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Summary of the seventeenth international winds workshop

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ABSTRACT

The Seventeenth International Winds Workshop (IWW17) took place virtually from May 19 to 22, 2025. This event was a collaborative effort, co-organized by the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA), with support from Lynker LLC and the University of Wisconsin-Madison. The workshop was attended by 75 participants and featured 50 presentations and 10 posters. Topics covered a range of subjects, including satellite winds derivation (feature tracking) and quality, ocean surface winds, use of winds in Numerical Weather Prediction (NWP) and other applications, future wind-related satellite missions, measurement campaigns supporting these missions, and the reprocessing of climate wind records. The International Winds Workshop brings together the International Winds Working Group (IWWG). This group plays a crucial role in communicating with the World Meteorological Organization's (WMO) Coordination Group for Meteorological Satellites (CGMS) on important matters concerning wind derivation from satellites. The workshop serves as a forum for data producers and users to exchange information on the characteristics of all satellite winds (feature tracked, scatterometer, etc.), and to optimize their application in various fields, particularly in numerical weather prediction. This report details the proceedings of IWW17 and includes its recommendations.

1. Introduction

The Seventeenth International Winds Workshop (IWW17) took place from May 19 to 22, 2025. The workshop was initially planned to be organized as an in-person event in March 2025, and to be hosted by the National Aeronautics and Space Administration (NASA). Geopolitical events, however, led to the event morphing into a virtual event hosted by the National Oceanic and Atmospheric Administration (NOAA) with virtual platform support from Lynker LLC and web programmatic support from University of Wisconsin-Madison.

Ninety-six scientists registered for the in-person and seventy-five scientists attended the virtual IWW17 event (time zone GMT-5:00). Sixteen countries and three international organizations were represented at the meeting (Austria, Brazil, Canada, China, France, Germany, India, Italy, Japan, Korea, Netherlands, Norway, Spain, the United Kingdom, the United States, ECMWF (European Centre for Medium-Range Weather Forecasts), ESA (European Space Agency), and EUMETSAT (European Organisation for the Exploitation of Meteorological Satellites)). The participants represented most meteorological satellite operators, most numerical weather prediction (NWP) centers,

the research and user communities from around the world, and engineers from novel satellite missions focusing on wind observations.

The biennial IWWs provide a forum for data providers and users to share information on the derivation and characteristics of satellite derived winds and the optimization of their use in NWP and other applications. An important outcome of IWWs includes recommendations that are communicated to the CGMS that often leads to actions and pertinent changes in CGMS member operational satellite systems for the derivation of winds. These recommendations are reviewed and discussed at each IWW to status the progress made for each and to make adjustments to them as needed. They are then presented at the CGMS plenary working group sessions (https://cgms-info.org/meeting-category/4_all-meetings/0_plenary-sessions/).

The first IWWs (1991–1998) focused on the operational extraction of satellite cloud feature tracked winds, verification and quality analysis, and assimilation and impact of AMVs in NWP. IWW4 and IWW5 included new active (microwave scatterometer, doppler lidar) and passive (stereo methods) techniques for wind extraction, and new spaceborne systems presentations. IWW6 introduced the first sessions on rapid scan and high resolution winds studies, and mesoscale

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applications. Polar winds and their applications were first discussed at the IWW7. The 1st Global AMV Inter-comparison Study was presented at the IWW9, 14–18 April 2008, and was reiterated in 2010, 2016 and 2023 (5th was encouraged). The growth of the satellite winds community and expanded range of session topics led to the introduction of poster sessions at the IWW13 in 2016. IWW15 (first virtual) dedicated a session to Aeolus, the first space doppler wind lidar mission..

The IWW17 program focused on operational products and utilization continuity, but also opened the Future Missions session to presentations highlighting airborne measurement campaigns supporting upcoming winds-relevant satellite missions and ML/AI use in winds derivation, and had strong 3D Winds and Global Navigation Satellite System (GNSS) Reflectometry (GNSS-R) sessions.

2. Summary of the presentations

The workshop participants were welcomed by co-chair Iliana Genkova and CGMS rapporteur Jaime Daniels on behalf of Jack Kaye, *Associate Director for Research, Earth Science Division, NASA* (who could not attend the rescheduled workshop due to retirement). The opening remarks acknowledged the satellite winds community's long list of accomplishments presented at the CGMS-52 WGII meeting April 2024, and recognised the commitments of the attendees of the workshop despite the workshop dates and format changes. They noted and welcomed the first time attendees, and the new topics in the agenda.

