Terminal Aerodrome Forecast (TAF)

Aerodrome forecasts for international airports and regional aerodromes in Germany are issued in the TAF (Terminal Aerodrome Forecast) code format. TAFs form the basis for decisions on the meteorological usability of an aerodrome as destination or alternate airport during a certain time period. Depending on what is needed, short- or long-term TAFs are generated.

TAF	Validity period	Created
Long-term TAF	24 or 30 hrs	every 6 hrs
Short-term TAF	9 hrs	every 3 hrs

For generating a TAF aerodrome forecast and then keeping it under continuous review, at least two consecutive METARs from before the validity of the TAF are needed, as well as one continuous meteorological observation report from during the validity of the TAF. It is generally not possible to keep a TAF under continuous review any longer if two consecutive METARs are missing. In this case, the TAF is cancelled (CNL).

1. Type of forecast TAF	2. Change parameters *COR or AMD*	3. ICAO location indicator	4. Time of issue of forecast
5. Identification of a missing forecast *NIL*	6. Days and period of validity of forecast	7. Identification of a cancelled forecast *CNL*	8. Surface wind
9. Visibility*	10. Significant weather*	11. Clouds of operational significance*	12. Expected significant changes

Elements appearing *in italics* are optional.
* CAVOK replaces groups 9, 10 and 11.

Comments regarding the interpretation of TAFs

- Light precipitation (except freezing precipitation) or haze/mist will not be included in the description of expected weather conditions unless they lead to a reduced visibility of ≤ 5 km.
- Visibility changes (change groups BECMG or TEMPO) are only forecast if the threshold values 150, 350, 600, 800, 1500, 3000 or 5000 m are reached (only for improvement) or passed through.
- Only clouds of operational significance are forecast (cloud base < 5000 ft AGL or below MSA, TCU/CB).
- Changes in the main cloud base (change groups BECMG or TEMPO) are only forecast if the threshold values 100, 200, 500, 1000 or 1500 ft are reached (only for improvement) or passed through.
- Changes in the cloud amount above 1500 ft are not forecast.
- VFR pilots should bear in mind that, in accordance with ICAO thresholds for visibility and cloud base height, TAFs may only be used to a limited extent as basis for planning a VFR flight. TAFs are oriented to the needs of IFR flights, which is why they should be interpreted with awareness of these limitations.

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Wetter und Klima aus einer Hand

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METAR / SPECI / TREND / TAF

Meteorological Reports and Forecasts for Aviation

Meteorological aerodrome reports METAR & SPECI

The routine and special meteorological aerodrome reports METAR and SPECI are internationally standardised, coded bulletins of the meteorological conditions at aerodromes.

In Germany, METARs (METeorological Aerodrome Reports) are published on a half-hourly basis for the observation times 20 and 50 minutes after the hour. SPECIs (SPECIal reports) are generated if the current weather differs significantly from the last routine meteorological report, based on fixed threshold values for the different parameters. METARs and SPECIs are composed of selected groups of codes for reporting meteorological parameters. Contents and order of these have been defined and adopted as standard by the International Civil Aviation Organization (ICAO).

1. Type of report METAR [COR] SPECI	2. ICAO location indicator	3. Day and time of the observation	4. Automated or missing report identifier *NIL, AUTO*	5. Surface wind
6. Significant directional variations	7. Prevailing visibility	8. Minimum visibility	9. Runway visual range	10. Present weather
11. Clouds of operational significance	12. Substitution group CAVOK*	13. Air and dew-point temperature	14. Air pressure	15. Supplementary information**

Elements appearing *in italics* are optional.
* CAVOK replaces groups 7, 8, 10 and 11.
** If the aerodrome is a military airfield, the weather report is additionally displayed by means of Colour States.

The following gives an overview of the use of METAR / SPECI reports; for more details see the *Handbuch zur Richtlinie Flugwetterdienste - Band Obs ´Wettermeldungen für die Luftfahrt´.*

TREND landing forecasts

Landing weather forecasts for the international airports in Germany are available in the TREND format, prepared by the competent MET Advisory Centres.

A TREND forecast is published as supplementary information to the current aerodrome meteorological report, is valid for the next two hours and, together with the meteorological aerodrome report, informs about the meteorological expected conditions.

TRENDs provide a concise description in code form of significant changes in one or several weather elements, such as surface wind, prevailing visibility, current weather, cloud cover. TREND forecasts issued by the Bundeswehr Geoinformation Service for military airfields are prepared using the so-called ‘colour state’ code, which is based on the main cloud base and visibility at ground level as references.

