

Southern Hang Gliding Club

WINDSOCK

March 2019

***"IF WE ARE WHAT WE EAT,
THEN SOME PILOTS
SHOULD EAT MORE
CHICKEN"***

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01 Introduction

Welcome to the March 2019 edition of the SHGC Windsock.

We hope that you enjoyed the January 2019 edition and found it both interesting and thought provoking. Thank you to for the generous comments of support and encouragement. The Windsock editorial team could barely get through the door of 'Windsock HQ' with all the gifts (wine, flowers, food hampers, etc.,) stacked up from grateful well wishers'.

As we noted in the January edition the entire team here at Windsock HQ want to help foster better pilot skills and, so, we will continue to publish features and articles that have at their heart, this aim.



Particular thanks are due again to **Laurent Boninfante** for applying his editorial/ formatting magic to Windsock.

In the January 2019 edition, we included a section on GDPR. The message here was that it is YOUR responsibility to make sure that your personal details are up to date and that you keep them secure by not disclosing your password and, for good measure, changing it periodically. There are a high number of member records that don't even have an emergency contact shown. This won't help anyone in the event that it is needed, in haste!

PLEASE CHECK & AMEND YOUR PERSONAL DETAILS ASAP.

Also in the January edition we led with the first of 3 articles on "Understanding Thermals" written by Will Gadd. This article focussed on 'Thermal Collectors, Passive & Active Triggers, and, most importantly, applying all this in practice'. The second instalment in this edition focuses on 'Thermals and Clouds; which [until thermal goggles are invented] are the best visible evidence available to pilots'. We included a section on paragliding whilst on skis. The Windsock team would be interested to know if a result of reading the article anyone tried this as and, more importantly, when do you expect to get out of hospital? Seriously, though, if you did, the Windsock team would be keen to know how it went. In the last edition, we included a guide to flying in Kruševo in Macedonia. Are you tempted to try it? A number of instructors offer guided courses there (e.g. Passion Paragliding) and it's still cheap as chips! This months featured Clime is Oludeniz, Turkey a hot favourite for SIV.

BTW, all these articles past, present, and future have been culled from various sources so apologies if you have seen some of them before. Every effort has been made to obtain the permission of the author and where possible, these are shown. In some instances, in spite of the Team's best endeavours, this has not been possible. In these cases, this has been noted. If you want to contribute an article then PLEASE get in touch **sbnicholls1@gmail.com**. The Windsock team are interested in articles on weather, instruments, and personal flying anecdotes.

Last thing, before we begin, the SHGC AGM is planned for Sat 6th April 2019. Please come. It can be very daunting when there are so few members attending. The AGM provides an opportunity for the elected officers of the Club to report to YOU on the actions they have taken on your behalf; top of the agenda will, of course, be safety. A number of members regularly comment about matters and aspects of safety on the SHGC web site and other social media platforms. This is a chance to do it in person. All that and a scrummy meal and drink as well. See you there!

So strap in, helmet on, reserve stowed correctly, instruments charged, beeping, glowing, and we're off...

02

Meteorology: A Beginner's Guide (and a refresher for others)

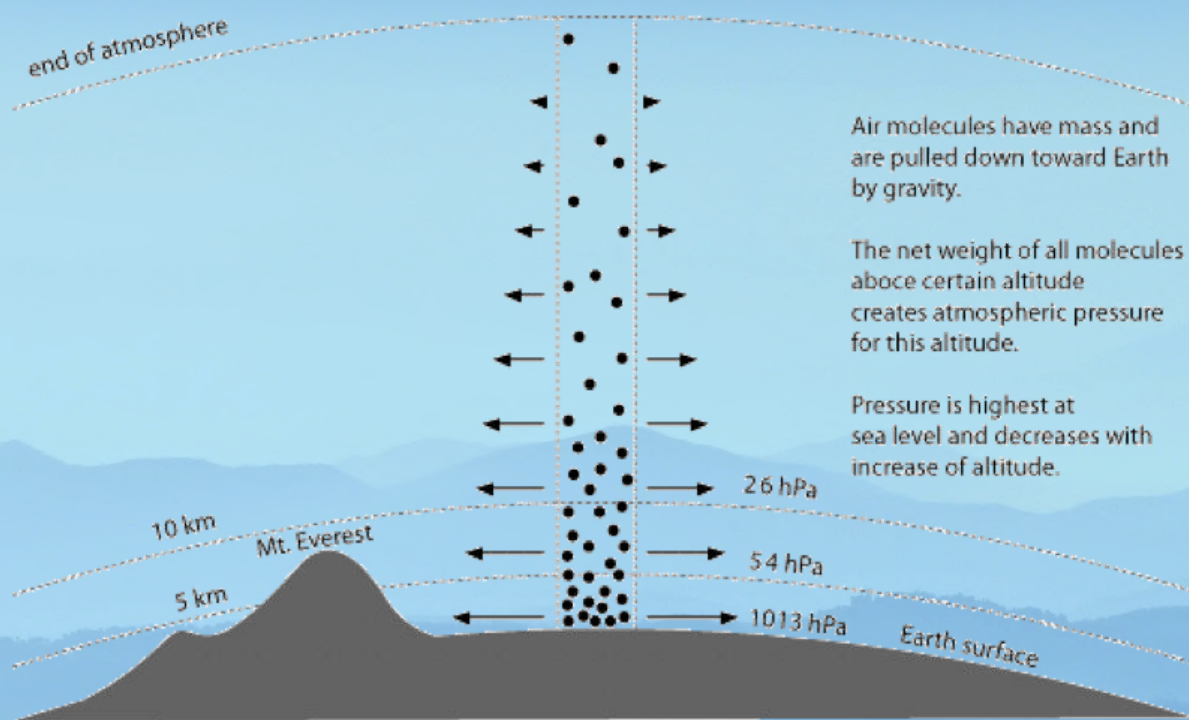
Feature One

This article was written by Nikolay Yotov of Skynomad Paragliding www.skynomad.com. This is a BHPA [foreign] registered school. Skynomad are based in Sofot, Bulgaria and offer courses and training to PGF pilots; From beginner, to intermediate, up to and including full XC experience. This article is used with the kind permission of Nikolay, the author.

Meteorology is a science about atmospheric processes. The atmosphere is the air envelope around Earth. The air is a mix of gases, which molecules move around by different processes, but are also pulled down by gravity. The net effect of air molecule's interaction with surrounding objects is called pressure.

