



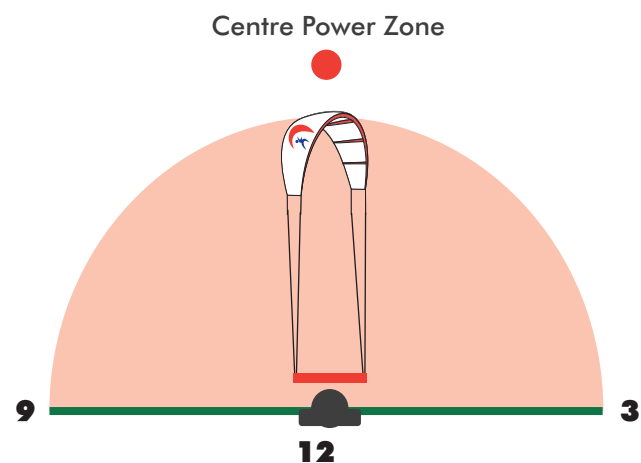
British Kitesports®
A S S O C I A T I O N

Instructors Official Training Aid

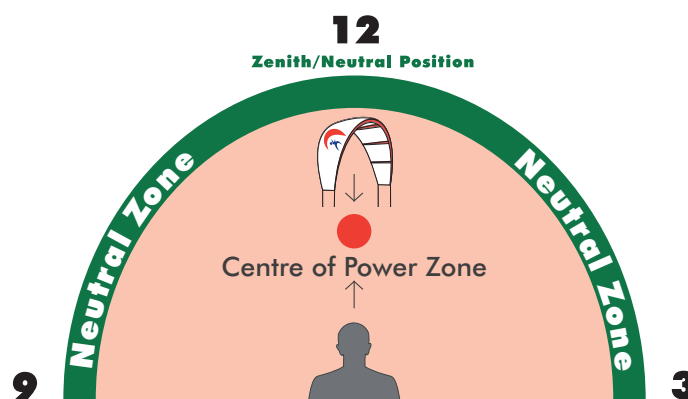
Level 2 Background Knowledge

WIND WINDOW

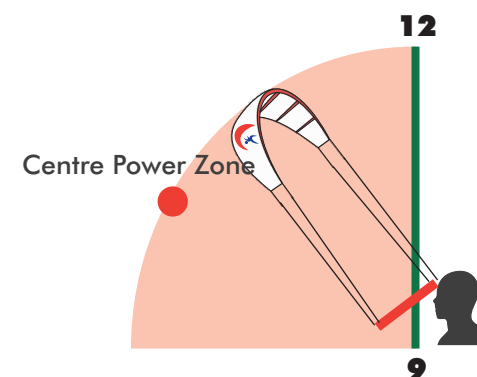
VIEW 1
bird's eye view



VIEW 2
from behind the kiter



VIEW 3
side view



wind window

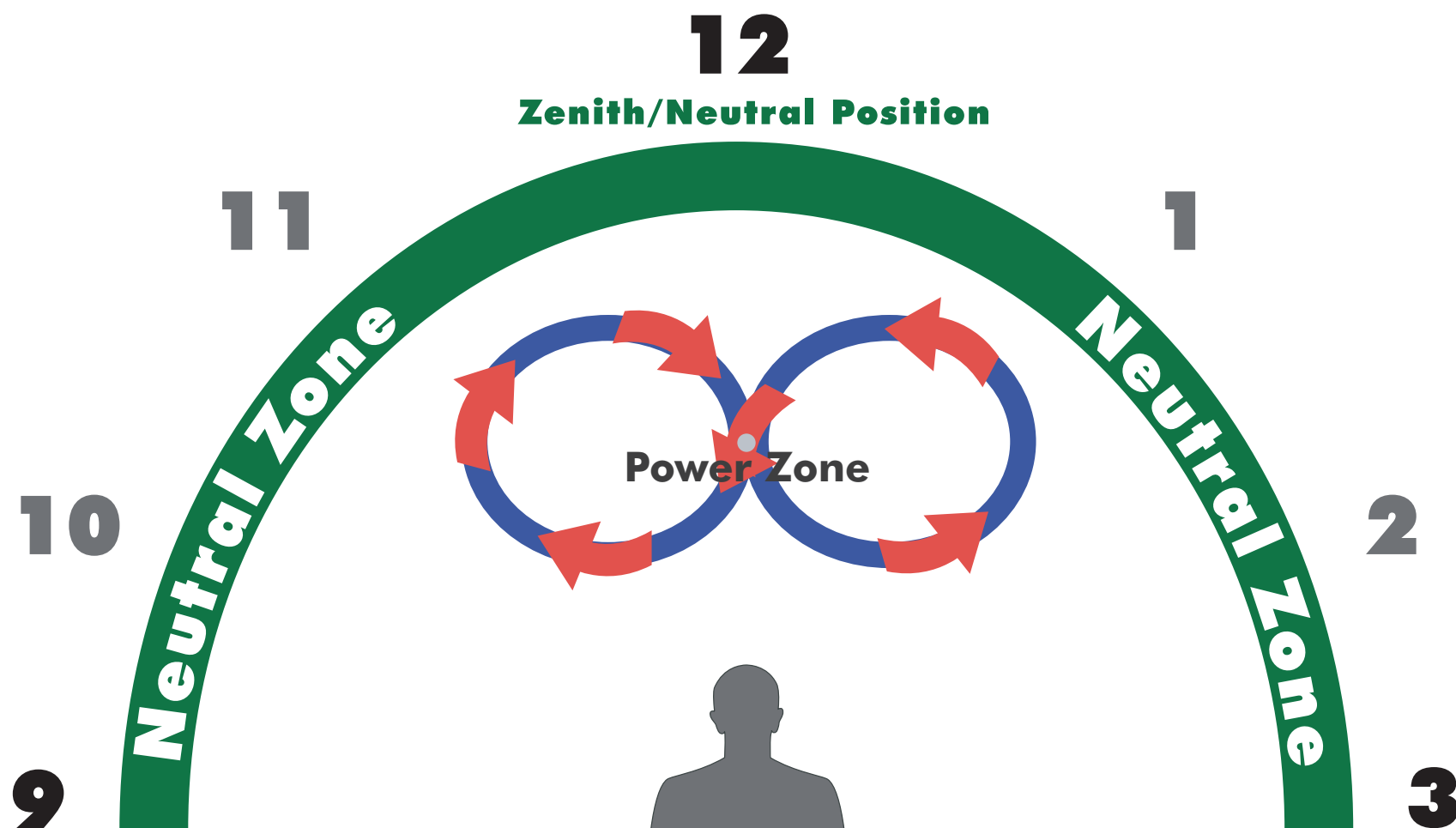


neutral zone



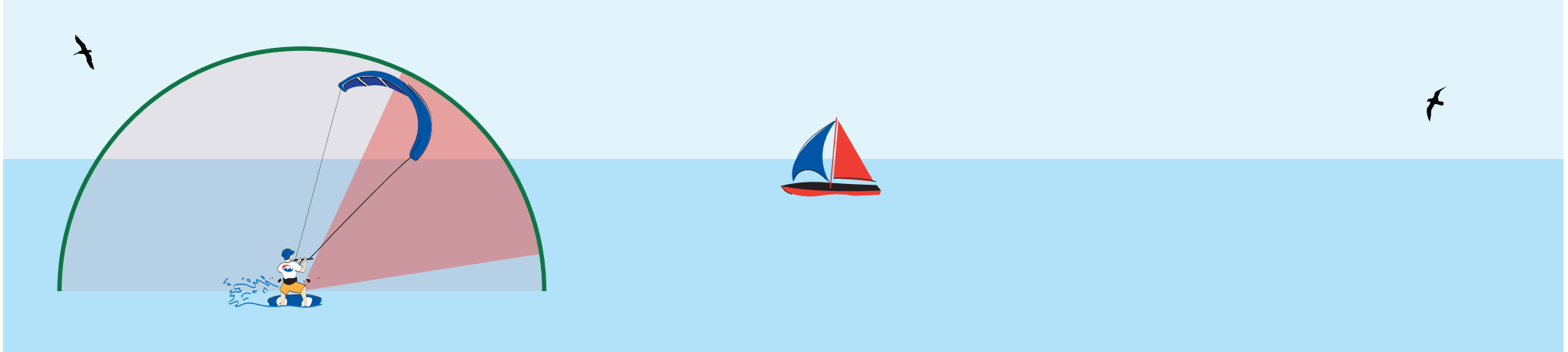
centre of power zone

FIGURE OF EIGHT

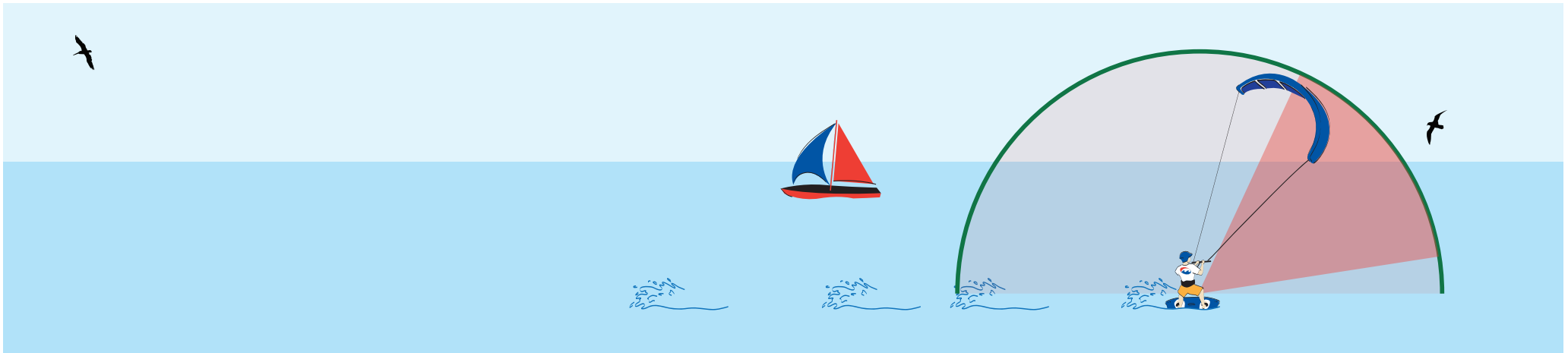


Flying the kite in a figure of eight is how you generate power

DYNAMIC WIND WINDOW



The Dynamic Wind Window is the area in front of you during travel that you can fly the kite in.

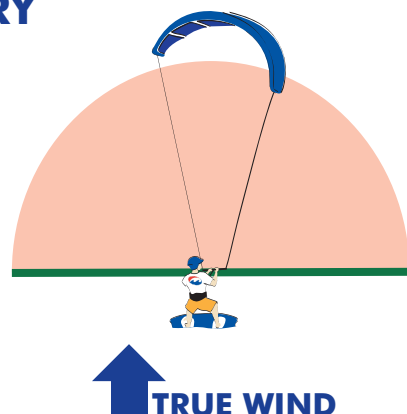


The window moves with you as you travel, always remaining in front to enable you to fly your kite, so it looks as if the kite is still when actually it is moving forward.

