Wind, Land & Sea Part 2

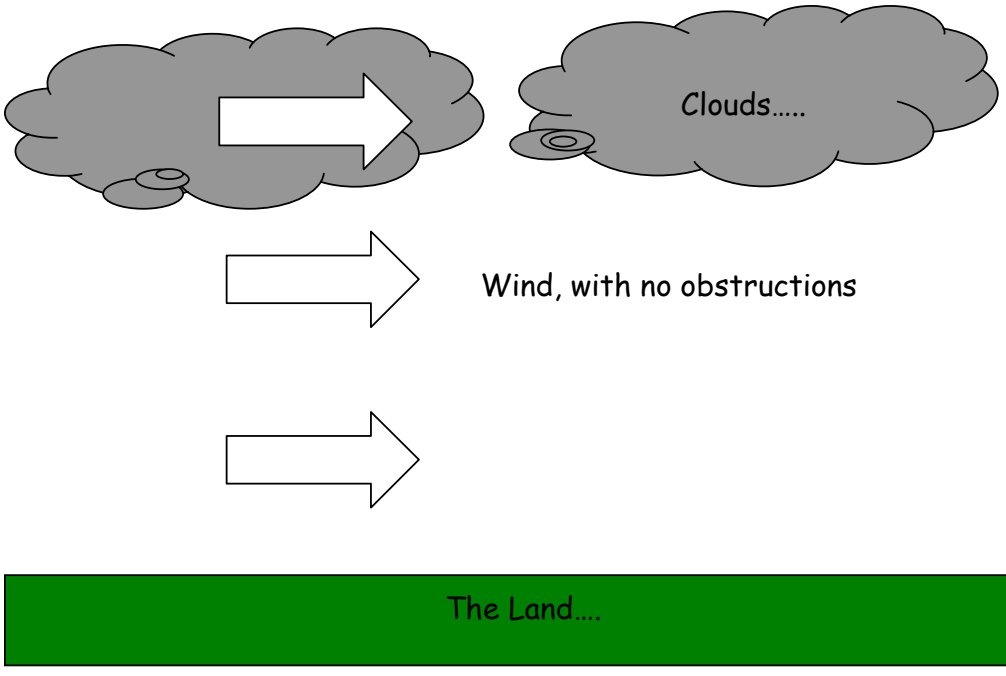
Welcome back to part 2 of this article. We aim to look at the following terms and make some sense of them for you:

- Downdrafts
- 'Friendly Wedge'
- Katabatic winds

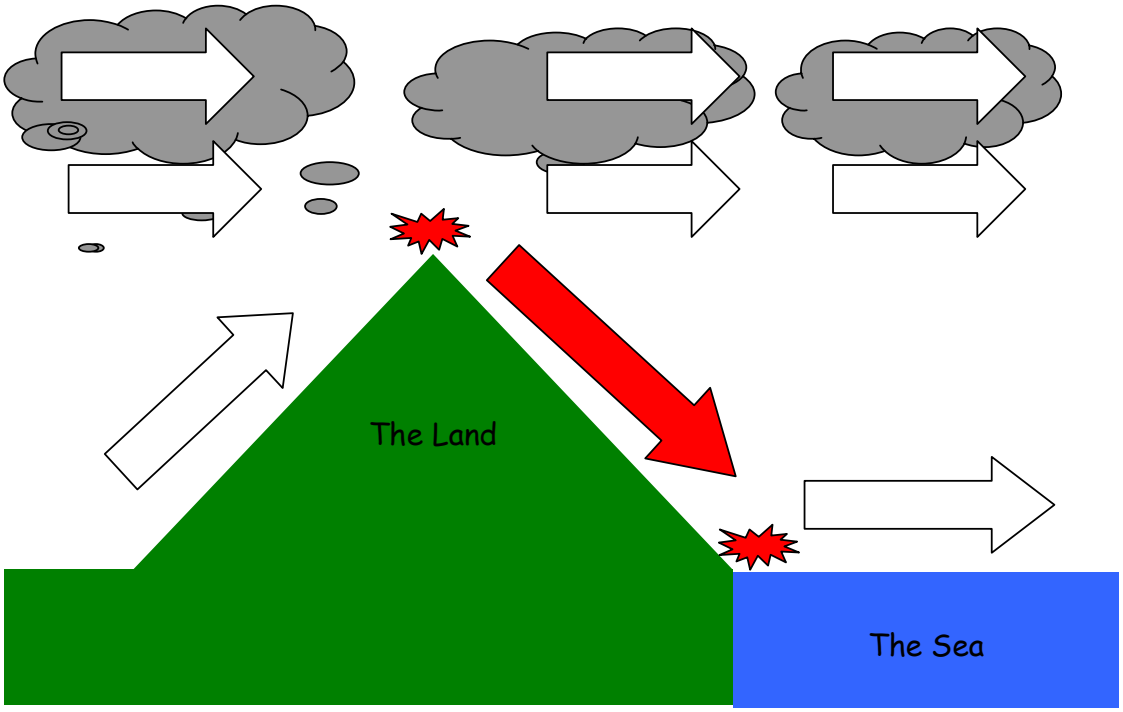
Part 3 will look at sea breezes, what convergence & divergence are and round up this series of short articles on wind, land & sea.