Pressure

In the atmosphere, the pressure represents the weight force of the molecules above certain level. The higher we go, there are fewer molecules weighing down from above, thus pressure decreases with altitude.



Pressure is measured in Pa (Pascal) and represents the effect of 1 N force applied to 1 m². Pressure is also measured in bar. 1 milibar = 102 Pa = 1 hPa. An older unit called atmosphere represent the pressure at sea level and this is the pressure equalizing the weight of 760 mm column of mercury: 1 atm=760 mm Hg = 1013.25 Pa ≈ 1 bar

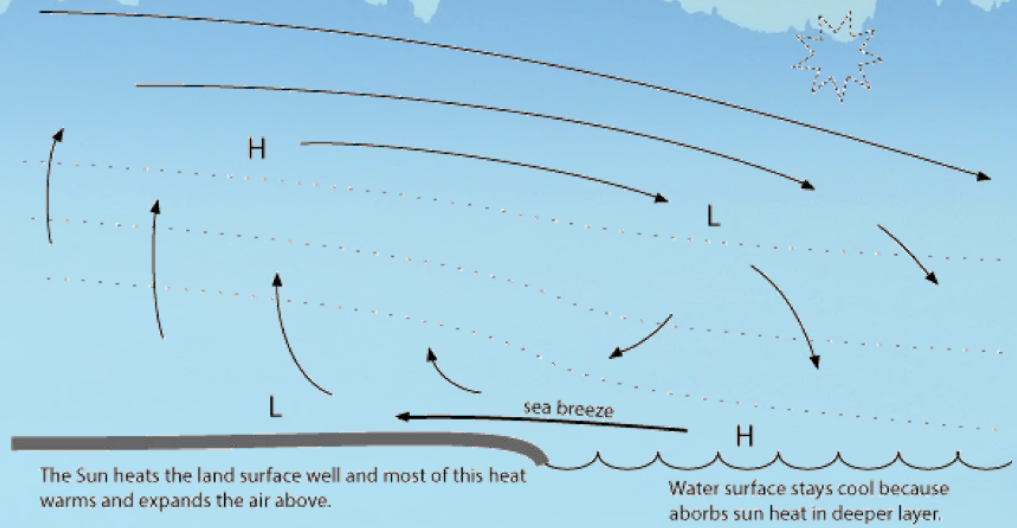
On weather charts, altitude is given in pressure instead of meters above sea level. One reason is that in the past, airplanes used barometric altimeters to maintain certain altitude above ground. Nowadays, use of pressure as a vertical coordinate simplifies thermodynamic computations used to prepare weather charts. The main charts are 850 mili bar (~1500 meters above sea level), 500 mb (~5500 m asl), 300 mb (~8000 m asl).

As the air is transparent, the main source of energy in the atmosphere comes from the Sun heating the Earth's surface. Usually, the higher we go, the colder it gets.

Again, the Sun is the main engine of processes in the atmosphere and there are many others because of Earth's irregularities (including land and water, mountains and flatlands, white snow and dark fields, etc.) and also because of daily and seasonal changes of sun's radiation for a certain location.

For example, when the sun shines on a dry dark field, it will heat the air above, expand it and lifts number of molecules up. At certain level, there will be more molecules above and thus higher pressure, compared to unheated area at the same altitude nearby. Air moves from higher pressure (H) to the lower pressure (L). The adding of air above the unheated neighboring area will increase the pressure at ground level there and again air will move along the surface to the heated area.

This is called temperature circulation cell and there are numerous examples around: sea breeze circulation, valley-mountain circulation, monsoons, equatorial circulation, etc.

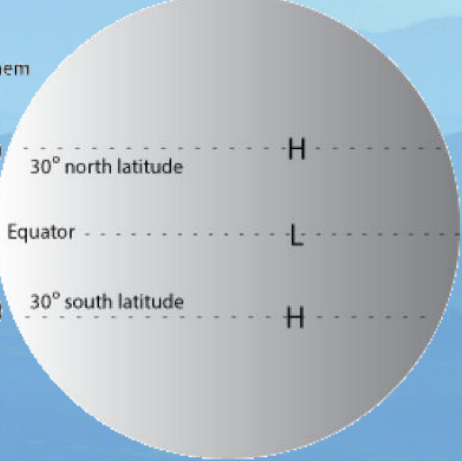


The Sun heats the land surface well and most of this heat warms and expands the air above.

Water surface stays cool because absorbs sun heat in deeper layer.

H - zone with relatively high pressure
L - zone with relatively low pressure

The Sun heats equatorial areas perpendicularly and gives them more energy than the surrounding areas. This creates a circulation around each side of Inter Tropical Convergence Zone.



ITCZ position moves during the annual rotation of Earth around Sun. It's above Equator during Equinox (20 March, 22 Sept) and reaches 24° north and south latitude during Solstice (21 June, 22 Dec).

Air circulation depends on the temperature difference and air mass properties like instability, moisture, etc. The temperature difference circulation cells appear in all kind of sizes and often suppress or enhance each other. Most visible effect on us is the horizontal air mass movement along the ground surface, which we call wind.