The CGMS rapporteur presented the CGMS-53 High Level Priority Plan recommendations and encouraged the workshop participants to consider these in the discussions. The most current recommendations include: Assessing the value of winds derived from Geostationary Earth Orbiting (GEO) and Low Earth Orbiting (LEO) Hyperspectral Infrared (IR) observations, and exploring the application and value of winds derived from stereographic and optical flow (OF) approaches.

The workshop proceeded with seven plenary sessions. The first session on operational Atmospheric Motion Vector (AMV) products reported on the current status of wind generation. The Japanese Meteorological Agency (JMA) reported a stable status of their operational wind products, its plans for its future Himawari-10 satellite with an enhanced imager and hyperspectral infrared sounder, and its ongoing development of 3D wind retrievals using an OF approach. EUMETSAT presented an update on its operational products, with a focus on its Meteosat Third Generation (MTG) Flexible Combined Imager (FCI) AMV product (operational in June 2025), and its preparations for the retrieval of 3D winds from hyperspectral IR sounders from its future MTG-S1 and Metop-SG satellites. EUMETSAT also gave an update on its IASI 3D winds product, disseminated for users since December 2024, but currently in demonstrational status. Validation efforts showed good correlation with Aeolus data and AVHRR AMVs. Initial feedback from NWP users has been mixed but hopeful towards a parallax correction to be made operational in June 2025. EUMETSAT discussed the status of their MTG FCI winds, highlighting increased AMV counts due to the higher spatial resolution of the images, more frequent full disk scans, and the use of cloud heights from its latest Optical Cloud Analysis (OCA) algorithm for assigning heights to AMVs. Demonstrational dissemination of MTG FCI AMVs began in December 2024 and GTS dissemination started mid-June 2025. Validation showed strong agreement with MSG AMVs and improvements against radiosonde measurements. NOAA/NESDIS provided an overview of its operational GOES and Polar winds product suite that includes AMVs, scatterometer ocean surface winds, and Synthetic Aperture Radar (SAR) coastal surface winds. It reported on its successful transition to operational AMVs from its newest satellites, GOES-19 and NOAA-21. Finally, it reported that its polar AMV products from its heritage NOAA-15, NOAA-18, and NOAA-19 satellites were retired in April 2024 and that it plans to deorbit S-NPP and retire its S-NPP polar AMV product.

Session two focused on satellite wind derivation and applications and highlighted the development, assessment, and demonstration of

several pre-operational satellite-derived wind products. The Norwegian Meteorological Institute (MET Norway) presented on the utilization of locally processed AMVs in the Arctic, aiming to increase wind data availability for early morning assimilation. Initial findings suggest high-resolution winds are useful with proper tuning. The EUMETSAT Nowcasting and Very Short Range Forecasting (NWC) Satellite Application Facility (SAF) provided an update on its High Resolution Winds AMV software, which calculates AMVs and trajectories for various geostationary and polar satellites. The v2025 version includes adaptation for the MTG-I satellite, significantly increasing AMV numbers. EUMETSAT reported on introducing the Feature Matching and Consensus (FMC) method for AMV tracking and quality indicators, showing improved correlation with RMSVD against ECMWF forecasts. NOAA/NESDIS provided an update on NOAA's AMV capabilities, including the post launch evaluation of NOAA-21 and GOES 19 AMVs, an evaluation of GEO-GEO and GEO-LEO stereo AMVs derived from its recently developed stereo winds capability, and its plans for transitioning high-resolution AMVs for tropical cyclones into operations. NOAA/NESDIS's Cooperative Institute for Research in the Atmosphere (CIRA) provided an update on the evaluation of dense optical flow-based wind products for forecasting operations, highlighting their value for convection warning, and demonstrating their usefulness for regional mesoscale nowcasting. The U.S. Naval Research Laboratory (NRL) followed up with a presentation on the sensitivity of optical flow-retrieved motions to different input frequencies, particularly for small-scale convective events, noting that slower scan frequencies miss finer-scale motions.

