Visualized METARs

for Aviation Services

What are METARs

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METARs(METeorological Aerodrome Reports) are a format for reporting
weather information. A METAR weather report is predominantly used by aircraft pilots, and by
meteorologists, who use aggregated METAR information to assist in weather forecasting.

Raw METAR is the most common format in the world for the transmission of observational weather data. It
is highly standardized through the International Civil Aviation Organization (ICAO), which allows it to
be understood throughout most of the world

A typical METAR contains data for the temperature, dew point, wind direction and speed, precipitation,
cloud cover and heights, visibility, and barometric pressure. A METAR may also contain information on
precipitation amounts, lightning, and other information that would be of interest to pilots or
meteorologists such as a pilot report or PIREP, colour states and runway visual range (RVR).

Goal

METARs(METeorological Aerodrome Reports) contains crucial weather information in interest that would be helpful in weather forecasting for pilots and meteorologists

But METARs are often inaccessible through the internet for many regions,making people dependant on radio broadcasts or other means that are quite inconvenient.

This web-App collects METAR data of different regions in a json format through some METAR DATA Providing APIs and visualizes that data in form of interactive plots that are easy to understand and more convenient for weather forecasting

Features

Station Review

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Station overview shows a set of plots covering all the core meteorological variables reported in a METAR, for a single specified station. The variables shown are:
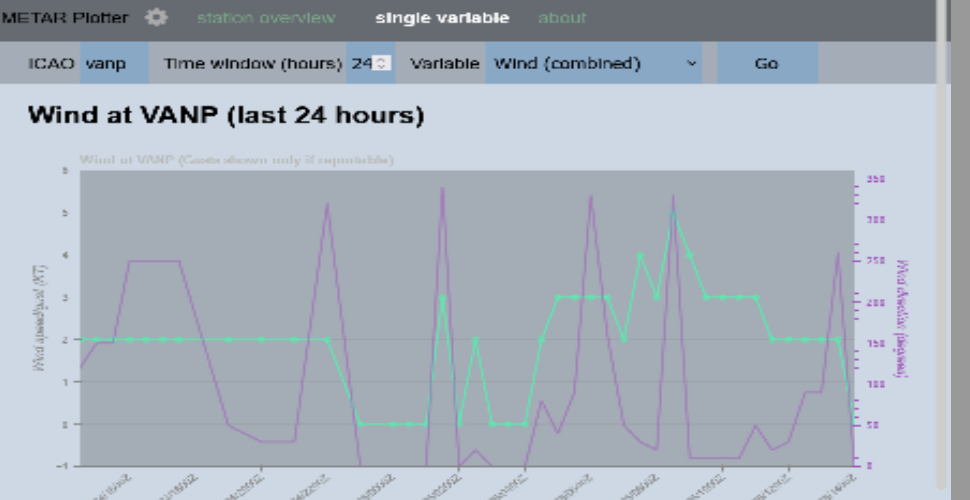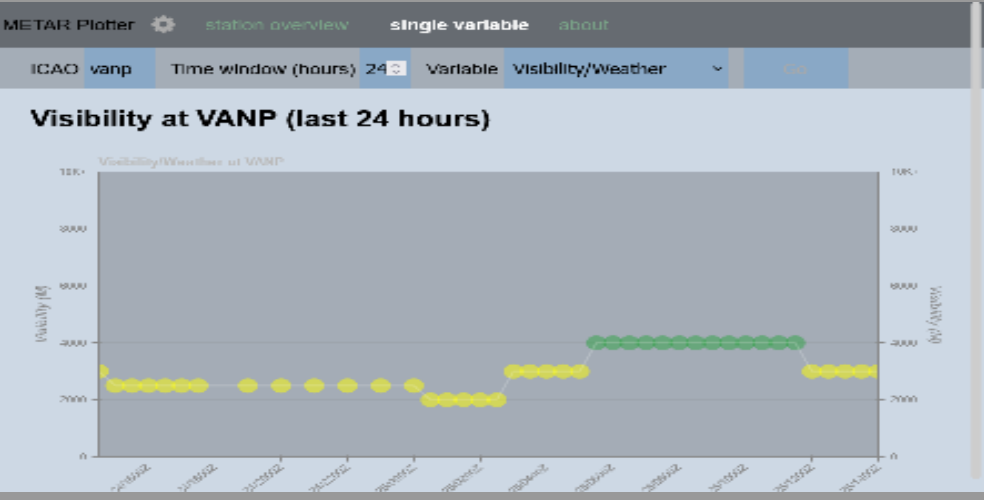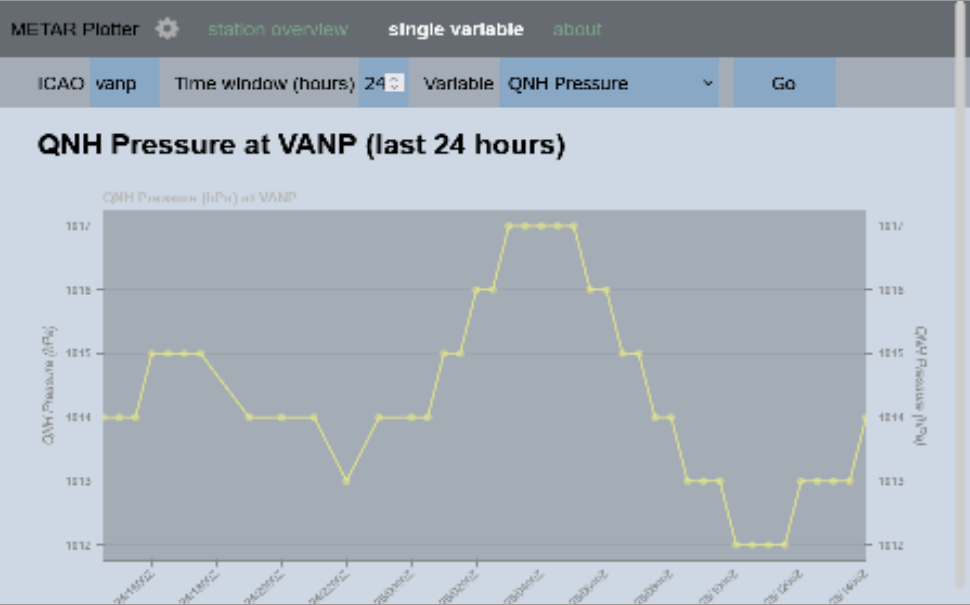
- Cloud base
- Wind direction and speed (Gusts are included if reported)
- Temperature and dew point
- Visibility and any significant weather reported
- QNH pressure