Wind

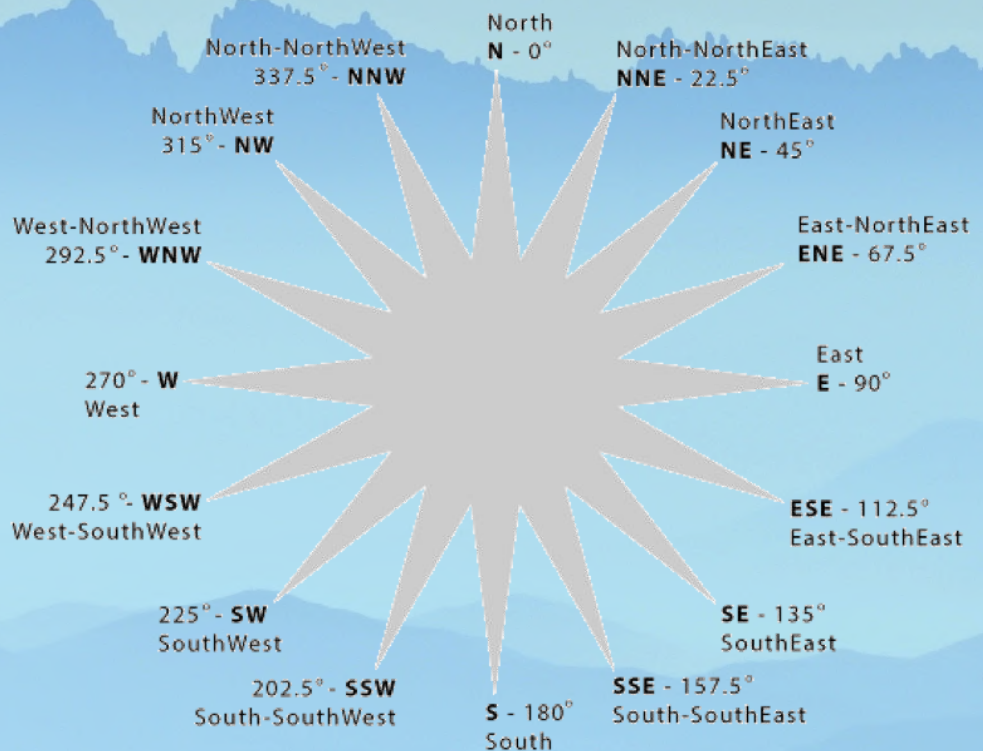
Wind has great effect on the very light paragliders with relatively big surface. Strong winds create big forces during takeoff and landing, high ground speeds and turbulence during flight. At the same time, pilots are looking for wind and air circulations to fly higher and further. Thus, studying the wind is essential for their safety and progress.

Measuring Wind

Beginners [should] start with measuring the wind on take off [with an anemometer if necessary] but then gradually making the habit of constant observation for building mental models of the wind's character until being able to find, explain and even predict the wind causing atmospheric circulations without reference to a 'machine'. Remember that the wind [speed] on launch may be very different to the speed just 10 meters above launch. See Wind Gradient below.

Wind Direction

Wind direction is given from where wind comes from.



Wind Strength

The wind strength is measured by anemometers (wind meters) in [m/s], [km/h] or [kt]. 1 m/s = 3.6 km/h = 2 knots. The following is a typical and commonly used scale of wind strength

- Calm: up to 1 m/s (forward launch; a lot of running=big take off)
- Light: 1-3 m/s; (both forward and reversed launch; still good running is needed)
- Moderate: 4-6 m/s; (reversed launch, but forward also possible, some running needed)
- Strong: 7-10 m/s; (reversed launch; only experienced pilots can fly; turbulence in the air; wind is close to paraglider air speed = chance to be lifted upward in front of the hill and blown backward after takeoff)
- Very strong: 11-13 m/s; (too strong to take off; chance for landing backward; strong turbulence in the air; difficult to control the canopy on landing)
- Squall: above 14 m/s. (too dangerous to fly)

Wind Condition

It's windy, fine, but what's the wind actually doing?

- Wind is constant if its speed doesn't change with more than 2 m/s within 2 minutes otherwise it's gusty.
- Wind is steady if its direction doesn't change more than 1 rumb (22.5°) within 2 minutes otherwise it's variable. Gusty and variable winds are signs of turbulence. If gusts exceed 150% of average wind speed, then air is probably too turbulent to fly. The same is valid if wind direction changes by more than 45°.
- Wind is laminar when it doesn't change speed and direction. [NB. Laminar airflow is defined as air moving at the same speed and in the same direction, with no or minimal crossover of air streams (or "lamina"). By contrast, turbulent flow creates swirls and eddies that deposit particles on surfaces randomly and unpredictably.]
- It is important to distinguish average wind speed from momentary gusts. For example, the gusts can make you fly backward for a moment, but if the average wind is less than your air speed, then you still go forward.
- Wind can be lifty or sinky i.e. wind is not horizontal but has upward or downward vertical component.

The most critical part of a flight is getting away from the ground after take off. Taking off in lifty air increases your height and gives you more time for reaction and recovery from unpredictable situations. Common reason for accidents is when pilots ignore the message of wind cycles and just look for easy wind for inflation. Experienced pilots spend years of studying the wind cycles at take off and build intuition when it's good to take off and when it's better to wait.

Many accidents happen during inflation, because beginners cannot control their wing efficiently and let it take them in undesired directions. There are even good pilots who've grown on easy take offs and when they go to different places and conditions, they have surprisingly bad take offs. Airtime is no substitute for ground training. Weeks and months of ground handling are needed to achieve good take off glider control.

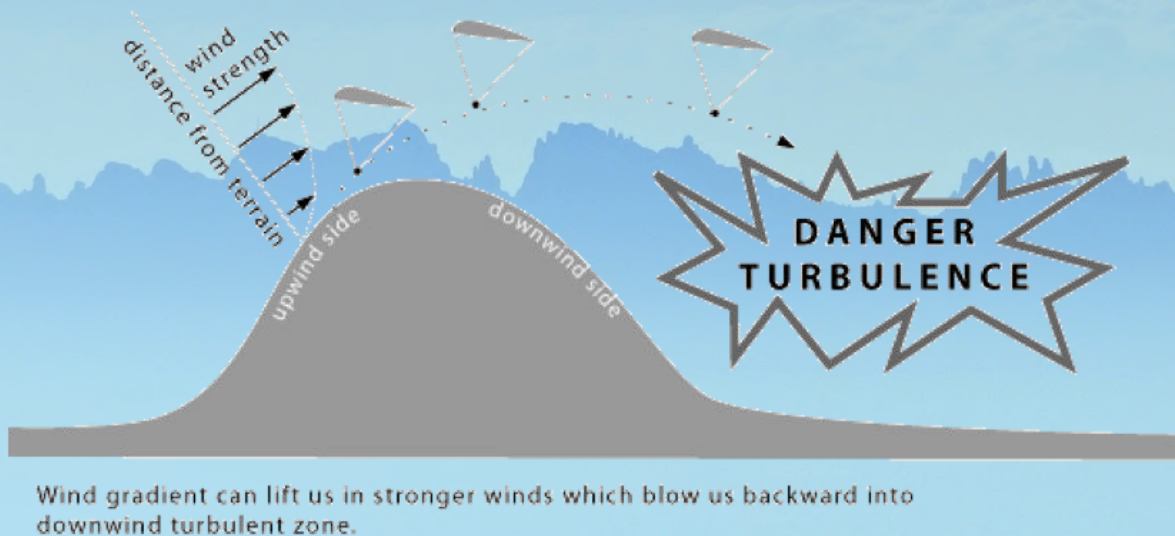
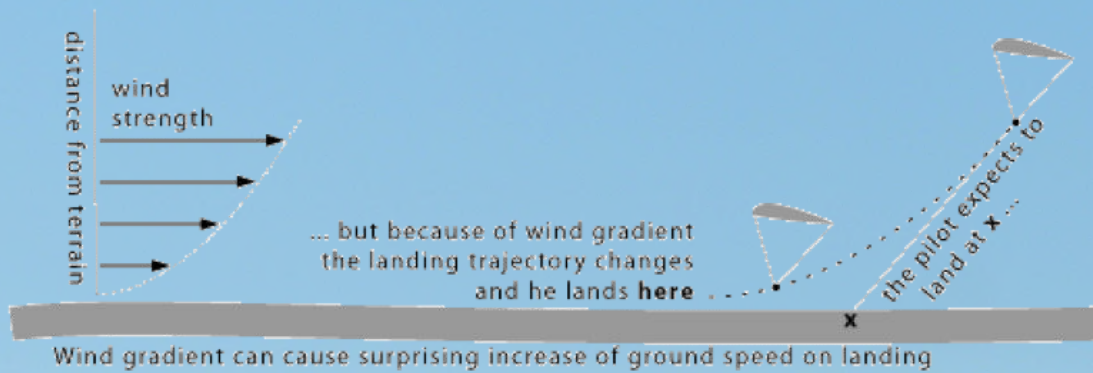
Wind Gradient

