

# Meteorology

- [METAR](#)
- [ATIS](#)
- [TAF](#)

# METAR

A **METAR** is a coded weather report issued at a specific time for an aerodrome, providing real-time weather conditions along with a short-term trend forecast. These reports are typically updated every hour or at specified intervals, with **SPECI** reports issued for significant changes between METAR updates.

The trend section at the end of the METAR is valid for the next two hours.

## Example METAR:

```
DAAG 301650Z AUTO 18008KT 140V220 9999 FEW030 25/15 Q1016 NOSIG
```

## Decoding METAR Components

### Location & Observation Time

The METAR starts with the ICAO code of the reporting airport (in this case, **DAAG** for Algiers Houari Boumediene Airport), followed by the day of the month and the **UTC time** of observation ( **301650Z** indicates the 30th of the month at 1650 UTC).

### Auto METAR

**AUTO** signifies that the report is automatically generated by meteorological instruments without human intervention.

### Surface Wind

```
18008KT 140V220
```

- The first **three digits** (180) indicate the wind direction (180°).
- The following **two digits** (08) indicate the average wind speed in knots (08 KT).
- If the wind is variable beyond 60°, the fluctuation is indicated (e.g., **140V220** means the wind varies between 140° and 220°).
- Calm winds are reported as **00000KT**.

### Gusts

```
18008G20KT
```

- **G** followed by a number indicates gusts exceeding the mean wind speed (e.g., 08 KT with gusts of 20 KT).

### Variable Wind

VRB02KT

- **VRB** indicates a wind direction variation when speeds are below 3 KT.

## Visibility

9999

- The maximum reported visibility.
- **9999** means visibility is **10 km or more**.
- If visibility varies, additional details may be provided (e.g., **1400N** indicates 1400 meters visibility in the north).

## Runway Visual Range (RVR)

R09/1200U

- Reports **visibility down the runway** when visibility is **below 1500 meters**.
- The **runway number** is followed by the RVR in meters.
- **U/D/N** indicates whether the RVR is **increasing, decreasing, or stable**.

## Weather Phenomena

-RA

- **RA** (Rain) preceded by - indicates **light rain**.
- **+TSRA** means **heavy thunderstorm rain**.

## Common Weather Codes:

Code	Meaning
DZ	Drizzle
RA	Rain
SN	Snow
PL	Ice Pellets
GR	Hail
FG	Fog (Vis <1km)
BR	Mist (Vis 1-5 km)
TS	Thunderstorm

## Cloud Cover

FEW030

- Cloud coverage is reported in **eighths (octas)** of the sky:

Abbreviation	Meaning
NSC	No significant clouds
FEW	1-2/8 coverage
SCT	3-4/8 coverage
BKN	5-7/8 coverage (ceiling)
OVC	8/8 (overcast)

- **FEW030** means a few clouds at **3000 feet AGL**.
- **CAVOK** (Ceiling And Visibility OK) replaces visibility, cloud, and weather information when visibility is **≥10 km**, no significant clouds exist, and no hazardous weather is reported.

## Temperature & Dew Point

25/15

- **First number (25°C)**: Ambient temperature.
- **Second number (15°C)**: Dew point temperature.
- If temperatures are negative, an **M** is used (e.g., **M05** = -5°C).

## QNH (Pressure)

Q1016

- **QNH** is the air pressure adjusted to sea level in **hPa**.
- **Q1016** means the pressure is **1016 hPa**.

## Additional Information

NOSIG

- **NOSIG** (No Significant Change) means no expected changes in wind, visibility, weather, or clouds in the next two hours.
- Other possible codes:
  - **TEMPO**: Temporary weather changes.
  - **BECMG**: Gradual weather change.

## Example METAR Analysis

DAAG 301650Z AUTO 18008KT 140V220 9999 FEW030 25/15 Q1016 NOSIG

- **Location**: DAAG (Algiers Houari Boumediene Airport)
- **Time**: 30th of the month, 1650 UTC
- **Wind**: 180° at 8 KT, variable between 140° and 220°

- **Visibility:** 10 km or more
- **Cloud Cover:** Few clouds at 3000 feet
- **Temperature:** 25°C, Dew Point: 15°C
- **Pressure:** 1016 hPa
- **Trend:** No significant change expected

# ATIS

**ATIS** provides pilots with up-to-date airport information, including weather conditions, active runways, available approaches (e.g., ILS, RNP), transition level (TRL), and any other relevant operational details. Pilots can access ATIS via radio frequency or through text-based data services such as datalink, including on VATSIM.

Maintaining an accurate and updated ATIS is crucial for ensuring smooth airport operations. The ATIS is refreshed regularly, especially when significant weather or operational changes occur.

## ATIS Code System

Each ATIS report is assigned a unique **code letter (A to Z)** to ensure pilots and controllers are referencing the same information. Every time the ATIS is updated, the code advances alphabetically. This helps pilots verify that they have the latest information before departure or arrival.

Since METAR updates occur at least every **30 minutes**, the ATIS is also updated at least once within this timeframe. However, additional updates may be issued if there are runway changes or other operational updates.

