



Friends and Partners in Aviation Weather

November 14, 2023

MEMORANDUM FOR: SEE DISTRIBUTION

SUBJECT: Statement of Support for Automatic Dependent Surveillance – Broadcast Weather Implementation

Background

The Friends and Partners in Aviation Weather (FPAW) is a volunteer professional organization that consists of more than 400 members representing four aviation weather constituencies- users, providers, researchers/engineers/academicians, and regulators.

The FPAW Steering Committee (FPAW SC), comprised of 15 representatives of the four aviation weather constituency groups, is the voice of FPAW. This position paper comes from the FPAW SC and represents the views of FPAW.

Bottom Line Up Front (BLUF)

FPAW recommends that Automatic Dependent Surveillance – Broadcast Weather (ADS-B Wx) Air Report (AIREP) and Pilot Report (PIREP) capabilities be implemented by avionics manufacturers and commercial and general aviation operators as early and as widely as possible.

FPAW also recommends that the Federal Aviation Administration (FAA), the National Weather Service (NWS), and the weather and aviation industries be prepared to fully leverage ADS-B Wx data as soon as it becomes available.

About FPAW

Created in 1997, FPAW is the only global organization that brings together representatives of every part of the aviation weather community. FPAW, a grass roots, all-volunteer group, serves as the aviation weather community of practice. The FPAW mission is, “to increase understanding of the impact of weather on current and emerging aviation operations, identify, discuss and provide support to problem areas that need further development of accurate and timely weather guidance, and facilitate the integration of weather into the operational decision-making process.”¹ The ultimate goal of FPAW is ensuring the safest, most efficient, and reliable aviation operations possible in the face of all aviation weather challenges.

The History of ADS-B Wx

The broadcast of meteorological data via the ADS-B data link was first published as a potential next generation ADS-B application in the ADS-B Version 2 Minimum Operational Performance Standards (MOPS) by RTCA and EUROCAE in 2009.

Since 2012, the FPAW community has regularly been briefed on and contributed to the development of Weather Surveillance (WxS) requirements by RTCA. The maturation of these WxS requirements, initially in RTCA Operational Services and Environmental Description document DO-339, and later in RTCA

¹ <https://fpaw.aero/about> (accessed on 31 October 2023)

37 Minimum Aviation System Performance Standard DO-364, provided data link agnostic requirements for
38 aircraft-based observations (ABO) supporting wake vortex, air traffic, weather, and other applications.

39 The inclusion of WxS requirements as two optional additional features, ADS-B Wx AIREP and ADS-B Wx
40 PIREP, in ADS-B Version 3 MOPS by RTCA in DO-260C and DO-282B, and by EUROCAE in ED-102B,
41 provide an immediate opportunity for the FAA and NWS to efficiently obtain weather data that is currently
42 generated but not communicated during most commercial and general aviation operations.

43 The National Transportation Safety Board (NTSB), in its 2017 special investigative report on PIREPs,
44 recommended that the FAA provide submitters a reliable means of electronic submission of pilot reports
45 (A-17-26); the ADS-B Wx PIREP capability provides one such means. Following the publication of ADS-B
46 Wx requirements in the ADS-B V3 MOPS, the NTSB, in its 2021 safety research report on turbulence-
47 related injuries in Part 121 air carrier operations, recommended to the FAA that Part 121 air carriers be
48 required to equip with and operate ADS-B Wx capable avionics in ADS-B rule airspace (A-21-28, A-21-29,
49 and A-21-30).

50 United Airlines, the Air Lines Pilots Association, the National Weather Service, the Aviation Weather
51 Center, the World Meteorological Organization, the Aircraft Owners and Pilots Association, Airlines for
52 America, the International Air Traffic Association, the FAA Air Traffic Organization Top-5 Safety Team, the
53 FAA NextGen Weather Division, and others have expressed support for the development of ADS-B Wx
54 requirements and their implementation.

55 **ADS-B Wx: A Deeper Dive**

56 ADS-B Wx will allow operators to avoid costly upfront and continuing investments in aircraft
57 communications equipment and data link services to secure ABO data in support of their operations.
58 These costs have limited the willingness of operators to communicate and share ABO data and led the
59 government to incentivize its collection through cost-sharing incentives.