When we measure wind on the ground, we should aware the wind gradient - change of wind strength and direction with height.

Wind gradient occurs because lower layers of the moving air mass are slowed down by friction with the ground. Thus, we should expect increase of wind with height. It's a common reason for accidents to take off in strong wind, being lifted up and blown backward by the stronger higher winds into the turbulence behind the hill.

Wind gradient also changes our gliding trajectory close to the ground and we should expect increase of our ground speed before landing.

Wind gradient can be easily seen outside: if you lie on the grass, you don't feel much wind, but when you sit and then stand up and then climb something high such as a hill, then you will feel the increase of wind with height.



Isolated gusts can cause sudden lift or sink due to increase or decrease of airspeed flow around the wing. Layers with strong wind gradient can cause the same but for longer time and magnitude.

Summary. For ground dwelling folk wind is, well, just wind. But for the experienced pilot, however, wind has many features: direction, strength (temporary and average, min and max), character (laminar, gusty, variable), gradient, ascending or descending component. Additionally, the experienced pilot is aware of tendencies of wind's parameters. Befriending with the wind happens after understanding the big picture - and the circulations and influential conditions it participates in.



The answer my friend is blowin' in the wind - Bob Dylan

03

Winter Flying

Pilot Skills One



The low winter sun angle in our Northern Hemisphere heats less surface area. Behind every bush, blade of grass, and tree is more shadow throughout more of a shorter day than during the summer, so less heat is accumulating. Thermals may still exist even in the winter when the pressure is low and the upper atmosphere is cold, so still do your "thermal index" modelling and don't ever get complacent.

Expect the triggering of the thermals to generally occur later in the day than in the summer and for a shorter duration and interval. Very late in the day look for thermals over the forest areas as they give up their accumulated heat. Just because you're freezing cold doesn't mean there aren't thermals, heat still wants to rise. Get yourself some long johns, a good windproof flight suit, a balaclava, and some warm gloves. The thermals generally won't rise very far and for very long, but it's a hoot to make the most of light conditions. Getting good at using nominal lifting air may very well become your favourite kind of flying. It's sure fun to work super light lift as a possible welcome change from the summer time "events" of "hanging on" in "nuclear" air. Leave the vario behind and fly by the "seat of your pants". Keep horizon reference, even while making circles. Try and feel yourself being lifted, the sink and being pushed sideways through the air. Work on using every bit of buoyancy to maximize your stay in the air.

Winter flying might also bring your local area widespread regional wind flows that can be soared for hours with relative ease. Watch for a day when you have a stratus-clouded sky and look at the winds aloft for a model of upper level wind flow that isn't too strong for your skills and aircraft. Be aware that a cloudy day that breaks into sunshine may develop thermals very quickly and be sure to account for this potential increase in your ever-updated evaluation of your immediate atmosphere. It can take only a few minutes of direct heating for the air to get turbulent on an unstable day, even in the winter. More advanced pilots that have solid active piloting skills will look for areas of direct sunshine and boat around those potentially "productive" spots looking for a "lift". This can be a great time of year for pilots to begin flying unfamiliar sites that have been unapproachable in the summer.

Take advantage of the soft winter conditions to make loads of flights. Sled rides are great, really! You can often fly all day in the winter and make many flights and thus perfect your abilities on many levels. Try bringing up your glider in all sorts of conditions and make clean and straight launches. Actually make a mark on the ground and try to make your launch without running to the side. To "loaf" off launch as you stare up at your glider often causes failed launches. A key to your success is to keep moving with your eyes on the horizon so your glider has more airspeed and consequentially is more manageable.

Get those accurate landings down pat. Keep your eyes on your landing target with your knees as a reference point. If the target is getting higher on your horizon you'll need to straighten out your flight path and get a better glide with your hands at "trim". If your target is getting lower on your horizon, then you better do something to reduce your glide. Glide reduction to avoid over-flying a target can be accomplished by making "s" turns while holding about 1/3rd brake. Keep an eye on your target, as well as the traffic, while making the turns and you'll notice your slope angle changing and you'll be able to straighten out your path and make your target.

This article was first published in the USHGA Magazine. It was sourced from the Eagle Paragliding website listed under the tab "Dixon's Notes" (www.eagleparagliding.com). No author of the work is recorded. The Windsock team have approached the USHGA and Eagle Paragliding to ask permission to reproduce the article. Unfortunately, to date, this has not been forthcoming. Given its relevance, we have produced it in Windsock.

04

The Four Keys To Milking Weak Lift - by Toby Colombé

Pilot Skills Two

Toby Colombé is a paragliding guide and instructor; a tandem XC distance world record holder; a British Team Member (2014 and 2015), an Advanced Pilot; and professional Tandem Pilot. He is a BHPA Instructor and has guided and instructed all over the world. He founded Passion Paragliding in 2004. Passion PG offer XC courses all around the world and also pilot skills (SIV) in Turkey. www.passionparagliding.com. This article is used with permission.

