

Weather

This resource will help you with:

- **Stage 5** - I understand how weather affects air activities.
- **Stage 6** - I can demonstrate how to obtain a local forecast for an air activity.
- **Stage 6** – I can explain how wind speed and direction are measured.

The Irish Meteorological Office (www.meteireann.ie) provides detailed **weather forecasts** to commercial airlines operating from Ireland. These are collected by pilots as part of their pre-flight preparations.

Airports typically have an office where weather detailed forecasts are provided to pilots.

For everybody else, there are other sources.

- Met Eireann provides forecasts through **newspapers**, over the **phone** (“Weatherdial”) and via the **internet** (meteireann.ie)
- National weather forecasting services from other countries can also provide useful weather data for Ireland. For example, the Norwegian national weather services has a good free **smartphone app**.
- There are also commercial weather forecasters that aggregate data and provide it to websites, smartphone apps, and so on.

In general, we can use the same sources of weather information that we would use for our other weather-dependant activities, such as hill walking. However, not all weather information services provide all of the data that we might need.

For an air-based activity, there are a number of things that we are interested in:

- **Visibility** – is there fog, mist or haze? how far can we see? Can we see far enough to operate safely?
- **Cloud base** (lower limit) – if we are operating visually, is there enough clear air between the ground and the base of the clouds for our activity?
- **Precipitation** (rain etc.) – rainfall and other precipitation has an impact on visibility (as well as enjoyment). Risk of thunder means there is a risk

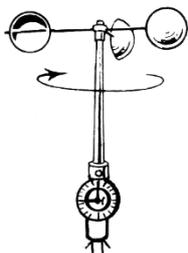


of lightning, which may present a safety issue for aircraft and people on the ground (airfields tend to be flat, open spaces ...)

- **Wind speed and direction, on the ground;** wind speed may be too fast (for model aircraft), or too slow (for kites), or too gusty either way for safe operations.
- Wind speed and direction *at our operating altitude* may be different from ground wind speed and/or direction, creating risk of wind shear.
- **Air pressure** – Air pressure that is lowering rapidly may precede the onset of stormy weather.
- **Air Temperature** – if it is too cold, there may be risk of ice forming on aircraft flying and control surfaces, or on aprons and runways, making operations risky (a problem of far northern and far southern latitudes, and high-altitude airfields); if it is too hot, the air may become too thin for normal operations (a problem in the middle-east and other hot places).

We can measure wind speed and direction easily ourselves, using special instruments.

Wind speed is measured using an instrument called an **anemometer**. This comprises a set of rotor arms with cups on the ends; the cups catch the wind, turning the rotor. The rate at which the rotor spins is proportional to the wind speed.



Wind direction is measured using a **wind vane**. A wind vane presents an obstruction to the passage of the wind such that it turns in order to minimise that obstruction. The direction in which the vane provides the least resistance to the wind is therefore the wind direction.





Some airfields use a windsock as a “ready reckoner” for both wind speed and direction. The horizontal direction of the windsock shows the wind direction in much the same way as a wind vane does, while the angle of the windsock with respect to the ground provides an indication of wind speed.