60 ADS-B Wx data will be received through existing ADS-B receiver networks upgraded to receive ADS-B V3
61 messages. Numerous studies have shown ABO data are among the most important inputs to global and
62 regional numerical weather prediction models. Making ADS-B Wx AIREP and PIREP data available to the
63 NWS will improve both aviation and general weather forecasts. ADS-B Wx AIREP will provide critical
64 vertical profile and upper air observations for initialization of rapid update numerical weather prediction
65 models wherever equipped aircraft fly, as well as a permanent record of atmospheric observations whose
66 frequency and distribution cannot be matched by current systems.

67 While tremendous progress has been made, demonstrating consensus among the aviation and weather
68 communities in developing ADS-B Wx standards, additional investment is needed to ensure its
69 implementation. NWS has identified ADS-B Wx data as a bona fide data acquisition requirement and is
70 awaiting its availability. Discussions related to conducting a large-scale demonstration of the benefits of
71 ADS-B Wx data have been discussed with FAA, NWS, and other stakeholders.

72 **ADS-B Wx: Current Events**

73 Recent legislative efforts related to aviation weather and FAA reauthorization may provide opportunities to
74 perform a large-scale demonstration of the potential of ADS-B Wx.

75 The Aviation Weather Improvement Act (H.R. 3915) was passed by the House Committee on Science,
76 Space, and Technology on 27 July 2023 with unanimous, bipartisan support. H.R. 6093, Weather Act
77 Reauthorization, was similarly passed by the committee on 08 November 2023. H.R. 6093 incorporates
78 language from H.R. 3915 that authorizes the appropriation of \$50M over five years for the procurement
79 and analysis of ABO data by the NWS. Both bills are awaiting action by the House of Representatives.

80 Discussions with Committee and Representative staff indicate that using appropriated funds to conduct a
81 large-scale demonstration of the potential of ADS-B Wx would be consistent with the legislation’s intent.

82 On 20 July 2023, the House of Representatives passed the *Securing Growth and Robust Leadership in*
83 *American Aviation Act* (H.R. 3935), a bill to reauthorize the FAA and aviation safety and infrastructure
84 programs for the next five years, with broad bipartisan support. It authorizes appropriation of up to \$25M
85 in incentives for ADS-B avionics installation.

86 **ADS-B Wx: FPAW Recommendations**

87 In support of the overarching recommendations listed in the BLUF section, FPAW recommends that the
88 NWS and FAA conduct a large-scale demonstration of the potential of ADS-B Wx using funds appropriated
89 in support of the Aviation Weather Improvement Act and/or the Weather Act or FAA reauthorization acts or
90 other appropriations. Additionally, FPAW recommends that, if ADS-B equipage incentives are again made
91 available, the FAA makes such incentives available only to those operators that equip with ADS-B Wx
92 capable avionics and that the NWS and FAA integrate ADS-B Wx data provided by aircraft equipped
93 through an incentive program into any demonstration of the potential of ADS-B Wx.

94 **ADS-B Wx: FPAW POCs**

95 The FPAW points of contact for this subject are FPAW SC member Elizabeth Wilson, Director of Weather
96 Programs at Synoptic Data PBC (elizabeth.wilson@synopticdata.com or (919) 758-5689) and Stephen
97 Darr, President of Dynamic Aerospace Inc. (sdarr@dynamicaerospace.com or (339) 364-0955).

98 On behalf of the Friends and Partners in Aviation Weather community:

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Matt Fronzak
FPAW Cochair

Matthias Steiner
FPAW Cochair

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105 DISTRIBUTION:

106 Undersecretary of Commerce for Oceans and Atmosphere and Administrator, National Oceanic and
107 Atmospheric Administration

108 Assistant Secretary of Commerce for Environmental Observation and Prediction, National Oceanic and
109 Atmospheric Administration

110 Assistant Administrator for Weather Services, National Oceanic and Atmospheric Administration

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- 126 President, General Aviation Manufacturers Association
- 127 President, Light Aircraft Manufacturer Association
- 128 President, National Business Aviation Association
- 129 President, RTCA
- 130 President, EUROCAE
- 131 World Meteorological Organization
- 132 U.S. Certificated Air Carriers on the U.S. DOT Certificated Air Carriers List, March 2022
- 133 FAA certified ADS-B equipment manufacturers listed at:
- 134 https://www.faa.gov/air_traffic/technology/equipadsb/installation/equipment#A1-out

DRAFT FOR COMMENT