Eeeeeeking It Out

Just how is it that some pilots seem to stay up longer than others in the light stuff? Are they light on the wing? Is it the wing itself? Or do they employ some magic techniques that you don't know about? Being lightly loaded, near the bottom of the weight range on a wing will almost certainly help you to waft about in the light stuff and minimize your sink rate. And some wings, particularly the higher-rated wings will often have a slightly better sink rate than some of the older and or lower end wings.

Pilot Ability

Does the pilot flying the wing really make that much difference? Almost certainly, the answer to that question is a big fat "YES!" So exactly what techniques are they using? And how can you be that last pilot in the air on the light lift days? Read on, to find out how to exploit every last drop of precious updraft. Learning how to exploit weak lift is a critical skill to develop if you want to stay in the air when conditions get light and "tricky". Being able to exploit weak lift can keep you in the game between the "easy" thermic cycles. It can even help you milk a few extra kilometers at the end of a long XC flight. Pilots that are good at using weak lift are usually the very same pilots that are good at getting high quickly on the booming days. Here are the keys to milking the weak stuff and when everyone else is bombing out, employ these master skills to remain air bound

KEY 1 - The Minimum Sink "Setting"

The first and most important key to making the most of weak flying conditions is learning how to use the "minimum sink setting" on your wing. A wing's performance at different brake settings is described graphically by the polar curve. Most modern LTF 1 to LTF2 (EN-A to EN-C) wings have a sink rate of about 1.1metre per second (or approximately 220 feet per minute) whilst flying "hands-up" (i.e. no braking). However, whereas flying "hands-up" usually approximates to "best glide" on a modern wing, this is certainly not the same as minimum sink rate. The minimum sink rate of a glider is the absolute lowest possible sink rate that can be attained or the smallest amount of height loss per unit of time. It is usually achieved by applying a significant amount of brake. Whereas with "hands-up" you might find yourself with a sink rate of about 1.1m/s, by flying at minimum sink you can achieve a sink rate of closer to 1m/s. Although this might not sound like much of a difference, a small difference of say 0.1m/s will equate to a 6metres (20feet) per minute!

6 meters of height difference per minute IS significant and in very light conditions this will often be the difference between just staying in the lift-band and just falling out of it! Exploiting the minimum sink “setting” is often the main difference between the pilots that eek it out for another half an hour and those that slip below the lifting air and head for an early bomb-out.

In my experience of guiding hundreds of paragliding clients over the years, pilots rarely use this “setting” on their wing. Indeed the majority of pilots have one setting: a little bit of brake. The minimum sink of your glider is found with a lot more brake than most pilots realize. On a medium sized LTF1/2 wing the amount of brake required to achieve minimum sink is a good 30cm or so of brake. The amount of brake required will of course vary considerably from wing brand to wing size and whilst that point is more brake than most pilots think, the risk of applying too much brake cannot be overstated. Applying too much brake can take you into the unsavory world of stalls and spins. If you are in any doubt then I urge you to risk applying too little rather than too much! And, always be ready to release some brake as the wing pitches back when encountering lift or gusts of wind - to keep you safe AND efficient. Get to know your wing by ground handling and attending a well run wing control course.

KEY 2 - SMoooooooooth

The second key to getting the most out of weak lift is using your wing efficiently by flying smoothly. In weak lift pilots who let their wings roll and dive around will find that they’re very quickly setting up for an early landing. Keeping your actions smooth, progressive and fluid is the key to being efficient in any air, and this is particularly important in the weak slow scratchy stuff. Use your controls to damp wing pitching and use your harness to damp out roll so as to keep your wing as flat as possible. Explaining exactly how this is achieved is probably the subject of another article so if the “how to” is a mystery, then for now just think about keeping everything as smooth as possible, sit still in your harness, try not to over compensate and you’ll be well on the road to piloting your wing with greater efficiency.

KEY 3 - Turn in lift

In weak conditions we often find ourselves confined to a small ridge. Perhaps we’re enjoying an evening soar-about, or perhaps we’re hoping to ride out the weak stuff until the next thermal shows up. In weak and “scratchy” conditions it’s important to spend as much time as possible in rising air and as little time as possible in the sinking air. That might sound obvious, but it’s in these conditions that more often than not most pilots seem to wait until they’ve been through a little section of lift before then turning in the sink the other side of it! So if you want to perform better than most pilots, turn in the lift!! When turning 180degrees we spend some 10 to 15 seconds in one place. If that place happens to be lifting then we’ll be going up. If like most pilots you boat through the lifting air and then turn in the sink (perhaps with the idea of boating back through the lift?) you will be spending considerably more time in the sink and speeding straight through the lift. Don’t turn in sink unless it’s to go back for something good and certain - something that’s worth going back for! Get through the sink hands high and fast (don’t spend time there!) and then should you happen upon a bit of lift carve a sweet smooth and slow turn to maximize efficiency of the wing and spend as much time in the scarce lift as possible. When you’re desperate for lift you don’t necessarily have the luxury of being able to explore the edges of the thermal (and perhaps risk falling out of the thermal!). So if you’ve been in lift for more than about 4 seconds it usually makes sense to turn! Turn before the sink and you’ll be doing better than most other pilots in the air.

KEY 4 - Survive until the next cycle

Even when conditions are light we often find conditions that are “cycling”. This means that as a lift cycle comes through it is usually relatively easy to stay up and might even be possible to climb. Usually between lift cycles, conditions can become much more challenging. If this is the case, then the key to staying airborne is to get as high as you can with each lift cycle so that you have as much altitude as possible to use up (as slowly as possible) in order to survive until the next lift cycle strikes. The gap between cycles can be as little as a minute and up to several. If lift cycles are sparse and irregular it is even more important that you don't content yourself with just surfing at ridge height during the “good times”. If you happen to be playing at a site that is top-landable, these are exactly the conditions in which you will see good pilots taking off at the beginning of the cycle only to slip in for a sneaky top landing as the cycle dies to wait until the next cycle presents itself. When the time between useable cycles is long and “sinky” this is a good game to play and is sure to enhance your awareness of the subtleties of lift cycles.

