

When the wind blows!

You don't have to fly paragliders for long before you realise that their top speed can soon be eclipsed by the wind speed. The difference between the top speed of EN A and EN D rated gliders is not that great, about 18 kph (10 mph); less at trim, but enough to meaningfully increase the margins for the EN D pilot. Conversely, with smaller margins, the EN A/B pilot needs to keep a more watchful eye on wind speed to ensure their ground speed stays positive. For that reason having an instrument field that displays ground speed is essential also knowing what is accurately into wind, any small deviation either way will produce false (higher) positive readings. Watching your groundspeed (into wind) drop to near 0 can be unsettling not least because it indicates it's windy, (at least where you are) but also values around zero can go negative, but still read as positive. A gentle tack sideways will tell you if it's positive or negative. However, this month's article is not about high wind flying but more about the landing under strong conditions. I'll break this into three parts for ease:

- **Forewarned is fore-armed**
- **Choosing your landing place**
- **Approach and killing the wing.**

Forewarned is fore-armed (Before we fly). Occasionally situations creep upon us, however, a lot of the time they can be predicted to a reasonable degree. This can have an influence on decisions about where - or even whether to fly. Using a range of weather forecasts and local knowledge it is often easy enough to anticipate increasing wind, either as weather systems move in or the effects of wave/strong thermal development come into play – some sites have reputations as 'windy' options whilst others are sheltered or spill the wind.. It could be simply that the forecast winds speeds are likely to be near the top end for flying, or over a period of time are likely to increase to that level – or beyond! Local topography is also likely to create areas of stronger wind such as at valley confluences or over hilltops. Windspeed is rarely uniform, but subject to large variation depending on location, height and weather systems. RASP is very good at locating dynamic and non-dynamic wind zones; coupled with experience this can provide useful gems of information to have on xc flights. Check the data from any long xc flight and you'll see the wind speed and direction are very subject to change. In other-words it makes sense to anticipate what might happen when making your site choice and make a plan B (escape route) accordingly. The main thing is not to panic and feel trapped – there are things you can do such as – wait a few minutes (it often eases), move to a different part of the sky or away from the funnelling effects of topographical features. As wind speed is often a feature of height then losing attitude may ease matters too – although in mountain /hilly areas it can also have the opposite effect so give consideration to the topography below and downwind. To sum up – know what to expect and what you can do.

However, at some point you will need to land and this is where the bulk of this article is focused.

Choose your landing place (carefully). Where you chose to land is very much your decision and in your control – the greater your height the greater your options. However, there are plenty of examples (me included) where leaving it too late condemns you to a place that is less than ideal.

Personally speaking, I am not that confident of getting a high wind landing right each time and I'd rather be in a nice place of my choosing than a nasty forced place to discover my shortcomings. Nasty places tend to result from pushing an XC or during a competition task. We all preach the wise answer but sometimes don't practice the wisdom of it.

So – what makes a good choice of landing place when it's windy? Think twice about a top landing unless it's big, open, clean (no rocks, fences, walls etc) and free of rotor. If no-one else is opting to top land I don't think I would either. If they are, try and watch their approach and touch-down plus the moments after. Watching others can tell you a lot about the conditions (it may also illustrate their wing control skills too.) The final 30' through the wind gradient (often pronounced) should be full trim speed (NO speedbar) and the wind could drop away markedly to a much better final touch-down than you imagined. I've seen big ears used but personally I think this is a mis-use based on a mis-understanding your hands have better places to be and when they move there, funny things happens as one tip starts to inflate before the other. Anyway – more drag could simply mean you'll be going backwards even faster!

Choosing your landing field may mean the normal bottom landing or simply flying away to a big open and lower area. In the past year alone I've, on three occasions flown well away from the site I was flying, to land more safely elsewhere..... on one occasion about 5k away! Running through my head is, 'What's the inconvenience of a walk against a broken something'.

My ideal strong wind landing field looks something like this. It's very open and fairly flat with nothing around to funnel the wind. Scan for power lines, fences, odd trees, bushes etc. The cleaner the better because they can become mental distractors to the point of obsessions! The ground looks smooth and (better) soft. There are no turbulence creating features for some distance upwind and nothing behind my planned touch down point for at least 50 yds upwind from this point is an irrelevance. Grass fields have the benefit of usually being rock free and easy to turn and control the wing on but can be quite hard; rough fell pasture may be soft and tussocky, but hard to run on – so you fall over easily on turning towards the wing – and it can hide small rocks. Call me fussy, but I also like a road close by – the reason? Well, I'd rather drag a sprained ankle across a few yards of field than 3k of moorland.

One final point before we move to the approach. A few miles an hour (wind speed) can be the difference between a landing moving forward (easy) and a landing going backwards (much harder) – the test to your skill level /speed of reaction between the two scenario's is considerable.

