

Dealing with **TURBULENCE!!!**

At some point during paragliding flight you will meet turbulence to some degree. It may simply be on one part of the ridge (dynamic turbulence), on encountering thermals (thermal turbulence), or passing close to other gliders or obstacles upwind on landing (wake turbulence). It may also be encountered at the inversion level or passing through boundary/shear layers where the wind speed (or direction) may change quite markedly or be a factor on final approach to landing, especially in windy conditions.

Paragliders can be especially prone to turbulent air – or at least they can behave in a very spectacular manner - if left to their own devices. On the positive side they are also very good at damping out a lot of the roughness in the air and with the right inputs their occasional wayward antics can be controlled by the normal range of piloting skills. Paragliders are somewhat unique in their ability to completely lose any semblance to an aerofoil, yet regain it again so quickly.



It's often the case that we deal with a 'rough' moment worse than the glider we are flying. It can be an unsettling experience leaving one a little mentally bruised and eager to be down. The trick is to build an increasing tolerance to the odd rough encounter by understanding the causes, developing the necessary active piloting skills and quite simply through experience.

Some turbulence finds us, some we find by either accident or design.

- **Dynamic turbulence** –this refers to the wind flowing over or around terrain or a fixed or moving object.

Putting relative densities aside, wind behaves in an almost identical way to water. A spell sat by your favourite river can be educational and well worth the time. The flow patterns can be interesting and their movements both logical and predictable. Few ridges are perfect in their contours and the wind is often off slightly to one side or another. Depending on the ridge features, the wind speed and direction then there are likely to be points where a degree of turbulence will occur. What it takes is a little bit of visualisation to see were the best lift, worse sink and possible turbulence will be and where it could reach hazard proportions. On recognised club sites, many pilots have been there before you and any hazards are usually highlighted in the Siteguide. Visualisation simply means imagining what the wind is likely to do as it travels around or is disturbed by sharp edges, sudden changes in terrain, lee sides or converging mixing points. Thoughtful pilots will be thinking ahead and be especially wary as the wind speed increases and take a cautious approach if scratching along a ridge, flying into mountainous regions at valley junctions.

- **Wake turbulence** – any object moving through the air will disturb the flow and to some degree leave turbulence in its wake. Surprisingly perhaps, but faster aircraft produce less wake disturbance that slower moving craft with their wake being shorter and the disturbance time less.

At very busy times on major airports the take off time separation from the same runway can be less than one minute between aircraft. With paragliders it's generally not a good idea to fly close behind or pass close behind at the same height – the wake turbulence won't be that great – perhaps little more than the odd jolt, but when ridge soaring and possibly close to the ground it's wiser to pick a safe time and relative attitude. When ridges get busy or thermalling is congested or tight then the odd bumpy ride is probably the price you need to pay. Just be aware and understand the implications. It's not a good idea to land directly behind someone without a little separation or better, just slightly to one side cleaner air. Generally speaking wake turbulence is of minor concern to us but worth mentioning.

- **Thermal turbulence** – like snowflakes there are no two thermals quite the same and different days give rise to different thermal behaviour. In fact the same day can produce some very varied and challenging thermals, from wonderfully tame to a wild ride. I'm reminded of a recent radio communication put out by Barney W when commenting on a recent encounter, "That (expletive removed) thermal deserves an ASBO!". Each encounter with a thermal is a meeting with unseen forces and the first turns can feel like a blind date – until you establish (hopefully) a rapport that leads to base (consummation). Yes sometimes my analogies are a bit weird but it works for me. On some days – especially blue days with an established high pressure the inversion can become quite pronounced and bumping up against it can be a bruising affair as thermals try to punch through.

If you intend to fly paragliders then – Spring to Autumn you will find or get found out by thermals. As a rough rule I'd say 60% or more are broken horses and let you ride them without rancour; 25% make you work to tame them and test your glider control skills and mental resilience – but aren't a problem. What remains are the fight or flight thermals that are unpredictable as well as rough. If you're getting low then you probably persevere with the comforting knowledge that once higher and past the entrainment (birth) stage they should get better mannered. If only one part of the turn is especially rough then with a strong thermal it probably means you're on the edge so going deeper into the strong lift may actually be smoother.

If it gets rough at times, then understanding the reasons – thinking rationally is half the mental battle in dealing with the situation. Odd small collapses are to be expected and just part of the game – most are far less than pilots would have you believe in the pub stories and most resolve themselves very quickly. Something a bit more dramatic may need dealing with, but these are the sort of experiences that really develop your abilities as a pilot and afterwards it's useful to reflect on how you dealt with matters.

In summary. Turbulence exists in the air we fly in. It has logical reasons for being created and you need to understand those factors. Paragliders are incredibly good at damping out and dealing with turbulence – a skilled pilot also helps a lot. A large part of dealing with rough air is our own mental toughness – that results from past experience and knowledge – which is quite different from wearing brave pants. Siv and pilotage courses can be of great benefit in understanding your wing and yourself – meeting a patch of rough air could be a very different experience however. Gradual immersion is a good way in – avoid potentially rough days whether it's due to thermal, wind or wave (which can be like a wrecking ball on thermals. If you do have a particularly bad encounter – and deal with it; reflect on the experience afterwards – maybe talk it through with someone if it helps.