Summary

Whilst eeking it out in the weak stuff has something to do with which wing you fly and a little to do with where you are on the weight range, much more important is the flying techniques that you employ. Learn to fly at minimum sink. Learn to fly smoothly and efficiently, turning in lift and spending as little time as possible in the sink. Be sensitive to how the thermals cycle. Have fun staying up in the air for longer and longer... and a little bit of luck always helps... Good luck!



Making the most of the lift at Beachy Head

Photo: Laurent Boninfante

05

Speed Flying: From the BHPA website

The development of sub-20m paragliding has been monitored since these gliders first emerged and it has been formalised within the BHPA Pilot Rating system.

It is clearly the case that a number of paragliding hill pilots wish to soar smaller canopies when conditions are a bit breezy for normal paragliders. The evidence shows that this activity is, in its essence, no different to 'normal' paragliding, and seems to require effectively the same knowledge and skills set. Therefore the qualifications required for this activity have been fixed at Club Pilot PG (hill).

If you already hold that qualification you can simply go ahead and enjoy yourself. However the FSC strongly recommend that any qualified PG (hill) pilot who has not previously flown a sub-20m wing should, at the very least, obtain a briefing from a Coach who is familiar with the characteristics of small wings.

The other activity that involves sub-20m wings is whistling down steep slopes at high speed with minimal ground clearance. The FSC have decided to reserve the term 'Speed Flying' for this activity.

As this kind of flying has few similarities, and many important differences, to other BHPA activities it is being treated as a separate discipline. A specific 'Speed Flying (non-soaring: max wind speed 20mph) Club Pilot' training programme has been created and is currently being trialled. This will enable those new members coming from skydiving and other outside adrenaline sports to acquire the specific skills needed for this activity. Conversion from Speed Flying (non-soaring) to PG (or PA or HG) will require the pilot to cover the full training programme for their new discipline (i.e. starting their training from scratch).

Clearly there will be occasions when PG (hill) qualified members, soaring their sub-20m wings, will find the wind dropping and may end up whistling down the hill front at high-ish speed. The FSC is confident that a PG (hill) qualified pilot will have the knowledge and skills required to deal safely with this situation.

In all cases, if the wing is uncertified then the standard BHPA rule applies: the pilot must complete the 'Pilot's Declaration: Uncertified Wings' form and have this noted on his/her membership card.

06

Thermals and Clouds

Feature Two

This article is part two in a three-part series written by Will Gadd. Part one (January 2019) covered how thermals form and release from the ground; this article covers the relationship between thermals and clouds. The final article in this series will cover thermal flying techniques. Despite the best efforts of the Windsock Editorial Team we have been unable to contact Will Gadd and formally receive his permission to publish.

Will Gadd writes: This article focuses on dealing with our best visible thermal indicators, clouds. There are dozens of books written on lapse rates, instability and the like, so the ideas presented here are more field rules for flying clouds and other sky-based clues rather than a meteorology text, please forgive the gross simplifications made.

The basis for understanding what's going on in the sky comes from watching it; reading books (or articles like this one!) helps, but you need to have your own on-board sky-interpretation system to fly well. Every good pilot I know has spent literally thousands of hours looking at the sky and trying to figure out what's going on up there. I have spent many blown-out days lying on my back watching the sky swirl over me, and these days are some of the most valuable time I've ever put into flying. Are the clouds being blown to bits? Do they remain relatively constant over set points or form over a set point and then drift off downwind decaying as they move? Do they cycle evenly, starting as thin wisps and then forming into ever-more solid masses before decaying, or do some pop up very quickly and then disperse slowly? Do they have hard, flat bottoms or a rounded, mushy appearance? Each answer to these questions provides a wealth of knowledge about the thermals that are generating these clouds. Clouds are infinitely variable, but I believe they do have patterns that can be learned by watching them.

The big concept here is that clouds cycle based on their attached thermals. As a warm air mass rises it eventually reaches an altitude where its moisture condenses out. This process continues only while the cloud is being fed by a thermal (condensation "pumps" basically act the same as thermals, so I'll treat them the same here for simplicity). At some point the collector or pool of warm air on the ground is exhausted, but the cloud is still being fed by a "bubble" rising above the ground. Eventually no more rising air feeds the cloud and it starts to decay; at this point there is no more lift under it. This is why many of the best-looking clouds often provide no lift when you fly under them; while pretty, they are at the end of their useful cycle. As clouds decay they will in fact usually produce sinking air, which is annoying if you've flown to one expecting an elevator ride back to base. What's more useful is to connect with the rising air under clouds that are still forming. So how do you tell 'em apart?

The simplest cloud game is to try and predict whether a cloud is forming or decaying; before doing this in flight, I like to play the cloud prediction game while mowing the lawn, driving, or looking out the office window. Pick one cloud and make a snap decision: is it forming or decaying?

Then carefully track that particular cloud through the rest of its cycle; if you think it's forming, it will grow in size (either vertically or horizontally or both) while becoming evermore resistant to light (more suspended water means going from wispies to small "clumps" of moisture to solid white to gray). If it's decaying then it will become ever lighter and slowly fragment into smaller pieces. How long does this process take? Two minutes? Ten? Twenty? Or does it just continue to develop into a monster cumulus? I can seldom make good predictions based on just one look at a cloud, but after watching it for a couple of minutes I can usually tell which direction it's heading. I believe that it's absolutely basic to learn the life cycles of clouds if you want to fly XC; this is the aerial equivalent of knowing how to read.

Michael Champlain, one of the better XC pilots I've met, taught me a good trick to help understand what clouds are doing while you're flying. He recommended taking a series of mental snapshots of the sky as I climbed in a thermal. With every circle I look downwind and take a quick "picture" of what all the clouds in my predicted flight direction look like; a long climb may allow for 30 or more good snapshots, and with minimal practice I have learned to memorize which clouds are forming and which decaying based on these snapshots. Over the course of a few climbs my snapshots also give me good clues on how long the clouds are lasting, information, which then tells me which ones may still be forming after I glide to them. If the cloud cycles are lasting 30 minutes then I can glide for 10 or 15 minutes and still arrive at a growing cloud with plenty of time to catch a ride. Generally, the more distance between clouds the longer they will last (a larger volume of air is feeding into a single cloud), and the higher cloud base is. If you go on glide toward a cloud that has been forming for 30 minutes and arrive low, the odds are slim that you will find lift no matter how beautiful the cloud over your head is. Many pilots make the mistake of climbing to base, then looking around and heading for whatever cloud looks "best," regardless of where it is in its life cycle. If you arrive at a cloud after it's useful lift cycle then it's worse than gliding into a pure blue hole as there will be sink under it, plus the ground may be shaded, a double hit to your odds of staying in the air.

