**PREPARING FOR THE 11TH INTERNATIONAL WINDS WORKSHOP**

The biennial International Winds Workshops are the forums used by the International Winds Working Group (IWWG) for co-operation in the operational and research community, and have strongly contributed to the improvement in the quality of the derived wind fields. This paper announces the 11th Workshop of the International Winds Working Group (IWW11) to be held in Auckland, New Zealand from  20 - 24 February 2012. The workshop is hosted at the University of Auckland by Prof. Roger Davies

The paper provides a coherent and continuous perspective by recalling the background of relevant activities as discussed and put into action at earlier CGMS meetings and Wind Workshops. Futhermore the paper puts forward additional topics for discussion at CGMS 39 in WGII with the suggestion to consider those topics for further elaboration at IWW11.

CGMS 37 is invited to:

i)   discuss in WGII the topics addressed  in the paper and other related topics as submitted to CGMS 39 by other CGMS operators

ii)  advise on priority topics to be addressed at the 11th International Winds Workshop

iii) provide support to the next IWW11 meeting by approving participation of scientists and operational  staff working on the utilisation and derivation of satellite winds and, if possible  to provide some funding to support  travel of relevant scientists from the research community.

This paper has been written by the IWWG rapporteur (Johannes Schmetz, EUMETSAT) jointly with the two co-chairs Jaime Daniels (NOAA) and Régis Borde (EUMETSAT).

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# 1   INTRODUCTION

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CGMS 37 is invited to:

1. discuss in WGII the topics addressed  in the paper and other related topics as submitted to CGMS 39 by other CGMS operators

2. advise on priority topics to be addressed at the 11th International Winds Workshop

3. provide support to the next IWW11 meeting by approving participation of scientists and operational  staff working on the utilisation and derivation of satellite winds and, if possible  to provide some funding to support  travel of relevant scientists from the research community.

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# 2   RECALLING SALIENT POINTS OF THE SUMMARY OUTCOME OF IWW10

The 10th International Winds Workshop (IWW10) was hosted by JMA and took place in Tokyo from 22-26 February 2010. There was a good cross-spectrum of attendance (46 participants) from a wide range of producers, NWP centres and a few research centres. IWW10 invited CGMS-38 to specifically address  the following aspects. The current status of actions upon the topics is provided directly after the topic:

*1.    NWP centres to coordinate a joint AMV and scatterometer denial study, also looking at adjoint sensitivity statistics where available. Aim to summarise in a report to the WMO GOS impact workshop and IWW11, both due to be held in the first half of 2012.*

Status: Discussion between EUMETSAT and ECMWF is ongoing. The current views contain two lines of work: i) measuring the impacts via the adjoint of a data assimilation system. This capability has been developed by a number of NWP centers; ii) performing forecasts with scatterometer data excluded and testing whether the use of low-level AMVs over the ocean improves the fit of the model surface wind to observations with scatterometers.

*2.    AMV producers to undertake a new AMV derivation inter-comparison using their latest software and a new study period. Plan to repeat at intervals and report results at future IWWs.*

Status: This resulted in actions from CGMS 38:

Action 38.26: All satellite operators are invited to inform the Secretariat whether they will support a second AMV intercomparison study. They are also invited to provide feedback on potential improvements and changes (due date 31 March 2011).

⇨ A positive response indicating support has been received from CMA, JMA, KMA, NOAA and EUMETSAT.

Furthermore the IWWG co-chairs are tasked to fulfil the following action:
Action 38.28: Co-chairs of the IWWG should develop a workplan for a second AMV intercomparison study on the basis of lessons-learnt from the 1st intercomparison and the pertinent feedback and comments provided by CGMS members (see Action above). Due CGMS-39.

⇨ This action will be closed by EUM-WP-28 for CGMS 39.

*3.    The NWC SAF, producers and IWWG co-chairs to undertake the work outlined in CGMS-38 EUM-WP-42.*

EUM-WP-42 to CGMS 38 was a paper provided by the IWWG co-chairs M. Forsythe and J. Daniels summarising the outcomes of the 10th International Winds Workshop (IWW10) plenary discussion on plans to develop a portable AMV processing software package. While the topic generated a lot of debate it did address the following two objectives:
  i) Greater involvement of research groups to help develop and test new approaches for deriving satellite-based AMVs;
  ii) Increased collaboration between operational AMV producers to speed up improvements to AMV derivation and move towards more consistent approaches.

Work along the lines discussed so far is progressing and described in more detail below in section 3.

> *4.    The IWWG co-chairs to set up a wiki page and initiate discussion on improving the derivation and assimilation of high resolution winds.*

Status:    A IWWG wiki page ([https://groups.ssec.wisc.edu/groups/iwwg](https://groups.ssec.wisc.edu/groups/iwwg)) has been established that will enable discussion between IWWG membership on a number of topics including the derivation and assimilation of high resolution winds from satellite imagery.    Other topics of mutual interest and collaboration include the: AMV intercomparison study, simulated imagery AMV studies, NWP winds impact studies, and AMV error characteristics,

> *5.    Encourage all scatterometer data producers to consider providing global data in near-real-time to support NWP.*

Status: This is being pursued in the corresponding fora. Discussions and work on the access to ISRO's Oceansat-2 scatterometer are progressing and dealt with directly through interactions between ISRO and EUMETSAT.

