

Weather and weather forecasts

© 2003 by Mike Wagenbach

Few subjects are more important to planning a safe sea kayaking trip than the weather. Obviously, these notes are not a very complete discussion of weather, but are an erratic collection of a few tips that I think it might be useful to emphasize to kayakers. Books like _Northwest Marine Weather_ by Jeff Renner or (less conveniently) a Meteorology 101 textbook should be studied for more complete information.

There are two distinct but related questions to ask about the weather: 1. Can I handle (or enjoy) the conditions now? 2. What about other times before the end of the trip, whether that's in 10 minutes or several days?

Question 1 is going to depend on the boat and other equipment, your physical strength and boating skill (both of which will improve dramatically with regular practice), the area in which you are considering paddling and your taste for risk. This subject could be developed at great length, but most of the details will be ignored here. A look at the sea trip rating scale <http://students.washington.edu/~ukc/sea/UKCSea.html#searating> will give a few hints at fitting the conditions or forecasts to your experience level.

The UKC has tried to acquire boats that have sea-worthy (weather resistant) handling qualities, within the limited range of readily available plastic boats (which, unfortunately, is not that impressive compared to some fiberglass boats). Absolute beginners may find the boats hard to steer in any wind (or even in no wind at all!), but with a little practice, most people will be able to control their heading and keep moving in wind up to about 10 knots. More experienced boaters may be able to deal with 15 or perhaps even 20 knot sustained winds. Few people will want to or be able to travel for long distances near these limits, of course.

One might define "near the limits" as conditions at which someone's average speed drops below half it's normal value, so about 1 knot for beginners or 2 knots for fairly advanced boaters. Not a very good way to go very far! Of course, going downwind would seem fairly easy, since the wind helps you along, but most boats are somewhat tricky to keep pointed directly downwind, and if the waves are big enough to start surfing you along, this is the course that is most likely to lead to a capsize. Angling partly downwind, or "quartering downwind," has much the same challenges with less of the helpful push from wind and waves.

Most of the boats "weathercock" moderately, so the first requirement of dealing with wind is to develop as strong a "forward sweep" stroke as possible. This stroke will allow you to turn the boat effectively without wasting much forward speed, as would occur with a "stern rudder" stroke or other backward stroke. The forward sweep is fairly easy to learn, but specific points of technique will make-or-break this stroke. If you find it hard to steer your boat, you should ask someone (probably the members of the ukc-skl mailing list, or the leader of the next pool session) to organize a basic-skills instruction class. If you are on a trip at the time, ask the trip coordinator or other experienced paddlers for advice.

Because of this tendency to weathercock, for most of the boats the easiest course to steer is directly into the wind. That is also an easy course to paddle on, since waves pass by most quickly, with less chance to disturb your balance. Unfortunately, in addition to the headwind slowing your progress, the wind usually blows along narrow channels, while your desired course is most often across the channel. There may not be dry land along a windward course within a reasonable distance!!

Fortunately, the handling of the boat can usually be affected by the way it is loaded. Loading a boat with extra weight in the rear compartment will at least partially reduce the tendency to weathercock. If you do not have a lot of equipment to take on the trip, this ballasting trick can be done with a few re-used 2 liter plastic pop bottles filled with water and placed in the stern compartment. These should always be chocked into place with inflated airbags, since loose ballast could shift and flip you!

Waves would seem like an obvious problem at first glance, but usually they are secondary to the direct effects of wind on the boat. If you keep your upper body loose (don't stiffen up with nervousness, and don't lean back on your seatback), non-breaking waves of up to 2-3 feet in height will have minimal effects on your balance. Again, if you are going downwind and the waves start to push you along, that is when they are usually most likely to trip you up and require edging or bracing skills.

Small to medium waves can even help you steer, with a little practice. If you begin a sweep stroke just as the crest of a wave passes under the forward hatch of your boat (or under your butt if you are going downwind), the boat will be turning as the bow and then the stern are lifted at least partially out of the water, freeing them to pivot easily through the air. OTOH, if you time your sweep just as the trough of the wave is passing under the boat, the ends will be deeply buried in the crests around you, making it very difficult to turn as desired.

Weather Forecasting:

Question 2 is even more troublesome, since it is usually pretty hard to predict the future. (Just ask anyone with much money invested in the stock market.)

In the very short term (the next few minutes to the next hour or two), you are pretty much on your own for forecasting, which may be a problem. Most of us will probably be pretty poor at guessing exactly when the wind will suddenly go from 5 knots to 15 knots under a clear blue sky (or a flat overcast sky), which is enough of a change to be troublesome for many kayakers.

Still, there are often useful clues that can be seen if you look for them. Unless it is completely clear or raining steadily, you can check the wind aloft by watching the clouds carefully for a minute.

First, you will have to guess roughly how high the clouds are, by knowing their characteristic forms (e.g. cirrus is high, "mackerel sky" is pretty high, fair-weather cumulus is pretty low, "scud" is low, see books on weather for a more complete discussion with pictures.

This should tell you something about the general weather pattern. (Again, mostly beyond the scope of these notes.) It's also important for guessing the winds in the near future. If you can see high clouds moving at all, winds there are fast, but that may not affect you in the short term. Low clouds will almost always appear to move some, but if they are going unusually fast, beware! Wind at the surface may be light now, but that could change quickly if the wind suddenly dips down from above. Think twice about an exposed crossing under these conditions, or a long daytrip which might be a real pain coming back.