Session three covered ocean surface satellite wind derivation and applications. The China Meteorological Administration (CMA) and the National Space Science Center presented on Global Navigation Satellite System (GNSS) Reflectometry (GNSS-R) ocean surface wind products from China's Fengyun-3 and Tianmu-1 (TM-1) satellite constellations. GNSS-R leverages reflected signals to measure ocean surface wind speed, emphasizing the technology's advantages, such as small payload size and penetration of heavy rain. The spatial and temporal gap filling of these missions, particularly their high coverage at higher latitudes, were highlighted, alongside analyses of temporal resolution and revisit times. Retrieved GNSS-R wind speeds showed accuracy with an RMSD of 1–1.5 m/s when validated against scatterometer data. A compelling application of these products was demonstrated in tropical cyclone monitoring, where GNSS-R maximum wind speeds showed some consistency with best track values, offering increased high spatial coverage for tracking surface winds in these critical weather events. Future plans include optimizing data fusion and evaluating NWP impact. The Royal Netherlands Meteorological Institute (KNMI) presented the International Virtual Scatterometer Constellation, emphasizing the "golden age of scatterometry" and the importance of collocations between different scatterometers. KNMI detailed ASCAT's mission, highlighting its frequent monitoring capabilities, including tropical cyclones, and its production of higher-level gridded products like wind and stress vectors. The intrinsic stability and accuracy of scatterometer measurements, were underscored as ideal for climate data records and data assimilation. Error assessments through triple and multiple collocations confirmed the excellent accuracy of scatterometer winds, with VRMSE for ASCAT A and B of 0.5 m/s. The presentation also delved into the use of spatial derivatives, curl and divergence from scatterometers to understand extreme updrafts and downdrafts in moist convection, revealing discrepancies with ECMWF model data. Improved rain detection and quality control for Ku-band using C-band collocations were also presented, leading to better wind verifications and improved ambiguity removal in 2D-Var schemes. Challenges in coastal wind retrieval were addressed, with improvements shown through regularization regression schemes. There was a strong emphasis for the standardization of operational scatterometer wind products within the CGMS International Winds Working Group and their potential to correct model biases in coupled atmosphere-ocean simulations. Muon Space Inc.

presented their GNSS reflectometry satellites, MuSat 2 and MuSat 4, which are used for ocean wind speed observations and soil moisture measurements. Launched in March 2024, MuSat 2 is a dual-polar and dual-frequency GNSS instrument that provides ocean surface wind speed products to the U.S. Air Force since May 2024. A machine learning algorithm is used to derive ocean surface winds. Validation against buoy data showed a 0.8 correlation and an RMSD of approximately 1 m/s. Data from MuSat 2 creates a 25 km gridded product, combining subtropical and polar coverage. Future Muon satellites, starting with MuSat 4 will use higher-gain antennas to improve measurements at high wind speeds and will be capable of beamforming. Muon Space plans to build constellations of these satellites, with three more similar to MuSat 4 scheduled for 2026.

The fourth session was dedicated to 3D winds approaches aimed at providing more wind observations in the vertical dimension. The session opened with an update on advanced lidar technologies. EUMETSAT presented on the EPS-Aeolus project, the Aeolus follow-up mission. Scientific studies demonstrated the benefits of reduced noise, increased observations and extended vertical sampling. An ensemble data assimilation experiment made by ECMWF suggests the forecast impact of EPS-Aeolus could be twice that of Aeolus. NOAA's Cooperative Institute for Meteorological Satellite Studies (CIMSS) at the University of Wisconsin provided a historical overview of 3D wind activities using hyperspectral sounders. It discussed its early and more recent efforts to derive 3D winds from AIRS and CrIS humidity retrievals and their potential for improving the depiction of the global wind field and the wind field in the vicinity of hurricanes. NASA Langley Research Center introduced its new Aerosol Wind Profiler (AWP), a coherent-detection "heterodyne" Doppler wind lidar that measures wind vectors from cloud and aerosol backscatter. It undertook an airborne mission that collected about 100 h of AWP data in a variety of geographic locations, wind/weather regimes, and aerosol/cloud conditions, the instrument demonstrated capability to measure aerosol/cloud backscatter and vector wind profiles with high precision, reliability, and vertical coverage required for a range of weather process studies, meriting planetary boundary layer (PBL) ones. Comparisons of AWP winds with dropsonde winds across various altitudes showed excellent agreement, with uncertainties generally under 1 m/s for wind speed. A comparative analysis of AWP winds against U.S. National Weather Service (NWS) global and regional NWP wind fields showed excellent agreement at the initial analysis time with a steady drop off in agreement due to increasing uncertainty of longer range forecasts. The AWP data was also compared to GOES-16 and 18 operational AMVs, particularly those from visible and IR window channels, and showed good agreement with AWP wind speeds when normalized. Some discrepancies in height assignments for some AMVs, especially in cloudy regions are still to be understood. Higher temporal resolution AMV data tended to show better agreement with AWP data. Simpson Weather Associates further discussed the airborne AWP's performance with regard to supporting space-based missions, using NASA's G5 nature run for simulations and showing promising vertical coverage. The University College London presented a system for retrieving cloud base winds using thermal infrared imagery and AI-based scene tracking. It can track individual pixels and estimate relative cloud height in near real-time. Comparisons with HALO Doppler lidar data are being conducted to validate the wind retrievals. The system could have applications in aviation and for validating satellite-based wind measurements. The last presentation in this session reported on the "NOAA-NASA Workshop on Space-based Measurements of 3-Dimensional Winds", February 19–20, 2025, underscoring the high priority of these measurements for NWP improvement despite budget constraints. International efforts advocate for 3D winds and active lidar for applications beyond NWP, such as tracking greenhouse gases and aerosols.

