

# SESSION 6: WEATHER PRODUCTS — WIND ALOFT FORECASTS, AIRMETs, AND SIGMETs

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1. The Winds and Temperatures Aloft Forecast (FB) is issued how often?
  - A. Twice daily, for 6-, 12-, and 24-hour valid times
  - B. Hourly, aligned with METAR observations
  - C. Every three hours with the Surface Analysis Chart
  - D. Once daily at 1200Z only
  
2. In an FB forecast, no temperature is included for which altitudes?
  - A. Altitudes within a few thousand feet of the station elevation (below 6,000 feet)
  - B. All altitudes above 18,000 feet
  - C. Only the 24,000-foot level
  - D. Altitudes where the wind exceeds 100 knots
  
3. An FB entry of `9900` indicates:
  - A. A wind of 99 knots from 090 degrees
  - B. A temperature of -99°C at that level
  - C. Calm winds with no temperature data
  - D. Light and variable winds (less than 5 knots)
  
4. When an FB wind speed exceeds 99 knots, it is encoded by:

- A. Reporting the speed in a separate appended group
- B. Rounding the speed down to exactly 99 knots
- C. Adding 50 to the direction and subtracting 100 from the speed
- D. Omitting the entry entirely for that altitude

5. AIRMET Sierra is issued for which conditions?

- A. Moderate icing and freezing levels
- B. Severe turbulence not associated with thunderstorms
- C. IFR conditions and mountain obscuration
- D. Thunderstorms covering 40% of an area

6. AIRMET Tango is issued for which conditions?

- A. IFR ceilings and visibility
- B. Moderate turbulence, surface winds  $\geq 30$  knots, and low-level wind shear
- C. Moderate icing and freezing levels
- D. Volcanic ash and dust storms

7. AIRMET Zulu is issued for which conditions?

- A. IFR conditions and mountain obscuration
- B. Moderate turbulence and strong surface winds
- C. Moderate icing and freezing levels
- D. Embedded thunderstorms and squall lines

8. A non-convective SIGMET differs from an AIRMET in that it is issued for:

- A. Hazards of greater severity affecting all aircraft, such as severe icing or turbulence
- B. Conditions significant only to light aircraft
- C. Routine IFR ceilings and visibilities
- D. Forecast surface winds between 20 and 30 knots

9. A Convective SIGMET would be issued for which of the following?

- A. Moderate rime icing forecast between 6,000 and 10,000 feet
- B. Embedded thunderstorms or a line of thunderstorms
- C. IFR conditions affecting 50% of an area
- D. Surface winds of 25 knots gusting to 35

10. An FB entry reads `2435-30` at 12,000 feet. This decodes as:

- A. Wind from 240° at 35 knots, temperature +30°C
- B. Wind from 243° at 5 knots, temperature -30°C
- C. Wind from 024° at 35 knots, no temperature
- D. Wind from 240° at 35 knots, temperature -30°C

11. Convective SIGMETs are issued routinely at what time?

- A. On the hour, every hour
- B. At 55 minutes past each hour, with special issuances as needed
- C. Twice daily at 0000Z and 1200Z
- D. Every 30 minutes during convective season

12. A non-convective SIGMET is valid for up to how long (excluding volcanic ash and tropical cyclones)?

- A. 2 hours
- B. 6 hours
- C. 4 hours
- D. 12 hours

13. How can a pilot use the FB temperature data to estimate the freezing level?

- A. By interpolating to find the altitude where the temperature transitions through 0°C
- B. By doubling the surface temperature and dividing by the altitude
- C. The FB does not provide any temperature information
- D. By reading the freezing level directly from the wind direction code

14. A Zulu AIRMET covering 4,000 to 12,000 feet over a 200-mile-wide corridor that bisects the planned route means:

- A. The entire planned cruise altitude band may lie within forecast icing
- B. Icing is confined to the edges of the corridor only
- C. The AIRMET does not apply unless directly overhead
- D. Only aircraft above 12,000 feet are affected

15. A Convective SIGMET active along the planned route is most appropriately treated as:

- A. Advisory information requiring no specific action
- B. Relevant only to aircraft above 18,000 feet
- C. A serious flag describing conditions that can be lethal to general aviation aircraft
- D. Information that supersedes the need to check NOTAMs

16. AIRMETs are typically issued for valid periods of:

- A. Up to 6 hours (12 hours overnight)
- B. Up to 2 hours
- C. Up to 24 hours
- D. Up to 48 hours

17. A SIGMET for severe icing not associated with thunderstorms affects which aircraft?

- A. Only light general aviation aircraft
- B. Only aircraft not certified for flight into known icing
- C. Only turbine aircraft above FL180
- D. All aircraft, regardless of size or capability

18. The FB product supports IFR fuel planning primarily by providing:

- A. Forecast ceiling and visibility at the destination
- B. The synoptic frontal positions along the route
- C. Forecast winds aloft, enabling groundspeed and fuel burn estimates
- D. The required alternate airport minimums