APPARENT WIND

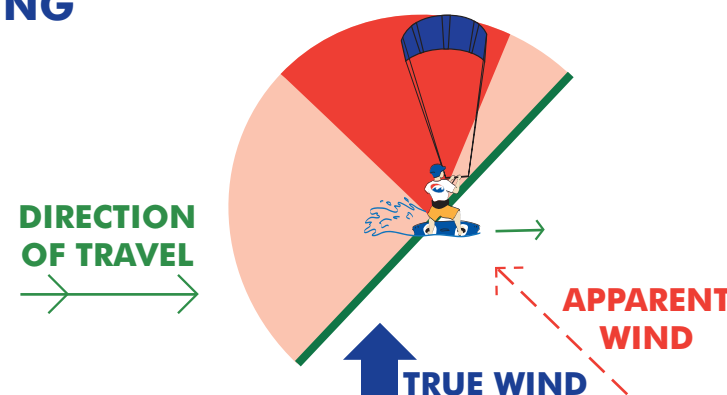
aerial view

STATIONARY



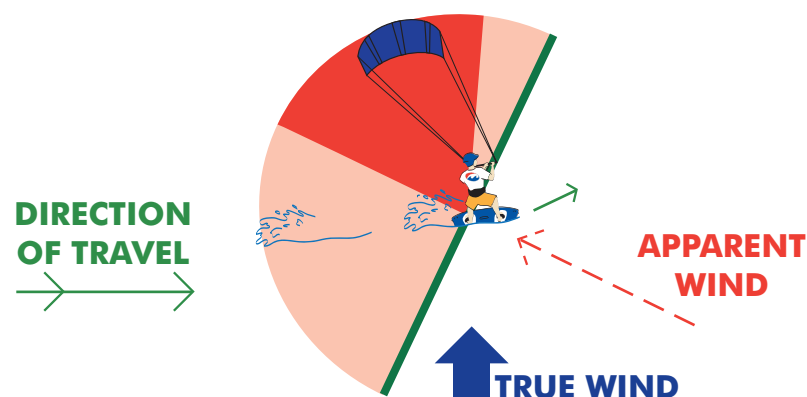
aerial view

MOVING



aerial view

MOVING FASTER

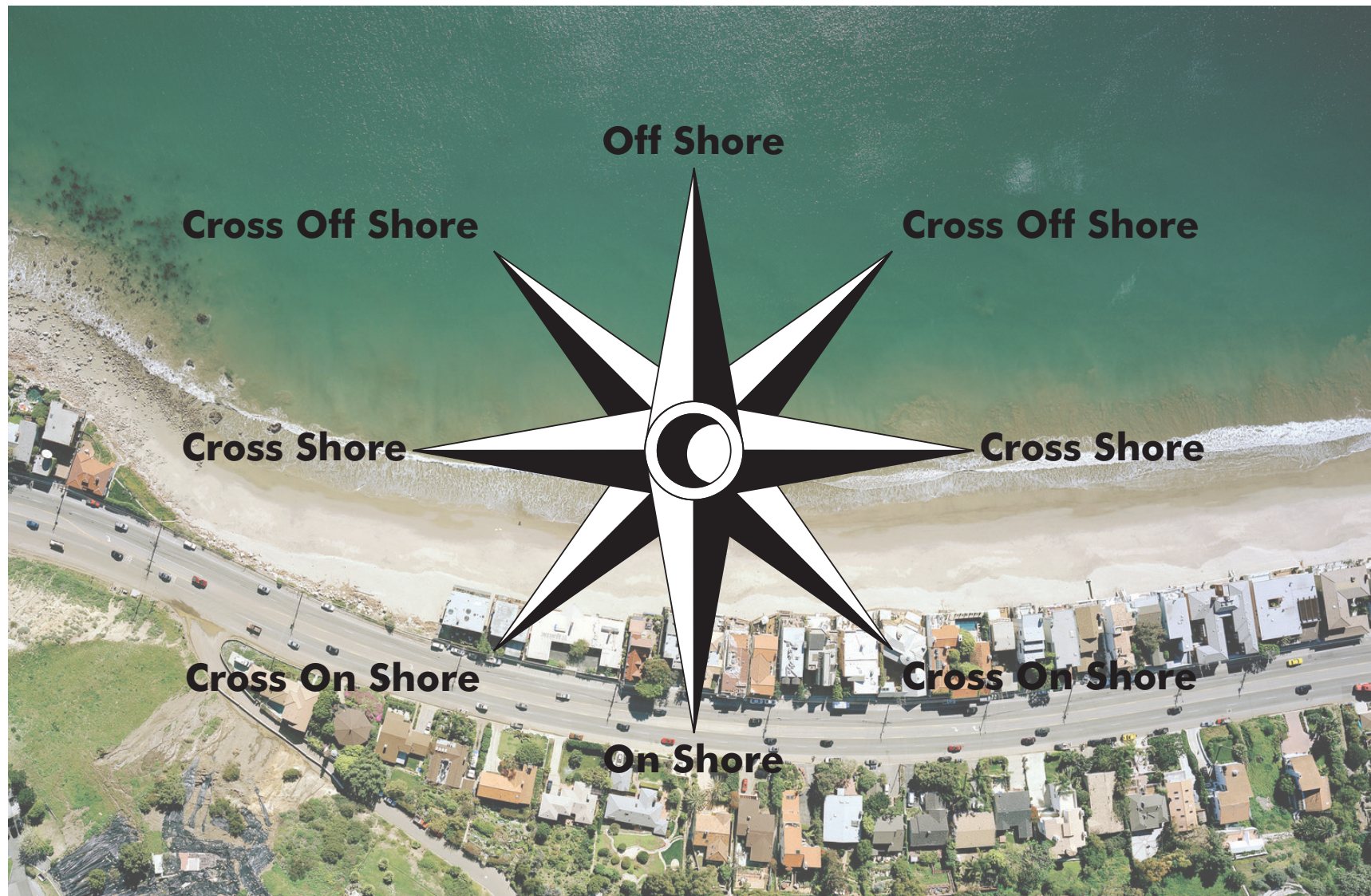


Apparent Wind is a combination of True Wind and the Dynamic Wind produced when a kitesurfer starts moving. Apparent Wind is the wind a kitesurfer 'feels' on their face as they're going along. When standing the kite flies in the static wind window but once moving, the kite is restricted to the segment of this wind, called the 'Dynamic Wind Window'.

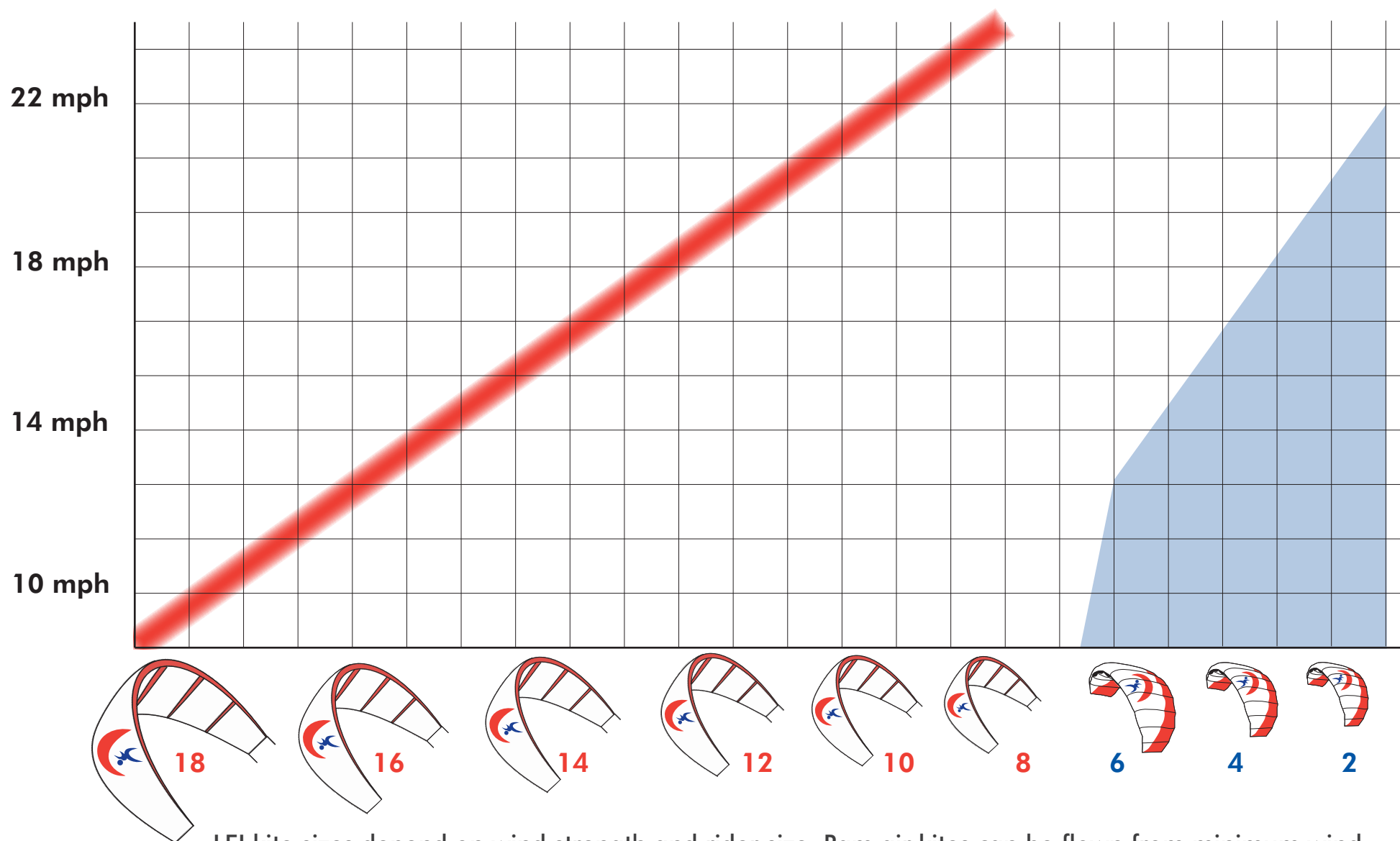
The faster a kitesurfer travels, the more the apparent wind comes from in front of them. This means the dynamic wind window is forced back, resulting in less upwind ability.

