TERMINAL AERODROME FORECAST

1. Introduction

Basically, a **Terminal Aerodrome Forecast** (or Terminal Area Forecast, TAF) is a message with a defined format with the objective to report a weather **forecast** for a single airport and its vicinity.

This international code was developed by the ICAO and approved by the World Meteorological Organization. Baseline data are common to all countries, but some sections of the code are subject to local variations.

TAF messages are generally issued at every 6 hours and may have a validity of 12 hours, 24 hours or even 30 hours.

The TAF is made by a human forecaster (no automatic observation is done) and its structure is very close to the METAR (refer to the specific book), but some differences are noted and they'll be covered in this document.

2. Decoding (and understanding) the TAF

We'll use the following TAF as an example:

```
TAF SAEZ 171100Z 1712/1812 02005KT CAVOK TX22/1718Z TN11/1810Z
PROB40 TEMPO 1716/1718 4800 SHRA BKN020CB
BECMG 1801/1804 05005KT 7000 NSC
FM181000 02005KT 0800 BCFG=
```

2.1. Descriptor of the Message

TAF SAEZ 171100Z 1712/1812 02005KT CAVOK TX22/1718Z TN11/1810Z (...)

It informs that the message is a TAF.

2.2. Airfield ICAO Code

TAF **SAEZ** 171100Z 1712/1812 02005KT CAVOK TX22/1718Z TN11/1810Z (...)

It's the same as METAR. In the example, the forecast is issued for Buenos Aires/Ezeiza Airport (SAEZ).

2.3. Date and Time

TAF SAEZ **171100Z** 1712/1812 02005KT CAVOK TX22/1718Z TN11/1810Z (...)

It's the same as METAR. In the example, the forecast has been disseminated (published) at 1100Z of day 17.

Remember that the time is always in UTC.

2.4. Period of Validity

TAF SAEZ 171100Z **1712/1812** 02005KT CAVOK TX22/1718Z TN11/1810Z (...)

This group shows the period of the forecast's validity. **Before** the forward slash ("/") is the start of validity, while **after** the forward slash is the end of validity, showing **date and hour.** So, in the example, the forecast is valid between 1200Z of day 17 [**1712**] and 1200Z of day 18 [**1812**], comprising 24 hours.

2.5. Initial (or General) Forecast

TAF TXKF 171133Z 1712/1812 **02005KT CAVOK** TX22/1718Z TN11/1810Z (...)

This is the first thing we need to understand from the TAF. Since the weather is dynamic, a forecast may have **two** evolutions:

- **Temporary Change**

The initial forecast changes **temporarily** in a certain timeframe, but will turn back to the initial forecast in the end of that timeframe

- **Definitive Change**

The initial forecast changes **definitely**, gradually or does not. The initial forecast is not available anymore.

Some abbreviations are used to express a change, whether temporary or definitive. If no change is predicted in the forecast (not of any change keyword is mentioned), the initial forecast will be valid for the entire TAF duration, being a **General Forecast**.

In our example, the initial forecast (from 1200Z) is:

Wind: blowing from direction 020° with 5 knots of intensity;
Cloud Coverage and Visibility: no clouds and visibility equal or more than 10 km.

2.6. Maximum and Minimum Temperatures

TAF TXKF 171133Z 1712/1812 02005KT CAVOK **TX22/1718Z TN11/1810Z** (...)

The TAF also informs the atmospheric temperature range on that airport during the validity period of the TAF. The **maximum temperature** is indicated in **TX** group, while the **minimum temperature** is informed in **TN** group.

TX22/1718Z means that the **maximum** temperature expected for the TAF period is 22°C, to be observed on day 17 at 1800Z (date and time information like explained in section 2.4).

TN11/1810Z means that the **minimum** temperature expected for the TAF period is 11°C, to be observed on day 18 at 1000Z.

2.7. Probability

(...)
PROB40 TEMPO 1716/1718 4800 SHRA BKN020CB
BECMG 1801/1804 05005KT 7000 NSC
FM181000 02005KT 0800 BCFG=

If the meteorologist is not totally sure if a forecast change will happen, the percentage of probability of this change is informed with the abbreviation **PROB**. In the example, the probability of the forecast change (the underlined one) is 40% probable to happen.

A TAF will use PROB only for probability of 30% (**PROB30**) or 40% (**PROB40**).

2.8. Forecast Change

(...)
PROB40 **TEMPO 1716/1718** 4800 SHRA BKN020CB
BECMG 1801/1804 05005KT 7000 NSC
FM181000 02005KT 0800 BCFG**=**

If a change on forecast (with at least 50% of probability) is expected, it'll be informed accordingly. Resembling section 2.5 of this document, the abbreviations used for each change is:

Type of Change	Abbreviation Used	Meaning
Temporary	**TEMPO**	Temporary change between the specified period. After the end of the period, the weather will revert back to the state of the last definitive change.
Definitive	**FM**	**Immediate** change from a previous state to a new one from the date, time and minute specified to the described one, nullifying previous changes.
	BECMG	**Gradual** change from a previous state to a new one between the specified periods. After the end of the period, the weather will be the described one, nullifying previous changes.