In particular, if the wind is at your back when looking out from the beach, you are in the lee of the land and trees, and the zone where the wind hits the water level could be just far enough offshore to be hard to detect.

One cloud form that does bear discussion here is the towering cumulus or "thunderhead." While actual intense lightning is rare in Western Washington, even in nominal "thunderstorms," these clouds are warnings of hazards other than instant electrocution. Cumulus clouds obviously taller than they are wide are a sign of strong convection (heat driven vertical motion, similar to boiling) in the atmosphere. This may or may not lead to lightning or strong rain, but it is almost certain to indicate significant, gusty winds near these clouds.

During otherwise fair weather, the nice thing about this is that these clouds can be seen from a considerable distance, so once you determine the general wind direction from watching the nearest clouds, you can be fairly sure if you are in the path of the bigger stuff. Again, if the wind is behind you at the launch beach, the clouds are just coming over the trees into view above your head, and you will need to look back from a couple hundred yards offshore to see farther upwind.

The effects of an isolated thunderstorm tend to be brief (30 minutes to an hour in many cases), so if you see one getting close, you can probably pull out on a beach or otherwise alter your plan slightly to minimize the exposure to risks, and maybe continue as planned later.

If the sky is more smoothly overcast, things are a little trickier. Isolated showers can usually be seen at a distance if you look for areas where the visibility of distant landmark looks fuzzier, but it's difficult to know if these are mild stratus-born showers with little associated wind, or the product of a convective cell imbedded in the overcast. This will probably need to be something you guess based on the latest professional forecast.

Comments in the forecast about thunderstorms, convective activity or unstable airmasses should warn you that gusty local winds greater than the general forecast wind speeds could be a hazard!!

Other than the VHF radio, the best place to get forecasts is the National Weather Service website, or <http://www.atmos.washington.edu/data/>

The "zone forecasts" or other land-oriented forecasts will probably have more to say about precipitation (which may be of interest if you are camping or birding) but tend to underplay the wind.

The marine forecast is more wind-oriented, and usually seems to try to err on the side of caution (forecast winds often drop a little over the last few revisions of the forecast, even if the general forecast pattern doesn't seem to be changing).

The main problem with the forecast is that the range of winds given is usually 10 knots. If the range is "25 to 35 knots" that probably won't affect your choice much, but "5 to 15 knots" covers "next to nothing" to significantly troublesome for most people in most UKC boats. Generally, you have to assume that "variable to 10 knots" means no wind, "5 to 15" means OK for most people in most situations and "10 to 20 knots" means at least nuisance-level winds, and worse for paddlers near the limit of their ability.

Also, the forecast areas are pretty broad, so you have to allow for that in making your guesses. "Camano Island to Point Roberts," for example, covers many areas where local landforms can affect the actual wind you feel. Areas east of sheltering land masses like Port Susan or southern Padilla Bay are likely to have rather less wind than just off Tide Point on the west side of Cypress Island.

An off-putting but quite useful forecast is the "forecast discussion." This is not really intended for the general public, but is the secret stash of comments by the guys at the NWS who actually run the computer models, for other professionals who may be using the forecasts (like the weird guy on the TV news). Read the zone and marine forecasts first, then see if you can make sense of the forecast discussion. It's not important to understand every word. I still don't know what "H5" really means, but most of the abbreviations are simply phonetic shorthand for fairly common terms, like "frzn lvl" for freezing level or "vort max" for vortex maximum (a 100-mile scale swirl in the atmosphere, which you can probably ignore). It's worth spending a few minutes trying to decipher this to see if anything interesting didn't make it into the public forecast. Talk of convection, unstable air masses or unstable "lapse rates" may suggest gusty winds, even if they don't reach the level of thunderstorms.

The best part is that you can get some idea about the reliability of the forecast outside the next few hours. The forecasters run several different computer models with names like EVA and AVN. Phrases like "well-initialized" or "good agreement" suggest that the computer models have been given data that actually reflects reality fairly well, so the 48-hour forecast might be pretty reliable. OTOH, if it's Friday morning and the forecast discussion reads "poor agreement," "little consistency" or "models in complete disarray" (as I saw once), Sunday's forecast is probably not a very likely description of what's going to happen that day, and even the forecast for the next few hours may be garbage!

Seasonal trends:

Obviously, winter is generally dank and often windy. Forecasts are rarely reliable enough to plan more than a day or two in advance, so if a trip is announced farther ahead, it's a lottery on the weather. Winter is a great time to get out on the water and see all the ducks and grebes that breed elsewhere, but you should be patient when picking a day if you don't want to paddle in Small Craft Advisory conditions. If it's too windy, go river boating.

Spring usually sees a switch from a couple of months between trips to a couple of weeks, due as much to increasing day length and average temperature as actual consistency in the weather. But generally, things do calm down a bit from winter. Mid to late April seems to be as good a bet as any time during spring to plan the first overnight trip of the season--I recall several excellent weekend trips during this period. Waiting until May or June is no guarantee of better odds on the weather. A researcher in Atmospheric Sciences once complained to me about people whining about a chilly, damp June, saying "that's the normal pattern here."

In a worst-case year, that leaves July 10 through August 20 as the period of almost reliably nice weather. Sometimes Labor day is the start of the fall fronts with their big rains, though it's usually a month later.