But if you near the top of your climb and see wispies start to pop within gliding distance and head out on glide toward them, then the odds are much better that you will find useful lift.

OK, you're on glide toward a fine forming cloud, but where will you connect with the lift? Again, observing the cloud cycles will tell you. If the wind is stronger aloft than on the ground, the clouds will be forming at the upwind edges and decaying at the downwind edges. This tells you that the thermal will be sloped at some angle from upwind of the cloud to it. If you have a GPS or learn to read your groundspeed even while fairly high, you can figure out how strong the wind gradient is and therefore how much the thermal slopes. As a rule of wing, I visualize thermals in wind gradients of 10 MPH or less as sloping at up to 20 degrees, 20 or less MPH at 30 degrees and so on. Also realize that the gradient will often not be linear; there are many days where you will encounter some sort of strong gradient at a particular altitude; the thermals here will often become disorganized, but if you can fight through this barrier then you may continue on to base. Remember this altitude and anticipate doing battle to get through it instead of getting discouraged and heading off.

Some of the most frustrating XC days come when the winds are slower aloft than they are on the ground; I have found this situation surprisingly often and could never understand how to find thermals until I realized that the clouds were forming on their "downwind" edges and dissipating on their upwind edges! The more moisture-laden areas of the cloud will be on their downwind edges; in this situation you will actually connect with the thermal downwind of the cloud.

The shape and texture of finished clouds also offer a wealth of information. Clouds taller than they are wide generally mean stronger thermals and may lead to over-development later in the day (don't get me started on instability!). Puffy, closely-spaced clouds that cycle relatively quickly but never attain flat or "hard" bottoms generally don't have very good lift under them; however, the light lift will be easy to find, just fly downwind and you'll probably blunder into something. Because these clouds cycle so rapidly it's almost impossible to time your arrival under one that's developing. However, they often form up in general areas, and these areas will offer better chances of staying in the air. On humid days the sky will be absolutely filled with evenly spaced clouds; unfortunately, only a few of these clouds will be active while the vast majority are slowly and irritatingly decaying. On dryer days the few clouds that are in the sky will most likely be active, but make sure to get there while they are still in their active cycle. Finally, flat cloud bases indicate well-formed thermals feeding continuously. Rounded, puffy bases usually indicate less well-formed feeder thermals and weaker lift.

On days with larger clouds, pay careful attention to what part of the base is highest; the best lift will almost always be feeding to the highest part of the cloud. As you climb to base keep looking around as you may be able to get higher under a different portion of the cloud than you climbed to it under. This is especially common when flying the border between moist and relatively dry air masses; I have seen clouds that are stepped up to 4,000 feet as a result of this feature.

In addition to understanding what kind of clouds to fly under, most people want to know what kind of clouds to avoid. It's often difficult to tell what your particular cloud is doing as you climb because the cloud tends to block your side-view of it; however, if you're taking mental snapshots with each circle then you should have a good idea of what's going on with the other clouds. It's possible that you are thermalling up under the one giant cu-nimb in the sky, but it's rare. If the sky is starting to over-develop all around you then it's probably time to get out of the air regardless of what's happening over your head. Even large clouds can cycle regularly; some days with cumulus clouds up to five or ten miles across are fine to fly on, but as soon as the clouds start growing much higher than they are wide I usually find myself either running for a much better portion of the sky or landing. After I land and my glider is secure I like to really watch what happens to the clouds I was worried about; did they cycle harmlessly, or are they continuing to blow up? If they did over-develop, how long did it take from the point I called my flight off to when the first gust front hit the ground? I have occasionally been frustrated that I landed early, but the few times I've pushed and stayed in the air too long were truly terrifying. The more I fly, the more conservative I become. If the clouds in the sky start "spiking" radically and look like fists on a day when the forecast is for thunderstorms then land immediately. Observing the sky intensely while flying isn't just about finding the next good climb; it is the basis for safe flying.

This leads me to the broader part of this article: In general, clouds form in related patterns. These patterns may be due to any combination of literally thousands of factors (again, it's worth understanding the meteorology, buy the book), but these areas of instability are where you want to be flying to connect with the lift. I've blundered off into large blue areas only to hit the dirt enough to believe this. It's almost always worth flying the clouds around the edge of a blue hole rather than jamming straight through it, no matter how much more direct the blue line looks. Sail plane pilots have the luxury of making huge transitions across sky features up to a hundred miles apart, we generally don't.

Most pilots dream of getting under cloud streets and flying straight until dark; while this does happen occasionally, I've found it more useful to treat streets as linked but individual clouds. If the street is set up with flat, hard bottoms and is maintaining good color (dense but not decaying and not over-developing as you fly along it, then stuff the bar and fly as fast as your understanding of speed to fly theory allows. But keep looking ahead and analyzing what is going on; sooner or later the clouds will end, and you need to be paying attention to what's happening in front of you as well as to either side. I've often found it's better to treat large gaps in streets as blue holes and jump sideways to another street if the gap in front of you is wider than the lateral jump by a significant margin.

Many "blue days" actually offer some very good sky-based clues. For starters, even if clouds don't form at the top of thermals, "haze domes" often will. These are areas where the light refracts differently through the air due to more moisture, dust or just a different air mass. I've seen haze domes most frequently when flying relatively stable blue days in Mexico and the desert southwest; often the haze domes are marked simply by areas of the sky that are less blue. Haze domes are also often the precursors to proper clouds - in the morning you might just get haze domes at an inversion level, but they still mark lift and often are the first areas to pop through an inversion and become clouds. Blue days will often still form dust devils or swirling thermal cores; if you can see hay, fine dust or other debris in the air then that's a sign of a thermal core as well.