> *6.    Encourage increased efforts to validate AMV height assignment using the A-train, model, sonde, and profiler data.*

Status: Research work on using A-train data for validating cloud parameters from operational instruments (e.g. from geostationary orbit) is progressing well. Notably EUMETSAT has developed a software tool named AVACS (A-Train Validation of Aerosol and Cloud Products from SEVIRI). This software is in principle adaptable to other geostationary satellites.

> *7.    Encourage continued efforts to generate physically-based AMV vector and height error estimates to be sent with each wind.*

Status: The NOAA/NESDIS AMV algorithm (Daniels, et al, 2010) developed for the future GOES-R Advanced Baseline Imager (ABI) will use pixel level cloud height products derived by the GOES-R ABI Cloud Height algorithm (Heidinger, 2010) to assign representative heights to the derived wind motion retrievals. The cloud height retrieval algorithm uses an optimal estimation framework to perform the cloud height retrievals. The optimal estimation approach was chosen for its efficiency, stability, as well as the fact that it is a well-accepted approach in the science community and provides errors estimates of the retrieved quantities. The cloud-top retrieval error estimates for temperature and pressure are carried along by the derived motion wind algorithm and available for use in quality control and product quality assessment.

The future EUMETSAT AMV algorithm in preparation for Meteosat Third Generation (MTG) will provide a pressure error (in hPa) associated to the AMV height. This

parameter is linked to the variability of the pixels used to estimate the AMV altitude. In addition, the future OCA product (Optimal Cloud Analysis) calculated on a pixel basis, should be used to set the AMV altitude. Based on an optimal estimation approach, this method provides error estimates that are also planned to be used in AMV HA process; the method selects only pixels which have a reliable cloud top height to set the final AMV altitude.

## 3 RECALLING DISCUSSIONS RELATED TO IWWG AT CGMS 38

A paper from EUMETSAT (EUM-WP-28) had described how EUMETSAT and the Nowcasting Satellite Application Facility (NWC SAF) have implemented the new CCC AMV height assignment scheme jointly developed by EUMETSAT and JMA researchers (Borde and Oyama, 2008) into the NWC SAF AMV software for testing the impact of this method in the NWC SAF AMV retrieval software package. The paper did demonstrate in a very practical way that the NWC SAF AMV software provides a very good basis to serve as a stand-alone software package for the derivation of AMVs from imaging satellite instruments because it proved that the software is modular and well-documented changes and adaptations are relatively simple to do. The discussions at CGMS 38 tasked EUMETSAT to also demonstrate the quality of the AMVs from the NWC SAF software through and dedicated validation campaign.

Action 38.29: EUMETSAT to conduct an extended validation campaign for AMVs derived with the NWCSAF portable AMV software package. Due date 31 May 2011 and a report to CGMS-39.

⇨ This will be closed by EUM-WP-28.

With regard to the AMV software package other satellite operators were invited to express an interest in response to the following recommendation:
Recommendation 38.15: CGMS operators are invited to express their interest in the portable AMV software package from the EUMETSAT 'Nowcasting SAF' for testing and internal comparisons.

⇨ Status: Some CGMS operators have expressed their interest already. The question and recommendation should be reiterated at CGMS 39 in the WG II discussions.

Another important discussion item addressed high resolution winds:
Recommendation 38.14: JMA is invited to report on the use of high resolution AMV derived for T-PARC experiment.

⇨ This topic will be addressed at CGMS 39 by JMA-WP-05.

## 4   OPEN ITEMS ADDRESSED AT EARLIER WINDS WORKSHOPS

This section is primarily a repository of important items that have not been addressed in detail at CGMS 38 or IWW 10 and do need to be kept in mind for the future:

- new validation strategies to demonstrate improvements in the products.
- height assignment of low-level winds
- height assignment validation
- AMV modelling study based on NWP (a study is currently being pursued by EUMETSAT with ECMWF and results will be reported to CGMS 40)
- mesoscale winds from geostationary orbit
- Investigations into AMVs from hyperspectral sounder data addressing the issues related to the tracking of different spatial scales and the vertical development and corresponding cloud formation in convective regions
- Use of additional information on cloud characteristics (e.g. microphysics) within the AMV derivation schemes

## 7   CONCLUSION

CGMS members are invited to:

- discuss in WGII the topics addressed in the paper and other related topics as submitted to CGMS 39 by other CGMS operators

- advise on priority topics to be addressed at the 11th International Winds Workshop

Last but not least CGMS members are reminded to provide support to the next IWW11 meeting by approving participation of scientists and operational staff working on the utilisation and derivation of satellite winds and to provide funding to primarily support travel of relevant scientists from the research community.

# 8 REFERENCES

Borde, R. and R. Oyama, 2008: A Direct Link Between Feature Tracking and Height Assignment of Operational Atmospheric Motion Vectors. Proc.Ninth Intl. Winds Workshop, Annapolis, MD, EUMETSAT.

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