## Pilot Requirements

- **Before Departure:** The pilot must listen to the ATIS before requesting startup clearance and provide the ATIS code to **Delivery**.
- **Before Approach:** The ATIS must be received before initial contact with **Approach Control**, and the current ATIS code should be reported to confirm receipt of the latest information.

## ATIS Handoff Procedures

At most airports, the **departure frequency** is included in the ATIS for pilots to automatically switch after takeoff. However, at certain busy airports, such as Casablanca, Algiers, and Tunis, the handoff is performed manually by the **Tower Controller** instead of being automatically preassigned.

**Note:** At **Tunis-Carthage (DTTA)**, the ATIS is generated automatically, similar to real-world operations.

## ATIS Example

CASABLANCA INFORMATION P MET REPORT TIME 1920 EXPECT ILS APPROACH RUNWAY 35R RUNWAYS IN USE 35R FOR LANDING 35L FOR TAKEOFF TRL 70 WHEN PASSING 2000 FEET CONTACT RADAR ON FREQUENCY 120.300 WIND 280 DEGREES 7 KNOTS VISIBILITY 10 KILOMETERS LIGHT RAIN CLOUDS FEW 4000 FEET SCATTERED 5500 FEET TEMPERATURE 18 DEW POINT 15 QNH 1013 TREND NOSIG INFORMATION P OUT

# Key Components of ATIS

## 1. Airport Name & ATIS Code

- Identifies the airport and the current ATIS letter.

## 2. Time of Report

- UTC time when the ATIS was issued.

## 3. Weather Information

- Includes wind direction/speed, visibility, precipitation, cloud cover, temperature, dew point, and QNH.

## 4. Runway & Approach Information

- Specifies active runways and available approach types.

## 5. Transition Level (TRL)

- Defines the altitude at which aircraft switch from QNH to standard pressure.

## 6. Departure Frequency

- Specifies which frequency pilots should contact after takeoff if an automatic switch is required.

## 7. Trend Forecast

- Indicates whether significant weather changes are expected.

# TAF

**TAF (Terminal Aerodrome Forecast)** is a weather forecast specifically for airports, detailing expected meteorological conditions relevant to flight operations. It predicts changes in specific weather parameters over a defined forecast period, which may vary from **9, 12, 18, or 24 hours**, depending on the airport. The **TAF is updated at regular intervals** to ensure accuracy.

The structure of a **TAF follows similar coding** to a **METAR**, using ICAO standard abbreviations.

## Example TAF:

```
DAAG 041100Z 0412/0518 22020G35KT 9999 SCT040  
TEMPO 0412/0416 22030G40KT SHRA BKN030CB  
BECMG 0418/0420 22015G25KT  
TEMPO 0510/0518 26020G35KT SHRA BKN030CB  
PROB30 TEMPO 0512/0518 TSRA
```

## Components of a TAF

Each **TAF report** consists of different sections:

### Base Status

The **initial conditions** of the forecast, including:

- **Surface wind** (direction, speed, gusts if applicable)
- **Horizontal visibility**
- **Significant weather phenomena**
- **Cloud cover and types**

This section also includes:

- **ICAO airport identifier** (e.g., DAAG for Algiers Houari Boumediene)
- **Report creation time** (041100Z means 4th day of the month at 11:00 UTC)
- **Forecast validity period** (0412/0518 means valid from the 4th at 12:00 UTC to the 5th at 18:00 UTC)

The **initial conditions** in the TAF **usually align with the latest METAR** at the time of issuance.

### Change Groups

TAFs contain specific codes indicating expected changes in weather conditions over time. Changes are only noted when they exceed certain predefined thresholds.

### TEMPO (Temporary Changes)



- Indicates **temporary fluctuations** expected during the specified period.
- Each fluctuation lasts **no longer than half** of the given time range.
- Example:

```
TEMPO 0412/0416 22030G40KT SHRA BKN030CB
```

This means that between the 4th at 12:00 UTC and the 4th at 16:00 UTC, **temporary rain showers (SHRA)** and **broken cumulonimbus clouds (BKN030CB)** are expected, with wind gusts up to 40KT.

## BECMG (Becoming)

- Indicates a **gradual change** in conditions **starting at the first listed time** and **completed by the second**.
- After this period, the new condition is considered the new **base status**.
- Example:

```
BECMG 0418/0420 22015G25KT
```

This means that between the **4th at 18:00 UTC** and the **4th at 20:00 UTC**, wind speeds will reduce to **15 knots with gusts of 25 knots**.

## PROB (Probability)

- Used **only with TEMPO** to indicate a **30% or 40% probability** of temporary changes.
- Example:

```
PROB30 TEMPO 0512/0518 TSRA
```

This indicates a **30% probability** of temporary **thunderstorms with rain (TSRA)** occurring between the **5th at 12:00 UTC** and the **5th at 18:00 UTC**.

## FM (From)

- **Indicates an abrupt change** expected at a specific time.
- Example:

```
FM1200 28015KT CAVOK
```

This means that **from 12:00 UTC onward**, the wind will shift to **280° at 15KT**, and conditions will be **CAVOK** (clear skies and good visibility).