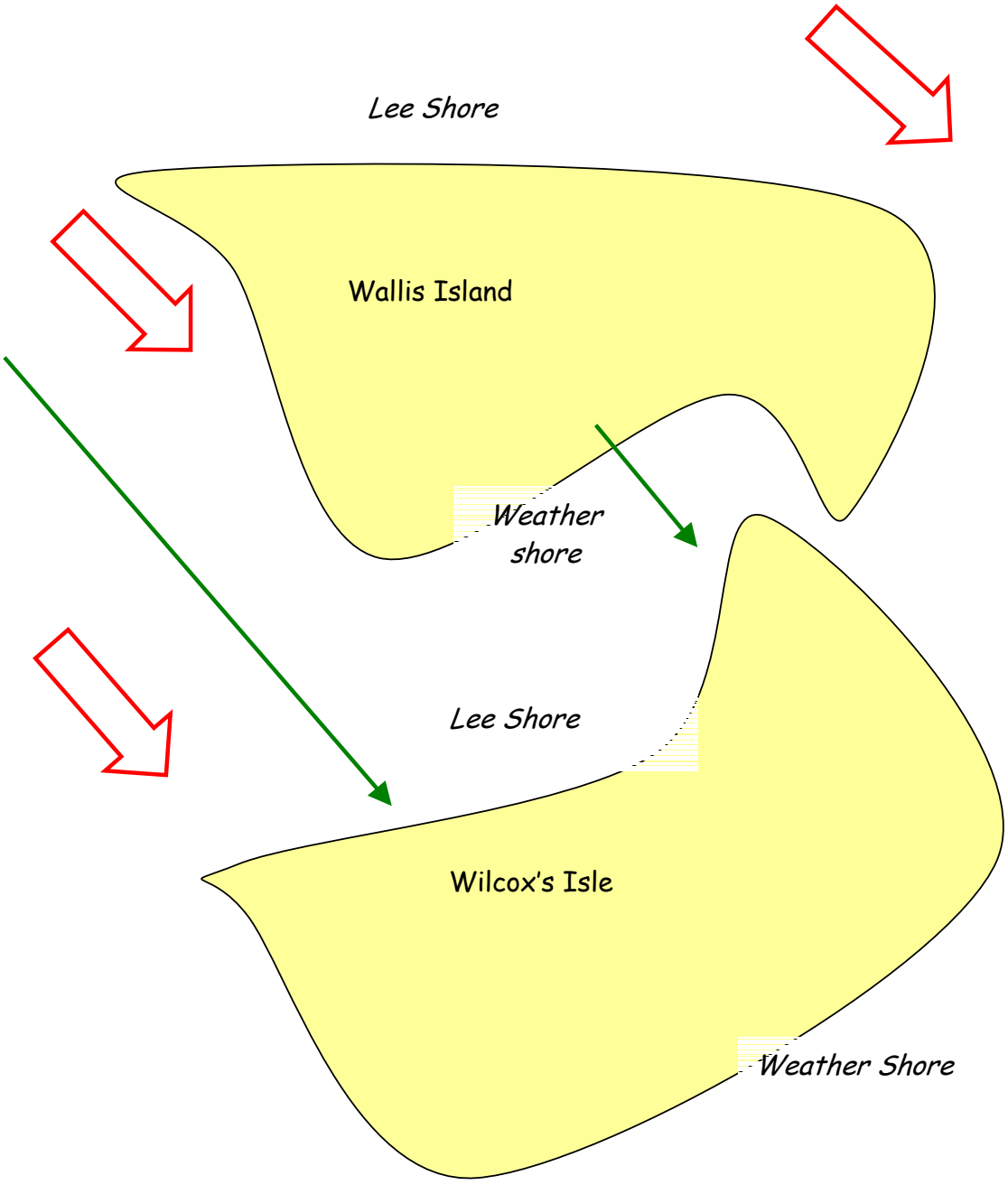
Wind, Waves & Land – Part 1

We will look at the terms fetch, lee shore, weather shore and the equation for determining the resulting waves generated by the wind in this article.

