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COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

EXPERT TEAM ON SATELLITE UTILIZATION AND PRODUCTS

ITEM: 15

SEVENTH SESSION

GENEVA, SWITZERLAND, 27-30 MAY 2013

Original: ENGLISH

International Winds Working Group Matters

(Submitted by IWWG co-chairs (Jaime Daniels,NESDIS and Regis Borde, EUMETSAT) and Rapporteur (Johannes Schmetz, EUMETSAT))

Summary and Purpose of Document

To provide a summary of the 11th International Winds Workshop held in Auckland, New Zealand on 20-24 February 2012 and to provide a status of activities and recent developments since this workshop.

ACTION PROPOSED

The seventh session is invited to review and take note of the status and progress of the IWWG and the related recommendations to CGMS-40 and to provide comments as appropriate.

DISCUSSION

11th International Winds Workshop

The 11th International Winds Workshop (IWW11) hosted by the University of Auckland in Auckland, New Zealand and held during the period 20-24, February 2012 continued the series of successful workshops. The workshop included seven sessions of talks that covered the following topics: Operational Status of Atmospheric Motion Vectors (AMVs), AMV derivation, polar AMVs, winds in Numerical Weather Predcition (NWP), characterizing AMVs, atmospheric winds derived from the Multi-angle Imaging SpectroRadiometer (MISR) and the future Atmospheric Dynamics Mission (ADM) Aeolus Atmospheric Laser Doppler Instrument (ALADIN). Working group sessions were held that covered wind extraction methods and data assimilation. Finally, three plenary discussions were held that covered the following topics: Joint NWP winds impact study, Second AMV inter-comparison plan and simulated data studies, and AMV Open Source Software.

As a result of these discussions, a number of recommendations were formulated. The top four key recommendations are highlighted here:

IWW11.1. All AMV producing centers are encouraged to investigate how to provide enhanced situation-dependent error estimates of wind and pressure with new derivation techniques. NWP centers are encouraged to work with producers on the evaluation.

IWW11.2. A second AMV derivation inter-comparison project should be carried out and the results presented at IWW12 in 2014.

IWW11.3. IWWG co-chairs to kick off an activity to pull together the latest research on high resolution wind production and usage and to encourage increased focus on this theme at IWW12. This will involve input from NWP centers (to investigate need for this data in high resolution models and how best to assimilate) and data producers (how best to adapt the derivation).

IWW11.4. Satellite providers should investigate the potential of global AMVs from tandem satellites: dual Metop, MODIS/VIIRS and the future Sentinel 3A/B.

More details about this workshop, including the presentations and extended abstracts, can be found on the International Winds Working Group (IWWG) web page: http://cimss.ssec.wisc.edu/iwwg/iwwg.html. The final report (CGMS-40 NOAA-WP-22) provides a complete summary and outcomes of IWW11the 11th International Winds Workshop (IWW11).

Status and Recent Developments

The status of activities and recent developments since IWWW11 that pertain to atmospheric winds that the IWWG co-chairs believe should be of interest to the WMO Expert Team on Satellite Utilization and Products (ET-SUP) are described in this section.

- ***Collaborative Satellite Winds Impact Study***

We are pleased to announce that the final report of the Collaborative Satellite Winds Impact Study (led by Christophe Payan, Meteo France and James Cotton, Met Office) is now available from the IWWG home page under “Latest News” (http://cimss.ssec.wisc.edu/iwwg/iwwg.html).

- ***New Wind Datasets***

  - NOAA/NESDIS
    - Operational Metop-B AVHRR AMVs starting on April 24, 2013

  - EUMETSAT
    - Operational Meteosat-10 (0-degrees service) AMVs starting on January 21, 2013
    - Operational Meteosat-9 rapid scan AMVs starting on January 21, 2013
    - Metop-B becomes operational on April 24, 2013. AVHRR AMVs product generated routinely and made available via trial mode.

  - NASA/JPL
    - Currently (as of April 11, 2013) generating routine/experimental near real-time cloud motion vectors (CMVs) from Terra/MISR and performing extended testing of production software. The latency of the MISR CMV products is expected to be much less than 5 hours.

