IWW15
Report from WG2
(Data assimilation)

Chaired by Niels Bormann and Iliana Genkova

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Topics

1) Aeolus - status and outlook
2) Product/satellite changes
3) Quality information for global and regional systems

3) Configurations for wind derivation for global and regional NWP
4) NWP SAF activities
5) Scatterometer winds
6) AOB

1) Aeolus - status and outlook

Further to the recommendation from the plenary:

For the first time, results with a space-borne DWL were presented a IWW, with an overwhelmingly beneficial impact of Aeolus winds in most of the global NWP models. WG2 acknowledges the substantial progress as documented at IWW15 and two earlier Aeolus NWP workshops. The impact is complemented by studies demonstrating the benefits of Aeolus in AMV validation and height assignment. Follow-on DWL missions delivering improved-quality winds in the next decade are strongly supported by the IWWG.

DWL and wind information from high-temporal resolution passive sounders are seen as complementary, ie providing different strengths.

Recommendation to the wider satellite winds community: Further work is required to assess the unique strengths and weaknesses of DWL and other methods (e.g., high temporal-resolution passive sounders) in providing vertically-resolved global wind information and to underline further how these are complementary.

2) Product/satellite changes (I)

Recalling standing recommendations to AMV producers from previous IWWs:

- To provide a 9-month overlap period when transitioning to a new generation of satellite and for major derivation changes
- For like-for-like satellite changes 3 month overlap period is considered sufficient.
- Communication of upcoming changes - use IWWG email list, and inform users several months in advance

- **Feedback requested by JMA on their plans**
  - **Nov 2021 change (1-2 months parallel dissemination planned):**
    - **new BUFR template, algorithm update, ½ hourly product, etc**
    - **possibly keep AMVs from only one or two WV channels (ie 6.2, 6.9, 7.3 µm)**
  - **Himawari-8 -> -9 (Oct 2022 - Jan2023 parallel dissemination planned)**

WG2 welcomes the planned improvements by JMA and recommends:

- a longer parallel dissemination period (3+ months), with BUFR format change and algorithmic update implemented as separate steps at different times

- if a longer parallel dissemination is not feasible, provide separate sample data a few months in advance with clear announcement of intended implementation dates

- WG2 notes that end-of-year can be a particularly problematic timing for operational changes

- consider keeping AMVs from all 3 channels WV winds in the sample dataset to allow NWP centres to evaluate the impact of not having either of them

- Relocation of Himawari-8 could be considered for stereo-applications

2) Product/satellite changes (II)

- **AMVs from POES satellites (NOAA-15, -18, -19) + MODIS beyond Sept 2022**

NOAA is considering to decommission the POES satellites in Sept 2022.

WG2 recommends to NOAA to continue operating NOAA-15, -18, and -19 as long as the sensing instruments perform adequately. These satellites continue to provide useful polar AMV datasets.

Even if POES satellites continue to operate, NESDIS plans to discontinue the derivation of AMVs from the POES satellites and MODIS in Sept 2022. AMVs will still be available from CIMSS, albeit with different processing configuration and in different BUFR format, hence a switch to CIMSS-datasets will mean a considerable disruption to users of the NESDIS data-stream.

WG2 recommends to NOAA/NESDIS to keep processing AMVs from POES + MODIS for the lifetime of the instruments.

Alternatively, NESDIS to offer support in utilizing CIMSS's POES and MODIS winds (e.g., put in proper BUFR, on GTS, etc). If needed, CIMSS (Dave Santek) offered to submit a proposal to NESDIS to coordinate details (i.e. cloud product availability, PDA accessibility, etc.)

3) Quality information for global and regional systems

CGMS A46.06: IWWG to look at improving quality indicators for high resolution wind derivation for mesoscale and regional applications. (Ref. CGMS-46-IWWG-WP-01).

While the QI continues to be used for quality screening, NWP centres are increasingly looking for other ways to characterise AMV quality (e.g., use of correlation surfaces, cloud parameters). The move to the new BUFR template facilitates this.

- **WG2 recommends that producers make use of the new BUFR template to provide further information on the AMV derivation and auxiliary cloud information, as available in their processing.**
- **WG2 recommends to NWP centres to continue to evaluate this new information for enhanced AMV quality treatment.**
- **Common QI is now available from most producers and will be investigated for use in NWP systems.**

Views on new methods like Stereo views, Machine learning, optical flow…

It is encouraging to see new methods used for AMVs derivation.
Producers of such novel data are encouraged to devise and document alternative parameters to QI.
Need to make it clear in disseminated data which method was used.

4) Configurations for wind derivation for global and regional NWP

Key issues of relevance to CGMS: HLPP 4.2.2:
Investigate the best configurations to be used by the AMV producers for use in global and regional NWP models respectively, and clearly define the appropriate requirements for each of them

A46.04: NWP community to define the best configuration to be used by the AMV producers, for use in global and regional NWP models

Following discussions at IWW14, Mary Forsythe prepared a community document to summarise requirements for global and regional NWP, intended to be a living document for further reference.

- **Action on Mary Forsythe: Distribute the requirements document to the IWWG NWP community for further comment (deadline end of April 2021).**
- **Action on IWWG NWP community: To comment and update as appropriate (deadline end of May 2021).**

Further experimentation is considered useful regarding target size and tracking interval to produce the best product for global/regional applications.

- **Action on Roger Randriamampianina: To experiment with different target sizes to investigate configurations most suitable to regional NWP and report back at IWWG16.**
- **Action on Iliana Genkova: To collate information available from relevant experimentation in global systems and report back at IWWG16.**

5) NWP SAF activities

The NWP SAF continues to provide in-depth monitoring (e.g., real-time monitoring of all satellite observations used in NWP; monthly AMV monitoring; AMV analysis reports, etc). This continues to be seen as very valuable.

The NWP SAF invites stronger input from winds producers to follow-up on issues identified in the analysis reports.

DWD will start contributing monitoring statistics (in addition to Met Office and ECMWF) in the coming years.

- **Action on James Cotton: To ask NWP centres to provide updates on the pages summarising how AMVs are used at each centre.**
- **Action on NWP centres: To respond to James' request.**

6) Scatterometer

See Ad's report

7)Any other business

Data latency

WG2 iterated that data latency is important, in particular for regional models with shorter DA time windows.

Feedback on IWW15 and IWWG activities

WG2 appreciated the guidance from CGMS, the hard work of the workshop co-chairs/host/organizers before/during/after IWW15.

Virtual format of the IWW15 led to higher attendance, more 1st time attendees. Offline interactions were missed, but Slido, comment boxes accompanying the abstracts, and the in-advance availability of all presentation were much appreciated. In-advance posting of presentations could be encouraged for future meetings.