UPWIND ABILITY = CONTROLLED, MANAGED SPEED

WIND DIRECTION



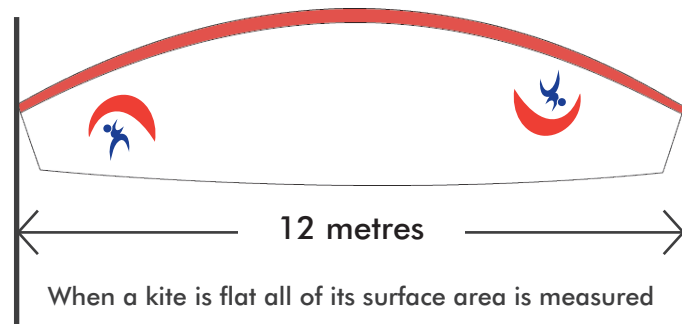
KITE SIZE TO WIND SPEED



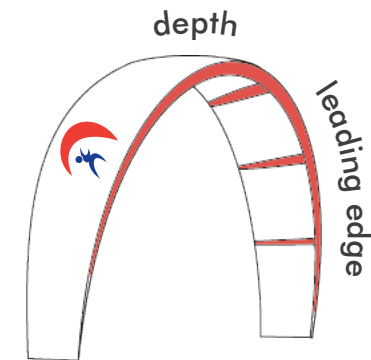
LEI kite sizes depend on wind strength and rider size, Ram air kites can be flown from minimum wind strengths up to the maximum recommended wind speed which will depend on rider size.

KITE SIZE

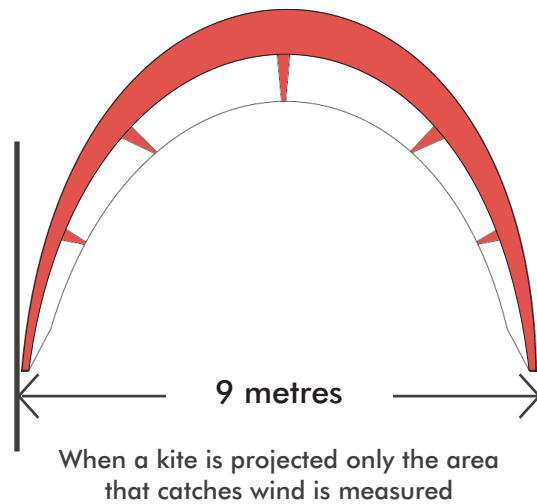
FLAT



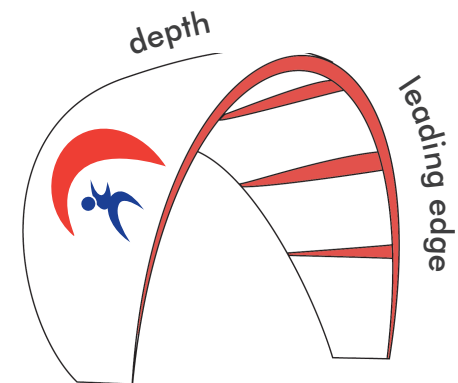
HIGH ASPECT



PROJECTED



LOW ASPECT



Aspect Ratio = length of leading edge ÷ depth of kite

Low Aspect Ratio = 3

Medium Aspect Ratio = 4/5

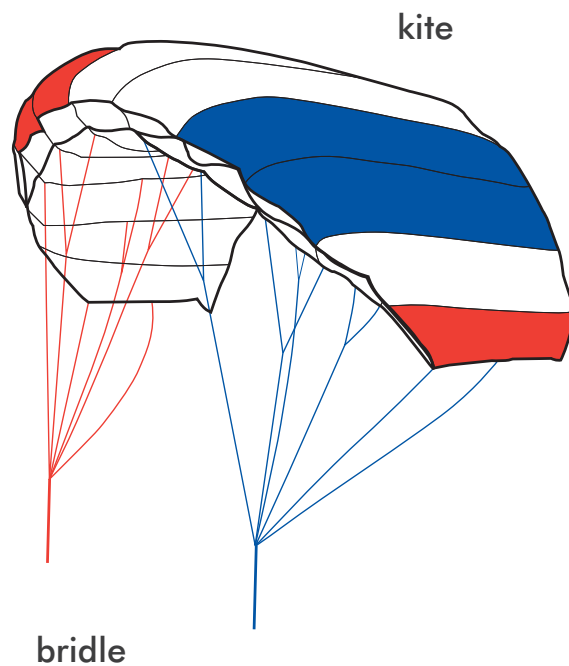
High Aspect Ratio = 6



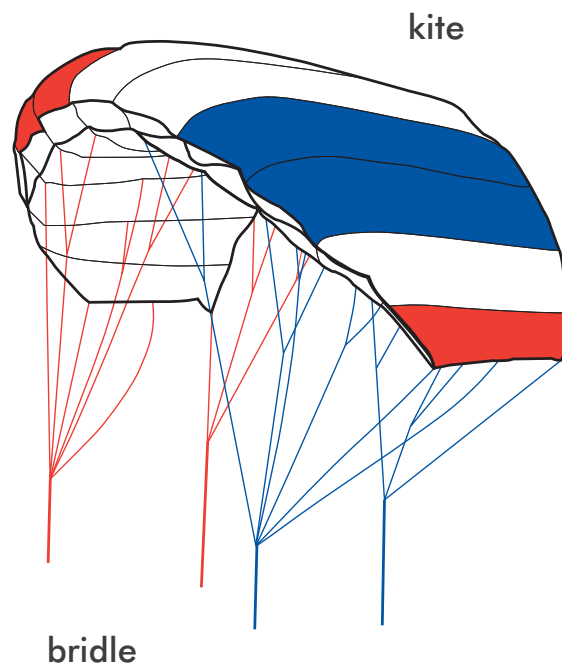
RAM AIR KITES



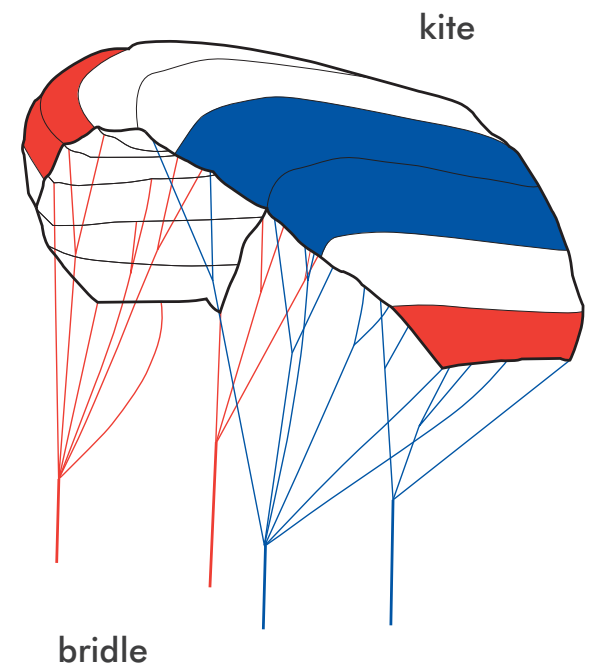
2 LINE



4 LINE



4 LINE CLOSED CELL



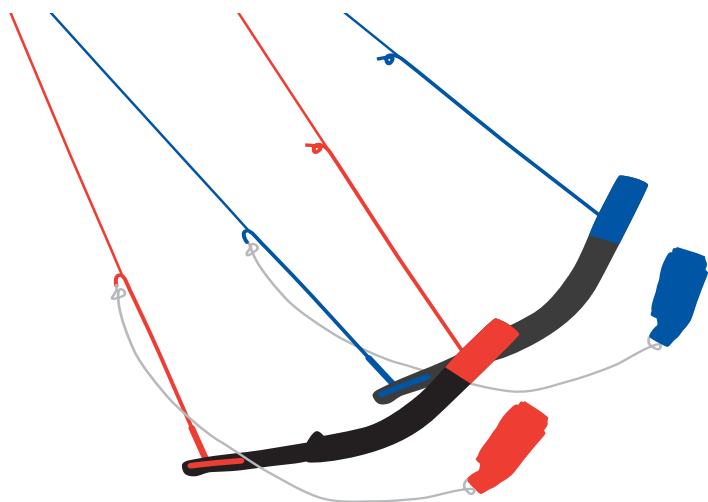


RAM AIR CONTROLS



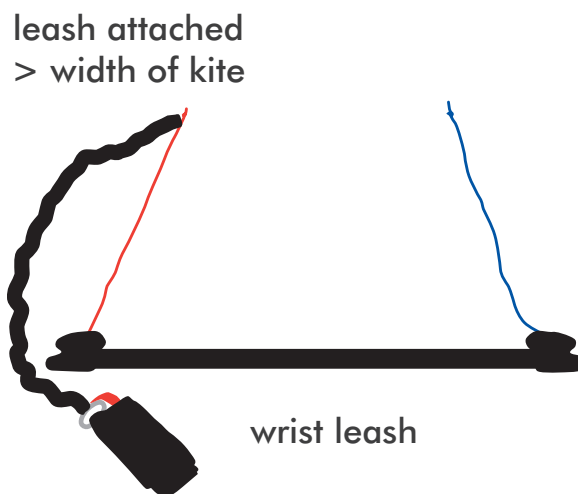
All controls must have a fully functioning safety system enabling the **COMPLETE** de-power of the kite on activation