Product name	Location indicator	Observation time	Wind	Visibility	Weather	Cloud	Temp./Dew pt.	QNH	Supp. info	Runway state	TREND
METAR / SPECI	EDDF	061150Z	23008KT	4000	-DZ	BKN008	03/02	Q1008	RESN	R25L/591026	NOSIG

Product name	Location indicator	Time of issue	Validity period	Wind	Visibility	Weather	Cloud	Change group
TAF	EDDF	031100Z	0312/0418	27005KT	1500	BR	BKN005	BECMG 0317/0319 0300 FZFG VV001

Product name

METAR	**Met**eorological **A**erodrome Routine **R**eport
SPECI	**Speci**al report
TAF	**T**erminal **A**erodrome **F**orecast

ICAO location indicator

EDDF	Location indicator for Frankfurt

Date/time group

061150Z	6	Day of the month
	11	Hour
	50	Minutes
	Z	UTC identifier

Validity period (TAF)

0312/0418	03	Day of the month
	12	Beginning of validity period of forecast (hour UTC)
	04	Day of the month
	18	End of validity period of forecast (hour UTC)

Example: 30 hours, beginning at 12 UTC on the 3rd of the month and ending at 18 UTC the following day

Other codes

COR	Corrected METAR or corrected TAF (changed before validity period of forecast)
AMD	Amended TAF (changed during validity period of forecast)
NIL	No METAR / No TAF compiled
AUTO	Automated METAR
CNL	TAF cancelled

Surface wind

23008KT	230	Wind direction (true north)
	08	Wind speed
	KT	Knots (MPS for m/s)
VRB03KT	VRB	Variable wind direction
05020G35KT	G35	Gusts up to 35 kt
00000KT	00000	Calm
030V100	V	Indicator letter for varying conditions
	030V100	Two extreme wind directions, varying between ≥ 60° and < 180°

Example: wind varies between 30° and 100°.

Visibility

4000	4000	Prevailing visibility in m
9999	9999	Visibility > 10,000 m
3500NE	NE	Minimum visibility* at ground level including direction (using the eight main compass points)
		Example: lowest visibility is 3500 m in north-easterly direction.
6000 1200S	6000	Prevailing visibility
	1200S	Lowest visibility in southerly direction

** Minimum visibility* is reported when, depending on the direction, there is a significant difference between minimum visibility and prevailing visibility. In case of automated reports, the direction is not indicated.

Runway visual range

R27L/1200U	R27L	Runway designator: 27 left
		L = left
		C = centre
		R = right
	1200	RVR in m
		M0050: RVR < 50 m
		P2000: RVR > 2000 m
	U	Change trend during the past 10 minutes
		U = upward
		D = downward
		N = no distinct tendency

Present or forecast weather

Intensity / distance	Descriptor	Precipitation	Obscuration	Other
Intensity	*MI* Shallow	DZ Drizzle	BR Mist	*PO* Dust or sand whirls
- Light	BC Patches	RA Rain	FG Fog	SQ Squalls
Moderate (no symbol)	*PR* Partially	SN Snow	*FU* Smoke	FC Funnel cloud (tornado, waterspout)
+ Heavy	*DR* Low drifting	*SG* Snow grains	*VA* Volcanic ash	SS Sandstorm
VC Vicinity of the aerodrome	BL Blowing	PL Ice pellets	*DU* Widespread dust	*DS* Duststorm
	SH Shower	GR Hail	SA Sand	
	TS Thunderstorm	GS small hail/snow pellets	HZ Haze	
	FZ Freezing			

Elements appearing *in italics* are not used by German civil airports in METARs or SPECIs.

Clouds of operational significance

BKN008	BKN	Cloud cover	FEW (few) = 1/8 - 2/8
	008	Cloud base at 800 ft (indicated in hft AGL)	SCT (scattered) = 3/8 - 4/8 BKN (broken) = 5/8 - 7/8 OVC (overcast) = 8/8
SCT030CB	CB	Cloud type CB = Cumulonimbus TCU = Towering cumulus	NSC Nil significant cloud • No clouds below 5000 ft or below the highest minimum sector altitude • No CB • No TCU
VV003	VV	Vertical visibility	NCD No significant cloud detected (in automated reports)
	003	Vertical visibility = 300 ft (indicated in hft AGL)	
VV///	///	Vertical visibility cannot be determined	

CAVOK

CAVOK	Conditions: • prevailing visibility: at least 10 km and no minimum visibility • no clouds observed or detected below 5000 ft or below the highest minimum sector height • no CB/TCU • no weather phenomenon (cf. table: Current or forecast weather)

Air temperature / dew point

03/02	03	Air temperature in °C
	02	Dew point in °C
01/M02	01	Air temperature + 1 °C
	M02	Dew point - 2 °C