The red arrows in the diagram indicate the direction from which the wind is blowing. Fetch is the distance over which the wind blows across the sea (indicated by the green arrows). Weather shore – the shore from which the weather comes from. Finally lee shore – the shore upon which the wind and sea blows or crashes onto!



So what does a lee shore mean for a sea kayaker?

The wind and resulting waves will be breaking on this shore. Great if your out for a day's rockhopping/swell bashing but if your touring you may have to cruise well offshore to avoid the rebounding waves (claptois). It also means that if you have a problem or rescue situation you will quickly drift into a big rocky, solid problem!

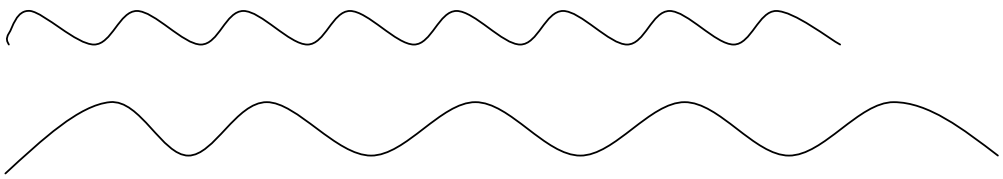
<u>So what does a weather shore mean for a sea kayaker?</u>

The wind will be blowing off this shore so if you have a problem or capsize then the group / victim will drift offshore – not so good. When the wind blows off the land it accelerates so it can be bad news for boat handling, especially if you are paddling parallel to the coast (weather cocking will occur depending on your kayak, i.e. bow turning into wind).

<u>What waves will be generated by wind be like on my intended trip?</u>

We will look at the three components which determine what the waves caused by wind will be like for a localised area. As a general rule of thumb, the bigger the fetch, then the bigger the waves that will be produced. The smaller the fetch the smaller the waves produced. However this is only one component of the equation.

Duration is the next component. The greater the duration of the wind blowing over a piece of water then the more defined in terms of pattern the waves will become. Below is two cross sections of wave patterns generated by a 'local' wind - the top diagram represents the wave pattern of a steady wind blowing over a piece of sea for a short duration and the bottom diagram represents a longer duration.



The longer duration produces 'fatter' waves which in turns means when they break on the shore there is a greater volume of water per wave and in turn are more powerful. The shorter duration produces more clustered, 'jabbly' waves to paddle in but the waves from the longer duration produce waves which are easier to surf in a sea kayak.

The third part of the equation is wind speed. The greater the wind speed, the greater the size of wave. However if the wind speed is constant over a long period of time, then there will come a point were the wind has generated the maximum size of waves for its speed. However we know as sea kayakers that the wind rarely stays at an exact wind speed for any prolonged speed.

I have purposely avoid putting fixed times or criteria as you just can't when dealing with the sea (the most dynamic environment on the earth?).

The Equation & Pulling It Together

S peed + **D** uration + **F** etch = windsea *

* - The term for localised wind generated waves.

So by thinking about all three components of the equation you can guess-estimate with a degree of confidence what the waves/conditions generated by the wind will be like on your intended trip. However you need the experience of what different wind speeds, duration and amounts of fetch actually look and feel like. So I'm afraid there's no real shortcuts to gaining good judgement but by going and getting the experience. However the process to acquiring the good judgement will happen quicker by knowing what to look out for and how it occurs.

Have a map and the latest relevant weather forecast at hand when carrying out the 'what will it be like?' process for real along with info on the wind speed & direction from the previous few days. Why have the previous few days forecast? As it will give you clues as to what waves will have been created by previous winds. Waves can take from a few hours to a few days to dissipate completely; it just depends on the SDF!

Part 2

The next part of this article will look at the interaction between the wind, land and sea. I will hopefully demystify the jargon of downdrafts, the friendly wedge, sea breezes, katabatic winds, convergence and divergence.

Cailean Macleod 5/2/06

Any feedback or views on this article is most welcome ☺. I have written it in mind with folks who are getting into sea kayaking or are learning more. I have tried to keep things as simple as possible and use plain English. Your opinion? info@peakwavecoaching.com