Single variable

Single variable plots allow you to view a single plot of a chosen variable for a specified station. The variables available are:

- Cloud base
- Wind direction and speed (Gusts are included if reported)
- Visibility and any significant weather reported
- Temperature
- Dew point
- QNH pressure
- Wind speed
- Wind direction

Responsive Design

Responsive design means
that the web app is
optimised for use on
mobile devices.
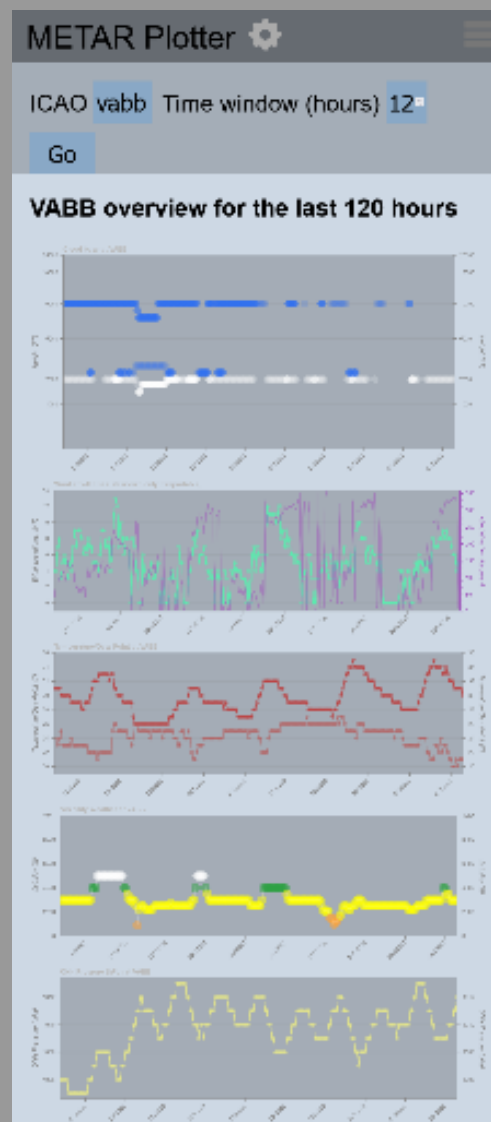
Interpreting the plots