In the example, we have three different changes:

2.8.1. Temporary Change (TEMPO)

PROB40 **TEMPO 1716/1718** 4800 SHRA BKN020CB

Temporary Change (**TEMPO**) predicted between 1600Z of day 17 and 1800Z of day 17 to:

Visibility: 4800 m;
Weather Phenomenon: Moderate Shower Rain (SHRA);
Cloud coverage: Broken at 2000 ft AGL with cumulonimbus.
After 1800Z, the weather will **revert back** to the last state (original or motivated by BECMG/FM).

In our example, the last state is the original one: `02005KT CAVOK`

2.8.2. Definitive Gradual Change (BECMG)

BECMG 1801/1804 05005KT 7000 NSC

Definitive Change (**BECMG**), **gradually** happening from 0100Z of day 17 to 0400Z of day 18. Weather will be changing to:

Wind: blowing from direction 050° with 5 knots of intensity;
Visibility: 7000 m;
Cloud coverage: Non-significative Clouds (NSC).
After 0400Z, the weather will be the described above, nullifying the last weather state.

2.8.3. Definitive Immediate Change (FM)

FM181000 02005KT 0800 BCFG=

Definitive Change (**FM**), **immediately** happening from 1000Z of day 18. Weather will change to:

Wind: blowing from direction 020° with 5 knots of intensity;
Visibility: 800 m;
Weather Phenomenon: Patches of Fog (BCFG).

2.9. End of message

FM181000 02005KT 0800 BCFG**=**

The equal sign (=) indicates the end of the message

To get a better understanding of the evolution of the weather states, look to the diagram of the next page.

Original Message:

TAF SAEZ 171100Z 1712/1812 02005KT CAVOK TX22/1718Z TN11/1810Z
PROB40 TEMPO 1716/1718 4800 SHRA BKN020CB
BECMG 1801/1804 05005KT 7000 NSC
FM181000 02005KT 0800 BCFG=

Weather Forecast evolution:

Period	Weather State
1200Z, day 17	**Original State** 02005KT CAVOK
1300Z, day 17	
1400Z, day 17	
1500Z, day 17	
1600Z, day 17	**Temporary Change (TEMPO) – Probability 40%** 4800 SHRA BKN020CB
1700Z, day 17	
1800Z, day 17 **MAX TEMP – 22°C**	**Revert back to Original State** 02005KT CAVOK
1900Z, day 17	
2000Z, day 17	
2100Z, day 17	
2200Z, day 17	
2300Z, day 17	
2400Z, day 17	
0100Z, day 18	**Process of Gradual Change** BECMG
0200Z, day 18	
0300Z, day 18	
0400Z, day 18	**State after the Gradual Change** 05005KT 7000 NSC
0500Z, day 18	
0600Z, day 18	
0700Z, day 18	
0800Z, day 18	
0900Z, day 18	
1000Z, day 18 **MIN TEMP – 11°C**	**Immediate Change (FM)** 02005KT 0800 BCFG
1100Z, day 18	

3. More Examples

3.1. Example 1

TAF LEMD 171700Z 1718/1824 21010KT 9999 SCT030 TX27/1815Z TN15/1806Z
PROB30 TEMPO 1718/1722 3000 SHRA FEW030TCU
PROB40 TEMPO 1800/1809 VRB05KT BKN010=

TAF [**TAF**] for Madrid/Barajas Airport [**LEMD**] disseminated at 1700Z of day 17 [**171700Z**], valid between 1800Z of day 17 to 24Z of day 18 [**1718/1824**]. The initial forecast is: wind blowing from 210°, with 10 kt; visibility equal or more than 10 km, scattered clouds at 3000 ft AGL [**21010KT 9999 SCT030**]. The predicted maximum temperature is 27°C, for 1500Z of day 18 [**TX27/1815Z**]. The predicted minimum temperature is 15°C, for 0600Z of day 18 [**TN15/1806Z**].
The weather state will **temporarily** change, with 30% of probability [**PROB30**], between 1800Z and 2200Z of day 17 [**TEMPO 1718/1722**] to: visibility equal to 3000 m, moderate shower rain, few clouds at 3000 ft AGL with towering cumulus [**3000 SHRA FEW030TCU**]. After 2200Z, it'll revert back to initial state.
The weather state will **temporarily** change, with 40% of probability [**PROB40**], between 0000Z and 0900Z of day 18 [**TEMPO 1800/1809**] to: wind from variable direction, with 5 kt, broken clouds at 1000 ft AGL [**VRB05KT BKN010**]. After 0900Z, it'll revert back to initial state.
End of message [**=**].