handles



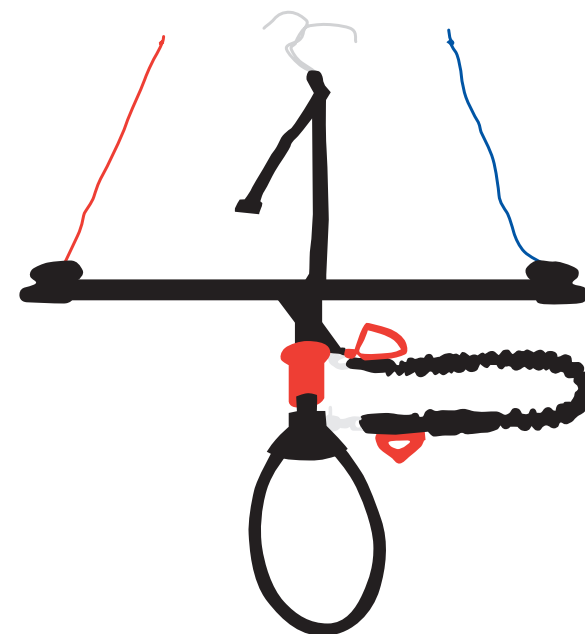
wrist leash for both arms

2 line bar



wrist leash

4 line bar



chicken loop



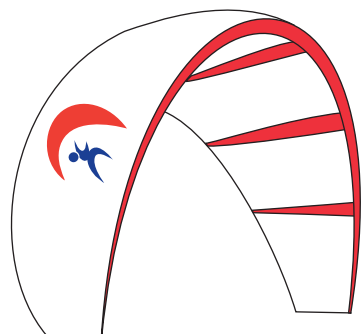


LEI KITES

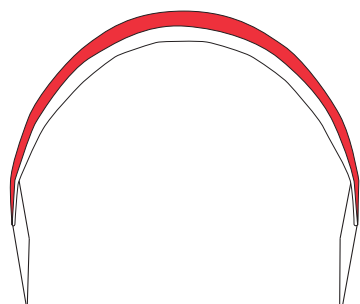


C KITE

kite

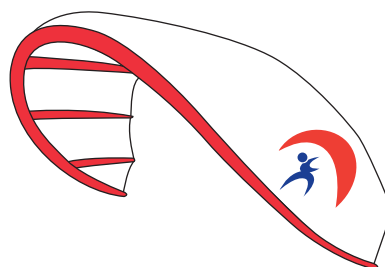


bridle

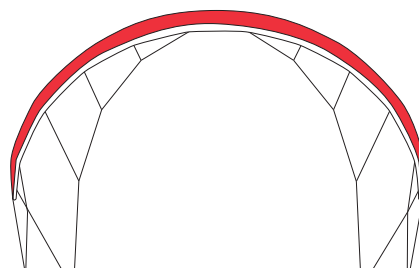


BOW KITE

kite

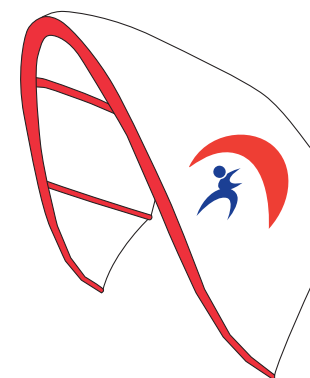


bridle

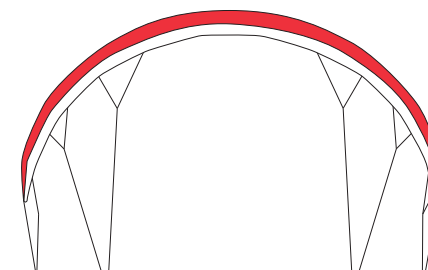


HYBRID / DELTA KITE

kite



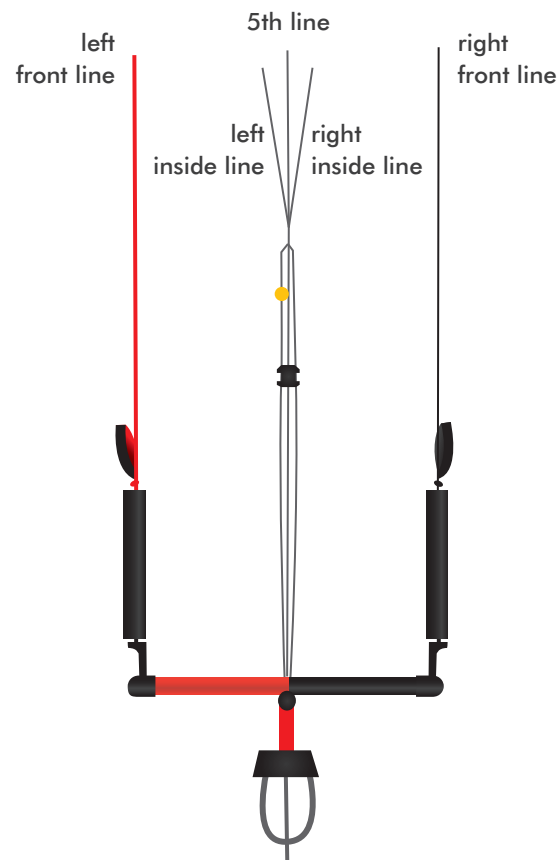
bridle



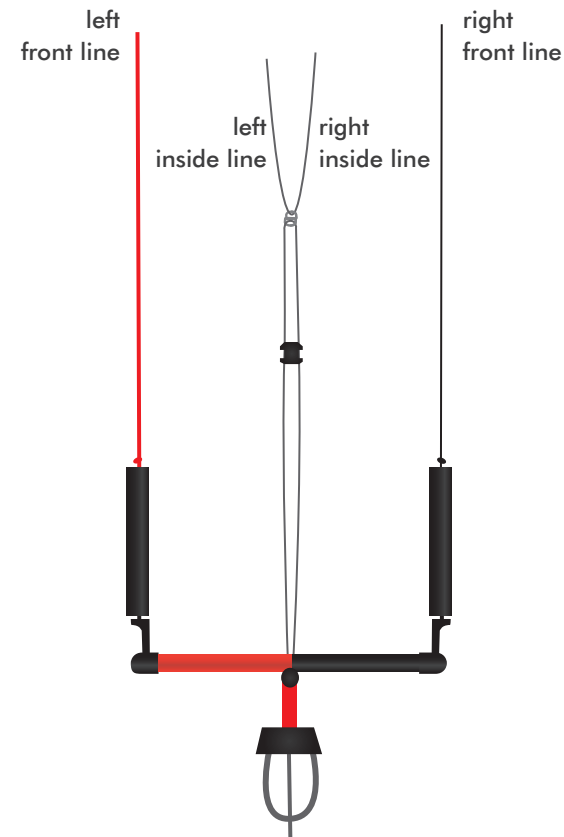
LEI BARS

All bars must have a fully functioning safety system enabling the COMPLETE de-power of the kite on activation

5 line kite



4 line kite



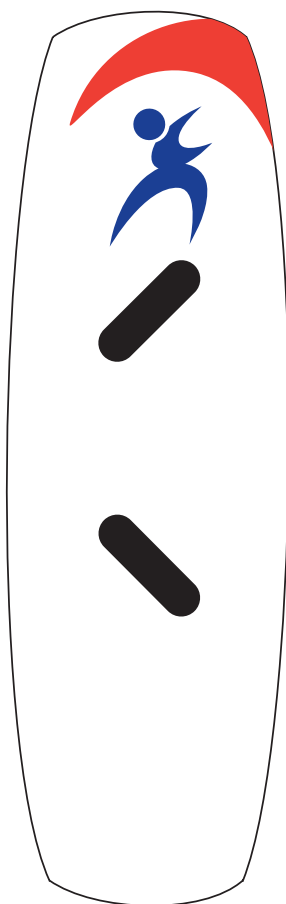
Chicken loop safety needs to flag onto a single (preferably front) line with a stopper a suitable distance up the line.



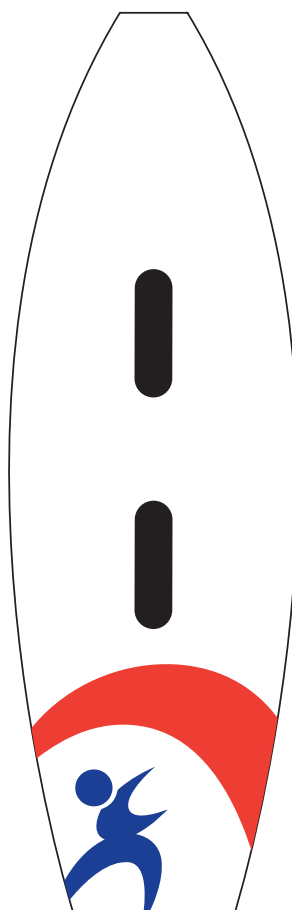
BOARDS FOR WATER



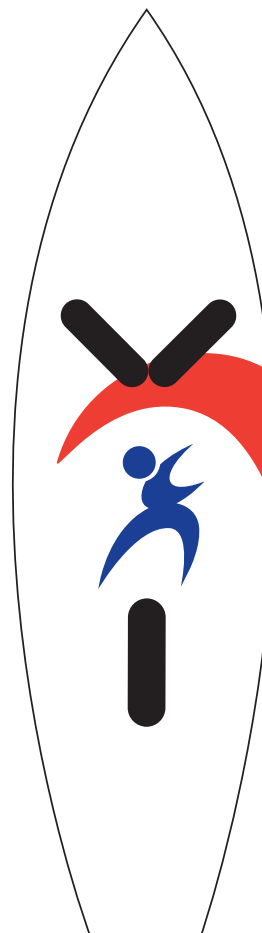
TWIN TIP



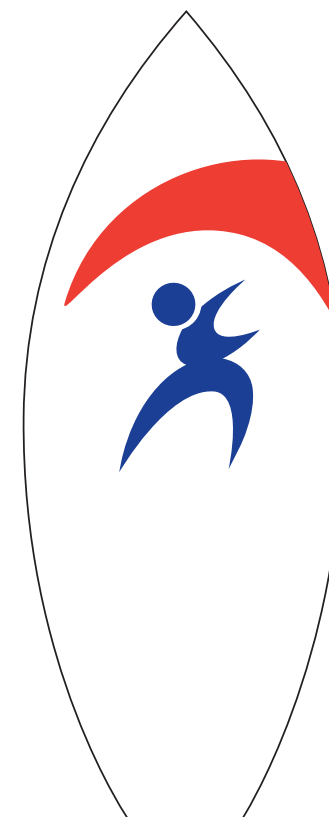
MUTANT



DIRECTIONAL



SKIMBOARD

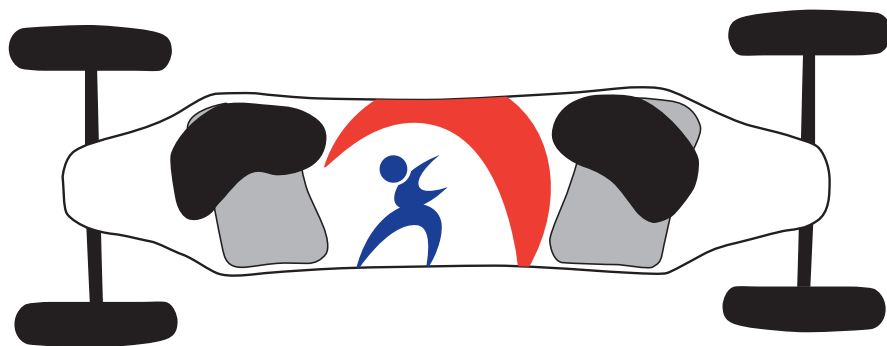




WHEELS FOR LAND

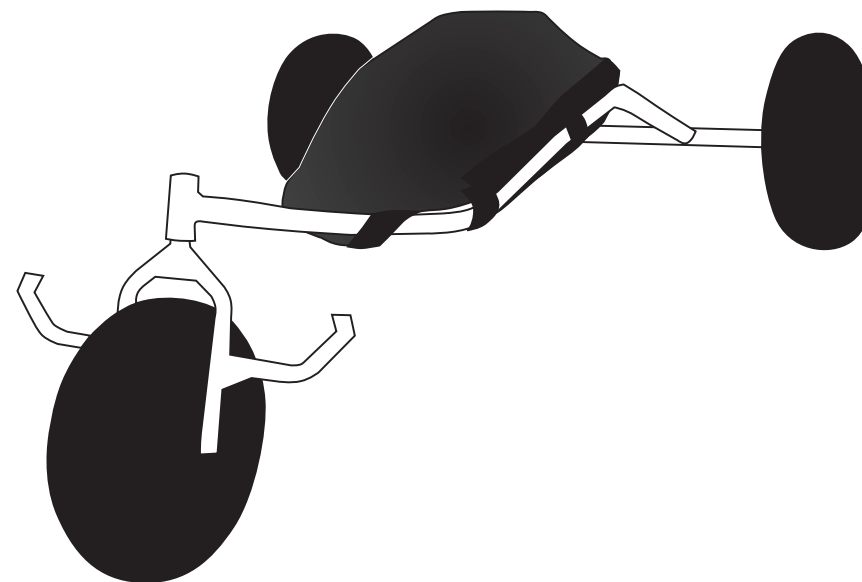


LANDBOARD



Softer tyres = slower; Hard tyres = fast.
NB. The British Kitesports Association do not recommend the use of a leash on landboards.