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Cloud base

Each reported cloud base is shown as a coloured dot. They are colour-coded according to UK Military colour states. Cloud amounts of FEW are shown with lower opacity. Hovering over or tapping each point will show the reported cloud base & amount and time of observation.
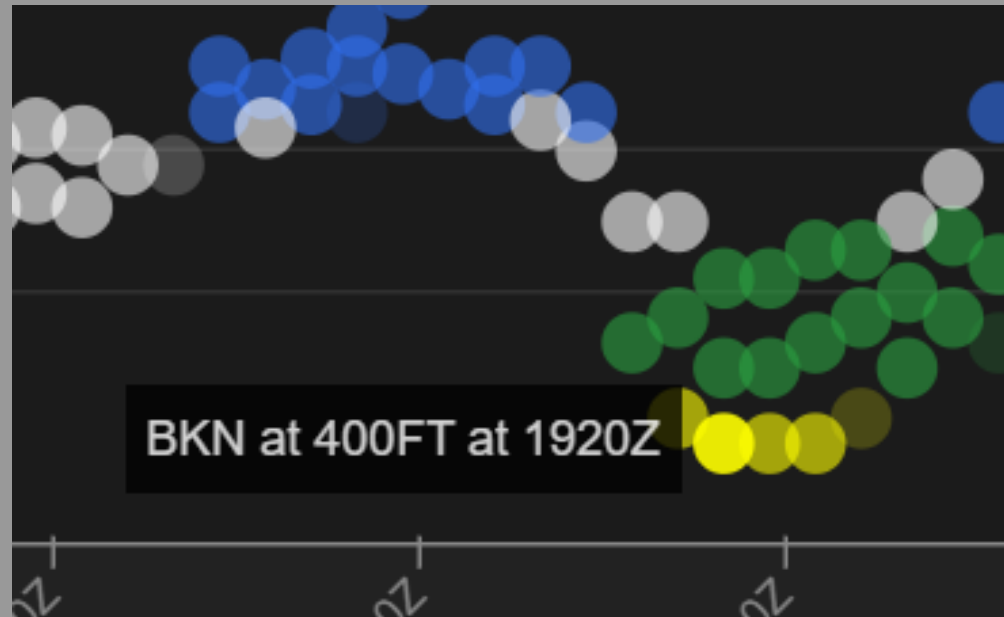
Visibility/weather

- Each reported visibility is shown as a coloured dot. They are colour-coded according to UK Military colour states. Hovering over or tapping each point will show the reported visibility, time of observation and any significant weather reported at that time.
- Wind gust (if reported)

3000M at 0750Z
Weather: -RADZ

Wind (combined)

Wind direction is plotted in purple against the scale on the right. Wind speed is plotted in green against the scale on the left. If any wind gusts are reported in the METARs, they will be shown as larger green dots "floating" above the main wind speed. Hovering over or tapping each point will show the reported wind direction and speed and time of observation. Any gusts at that time will also be shown.