Approach and killing the wing. The set up for approach should be just upwind of the field (along the field boundary); S turns only and as gentle as possible, mostly just using weight shift and at trim speed (hands up). The final part through the wind gradient usually sees the wind easing and any turbulence smoothing out; the heading is directly into wind with the drill for killing and controlling the fallen wing clear in the mind. At this point there are several options for killing the wing and the best one is whatever you've practiced and works for you. Remember – turning, running and pulling the right things can be very disorientating for the best of us so it needs to be hard wired in through regular practice. Just to reiterate one point – because we usually land and flare in calmer conditions the temptation is to do the same. Until we have turned (if using C's or brakes) the wing needs to

maintain full trim speed so better to keep hands high whilst turning (a small dab of brake on touch down only and release as that will tend to slightly increase the wings forward speed).

I've laid out a number of techniques below. The efficiency ratings are not mine but I've left in place, the comments are predominantly mine. If anyone, especially the more experienced pilots have any thoughts, tips or advice I'll gladly gather them and put them up on the forum.

Method	Efficiency	Description + Comments
One A riser + Opposite brake	80%	Simultaneously pull down one A riser and the brake on the other side. The wing will twist and bend back. If you don't brake enough, the open side may turn and hit the ground on its leading edge (bad). Those who are well practiced swear by this method, you don't often see it and it does require serious practice to get it wired in. It's less useful than other methods when trying to kill a wing during a strong wind launch so regard as a landing only technique. Well worth learning.
Both C risers	65 %	Let go of the brakes (I don't agree with this and would have them on my wrists in case I need) and pull down the C risers. The wing will hinge span-wise along the C line attachment points. Considerable force may be required, especially on lower rated wings and you will need to turn and move towards the wing to unload it a bit. Popular method.
Both B risers	50 %	Let go of the brakes (on wrists – as above) and pull down the B risers. The wing will hinge span-wise along the B line attachment points. The wing may stay off the ground at a 20° angle. Little used method and not really suitable on modern three liner wings a lot of force required and wing needs to go to semi loaded to be effective. Good for controlling on ground however in any wind but also puts a lot of strain on B line attachment points.
Both brakes	30 %	Pull both brakes as you run downwind towards your wing. The wing may pull you faster than you can run and on some EN A/B gliders it may be difficult to get enough travel on the brakes to be effective. However, it can be very effective on two liner wings when coupled with a very sharp pull – a wrap just before touch down (but keep speed on). My view is it's a lot easier to land an R10 in fresh wind than a Gin Atlas! On a lower rated wing in windy conditions this method can easily result in a drag.
Both A risers	10 %	Keep the brakes in hand and pull down the A risers. The wing will collapse from the front, but then have a strong tendency to re-inflate as it goes back, which would destabilise your stance from the sudden spinnaker effect. Early and ample braking following the A riser pull, could maybe prevent this. This method is not recommended due to the danger of re-inflation.

Although I've been talking about killing the wing on landing this equally applies to take off and an ability to do so effectively should be part of ground-handling drills. From the methods above my preferred option on a strong wind landing is:

- Hands up and single wrap just prior to touchdown

- Touchdown, brake dab (just before) and hands quickly fully up and turn to left (right if you prefer). A slightly bending of the legs helps as you touch the ground as straightening helps de-load the wing.
- A few paces towards wing and large, sharp brake pull
- Move to wing and ball up with wing ports at 90 degrees to wind
- Unbuckle and place harness on trailing half of wing.

Different wings tend to de power slightly differently and I find the lower rated wings more of a handful, certainly even if hard braking is applied, so C risers would be the easiest to learn and carry out. You need to learn both a method you find both most effective for you and the wing you're flying – they are not all quite the same.

When it goes wrong! Everyone has had a dragging at some point – no shame in that, a skid free harness doesn't stay that way for long! You need to de power the wing asap, hence I still like to have my brakes to hand (or wrist) – regardless of what method for landing is used. Simply pulling in a line (or bunch of lines – harder) will bring the back of the wing down or break the back of the wing. **BUT know your A lines and avoid pulling at all costs!!** It all happens very fast and simply saying do this/do that is not easy to follow in a moment of panic. Again it all comes down to plenty of practice. I think we tend to focus on launching and getting the wing up – in fact learning to kill the power of the wing quickly and safely is probably more important.

Follow the link to a small exercise.

<http://www.youtube.com/watch?v=Ek5khxOFDZw>

Check out the landing. It is WINDY!! The guy does a very good job backing into a restricted area; rocks to one side – power lines to the other and getting the wing under control .

Some comments and questions.

- Estimate the wind speed near ground level (listen to the commentary)
- What method did he use to kill (de-power) the wing?
- What were his hands holding at the moment of touchdown?
- Does the ground surface help or hinder his landing?
- Did he remove his helmet whilst still clipped in?