Downdrafts

Wind likes to move together like a bunch of friends walking down a street - side by side.



However, when you put obstructions in the way something happens to our three friends (particles of wind who like to stay together).

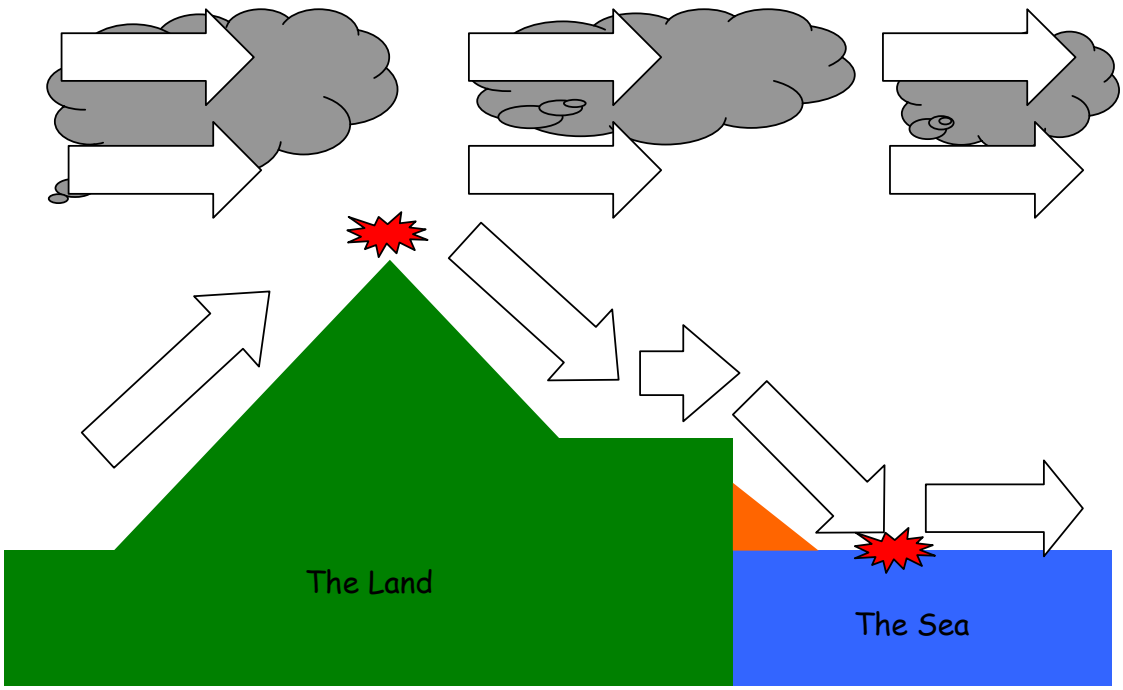


As you can see from the diagram above the wind closest to the land has to follow the land's shape but at the same time stay equal with its friends. This causes it to speed up. When we get a steep angled piece of land right beside the sea, with a wind blowing offshore we get downdrafts. Downdrafts (arrow in red) are blasts or variable speeds of wind rushing down a hillside onto the sea. Remember also that it's easier for the wind pick up speed when it drops down the hillside rather climbing up it! The point where the wind has to change direction i.e. flatten out and head out to sea, is going to be where it will have the most impact on the sea (represented by the red explosion / crash symbol). This point is very dependant on the shape of land. The wind then speeds up as it heads out to sea, because there are no large obstructions to hinder its progress in staying equal with its friends.

Downdrafts can be very frightening if you are not expecting them and can easily scatter a group or cause capsizes - dent folks confidence. So if you're paddling in an area where they might occur with a forecast for variable, gusty winds (e.g. F3 occasionally 4-5), take some precautions:

- Keep close into land – limit how far offshore you are pushed & get shelter.
- Keep group close together – reduce scatter effect.
- Listen for them – you might hear them coming if they are quite extreme.
- Look for patterns on water – gusty winds cause a very distinct pattern.

The 'Friendly Wedge'



When there is a section of cliffs with wind blowing offshore, there is often a friendly wedge created (represented in orange). This zone is caused by cliffs or steep land giving shelter (a bit like an eddy on a river). This zone can allow you an option to paddle along with a weather shore when you otherwise couldn't. However, it isn't very big generally and if you have any problems or venture out of the shelter of it you will rapidly be propelled offshore into faster winds! The red explosion / crash symbol represents the point where the wind has to change direction i.e. flatten out.