Session five was dedicated to the use and impact of satellite derived winds in NWP forecast systems. JMA presented on the latest status of satellite-derived wind usage in JMA's NWP systems noting the positive impact of single Metop AMV data on wind and temperature fields,

particularly at high latitudes. The National Centre For Medium Range Weather Forecasting (NCMRWF) India discussed the assimilation impact of various geostationary AMVs over the Indian Ocean. They highlighted the positive influence of assimilating the GK2A AMVs generated by the Korean Meteorological Administration (KMA), leading to improved cyclone forecasts. Deutscher Wetterdienst (DWD) provided an update on their NWP system's current data usage, including the operational implementation of AMVs from Himawari-9, GOES-19, NOAA-20/21 and experimental use of Oceansat3 scatterometer surface winds. DWD also presented findings from its initial assessment of IASI-3D winds and found that these winds differed the most from the DWD background around the tropopause and upper troposphere while noting the large number of these observations. MeteoFrance France reported on improvements made to its data assimilation scheme for satellite AMVs leading to positive impacts on forecasts and discussed the planned integration of OceanSat-3 scatterometer data. ECMWF presented preliminary results of assimilating MTG AMVs, highlighting that hourly assimilation performed better than half-hourly assimilation and that improvements largely stemmed from high-resolution imagery rather than height assignment. The MetOffice reported on characterizing errors associated with satellite-derived wind products using the NWP SAF monitoring capabilities. It highlighted the addition of new satellite wind products into the monitoring system, changes made to the content of the 11th NWP SAF Analysis Report that it authored, and results from an experiment it executed to understand how differences in the use of Himawari AMVs at MeteoFrance, DWD, and ECMWF contribute to observation minus background statistics using the MetOffice background as the control. The University of Arizona discussed work on deriving mesoscale 3D winds from satellite hyperspectral water vapor soundings, showcasing reduced slow speed bias with higher resolution retrievals and a substantial increase in data yield. The European Space Agency (ESA)'s European Space Research and Technology Centre (ESTEC) provided an overview of GNSS reflectometry for wind speed estimation. They highlighted numerous past, present, and future GNSS missions, the achieved retrieval performance, and ongoing European efforts to assimilate GNSS data in NWP using machine learning.