Air pressure

Q1008	Q	Indicator for QNH in hPa
	1008	QNH = 1008 (generally rounded down)
A2992	A	Indicator for QNH in inches
	2992	QNH = 29.92 inches

Supplementary information (METAR)

RESN	RE	Recent significant weather since last observation, but not at the time of observation
	SN	Moderate snowfall
WS R27	WS	Wind shear between ground and 1600 ft AGL
	R27	Runway 27
	ALL RWY	Wind shear at all runways
R25L/591026		State of the runway (description see below)
BLU		Colour state, only military airfields (description see below)
NOSIG		TREND (description see below)
RMK		Remarks section for national information

State of runway (METAR, if needed)

R25L/591026	R25L	Runway designator: 25 left
		L = left
		C = centre
		R = right
		88 All runways
	5	Type of cloud cover
		0 = clear and dry
		1 = damp
		2 = wet or water patches
		3 = rime or frost covered
		4 = dry snow
		5 = wet snow
		6 = slush
		7 = ice
		8 = compacted or rolled snow
		9 = frozen ruts or ridges
		/ = type of deposit not reported
	9	Extent
		1 = ≤ 10%
		2 = 11 to 25%
		5 = 26 to 50 %
		9 = 51 to 100 %
		/ = not reported
	10	Depth of deposit
		00 = less than 1 mm
		01 = 1 mm
		02 = 2 mm
		..
		10 = 1 cm
		..
		50 = 5 cm
		..
		90 = 9 cm
		92 = 10 cm
		93 = 15 cm
		..
		97 = 35 cm
		98 = 40 cm or more
		99 = runway not usable
		// = depth of deposit operationally not significant nor measurable
	26	Friction coefficient (R) or braking action (B)
		R of 0,26 is encoded 26
		R ≤ 25: B poor
		R 26–29: B poor to medium
		R 30–35: B medium
		R 36–39: B medium to good
		R ≥ 40: B good
		91 = B poor
		92 = B poor to medium
		93 = B medium
		94 = B medium to good
		95 = B good
		99 = B and R not reliable
		/ not measurable
		// = runway not used
R/SNOCLO		Aerodrome closed due to snow on runway(s)
R88/CLRD//		Contamination cleared from all runways

TREND (METAR)

NOSIG		NO SIGnificant changes expected
BECMG		Becoming
TEMPO		Temporarily
BECMG FM0950	0950	Hour of day: (hour / minutes UTC)
	FM	FM = from
		TL = till
		AT = at
NSW		No significant weather phenomenon
BLU		Colour state (only military airfields) (description see below)

Colour State (only military airfields)

YLO RED	YLO	1st state: METAR Main cloud base (ceiling) ≥ 300 ft, and horizontal visibility ≥ 1600 m
	RED	2nd state: TREND Main cloud base < 200 ft or horizontal visibility < 800 m
BLACK		Aerodrome closed

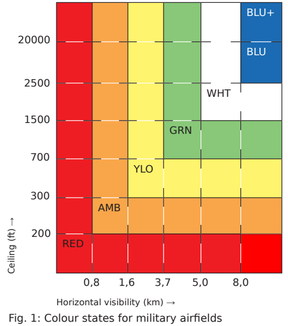

Fig. 1: Colour states for military airfields

Change group (TAF)

FM040800	FM	From (indicates new forecast section)
	04	Day of the month
	0800	Beginning of change (hour / minutes UTC)
BECMG 0317/0319	BECMG	Becoming (indicates a change in weather conditions)
	03	Day of the month
	17	Beginning of change period (hour UTC)
	03	Day of the month
	19	End of change period (hour UTC)
TEMPO 1216/1222	TEMPO	Temporarily (indicates a temporary change in particular weather elements)
	12	Day of the month
	16	Beginning of change period (hour UTC)
	12	Day of the month
	22	End of change period (hour UTC)

BECMG and TEMPO are only followed by those groups where the forecast changes are reached (only for improvement) or passed through the given thresholds.

PROB (TAF)

PROB30 0305/0308 BKN002	PROB	Probability forecast
	30	Probability of occurrence in per cent (30 or 40)
	03	Day of the month
	05	Beginning of forecast period (hour UTC)
	03	Day of the month
	08	End of forecast period (hour UTC)
BKN002		Cloud base (5/8 to 7/8) at 200 ft (indicated in hft AGL)

Temperature forecast (TAF, reported in only a few countries)

TX25/1612Z	TX	Forecasted maximum temperature
	25	25 degrees Celsius
	16	Day of the month
	12Z	Time of the forecast (12 UTC)
TN15/1706Z	TN	Forecasted minimum temperature