1 Short Term Weather Forecasting for Racing Sailors - Karl Thorne updated 04/03/2021

We are all competent sailors, if we weren't we wouldn't be putting ourselves under the pressure of racing and the tight situations that puts us in. Assuming our boat handling and boat speed are at a decent level, we are now left with looking for differentiators that will give us a slight gain; one differentiator is knowing the weather and type of day to expect and how we can form a plan around that.

There are stacks of decent weather apps that everyone is using, often based on the same forecast models so it is unlikely anyone is getting a significant advantage from those alone. The clever bit is being able to understand the weather pattern you are in, transpose it to a micro level where you are racing and what signs to look for that indicate a change in the very short term (2-3 minutes) and short term (2-3 hours), and what that means for your wind strategy during racing.

Being on the same page

If you are a singlehanded sailor this part is straight forward, you can create your own routine of weather forecasting and learn how to apply it. However if you sail on a boat with a crew it is vital you are all on the same page when it comes to strategy derived from weather forecasting. The easiest way to do this is to read the same books and reference material and agree a methodology that works for you.

If you are sailing in a larger team of say 3 or more then it might be one persons task to get the forecast and they communicate to the team what that is and then agree between the team what that means for wind strategy and tuning for the day. Professional teams on grand prix boats such as RC44s and TP52s will have a coach, strategist and tactician to do that for them, but we are aiming this at people like you and me, amateurs racing with our mates in search of occasional glory and a fun time.

Whatever the number of people onboard, it is essential to make a plan that everybody understands and is signed up to, they then know what to look out for and anticipate what should happen next. After all, the more people that know the plan, the more chance you might have of remembering and sticking to it, and alleviating those awkward debates at key decision making points!

Our go to reference for understanding the effects of topology and predicting thermal effects is the book "Wind Strategy" by David Houghton and Fiona Campbell (Fernhurst Books). It has 4 summary pages at the back designed to

be photocopied, laminated and taken afloat. We actually keep a spare copy of these ashore for our breakfast briefings either in our training group or racing team. Another go to is Frank Bethwaite's High Performance Sailing who dedicates the first 99 pages to weather and reading the wind, although written some time is still really valid.

It is also worth looking on You Tube for the excellent presentations made by the British Sailing Team's meteorologist Simon Rowell, particularly around building venue guides and short term forecasting, we have used a lot of that information from that video in this article and applied it to our general thinking.

Meteorology with Simon Rowell
https://www.youtube.com/watch?v=J8KhddNQsac

Building a Venue Guide - Simon Rowell
https://www.youtube.com/watch?v=PpsyTQzyFDs

Forecasting Afloat - Simon Rowell
https://www.youtube.com/watch?v=EYkIFGQeZBQ

Breakfast Tasks

Get into the habit of taking no more than 15 minutes every morning to do this, practice will improve speed, clarity and accuracy.

Braincasting

Instead of reading the paper or checking Social Media over breakfast, why not get into the routine of Braincasting, which means doing these three things to fully understand the current weather system and validate what the forecast is telling you:

- Look up to the sky, what is the weather like now, what are cloud formations, how fast and which way are they moving, what wind speed and direction do you have where you are?
- Take a look at the Surface Pressure Charts for today and tomorrow 0000, 1200 and 0000, to understand where the current systems lie, how they are developing or decaying, and what the gradient wind should be by looking at the isobars* Quickly ascertain if it might it be a sea breeze / thermal enhancement day or is it likely to be dominated by a system/frontal movement?
- Take a look at your nearest weather station either at a local airport or on the water and check what the wind is doing now and has been doing over the last few hours, does this fit with your view from the Surface Pressure chart?

* Remembering that the wind you experience at ground level will change direction due to surface friction, the two rules to remember wind flows clockwise around a High (anticlockwise around a low) in the Northern Hemisphere and that the wind backs from high to low across an isobar, meaning the wind direction doesn't quite line up with the isobar. How much this backs depends on whether you are over land (40 degrees) or water (15 degrees)

Forecasting Tools

Now we can start to look at the forecasting tools and can compare the different models to obtain a confidence factor, in the main broad agreement between the models should lead to a high confidence factor, unless you are in a particular location that a particular forecast model has been designed for, e.g. NEMS/ Meteoblue for alpine regions, then you should give more bias to that model if it has been accurate previously.

Making the Plan

By the time we had finished breakfast and before making that difficult second cup of coffee we should have written down the following items that we can refer to for the rest of the day to check-in and validate what is happening and to help develop our plan:

- General situation and braincast of what we think is happening
- Forecast for the day, including what changes are likely to happen and the indicators we should expect for them
- What the forecast means for our tuning and the course area we will be racing on, including considerations of the surrounding topography and potential thermal effects
- Summarise the type of day and what that means for weighting our priorities, e.g. line bias, shift, pressure, fleet position

Once we have this information written down it should form the basis of our plan, which we should be able to distill into a sentence or two, e.g. "today we are expecting an onshore sea breeze with long oscillating shifts, it is important that we focus on boat speed and clear air and that we can predict those shifts and work to the correct side of them as they come through". We have omitted tide from this discussion, so to include it we might add "the tide is due to turn at 1500 to an Easterly flow, this is likely to be between the second and third race this afternoon, it means we need to be aware of being pushed over the start line and that our windward mark lay lines will narrow and we need to be careful not to over stand".

We have already mentioned checking in and validating these notes, we should be looking for weather indicators when we arrive at the boat park until start

time and remain mindful of them whilst racing. This validation of what we think should be happening should be tested on the way out to the race course and during our time before the first race/after a long delay, i.e. shift tracking and pressure spotting.

Do and Review

During the first lockdown I went through this process everyday with my helm. This means that we are now both in the habit of doing this efficiently and accurately through practice and review. We messaged each other these points every morning and message again in the afternoon to review what actually happened and score our predictions. Practicing like this helps speed up the process, refine clarity and improve accuracy for when it really matters, and also ensures we are using the right language without overcomplicating the message. This routine also helped build up trust between us that we can rely on each other to get this right and minimise any debate!