19. A Convective SIGMET (WST) is valid for up to how long?

- A. 2 hours
- B. 4 hours
- C. 6 hours
- D. 12 hours

20. An FB entry `246755` at 24,000 feet decodes to a wind of:

- A. 246 knots from 075 degrees, temperature +55°C
- B. 240° at 167 knots, temperature -55°C
- C. 246° at 75 knots, temperature -55°C
- D. 024° at 67 knots, temperature +55°C

21. Which inflight advisory specifically addresses embedded thunderstorms?

- A. AIRMET Sierra
- B. AIRMET Tango
- C. A non-convective SIGMET
- D. A Convective SIGMET

22. Evaluating an icing AIRMET requires assessing it in how many dimensions?

- A. One — geographic extent only
- B. Three — altitude range, geographic extent, and valid time
- C. Two — altitude and probability only
- D. Four — including the reporting aircraft type

23. An FB temperature value at cruise altitude is also required to:

- A. Determine the required alternate minimums
- B. Calculate density altitude and true airspeed
- C. Identify the active runway at the destination
- D. Establish the transponder code assignment

24. A SIGMET issued for volcanic ash is valid for up to:

- A. 2 hours
- B. 4 hours
- C. 30 minutes
- D. 6 hours

25. A pilot planning to cruise at 9,000 feet finds the FB shows  $-2^{\circ}\text{C}$  at 9,000 and the GFA shows forecast icing in clouds from 7,000 to 11,000 feet. The integrated conclusion is:

- A. The cruise altitude is safely clear of icing
- B. Icing forecasts do not apply when the temperature is above  $-10^{\circ}\text{C}$
- C. The FB temperature is irrelevant to icing assessment
- D. The planned altitude lies within both the icing layer and the supercooled-water temperature band

## ANSWER KEY & EXPLANATIONS – SESSION 6

1. A. Twice daily — The FB is issued twice daily for 6-, 12-, and 24-hour valid times.
2. A. Near station elevation — No temperature is included for altitudes within a few thousand feet of the station (below 6,000 feet).
3. D. Light and variable — `9900` indicates light and variable winds, less than 5 knots.
4. C. +50 dir / -100 spd — Speeds over 99 knots are encoded by adding 50 to the direction and subtracting 100 from the speed.
5. C. IFR/mountain obscuration — AIRMET Sierra covers IFR conditions and mountain obscuration.
6. B. Turbulence/winds/shear — AIRMET Tango covers moderate turbulence, surface winds  $\geq 30$  knots, and low-level wind shear.

7. C. Icing/freezing level — AIRMET Zulu covers moderate icing and freezing levels.
8. A. Greater severity, all aircraft — A SIGMET addresses hazards of greater severity affecting all aircraft, such as severe icing or turbulence.
9. B. Embedded/line of TS — Convective SIGMETs are issued for embedded thunderstorms, lines of thunderstorms, and similar convective hazards.
10. D. 240°/35kt/-30°C — `2435-30` = wind from 240° at 35 knots, temperature -30°C.
11. B. :55 past hour + special — Convective SIGMETs are issued routinely at 55 minutes past each hour, with special issuances as needed.
12. C. 4 hours — Non-convective SIGMETs are valid up to 4 hours (6 hours for volcanic ash/tropical cyclones).
13. A. Interpolate to 0°C — The freezing level is estimated by interpolating FB temperatures to find where they transition through 0°C.
14. A. Entire band may be in icing — A Zulu AIRMET spanning the cruise band over a wide corridor means the planned altitude may lie within forecast icing.
15. C. Lethal-to-GA flag — A Convective SIGMET along the route is a serious flag describing conditions that can be lethal to GA aircraft.
16. A. Up to 6/12 hours — AIRMETs are issued for up to 6-hour periods (12 hours overnight).
17. D. All aircraft — A SIGMET affects all aircraft regardless of size or capability.
18. C. Winds aloft for fuel — The FB provides forecast winds aloft, enabling groundspeed and fuel burn estimates for fuel planning.

19. A. 2 hours — Convective SIGMETs are valid for up to 2 hours.

20. B. 240°/167kt/-55°C — `246755`: 246-50=240° direction, 67+100=167 knots, temperature -55°C.

21. D. Convective SIGMET — Embedded thunderstorms are specifically addressed by a Convective SIGMET.

22. B. Three dimensions — An icing AIRMET must be assessed in three dimensions: altitude range, geographic extent, and valid time.

23. B. Density altitude/TAS — FB cruise temperature is required to calculate density altitude and true airspeed.

24. D. 6 hours — A volcanic ash SIGMET is valid for up to 6 hours.

25. D. Within icing layer and band — At 9,000 ft with -2°C and forecast icing 7,000–11,000 ft, the altitude lies within both the icing layer and the supercooled-water temperature band.