- ***Second AMV Inter-comparison Study***

The second AMV inter-comparison study is well underway. A key goal of the study is to learn and understand similarities and differences in AMVs produced at different operational centers, and ultimately, to improve the quality and consistency of the AMV products. EUMETSAT has completed the generation and preparation of the common satellite and ancillary datasets needed for the study. All of these data were made available to the study participants. To aid study participants, EUMETSAT also provided software to read and decode each of these datasets.

The following CGMS members are participating in the study and have all successfully generated and delivered the request AMV product files from the test datasets provided by EUMETSAT:

- Brazil Met.Service
- P.R.China Met.Service
- EUMETSAT
- Japan Met.Service
- R.Korea Met.Service
- NOAA/NESDIS
- NWC/SAF

As a means to enhance collaboration and sharing of information, the IWWG co-chairs updated the IWWG pages to include a 2nd AMV inter-comparison web page under the IWWG activities web page. (*https://groups.ssec.wisc.edu/groups/iwwg/activities/amv-intercomparison-studies/amv-intercomparison-study*).

This web page contains specific information on the test datasets for the study and the prescribed instructions and configurations for how each AMV product dataset should be generated and what information should be output to the AMV product datasets.

The derived AMVs from each of the participants will be collected by the Satellite Application Facility on support to Nowcasting and Very Short-Range Forecasting (NWC SAF), hosted by AEMET in Spain. The AMV data will be distributed to the NWC SAF Visiting Scientist (VS) who will perform the detailed analysis and comparison of AMV datasets generated by each study participant. Results of this analysis will be presented and discussed at IWW12.

- ***High Resolution Wind Datasets***

The IWWG co-chairs are currently working to pull together the latest research and inputs on high resolution satellite wind production and usage with the goal of improving forecasts of high impact weather events. A wiki web page for this effort has been added under the IWWG activities page: (*https://groups.ssec.wisc.edu/groups/iwwg/activities*). Input is being gathered from NWP centers (to investigate the need for these data in high resolution models and how best to assimilate) and data producers (how best to adapt the AMV derivation).

At IWW11, several satellite data producers (EUMETSAT, NESDIS/CIMSS, JMA, SAF NWC SAF, KMA) reported their activities involving the generation and characterization of high resolution wind datasets. Much of this work activity has continued. NESDIS/CIMSS, for example, has taken advantage of 1-minute super rapid scan imagery obtained from GOES-14 during its checkout period in October 2012 to generate AMVs around Hurricane Sandy. NESDIS/CIMSS has also been coordinating closely with the NOAA Joint Center for Satellite Data Assimilation (JCSDA), NOAA's Hurricane Forecast Improvement Project (HFIP), and NCEP/EMC to plan studies that involve the use of high resolution AMVs within the Hurricane Weather Research and Forecast (HWRF) system in order to improve tropical cyclone forecasts. JMA is generating high resolution wind datasets from 5-minute imagery obtained from its MTSAT-2 satellite. EUMETSAT is generating AMVs from Meteosat-9/SEVIRI rapid scan imagery. Work continues at the Met Office involving the derivation and use of AMVS derived from high temporal resolution SEVIRI imagery and simulated imagery for nowcasting and improved understanding of satellite derived AMVs, respectively.

Summary

The IWWG is well focused, committed, and poised to address issues related to satellite winds. There has been an increasing trend to improve interactions between IWWG members through collaborative projects with good results. A goal of the IWWG is to strive for more commonality in satellite-derived winds products for the benefit of NWP users. The IWWG has elevated the utility of AMV for NWP in recent years as evidenced by the successful completion of a coordinated study of AMV impact on NWP, which clearly demonstrated the significant relative importance of the AMVs within the Global Observing System (GOS). Satellite wind producers continue to develop and test new or improved satellite wind derivation schemes with a more refined focus on producing high resolution (spatial and temporal) winds to help improve forecasts of high impact weather events.