LANDBUGGY

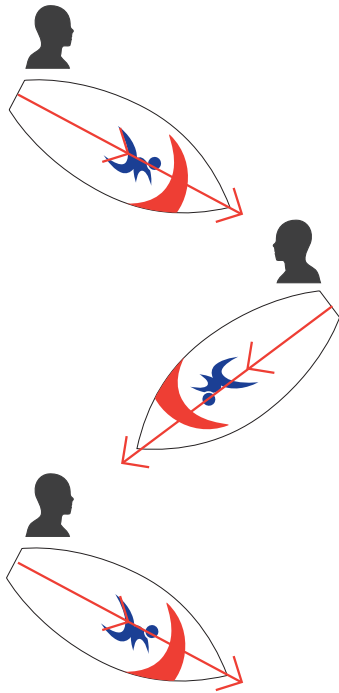


Softer tyres = slower; Hard tyres = fast.
NB. The British Kitesports Association do not recommend the use of a strop on landbuggies.

POINTS OF SAILING

Up Wind/Close Reach

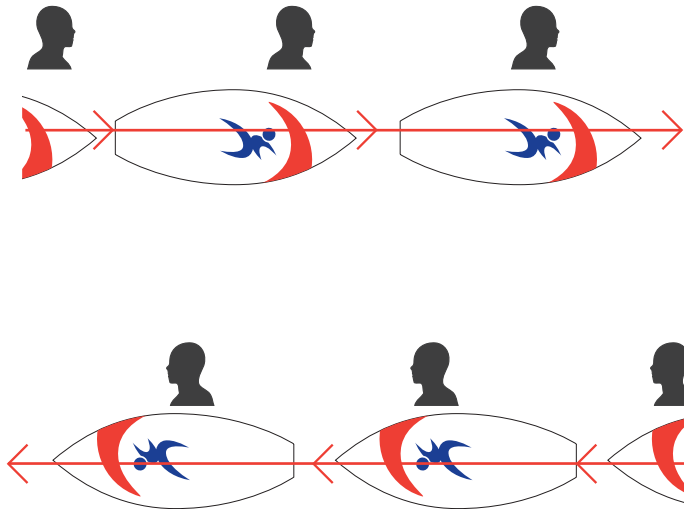
travelling in to the wind



WIND

Across Wind/Beam Reach

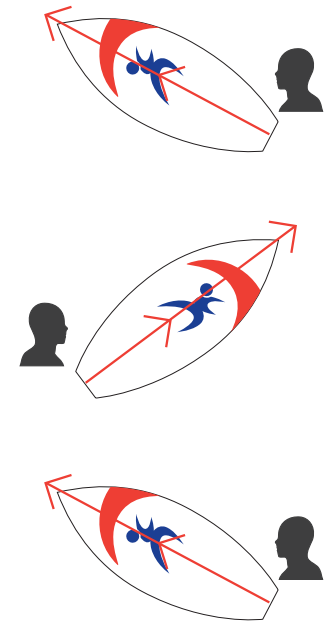
travelling across the wind
in either direction



WIND

Down Wind/Broad Reach

travelling in the same
direction as the wind



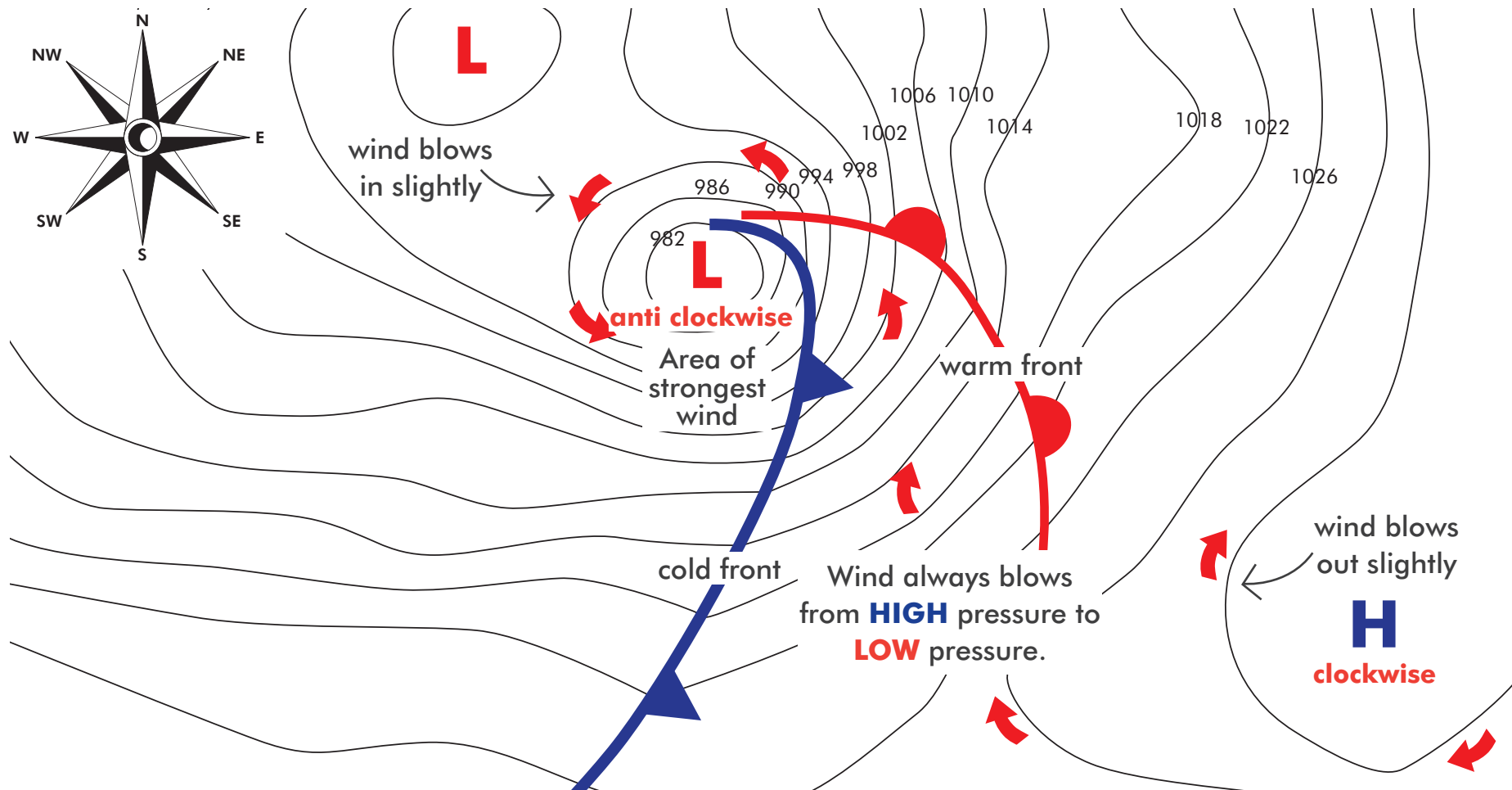
WIND



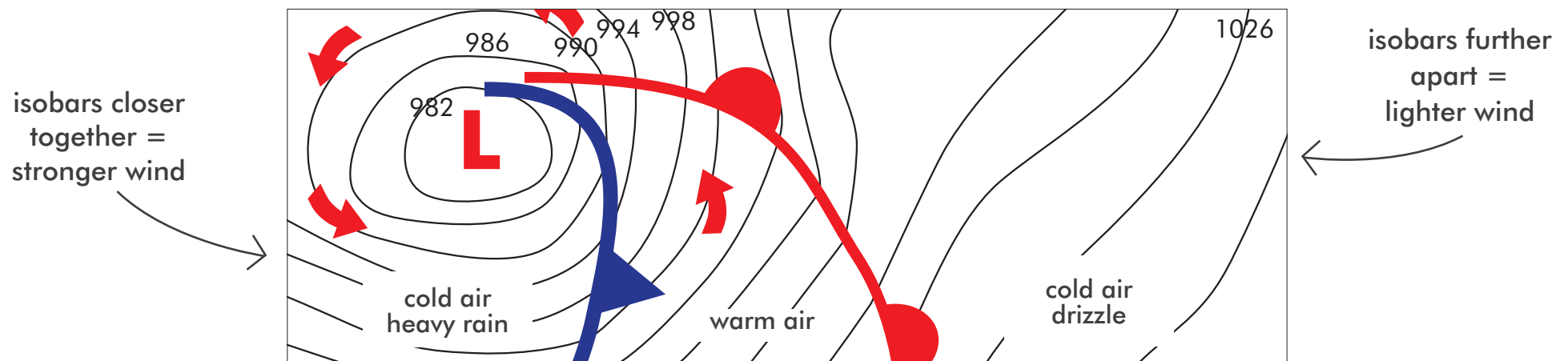
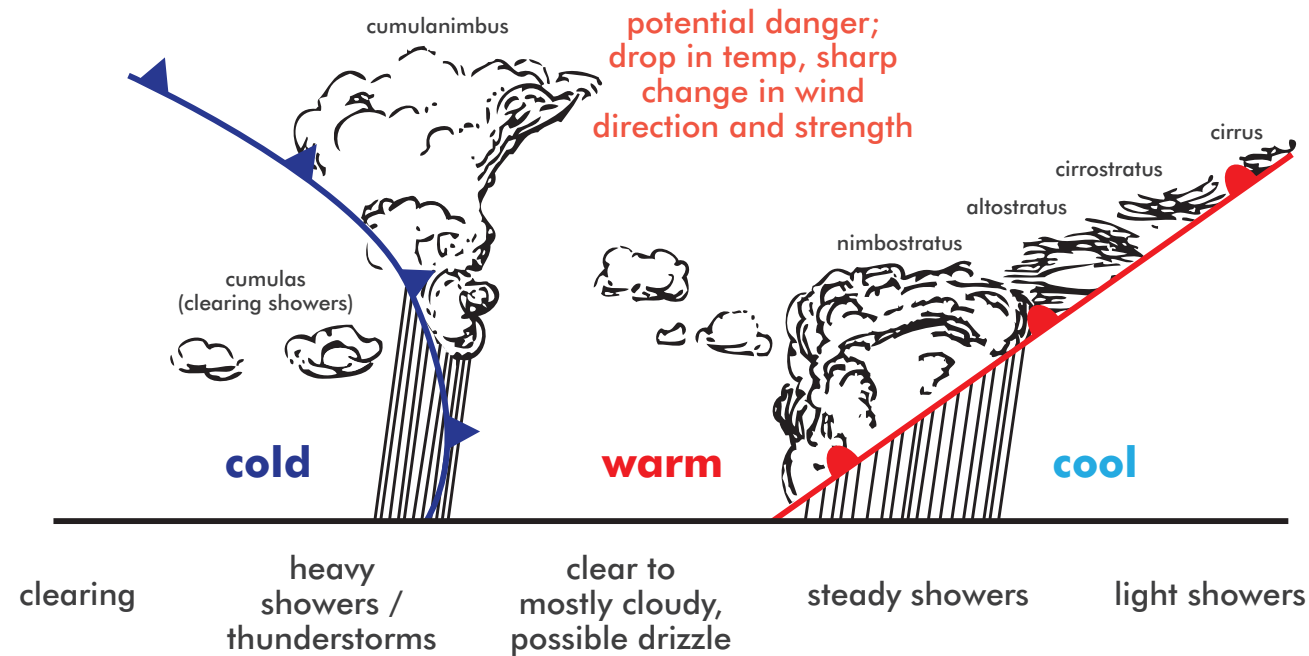
WEATHER: PRESSURE SYSTEMS



