IWW11 Charge to working groups

WG1: Methods - chaired by Ken Holmlund and Steve Wanzong

Thanks to all who attended WG1!
Charge to working groups
IWWG feedback (WG1 and 2)

• Thoughts on updates made to the IWWG web site:
  • Format and content
    • “wiki” pages:
      - We anticipate the wiki parts of the IWWG website will be updated more frequently to reflect advances in the observation types (information pages) and progress with our collaborative activities.
      - To help with this we propose:
        - **Identify a volunteer per wind type** (AMV, scat, passive microwave, DWL, MISR, hyperspectral) to complete and maintain the information pages (should not be much work)
        - **Identify coordinators for each activity** and give at least one coordinator per activity wiki access to ensure these pages are completed and kept up to date
          - Identify any other people who would benefit from wiki access e.g. likely to make significant or regular contributions to either the information or activity wiki sections.
      • Other suggestions? -
Charge to working groups (Details)

IWWG feedback (WG1 and 2)

- Thoughts on updates made to the IWWG web site:
  - No comments on the web page
  - “wiki” pages:
    - Whoever is interested will send me a request for an account
    - Still need to work out details with the UW-SSEC technical computing group
    - Wiki entry needed for accessing data types and perhaps have a warehouse for some datasets.
    - Should provide links to relevant reported works
  - “forum” pages:
    - Example to view is the McIDAS-V forum
    - not much interest in this as it seems easier to simply query the IWWG email list.
Charge to working groups

IWWG feedback (WG1 and 2)

- Thoughts on workshop format
  - The Wednesday excursions are an important part of the conference
  - Talks only?
    - The workshop does not have to be a talk only format
    - 15 minute talks are adequate. Do we lengthen Friday to enable longer talks?
  - Consider poster session(s)?
    - A poster session is a good idea
    - Perhaps make it a registration option
    - Needs to have some organisational structure
  - Group discussion on “hot topics“
    - Everyone agrees they are a good idea
    - Can they break up the day? It seems that everyone is tired when these happen at the end of the day
• Provide feedback/thoughts on 5th analysis report
  • Release date left too short of a time period to digest the analysis before the workshop
  • Everyone finds the analysis very valuable and hopes the reports continue to be produced
  • WG1 extends our thanks to the MetOffice for preparing the analysis
• Any requests?
  • zonal/meridional plots would be a welcome addition
Charge to working groups
Collaborative projects (WG1 and 2)

• Any further discussion on:

  • Plan for a 2\textsuperscript{nd} AMV Inter-comparison & Simulated imagery studies
    • There should be more than simply a perturbation shift in the first test. Rotational shifts? Adding noise?
    • More details on the study are needed, but should proceed as planned.
  • AMV Open Source Software (Group Discussion 3)
    • WG1 did not discuss this item as it was felt it was already sufficiently addressed during the hot topic discussion
    • Addition to s/w package to be identified during extraction discussion
Charge to working groups

AMV derivation (WG1)

• Tracking

  • Provide a statement of where community is with feature tracking (clouds, clear-sky WV)
  • Discuss issues, new methods, error characterization
  • Discuss mesoscale winds and how these can/should be generated to fill data gaps needed for high impact weather. How to proceed and engage NWP community?

• Height assignment

  • Provide a statement on where community is with height assignment (clouds, clear-sky WV)
  • Discuss issues, new methods, error characterization
  • Validation approaches (e.g. A-train, model/sonde/profiler best-fit, geometric-based). More work needed still?

Provide some recommendations for ways to collaboratively work identified issues that remain
Charge to working groups

AMV derivation (WG1)

• Tracking
  • Tracking differs from center to center but are there many tracking issues? MISR experience indicates tracking is sensitive to cloud type, resolution and sampling frequency (as noted in the past also for geo data)
  • Nested Tracking
    • Nested tracking assumes pixel level cloud heights
    • Eumetsat plans to collaborate with Wayne and Jaime (nested tracking plus CCC?)
    • NWCSAF would like to test, but no solid plans
    • Japan has tried on rapid-scan images.
    • China now plans on some testing of nested tracking

Recommendation: All producing centers should evaluate the nested tracking algorithm and report results at the next winds workshop.
Charge to working groups
AMV derivation (WG1)

• Height assignment

• General discussion on stereo height assignment opportunities across most platforms. It was noted that a lot of work has been done in the past, but with the improved capabilities in the instrumentation and further advances in data assimilation the previous work may be out of date

• MISR/AMV comparisons should expand to other platforms
  • Meteosat-9 AMVs has been the only comparison to date.

• Additional data sets like Concorde-IASI should be evaluated

• Evaluation of inversion height assignment methods compared to cloud base method

• Height assignment issues over snow/ice
  • Perhaps more focus on surface types in these cases

Recommendation: Winds producers should investigate stereo height assignment techniques.