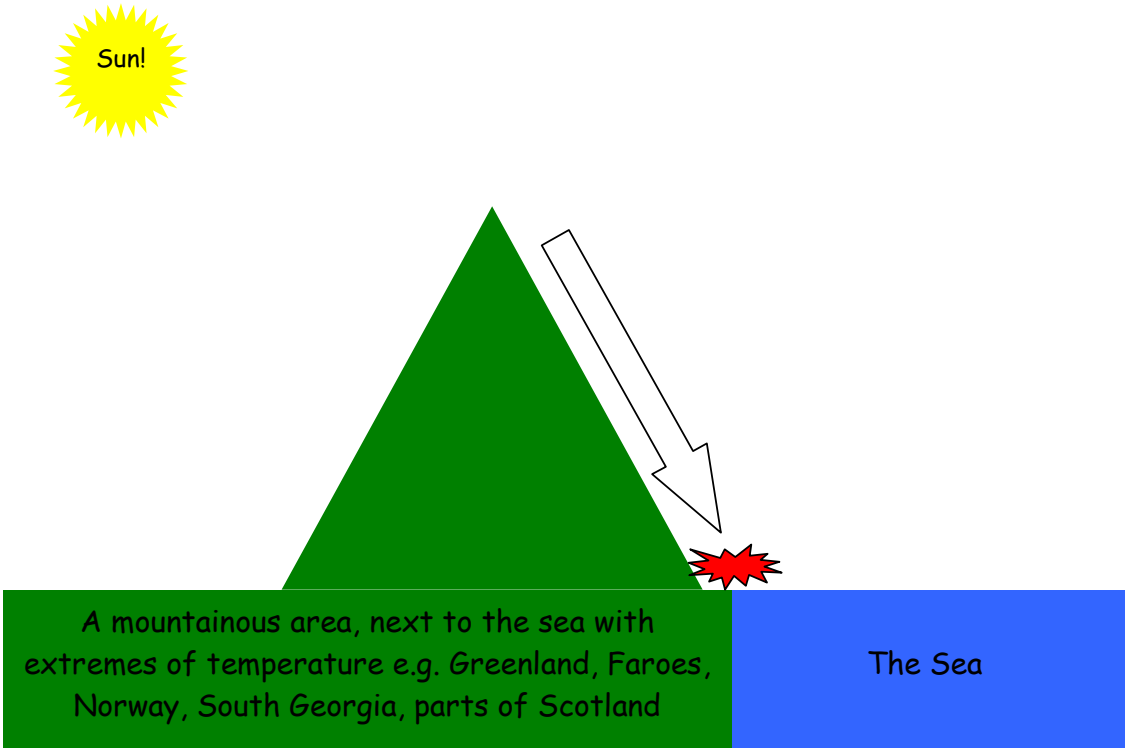
The friendly wedge needs careful judgement and awareness skills in order to use it. It may be the case that as you journey, the land flattens out i.e. a bay – and there aint gonna be no shelter there! Even a slight change in the land's shape, e.g. a small valley can create a 'tunnel' of fast wind which is rather keen on jetting you offshore.

So, some top tips are:

- Study ordnance survey maps carefully for the extent, limit and height of cliffs along your intended trip.
- Work out where the friendly wedge ends & the offshore conveyer belt starts!
- Is there shelter right along your planned trip – no headlands, changes in shape?

Katabatic Winds

Katabatic winds are a term you may have heard expedition paddlers talking about. There is a lot of confusion about what they are so here's a clear and simple explanation.



When the sun sets the air surrounding the mountain cools rapidly (aided if there is snow on the ground or no clouds to retain heat from the sun during the day close to land). If the temperature cools rapidly, then the air begins to sink to the bottom of the valley and if there is a steep mountain then the air particles will gather speed rather rapidly as them sink to the valley floor so causing a katabatic wind (very gusty, erratic winds).

To think of it another way, what happens on a cold night when after having a shower or bath you open the top window of bathroom window? Stick your hand right below the open window – you should feel cold air dropping really quickly past your fingertips. Works really well if it's close to freezing outside and after you have had a really long hot shower after a paddling mission.

It's relevance to sea kayakers? Basically I advise that you look out for jets and blasts of wind in the late afternoon/evening in early spring or winter when it has been a hot, cloudless day in mountainous paddling areas e.g. fjords. Finally, consider where you plan on pitching your tent – make sure you aren't beside a steep, constantly angled mountain slope!

Any comments, questions or feedback – caileanmacleod@yahoo.com ☺