Low Pressure = warm, wet and windy, **High Pressure** = fair, dry and light winds

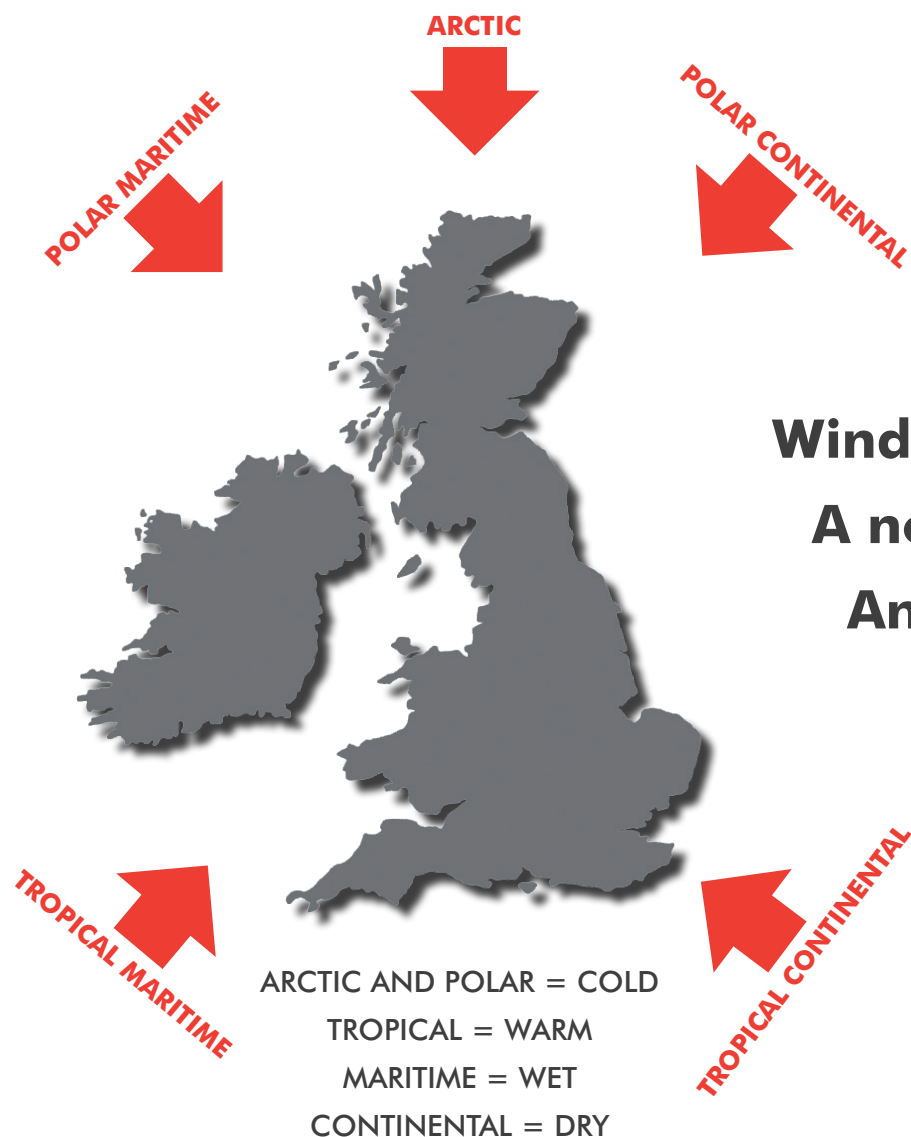


WEATHER FRONTS

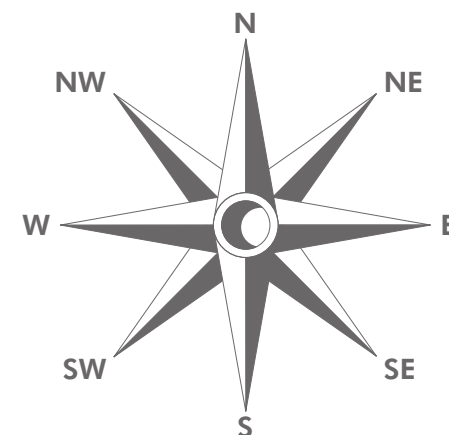




WHERE WEATHER COMES FROM



Wind is described by where it comes from
A northerly wind comes from the north
An arctic wind comes from the arctic





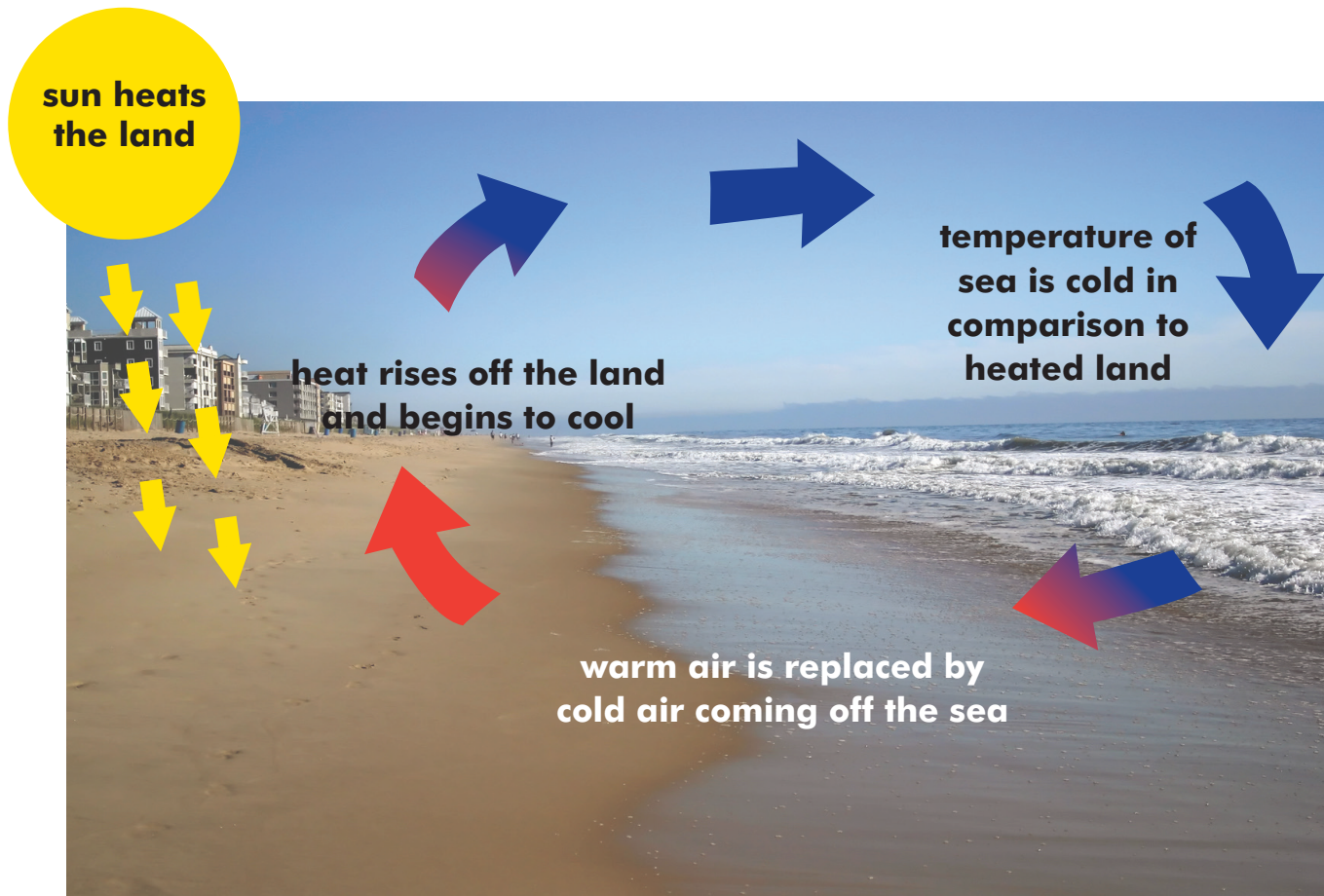
BEAUFORT SCALE OF WIND FORCE



Beaufort Number	General Description	Sea State	Velocity in knots
0	Calm	Sea like mirror	less than 1
1	Light Air	Ripples formed, no foam crests.	1-3
2	Light Breeze	Small wavelets, short but more pronounced. Crests glassy but do not break.	4-6
3	Gentle Breeze	Large wavelets, crests start to break. Foam glassy, scattered white horses.	7-10
4	Moderate Breeze	Small waves becoming longer, fairly frequent white horses.	11-16
5	Fresh Breeze	Moderate waves, more pronounce long form, many white horses, some spray.	17-21
6	Strong Breeze	Large waves start to form, extensive white foam crests, spray.	22-27
7	Near Gale	Sea heaps up, white foam from breaking waves starts blowing in streaks along wind direction.	28-33
8	Gale	Moderately high waves in greater length, crests break off in spindrift, foam blown in well-marked streaks.	34-40