Session six reported on future wind-oriented satellite missions. KNMI presented on the preparation for Aeolus-2, a follow-on mission to the ESA's Aeolus satellite, motivated by the significant impact of Aeolus winds data assimilation on hurricane storm tracks. Combining Aeolus Rayleigh and Mie winds is expected to yield greater forecast impact in NWP models. Aeolus reprocessing activities reported solving the altitude varying bias of Rayleigh-clear winds. KNMI also presented on the Harmony Mission (ESA Earth Explorer 10, launch 2029) which will use two satellites with SAR receivers and infrared payloads flying in formation with Sentinel-1. It aims to provide sub-kilometer to kilometer scale observations for the cryosphere, solid earth, and atmospheric boundary layer. The infrared instrument's five side-looking cameras are crucial for cloud motion and height, with stereo configuration for cloud dynamics studies. Optical flow techniques are being explored for cloud motion vector retrieval, showing promising results. The mission seeks new approaches for accurate 3D motion reconstruction. Surrey Satellite Technology Ltd reported on the upcoming ESA HydroGNSS Mission which focuses on land variables using GNSS reflectometry. Ocean wind is a secondary product for this mission. However, the instrument's dual polarization and dual-frequency capability aims at 2 m/s wind speed accuracy and 90 % sea ice classification accuracy. Data will be openly available after a six-month commissioning phase. The session concluded with a Météo-France - National Centre for Meteorological Research presentation on the Wivern Mission that employs a space-borne dual-polarisation Doppler radar measuring in-cloud line-of-sight winds. An Observing System Simulation Experiment (OSSE) framework demonstrated Wivern's ability to reduce short-range forecast uncertainty, especially in mid-latitudes, with an improvement in precipitation forecasts. This impact persists at longer lead times and is resilient to inflated observation errors.

The Seventh and last sessions of IWW17 was dedicated to AMV reprocessing and climate applications. EUMETSAT presented on the reprocessing of historical AMVs from the Temperature Humidity Infrared Radiometer (THIR) on Nimbus satellites as part of the Copernicus Climate Change Service (C3S2). EUMETSAT focused on data from Nimbus 4 (1970) and Nimbus 7 (1978–1985) due to their relatively complete datasets and adapted its AVHRR AMV software for the THIR instrument. Initial results show retrieved wind vectors aligned with cloud movement and pressure fields from ERA5. Comparisons of average wind speeds with expected patterns in jet regions and annual cycles showed good agreement. A comparison of Nimbus 7 THIR AMVs with AVHRR data from parallel flying NOAA satellites indicated similar characteristics, and slight differences were attributed to height assignment uncertainties related to pixel size. Comparisons with radiosonde data for Nimbus 4 in the Northern Hemisphere showed a bias generally below one meter per second. EUMETSAT discussed the limitations of the three-minute PDU approach for THIR and expressed interest in exploring optical flow techniques. They highlighted the positive impact of reprocessed AVHRR AMVs on the upcoming ERA6 reanalysis. EUMETSAT also mentioned potential for retrieving AMVs from earlier HRIR data (1964) but noted data quality and resolution concerns, while VHRR (1972–1978), a predecessor to AVHRR with slightly better resolution, has data that would require significant digitization efforts. EUMETSAT also presented on Geostationary Satellite AMV Climate Data Records (CDR), highlighting the long history of data from Meteosat first and second generation, and the ongoing third generation. EUMETSAT discussed the current state of geostationary AMV data records, including a two-channel consistent CDR, a full consistency CDR over the Indian Ocean, a new OCA AMV CDR using SEVIRI, and reprocessed rapid scan AMVs.

3. Summary of the poster sessions

The increasing number of attendees in recent workshops led to the need for poster sessions. Eight posters were blitz-presented, allowing the authors to present their work and engage in Q&A.

The U.S Navy's presented on the assimilation of EUMETSAT's IASI 3D-wind product (a prototype for the MTG-IRS hyperspectral winds) into the Navy's global model, emphasizing its ability to fill upper-level data gaps, though noting mixed verification results. The National Institute for Space Research (INPE) provided an overview of its AMV production and use at the Center for Culture of Weather Forecast and Climate Studies (CPTEC) in Brazil, including the adaptation of their algorithm for the GOES-19 satellite and the upcoming launch of a new Brazilian satellite with a GNSS-R instrument. KMA showcased improvements to the height error profile of AMVs for the Korean Integrated Model (KIM), demonstrating enhanced analysis fields through satellite-specific error profiles. ECMWF presented an assessment of IASI 3D winds data, observing lower biases at lower stratospheric and tropospheric levels but larger biases in the tropopause level. KMA also discussed challenges and improvements with its GK2A Rapid Scan AMVs, particularly regarding slow speed bias and height assignment errors, with plans for refining cloud top pressure estimation. Environment and Climate Change Canada (ECCC) presented an evaluation of HSCAT scatterometer winds from HY2B and HY2C, noting the operational implementation of the 25 km product due to slightly better forecast results. The Korea Institute of Atmospheric Prediction System (KIAPS) evaluated HSCAT observation for assimilation into the Korean Integrated Model (KIM), demonstrating improved lower-level wind analysis and NWP accuracy with bias correction.