Recommendation: Further intercomparison studies using additional data sets like MISR and Concorde-IASI are encouraged.
Charge to working groups
AMV derivation continued (WG1)

• Geo Winds
  • Discuss ways to improve AMVs in the tropics.

• Polar AMVs
  • Provide a statement on the current status and future of polar AMVs?
  • Discuss issues, new methods, error characterization (tracking & height assignment)
  • Handling of multi-satellite polar AMVs in BUFR.
  • Further discussion of highly-elliptical orbit mission

• Mesoscale AMVs
  • How can/should these be generated to fill data gaps needed for high impact weather.
  • How to proceed and engage NWP community?
  • Who are/should be the target users?

Provide some recommendations for ways to collaboratively work identified issues that remain
Charge to working groups

AMV derivation continued (WG1)

- Geo Winds

  - Recognize that the AMVs are sometimes not tracking passive tracers in the tropics
  
  - Errors in the tropics are larger. Height assignment issues seen in the deserts of the tropics due to surface emissivity and temperature problems in semi-transparency correction

  - Examine potential use of 2nd cluster within nested tracking

  - Examine what NWP see with the AMVs in the tropics in more detail

  - What would NWP like to see from the AMVs in the tropics
Charge to working groups

AMV derivation continued (WG1)

- Polar AMVs
  - Couple approach should be examined
    - Better coverage
    - Potential for global AMVs from polar satellites
    - Stereo heights
    - How mandatory is the water vapour channel today
      - Are we doing well enough with IR only?
      - Support addition on future VIIRS instruments?
    - The multiple satellite configuration in the BUFR file should fall to WMO working group on codes, not the IWWG
    - Investigate stereo heights on the polar platforms
    - Polar AMV comparisons to MISR
    - NOAA and Environmental Canada have reached a formal agreement to produce AMVs if the satellite is launched.

Recommendation: Investigate the potential of global AMVs from tandem satellites: dual Metop, MODIS/VIIRS, future Sentinel-3a/b
• **Mesoscale AMVs**
  
  • Hurricane WRF would like to assimilate AMVs
  • Wind energy community needs high resolution AMVs
  • Should QI be revisited in mesoscale applications. Significant QI drops in high curvature areas (tropical cyclones)
  • Can we get feedback from mesoscale and limited area modelers?
Charge to working groups
AMV derivation continued (WG1)

- Quality Control
  - Review how QI score is computed by sat operators. EUMETSAT only one that includes height component in its QI scores.
    -- The QI is not implemented in the same way through all of the centers.
    -- Currently Eumetsat/NESDIS/JMA all provide forecast independent QI.
    -- CMA and NWCSAF supply forecast dependent QI (although NWCSAF is moving towards forecast independent QI).
  - Best fit height as another indicator
    -- This is something all centers could produce as the background profile should be available and would be useful for internal monitoring/analysis
    -- All users should use the same methodology
    -- Use ECMWF method (local minima), but constrain to a +/- 200 hPa layer
    -- Is this something that NWP would be interested it?
  - Revisit image registration/navigation
    -- CMA does see significant issues at certain times
    -- Ken mentioned even the fixed grid of Meteosat can show some variation
  -- CGMS statistics should continue to be produced and added to the IWWG web page.
• **Scatterometer Winds**
  - No one present in the working group.
  - Another potential dataset to intercompare low-level AMVs

• **MISR Winds**
  - New algorithm is very promising and entire dataset will be reprocessed
    - reprocessed data set should be evaluated during reanalysis activities
  - Intercomparison opportunities with other satellite AMVs
    - Polar comparisons haven’t been done
  - Potential O-B statistics between MISR and the MetOffice
  - Would like to see NWP impact studies
    - Especially in severe storms. Geared towards mesoscale NWP.

**Recommendation:** MISR should be introduced into reanalysis datastreams. Potential inclusion in the ECMWF ERA-CLIM program.
Charge to working groups
AMV derivation continued (WG1)

• Hyperspectral Winds
  • 2 active projects
    • MetOffice simulated single-level retrieved moisture fields
    • CIMSS AIRS single-level moisture retrievals
  • Should the IWWG make a recommendation that the MetOffice work be further continued in the hopes that these AMVs will become an important part of the IRS product suite and available soon after the launch of MTG-S1.
Recommendations

Provide some recommendations for ways to collaboratively work identified issues that remain => Agree on joint case studies e.g. Follow up from the analysis report?

Recommendation: All producing centers should evaluate the nested tracking algorithm and report results at the next winds workshop.

Recommendation: Winds producers should investigate stereo height assignment techniques.

Recommendation: Further intercomparison studies using additional data sets like MISR and Concorde-IASI are encouraged.

Recommendation: Investigate the potential of global AMVs from tandem satellites: dual Metop, MODIS/VIIRS, future Sentinel-3a/b

Recommendation: MISR should be introduced into reanalysis datastreams. Potential inclusion in the ECMWF ERA-CLIM program.

Recommendation?: Can we make a statement wrt to water vapour channel on polar orbiters (VIIRS?)