SEA / LAND BREEZE



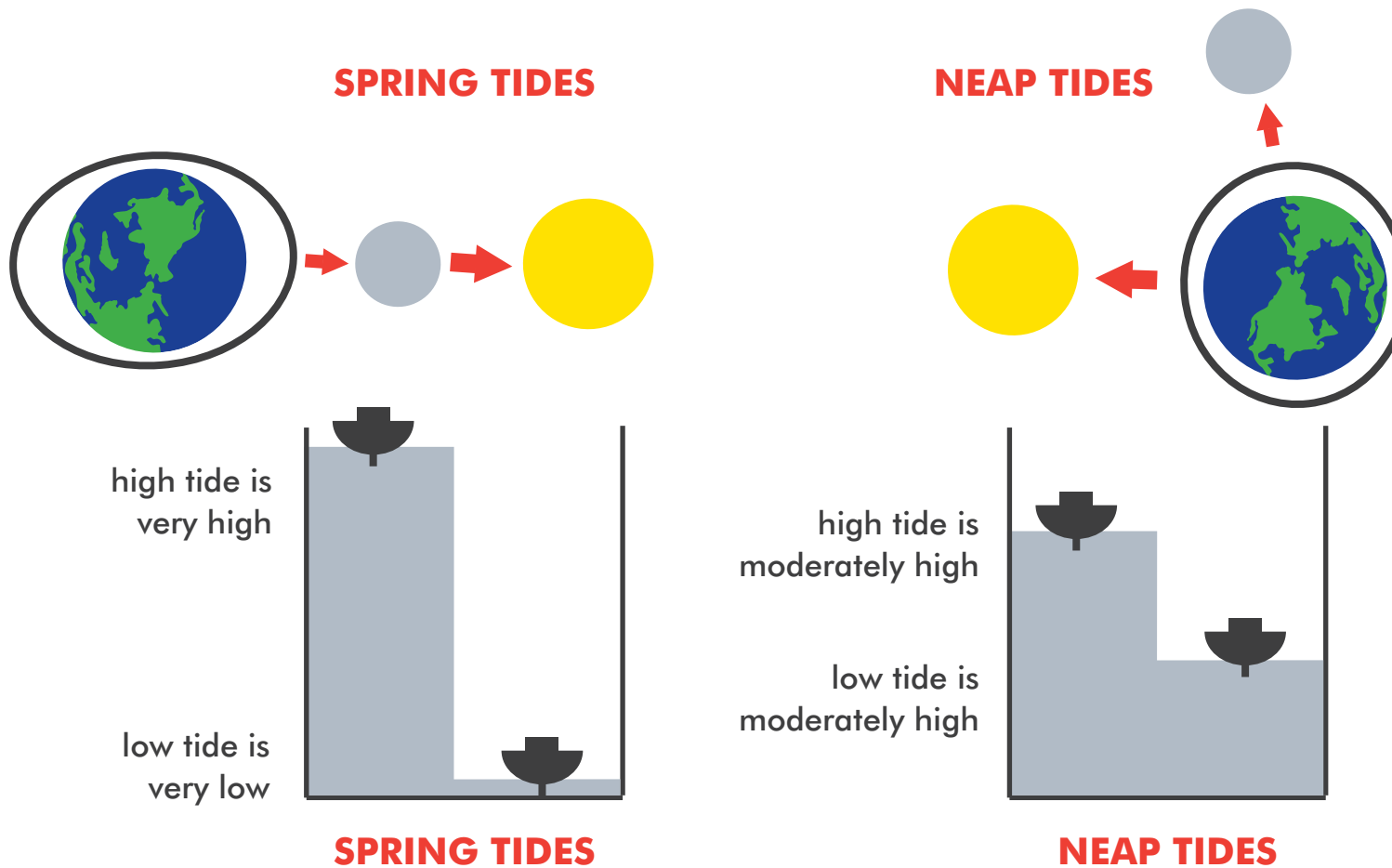
An on shore SEA BREEZE is most prevalent in spring afternoons when the land is warm but the water is still cold.



At night or early morning the cycle can reverse, causing a LAND BREEZE.

TIDES

The gravitational pull of the SUN and the MOON control the tides. When the sun and moon are in line they form **SPRING** tides and when they are adjacent they form **NEAP** tides.



Useful Tide Tips:

high - low: 6hrs

high - high: 12hrs

moves on approx. 50 mins a day, so if low tide is at midday today it will be at 12.50pm tomorrow.

most places are semi diurnal so they have 2 highs and 2 lows per day

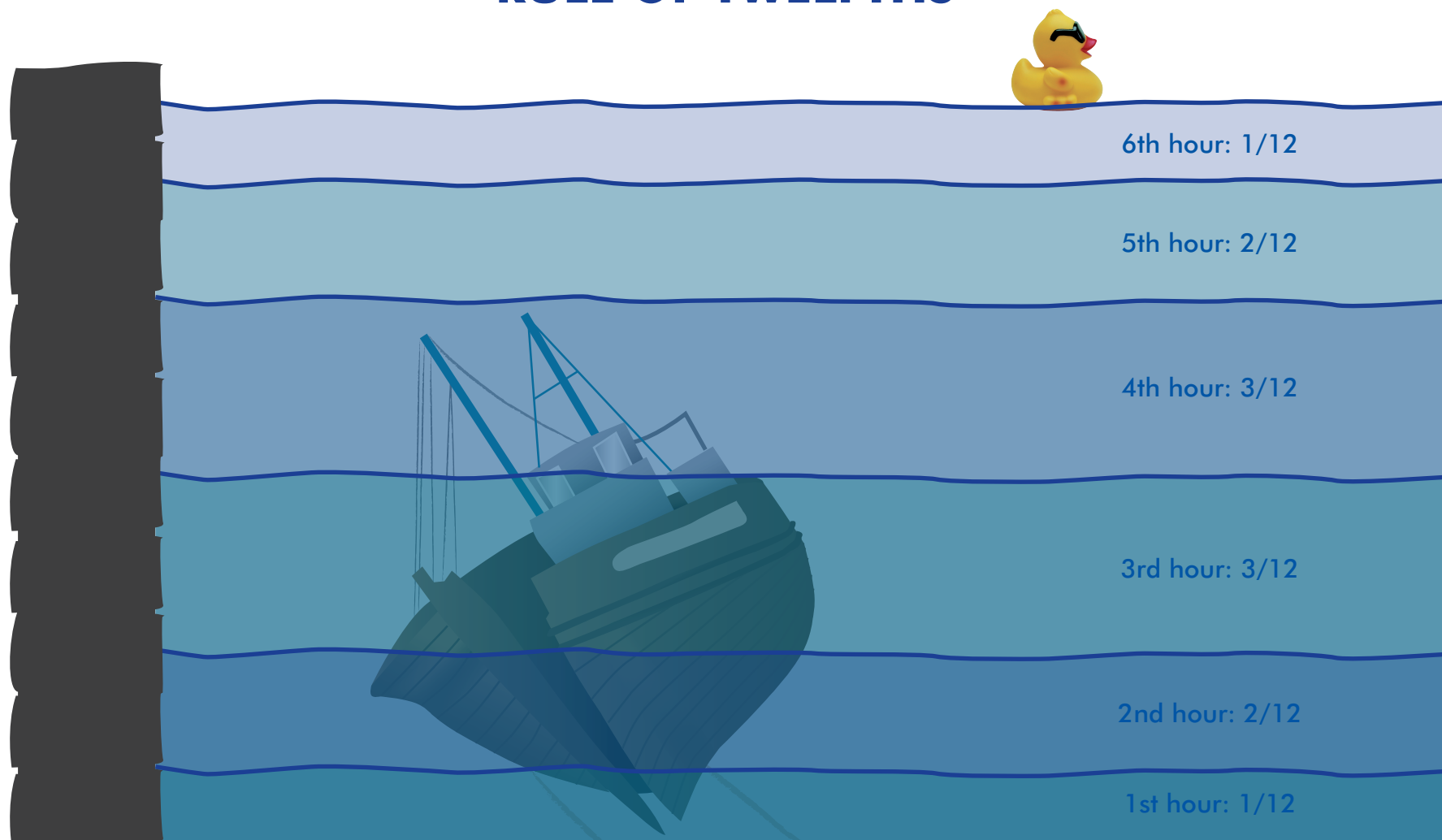
spring - neap: 7 days

neap - neap: 14 days

complete lunar cycle: 28 days

TIDAL AFFECTS

RULE OF TWELFTHS



RIGHT OF WAY



Avoid collision at all cost



Up wind kite goes up, down wind kite goes down



STARBOARD Tack has R.O.W over **PORT** tack

Memory tip: 'There is a little red port left in the bottle'. Port side is left and signalled by the colour red.



No rider must jump up wind of anyone within 2 kite lengths







Rider Launching has R.O.W over riders landing



Riders heading out through surf have R.O.W

RISK ASSESSMENT

-  **Risk assessment is a working document**
-  **It's purpose is to identify, measure, and limit risk of serious injury whilst undertaking an activity, to an acceptable level**
-  **All fixed hazards, 3rd parties, and likely occurrences must be considered when performing a risk assessment.**
-  **If a risk cannot be reduced to a safe level then the location or activity cannot take place.**



SITE ASSESSMENT



SURFACE

eg: sand, wet grass, huge waves



HAZARDS

eg: objects - above and below water



OTHERS

eg: people - in the water and on the beach

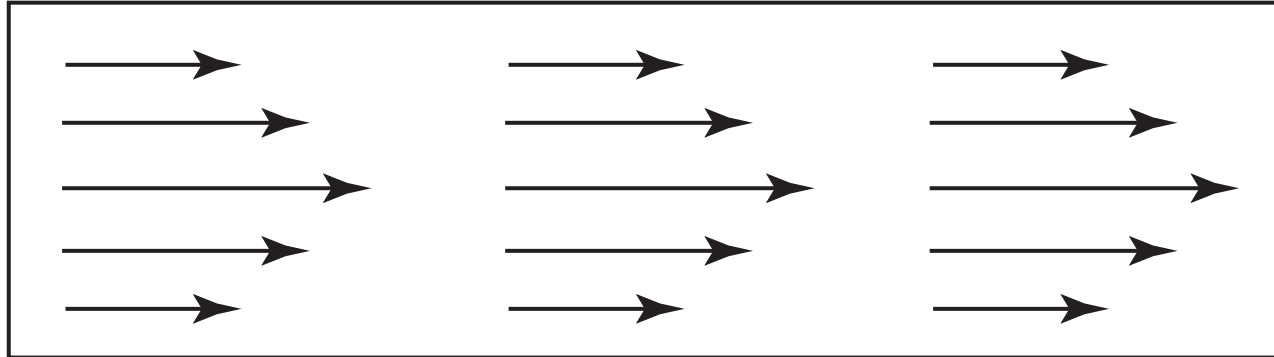


ENVIRONMENT

eg: weather and tides

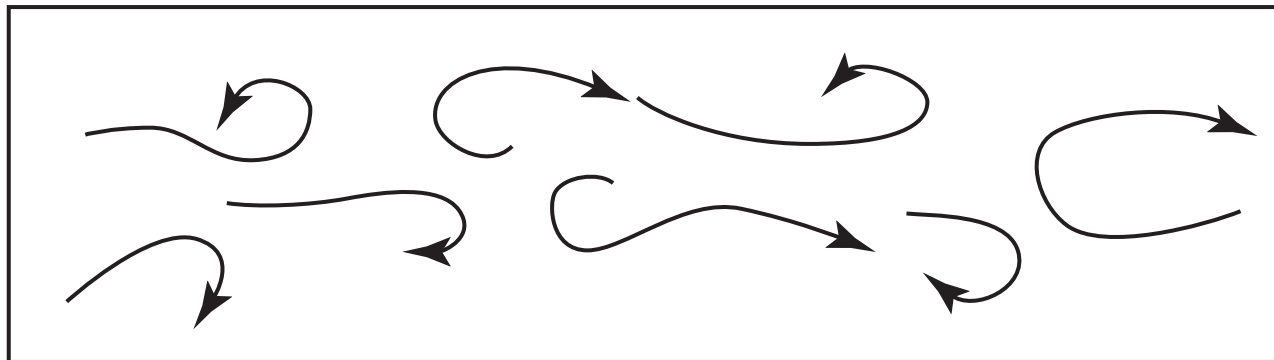
IF IN DOUBT... DON'T GO OUT!!!

