been proposed in the USA.

Items of relevance to CGMS

New HLPPs:
HLPP 3.2 Establish commonality in the derivation of satellite products for global users where appropriate (e.g., through sharing of prototype algorithms)

Newly proposed item: AMV producers: to consider backwards compatibility when designing current AMV algorithms, so that present state-of-the-art algorithms can be applied to old imagery. This recommendation could be generalized to other product algorithms, if agreed to.

Next International Wind workshop

- IWW14 to be organized in South Korea, April 2018

Further Information

Please visit the IWWG Web page:

http://cimss.ssec.wisc.edu/iwwg/iwwg.html