4. Summary of the working groups discussions

The meeting underscored the collaborative spirit and ongoing dedication within the community to refine and expand the use of satellite-derived winds for more accurate and timely weather forecasts. The

plenary sessions further delved into these critical topics, guiding future research and operational implementations.

Two working groups - *Wind extraction methods* and *Wind assimilation and other applications*, were convened to address topics raised by the CGMS-53. They discussed community-raised topics, reviewed the CGMS recommendations, and charted the course for future advancements in atmospheric wind observation and utilization.

The working group put forward the following actions to advance the wind community:

- a) Conduct a 5th AMV Global Intercomparison Study - IWW17 recognized past intercomparison studies as meritable in knowledge and experience exchange between AMV producers and users. It was stressed that this study should include new wind retrieval algorithms and involve all producers in the study, suggesting a broader scope beyond just AMVs generated from traditional algorithms using observations from imager observations. More specifically, it was proposed to generate and evaluate MTG and IASI 3D-winds generated using new Optical Flow approaches and evaluate their quality and performance characteristics relative to AMVs generated via new stereoscopic approaches and AMVs using traditional approaches. This was deemed an important goal of this intercomparison study as 3D wind profile observations are considered a priority of the IWWG with a goal being to work towards the operationalization of these observations. As has been done with past AMV Global Intercomparison studies, the next AMV intercomparison study would be closely coordinated with the ICWG and would involve the selection of a "golden day" and determination of specific studies and cases to explore.
 - Continue the evaluation of and preparation for operational hyperspectral 3D-winds (IASI-3D, MTG-IRS, FY-4, Himawari-10 when available).
- b) Encourage and support all remaining AMV producers to include "Common QI" and "new AMV BUFR template" in their AMV algorithms (as soon as possible) for more consistent wind use quality control
- c) AMV producers to update the existing "2023 Survey on AMV products", with the current status of implementation and answers to additional questions and share with community on the CGMS/IQQG website
- d) AMV producers to make use of the new BUFR template in providing further information on the AMV derivation and auxiliary cloud information, as available in their processing
- e) IWWG chairs to make the "Requirement document" visible to the whole IWWG community on the new CGMS/IWWG webpage and collect suggested updates from IWWG members between workshops

The working group recommendations were presented at the CGMS-53 Plenary Working Group Session, 2–6 June 2025 in Évian-les-Bains, France.

5. Conclusions

Despite rescheduling and altering the workshop format, the 17th International Winds Working Group workshop was a success, driven by the dedicated participants, high-quality presentations, engaging discussions, and the unwavering efforts of its hosts and organizers.

The workshop reported on operational AMV products generation and continuous efforts to improve and expand the satellite winds product portfolio and quality. The continuity of space-based wind observations is maintained with new and upcoming satellite launches (GOES-19, NOAA-21, MTG-S1, EPS-SG A/B, FY-3H, FY-4C, OceanSat-3A, HY2E/F).

The significant ongoing development of new satellite-based wind retrieval approaches (Stereographic, Optical Flow, AI/ML) reported in past workshops was now accompanied by demonstration of applications targeting user needs.

The retrieval of 3D vertical wind profiles remains a priority for the community. Significant ongoing work reported in the area of retrieval algorithm development (passive, active), airborne campaigns involving data collections from lidar instruments. Many NWP Centers have followed previous recommendations to assimilate and investigate available 3D vertical profile winds and scatterometer winds.

There was agreement that the ocean surface winds are in their “Golden Age”. A significant amount of work with the retrieval and applications (NWP, coastal) of ocean surface winds derived from scatterometers, Synthetic Aperture Radar (SAR), and GNSS-R was reported.

Reprocessing and creation of satellite wind Climate Data Records (CDR) remains a priority given their importance and need for NWP reanalysis efforts and for homogeneous long-term data sets.

Participants agreed that a 5th AMV intercomparison study should be done based on the value of prior AMV intercomparison studies.

The IWW17 materials could be found on the re-homed IWWG webpage:

<https://cgms-info.org/iwwg/> The next workshop will be organized by Iliana Genkova and Feng Lu and will occur in 2027.

CRediT authorship contribution statement

Iliana Genkova: Writing – review & editing, Writing – original draft.

Jaime Daniels: Writing – review & editing, Writing – original draft.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.