Reported gust of 40KT at 1550Z

10 30KT at 1550Z
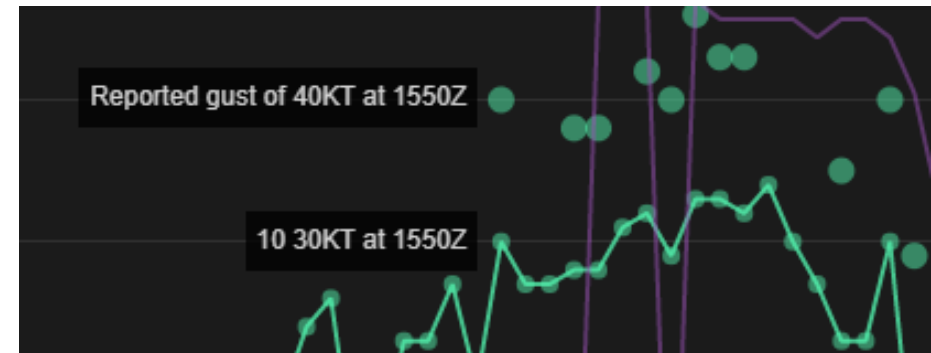
Temperature/dew point

- Temperature is plotted in red, and dew point in a fainter red. Hovering over or tapping each point will show the reported temperature, dewpoint and time of observation.

Temperature 27 C at 1350Z

Dew point 17 C at 1350Z
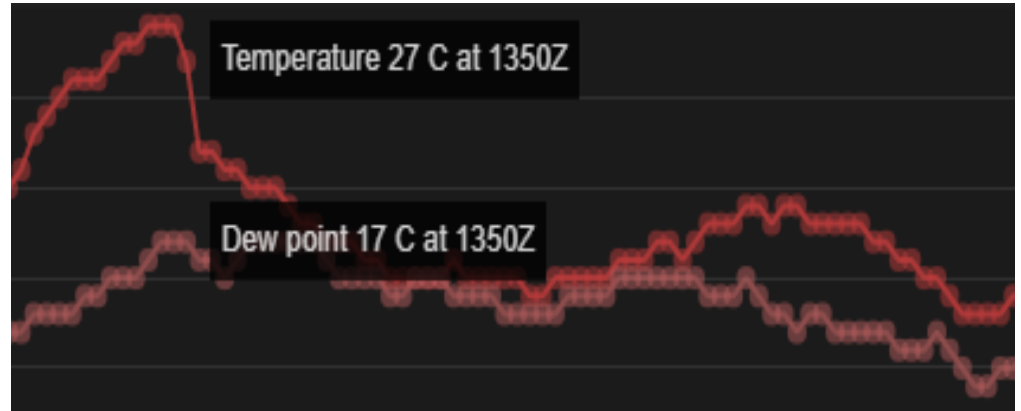
QNH pressure or other single variable

QNH pressure, or any other standard single variable plot will show that variable in yellow. Hovering over or tapping each point will show the reported value of the variable and time of observation.

1015 hPa at 1450Z
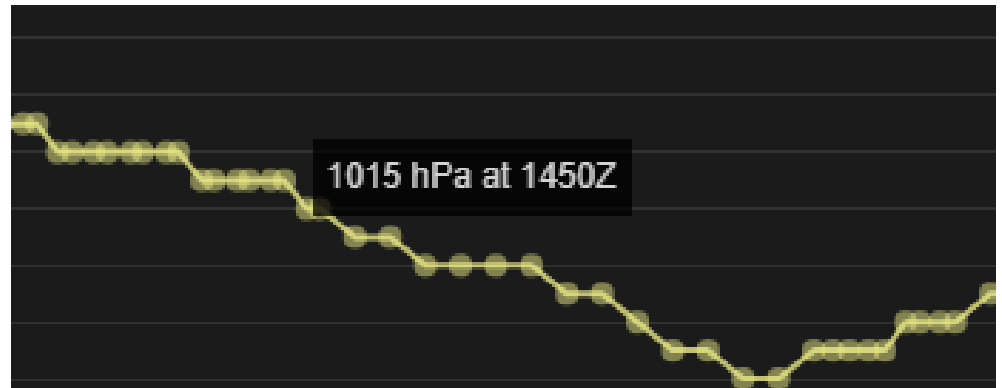
Structure

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Flask, WTForms and Bokeh are used for the front end, while python-metar, requests and numpy are used to acquire and process the data.

Sqlite is used for database.