3.2. Example 2

TAF VNKT 171500Z 1718/1818 00000KT 7000 FEW015 TX27/1807Z TN19/1722Z
BECMG 1800/1802 5000 BR
BECMG 1804/1805 20005KT 7000 FEW020 SCT100
BECMG 1807/1809 22010KT 9999
PROB40 TEMPO 1808/1814 FEW025CB BKN100
BECMG 1814/1815 00000KT 7000 FEW015 SCT100=

TAF [**TAF**] for Kathmandu Airport [**VNKT**] disseminated at 1500Z of day 17 [**171500Z**], valid between 1800Z of day 17 to 1800Z of day 18 [**1718/1818**]. The initial forecast is: wind calm, visibility equal to 7000 m, few clouds at 1500 ft AGL [**00000KT 7000 FEW015**]. The predicted maximum temperature is 27°C, for 0700Z of day 18 [**TX27/1807Z**]. The predicted minimum temperature is 19°C, for 2200Z of day 17 [**TN19/1722Z**].
The weather state will **gradually** change between 0000Z and 0200Z of day 18 [**BECMG 1800/1802**] to: visibility equal to 5000 m, mist [**5000 BR**]. After 0200Z, the change will complete and the initial state is withdrawn.
The weather state will **gradually** change between 0400Z and 0500Z of day 18 [**BECMG 1804/1805**] to: wind blowing from 200° with 5 kt, visibility equal to 4000 m, few clouds at 2000 ft AGL, scattered clouds at 10000 ft AGL [**20005KT 7000 FEW020 SCT100**]. After 0500Z, the change will complete and the preceding state is withdrawn.
The weather state will **gradually** change between 0700Z and 0900Z of day 18 [**BECMG 1807/1809**] to: wind blowing from 220° with 10 kt, visibility equal or bigger than 10 km [**22010KT 9999**]. After 0900Z, the change will complete and the preceding state is withdrawn.
The weather state will **temporarily** change, with 40% of probability [**PROB40**], between 0800Z and 1400Z of day 18 [**TEMPO 1808/1814**] to: few clouds at 2500 ft AGL with cumulonimbus, broken clouds at 10000 ft AGL [**FEW025CB BKN100**]. After 1400Z, it'll revert back to the **preceding** state.
The weather state will **gradually** change between 1400Z and 1500Z of day 18 [**BECMG 1814/1815**] to: wind calm, visibility equal to 7000 m, few clouds at 1500 ft AGL, scattered clouds at 10000 ft AGL [**00000KT 7000 FEW015 SCT100**]. After 1500Z, the change will complete and the preceding state is withdrawn.
End of message [**=**].

3.3. Example 3

TAF YSSY 171724Z 1718/1824 24015KT CAVOK
FM172300 21015KT CAVOK
FM180300 16010KT CAVOK
FM181000 24008KT 9999 SCT050=

TAF [**TAF**] for Sydney Airport [**YSSY**] disseminated at 1724Z of day 17 [**171724Z**], valid between 1800Z of day 17 to 2400Z of day 18 [**1718/1824**]. The initial forecast is: wind blowing from 240° with 15 kt, ceiling and visibility OK [**24015KT CAVOK**]. Maximum and Minimum temperatures weren't predicted.
The weather state will **immediately** change from 2300Z of day 17 [**FM172300**] to: wind blowing from 210° with 15 kt, ceiling and visibility OK [**21015KT CAVOK**].
The weather state will **immediately** change from 0300Z of day 18 [**FM180300**] to: wind blowing from 160° with 10 kt, ceiling and visibility OK [**16010KT CAVOK**].
The weather state will **immediately** change from 1000| of day 18 [**FM181000**] to: wind blowing from 240° with 8 kt, visibility equal or greater than 10 km, scattered clouds at 5000 ft AGL [**24008KT 9999 SCT050**].
End of message [**=**].

3.4. Example 4

KSEA 171728Z 1718/1824 33005KT P6SM VCSH SCT080 BKN120 BKN250
TEMPO 1718/1722 -SHRA
FM180600 20004KT P6SM -SHRA BKN060 OVC100
FM180900 20004KT P6SM -SHRA BKN040 OVC070=

TAF [**TAF**] for Seattle/Tacoma Airport [**KSEA**] disseminated at 1728Z of day 17 [**171724Z**], valid between 1800Z of day 17 to 2400Z of day 18 [**1718/1824**]. The initial forecast is: wind blowing from 330° with 5 kt, visibility greater than 6 statute miles, showers in the vicinity of the aerodrome, scattered at 8000 ft AGL, broken at 12000 ft AGL, broken at 25000 ft AGL [**33005KT P6SM VCSH SCT080 BKN120 BKN250**]. Maximum and Minimum temperatures weren't predicted.
The weather state will **temporarily** change between 1800Z and 2200Z of day 17 [**TEMPO 1718/1722**] to: light shower rain [**-SHRA**]. After 2200Z, it'll revert back to the **original** state.
The weather state will **immediately** change from 0600Z of day 18 [**FM180600**] to: wind blowing from 200° with 4 kt, visibility greater than 6 statute miles, light shower rain, broken at 6000 ft AGL, overcast at 10000 ft AGL [**20004KT P6SM -SHRA BKN060 OVC100**].
The weather state will **immediately** change from 0900Z of day 18 [**FM180900**] to: wind blowing from 200° with 4 kt, visibility greater than 6 statute miles, light shower rain, broken at 4000 ft AGL, overcast at 7000 ft AGL [**20004KT P6SM -SHRA BKN040 OVC070**].
End of message [**=**].