WIND AFFECTS



Laminar Flow

This is good for kites as it provides a constant, solid wind



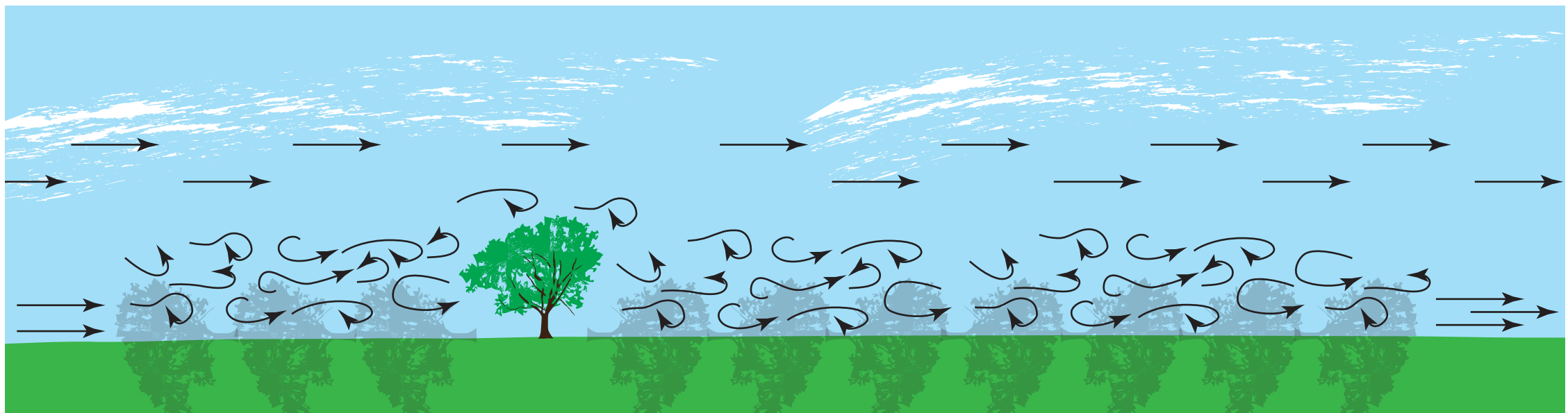
Turbulent Flow

This is bad for kites as it provides an unpredictable, gusty wind

WIND AFFECTS

WIND SHADOW

Objects cause laminar flow to become turbulent before, after and above the object.
When flying a kite it is important to look around and see what objects could be causing a wind shadow and therefore either producing no wind or unpredictable wind.



←→
turbulent flow BEFORE the object =
3x the height of the object laid flat

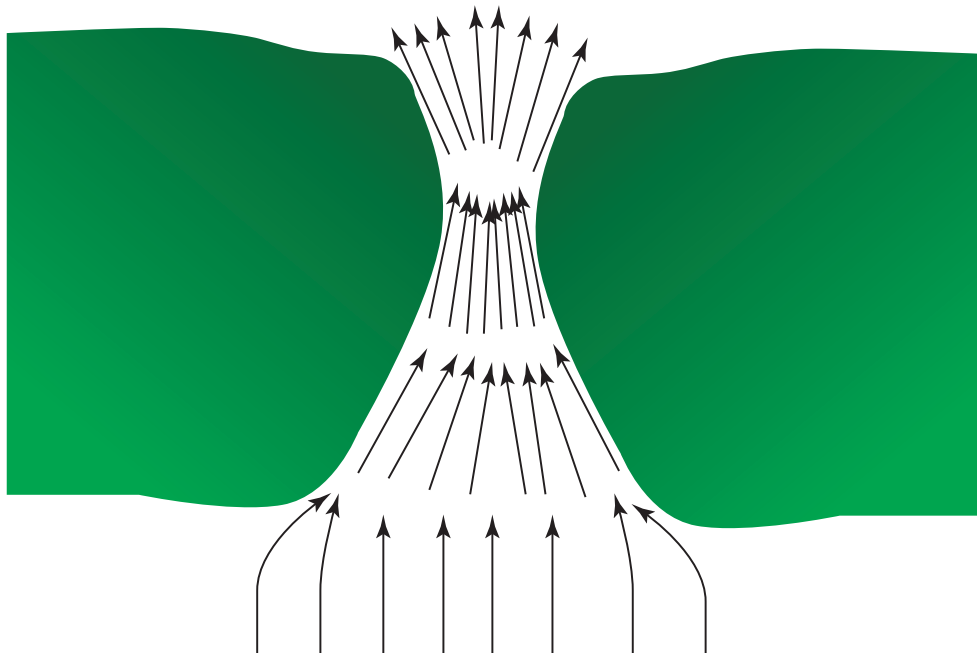
←→
turbulent flow AFTER the object =
7x the height of the object laid flat

WIND AFFECTS

VENTURI EFFECT

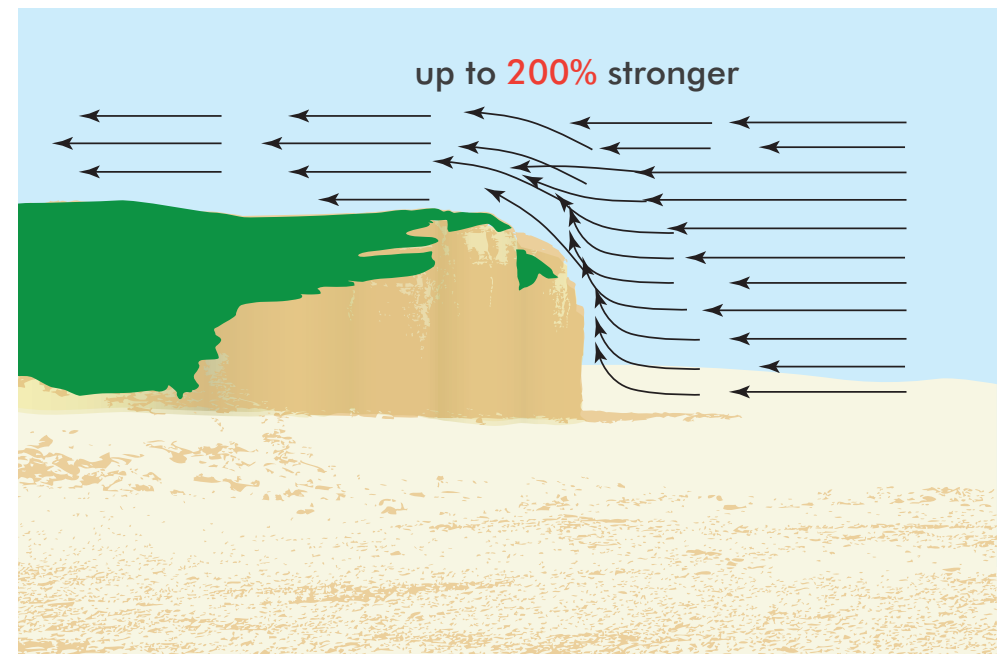
As wind travels towards a corridor it is squeezed through the gap and pushed out the other side, increasing its speed through the corridor and on the other side, where it escapes. As it travels away from the gap it reduces in speed again.

aerial view



COMPRESSION

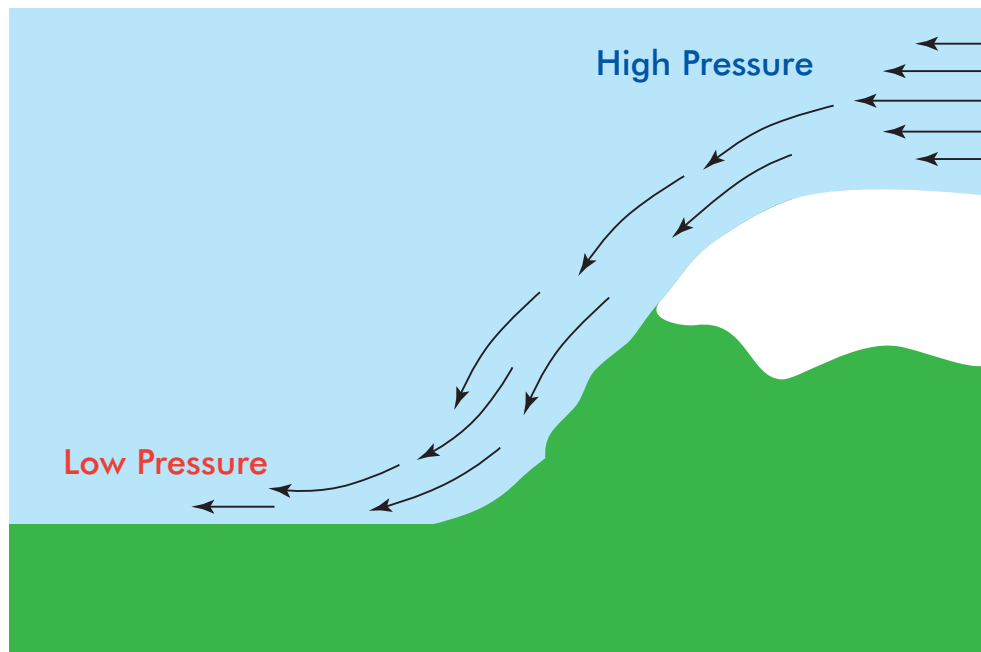
As laminar flow hits an object or cliff face the wind cannot move forward through the face so it is pushed upwards creating turbulent flow above the cliff. The turbulent wind can be up to **200%** stronger than the original wind strength



WIND AFFECTS

KATABATIC WIND

When the land at the top of a mountain or cliff is colder than the land below it, wind will rush down the face of the mountain as the high pressure from the cold air flows towards the low pressure from the warm air. The air tumbles down the side of the cliff making it very turbulent.



ANABATIC WIND

When the land at the top of a mountain or cliff is warmer than the land below it, hot air rises at the top of the cliff and cooler air off the lower land will rush up the face to fill the gap. This rushing wind is very turbulent. As it rises, it cools and flows back to fill the gap produced at the bottom of the cliff, producing a cycle motion with a lift and a drop.

