
# *ASTM-F38 Specifications for Weather Data Performance, Weather Data Interfaces and Weather Information Provider (WIP) Performance and Interoperability*

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## A new paradigm of substantial weather data and services, and sustainable weather infrastructure is needed to enable OEMs and operators to safely increase drone and vertiport operations

There is an opportunity to align weather aviation service policy, regulations, services and business models to improve safety, system efficiency and business economics to autonomous flight.

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# ASTM F38 Weather Standard Provides Framework For 3rd Party Weather Information Providers (WIP)

*"For certain data (e.g., weather, obstacle information, etc.), one could expect that the standards that exist today for conventional aviation, in terms of delivery, update rate, data management and overall maintenance, may not be adequate."*

*CAAI, Aviation Infrastructure Division*

ASTM F38 Weather Standards Group drafting UAS Weather Standards:

- Focus: Weather observations and analyses--in-situ, remote sensor (wind lidar) and derived weather reports (e.g., camera imagery)
- Transition to a weather data performance standard vice requiring sensor certification
- All "approved" weather information will require quality quantification, validation and metadata
- R&D required to quantify weather data accuracy and method for collecting and submitting data sets for validation
- FAA will provide an Advisory Circular outlining process for recognizing WIPs
- Standardizes WIPs to provide JSON/GEOJSON formats

*Expect Standard to Meet ASTM F38 ballot in next few months*

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## Approach for Implementation

- Part 108 BVLOS Rulemaking
  - WIPs approved for Part 135
  - Can we get drones and eVTOLs under Part 91 covered?
- Test ASTM F38 Weather Standard Under Waivers and FAA Supervision
- Inform development of Advisory Circular
- Publish Advisory Circular

## Work for Global Harmonization

*"It is recognized that the weather information for UAS operations may be different from the one provided by today's meteorological service providers"* – GM 1 Article 12

*"USSPs should use weather data that comes from authoritative sources." – AMC 1* Article 12(1) (a)

*"USSPs should enable the identification of the source of the weather data in accordance with the contractual arrangements concluded with their UAS operators." – AMC 1* Article 12(1) (a)

*"An authoritative source may be an organization that is formally recognized by the Member State to originate and/or publish weather information which meets the data quality requirements as specified by that Member State." – GM1 Article 12(1)(a) Weather information*

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We are backed by science and experts that confirm the challenges of weather to the UAS/AAM Industry and the lack of adequate observation data.

## Supporting Science & Research Publications


Campbell, S. E., D. A. Clark, and J. E. Evans, 2017: Preliminary Weather Information Gap Analysis for UAS Operations.

Houston, A. L., J. C. Walther, L. M. Pytlikzillig, and J. Kawamoto, 2020: Initial assessment of unmanned aircraft system characteristics required to fill data gaps for short-term forecasts: Results from focus groups and interviews. J Operational Meteorology 8, 111–120, https://doi.org/10.15191/nwajom.2020.0809

James, E. P., and S. G. Benjamin, 2017: Observation System Experiments with the Hourly Updating Rapid Refresh Model Using GSI Hybrid Ensemble–Variational Data Assimilation. Mon Weather Rev, 145, 2897–2918, https://doi.org/10.1175/MWR-D-16-0398.1

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National Academies of Sciences, E. and M., 2018: The Future of Atmospheric Boundary Layer Observing, Understanding, and Modeling. L. Everett, Ed. National Academies Press,

National Research Council, 2009: Observing Weather and Climate from the Ground Up: A Nationwide Network of Network. The National Academic Press,

Oke, T. R., 1976: The distinction between canopy and boundary-layer urban heat islands. http://dx.doi.org/10.1080/00046973.1976.9648422, 14, 268–277 https://doi.org/10.1080/00046973.1976.9648422

Reiche, C., R. Goyal, A. Hamilton, A. Cohen, J. Serrao, S. Kimmel, C. Fernando, and S. Shaheen, 2018: Urban Air Mobility Market. 1–162 pp

Schweiger, K., and L. Preis, 2022: Urban Air Mobility: Systematic Review of Scientific Publications and Regulations for Vertiport Design and Operations. Drones, 6, 179, https://doi.org/10.3390/drones6070179

Zhao, Y., R. Li, L. Feng, Y. Wu, J. Niu, and N. Gao, 2022: Boundary layer wind tunnel tests of outdoor airflow field around urban buildings: A review of methods and status. Renewable and Sustainable Energy Reviews, 167, https://doi.org/10.1016/j.rser.2022.112717

# Thank You

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