Dr Simon Keeling is a meteorologist and founder of www.weatherschool.co.uk where he runs courses for sailors and aviators

Placing too much faith in weather apps could be risky

Your weather app may have predicted a gentle breeze, but it needs sensible interpretation to come up with a real forecast where you are

'Take weather apps with a pinch of salt'

Many of us trust smartphone weather apps, but they are just data, not a measured scientific prediction. Meteorologist Simon Keeling reveals what you need for a real forecast

Weather forecasts can seem mysterious. As a meteorologist I sometimes feel like Severus Snape – the Dark Arts teacher at Hogwarts School of Witchcraft & Wizardry – casting a spell to create a prediction as to what the weather is going to do.

So what actually goes into making a weather forecast for sailing, and how can you as a sailor in UK waters make the most of them? Whilst this topic can seem hugely confusing, an amount of knowledge and some practical application can help you improve your own forecasting skills and interpret the data from weather apps.

CONSIDER EACH ELEMENT

For starters I thought we'd look at what actually goes into making a weather forecast. Many of us are so used to glancing at weather apps on our smartphones that we never give a second thought to the data that has produced that prediction; that is, until the forecast goes wrong!

Initially, observations from across the world are made at stations on land, ships at sea and from weather balloons sent high into the atmosphere. The observations are all made at the same time. You can see the data from this at websites such as www.weatheronline.co.uk (click on 'current weather') and www.xcweather.co.uk.

As well as finding its way onto websites, this data is also ingested into some of the world's largest supercomputers. These electronic beasts devour numbers, spewing out predicted data based on equations held within their vast brains.

However, it's important for sailors to realise that not all of these equations are perfect. Some are, such as the law of thermo-dynamics, but others are approximations of how the atmosphere may

Every yacht should still carry a barometer

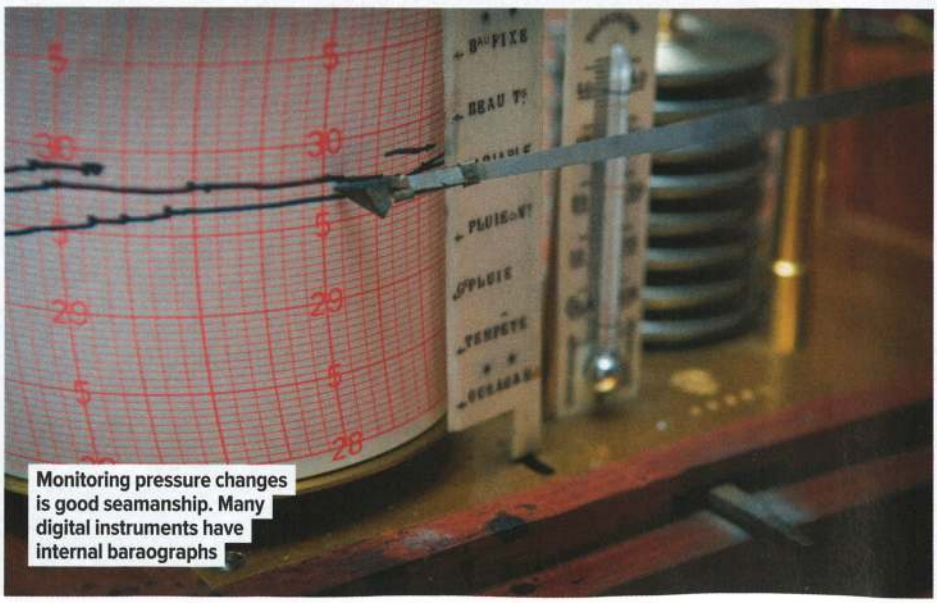
Photo Graham Snook Photography

Anastasios Varvelis / Alamy Stock Photo

behave, given a certain set of circumstances. So there are inbuilt errors within the computers before we have even started.

ERROR CAN BE EVERYTHING

I don't want to make you wary of all forecasts, but the margins of error can be quite large. That's why I worry about sailors taking too much notice of location-based apps. Any winds given in these apps could have a margin of error of one Beaufort force and more in certain conditions. Always err on the side of caution and add at least one Beaufort force on top of whatever speed the app is forecasting, thereby increasing your safety margin. Not only that, as the forecast extends outwards in time these errors can become magnified. So a 2- or 3-knot wind error on a 3-hour forecast may become a 10-knot wind error on the 24-hour forecast.



Monitoring pressure changes is good seamanship. Many digital instruments have internal baraographs

Checking live data from weather stations is a good way to assess a forecast's reliability

Vast super-computers are the brains behind most forecasts but their predictions shouldn't be taken as gospel

The key to great forecasting is to balance data from one or more sources with your own observations

BUILDING THE FORECAST UP

Are you worried yet? Well don't be. Us meteorologists live with the knowledge of those uncertainties every day. We see the same errors but account for them in forecasts such as the Shipping Forecast. After all, the forecast charts produced by computers are only for guidance, it's a meteorologist's job to make sense of them. Each client has differing requirements for the forecasts. For sailors it's wind direction and speed, sea state, visibility and temperature which we forecasters are aware is critical. For others, such as builders, it may be temperature and rainfall which are important. The forecaster must amend the prediction produced by the computer to satisfy the needs of each customer.

When writing forecasts for sailors I use similar information to that which you will see on an app. This is the raw, unaltered data being spewed out by those super-computers. My first task, and the thing I suggest you do first, is to look up! Is the weather at the present time doing what the forecast says it will do? If not, that's a sure sign not to trust the forecast. After all, if the next few hours is wrong how can you trust the forecast for the next 10 days?

Secondly, I'll look at what the weather is doing at nearby stations. Is that tying in with what the forecast is saying – is the wind direction and speed how I'd expect it to look at this time within the surrounding 50 miles?

Thirdly, check the instruments onboard. You should have the minimum of a barometer and the majority of us have a Mark I Eyeball too. Use them both to 'smell' the weather. Is the barometer rising or falling as it should? What does the weather actually feel like? If the Shipping Forecast says drizzle then the air should be feeling quite damp, even if it's not raining. Should it be a fair forecast, is the air feeling dry? If the conditions aren't doing what is predicted then there's a problem with the forecast.

It's all about cross-checking what the raw data is suggesting against what you are actually experiencing. That's pretty much what the first part of a forecasting day is about. I'll take a look at the current weather chart, draw on the isobars, assess what the weather is like over a large area and then use the data produced by the computer to guide my forecast.

Above all, remember the computer (or app) is a tool; a guide as to what the weather might do. Forecasting should be a LAF: Look, Assess, Forecast. And remember, the best aid to forecasting is you!