

Dancing with the wind

(The importance of wind shifts)

By Tor Bakke

When racing on maneuverable longboards or hybrids with a centerboard, the most important attribute a good sailor can have after boardhandling skills and a working knowledge of the rules - is the ability to determine wind shifts.

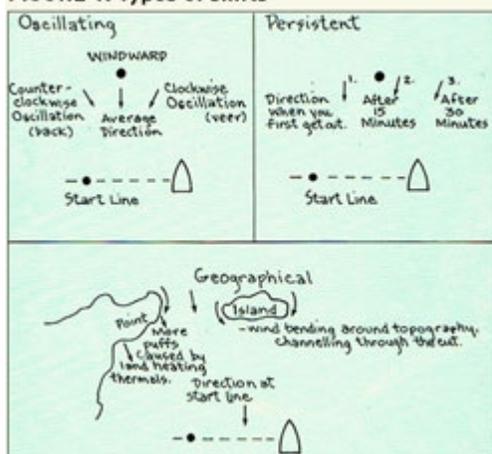
If you are able to correctly observe the occurrence and nature of a wind shift and properly apply this knowledge to your tactics in the race, the benefits can be enormous. It is equally important to know the different type of wind shifts - what causes them and how to use them to your advantage.



The three basic types of shifts are illustrated in figure 1. The most common one is the oscillating shift. As the name implies, the wind oscillate back and forth in time. Sometimes these shifts are only 5 to 10 degrees, very subtle and difficult to detect. This happens in stable sea breeze (onshore) conditions when the water is cooler than the air. However, in unstable off shore conditions the shifts can be as much as 20 to 30 degrees and can knock you down if you are not aware. This usually happens when cool air is moving over warm land, especially when after a cold front passage.

The next type of shift is the persistent shift. It is the most dangerous one if you do not recognize its nature in time. It is always a good feeling sailing into a header and wait for the big "bonus" in the end, but do not be too greedy. Tack in time, as you may risk being lifted far above the lay line on the opposite tack. This shift is caused by a new weather system approaching or a local wind gradually developing. It does not oscillate but will continue to move in one direction.

FIGURE 1. Types of shifts



If you are being lifted when this happen and see boards to windward of you sailing in more wind and pointing even higher - tack immediately. It usually means going behind the windward boards and loosing initially, but it is absolutely crucial to get on the inside as soon as possible. All your leeward competitors will be sailing in less wind and doing a painful outer circle - and in worst scenarios just continue to dream about that miracle counter shift that will never happen. A less dangerous version may happen suddenly and then remain reasonably stable.

The last type of shift is the geographical one. It is caused by the way the wind flows around the land topography. Not only does the direction change, but most likely also the wind speed. It happens in channels between two islands, around points or when approaching land masses. In stable flows the gusts and lulls are only 20 to 30 percent higher or lower than the average speed, but in unstable flows you may encounter gusts that can be as much as 100 percent higher. This is caused by winds from higher levels mixing in - which are usually much stronger and have a different direction than the surface wind.

Without a compass (not practical on a board) shifts may be hard to recognize, but you have to use your own sensors, for instance by using land mark bearings or watching the leeward and windward competitors gaining or losing on you. When sailing close hauled upwind - any shift that enables you to point higher to the mark is a "lift", and if you are forced to point lower you are sailing into a "header." Headers are good when you have the freedom to tack (sufficient distance to the lay line) and utilize the advantage on the opposite tack. In distinctive oscillating winds -the lay line should be avoided as long as possible.

Preparations

Go out to the course well in time for your start to get an idea of the wind patterns.

Do some upwind sailing and use landmarks to see if and how often you are lifting or heading. It might very well be in 2 to 3 minutes intervals. It will also give you an idea whether one side is favored by a persistent or geographical shift. If on open waters, bring a partner with you and do the exercise together. Ideally this partner should be about the same speed as yourself. Do opposite tacks for 2 minutes or so as illustrated in figure 2. You should notice that whoever went to one side of the course first made more ground. That indicates that his side of the course is favored due to geographical or persistent shifts, less chop or even less current.

If you and your buddy keep switching the lead when crossing each other, then no particular side is favored and the wind is oscillating.

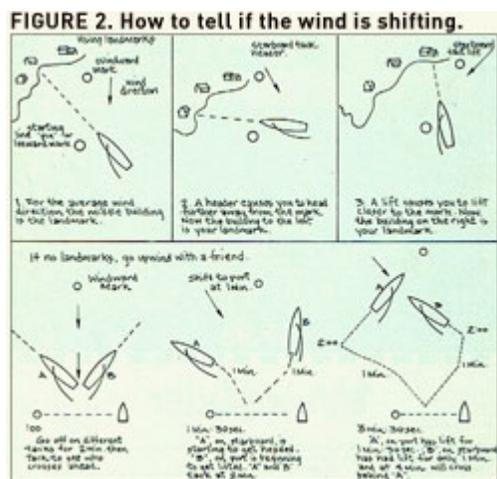
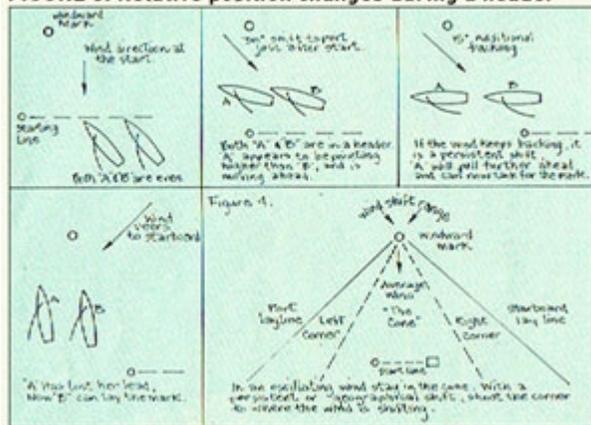


FIGURE 3. Relative position changes during a header



Pick the shortest distance The key to sailing well upwind is to keep an eye on the windward marker, and stay on the tack that has you pointing closest to it. This means you are in "rhythm" with the shifts as you are tacking on headers, which again means you are sailing a considerable shorter distance than a competitor going straight for the lay line - or failing to utilize the shifts. It is more important to tack on a shift than to cover competitors going in the wrong direction - unless you are clearly in the lead just protecting your position..

As the race develop

Let's say you got a good start at the leeward end of the start line, and there are several boards to windward of you. Looking over your shoulder, it seems they are pointing lower than you (figure 3)