Flying Strategies

The classic model of thermal formation suggests one rising cylinder of air feeding one cloud. In reality, I picture the thermals feeding into clouds as trees, with many small thermal "roots" feeding into larger ones until they reach the trunk and lead to the cloud. The higher you are above the ground, the farther apart the "trunks" are and the closer to the clouds you have to fly to truly intercept a large thermal. Anyone who has flown competitions will have seen gliders climbing relatively close together but in different cores before joining and continuing to base. Gliders that are low can take advantage of the smaller "root thermals," not just the trunks. If you're in the "low" zone, meaning below half way below cloud base, then you will most likely find relatively small cores. Sailplanes have a relatively hard time taking advantage of these lower-altitude thermals, but we can core up in very small circles, following the individual roots until they expand and join with other thermals. If you're below half the distance between the ground and the cloud then you can pretty much forget intercepting a large core that connects to the cloud; however, most clouds are fed by multiple smaller cores that join together, so searching over good collectors and triggers upwind of clouds is a good strategy (remember to know the day's gradients for which way the thermals will slope - the thermals may be "downwind" of the clouds on days with an inverted gradient).

I usually try to connect the collectors and triggers to the clouds they are feeding; this is also useful for predicting where the cloud is in its life cycle. For example, clouds that form over mountain ranges are generally flushed downwind. Once they are flushed past their thermal sources there may still be lift under the cloud as the thermal "bubble" continues to feed it, but you need to arrive relatively high to climb in this bubble no matter how great the cloud looks.

The higher the cloud base, the longer your glide to the next climb will be (unless you have the good luck to be flying under a street of some kind). Reichmann predicts that the distance between clouds is approximately two and a half times their distance above the ground. If the base is 5,000 feet above the ground then the distance between thermal "trunks" is likely to be 12,500 feet (the distance between the "roots" will likely be somewhat less). Even if your glider only goes at 5:1 then you should have a reasonably good chance of intercepting a thermal before intercepting the ground! Theoretically, it's very rare to glide all the way from base to the ground without hitting lift. In reality, I have done it often, particularly on blue days, but usually in retrospect I went gliding off into a large blue hole or down a sink street and should have turned 90 degrees after sinking more than half the distance between base and the ground to find lift. In the flats I think lift generally forms in lines and so does sink; even on blue days, the next logical place to look for a thermal is above a good collector/trigger downwind of your last climb.

In the mountains the thermals and clouds generally form above ranges, which may or may not be oriented with your planned flight or wind direction. If you are crossing anything except very narrow mountain valleys on very high-base days then you need to base your decisions less on what the clouds are doing and more on the ground-based tactics covered in the previous article. If you are crossing small gaps while flying One good trick for crossing the valleys between ranges is to climb to base, then drift over the gap with a cloud. This is slow, but XC flying is often more about staying in the air than speed. I've used this trick several times to beat gliders with far better glide ratios. The cloud will eventually start seriously decaying, so it's better to leave it before this point or you will have to deal with sinking air.

Don't get too aggravated if you can't get to base, I generally only get there on days with well-organized climbs leading into flat-bottomed, dense clouds. On more humid days with poor lapse rates (oops, slipping into tech talk here), there may be plenty of clouds but no way in hell to get them. Do note how high you got in your climb before it disintegrated, and roughly how far below base you were. If your first climb of the day ended at 6,000 feet and base looked to be at about 8,000, then expect that the top of your next few climbs may be at a similar altitude unless the clouds start looking better or moving higher. Cloud base usually moves higher throughout the day, and climbs generally improve until late afternoon. If the clouds go to 10,000 feet and start looking really solid, then you might expect to climb higher and closer to the clouds.

The best way to truly understand the sky is to study it with near religious fervor. Read the books and understand the meteorology of any given day, then correlate what was predicted to what actually happened on your flight. If you can't get into the air due to earthly responsibilities you can still learn a tremendous amount about flying. This will help you immeasurably when it comes time to make decisions while under your glider. My next article will deal with flying your glider in thermals and putting everything in these last two articles together. Happy flights.

07

Guide To Oludeniz, Turkey

Flying in Foreign Climes

This feature first appeared in XC Magazine and is reproduced in Windsock with the kind permission of the Editor Ed Ewing.

Highlights

- Acro and SIV heaven
- Launch in shorts and T-shirt and arrive 1,500m above the warm sea
- Go from April to November, though midsummer is stable
- Great location and fabulous food
- All the delights of a beach resort
- A flight to Butterfly Valley and a boat back is a must.

WHY GO?

Wring the living daylight out of your wing; land on the beach, and then do it again. Recent currency weakness has made an already cheap destination even better value.



Olu Deniz bay at sunset - Photo: Steven Nicholls

WHERE IS IT?



WHAT'S IT LIKE?

Set on a Mediterranean cove in the southwest of Turkey, Oludeniz is a beautiful and reliable place to fly. The season starts in April and goes through to November, with July and August being very hot and stable.

Oludeniz is a tourist resort with all the infrastructure, hotels, cheap flights and package deals that go with that, but with the bonus of a 1,900m mountain.

Babadag comes straight out of the sea and provides a perfect flying site for every direction. Light winds and cloud base at 2,500-3,500m are normal during the day, with smooth sunset flying in the evening. Please note that there have been significant recent improvements in the infrastructure and getting to the top doesn't need a teeth biting rally stage journey!

Babadag is very much a mountain and it gets mountain weather - but it feels more benign and coastal because it's so close to the sea. Some of takeoffs have been graded, but be careful of your wing - the surfaces are rough and can damage it if you drag it around. It's also very rocky and steep around the launches and pilots must make committed and positive takeoff runs. You should also keep a close eye on the streamers as the wind can shift and come up both sides at once.

The most commonly used and biggest launch is at 1,700m, where the vans stop first and there are toilets and a cafe. 1,800m is smaller and steeper and faces in the opposite direction. The 1,900m takeoff has launches in two directions and toilets. There is also a new 1,200m launch - useful in stronger conditions or when the top clouds over.

The main landing is along the promenade in Olu. Keep a close eye on pedestrians and the tandems coming down the main street.

FLYING CONDITIONS

Once airborne, you'll find lift above the peaks of the spine back mountain and in the house thermal, which is just to the right of the 1,700m launch. There is also often lift just to the left on the 1,700m. There are often bumpy inversion layers, but once through you can sometimes climb to over 3,000m.

Big XCs are difficult and require at least 3,000m above Babadag. May, June and October are the best months. The most common route is across the Kemer Valley to the northeast of Babadag. A second climb on Mendos, the mountain just north of Babadag, takes you over Kemer town to the NNE, or go more east towards Akdag, an obvious 3,000m peak on the east side of the wide Kemer valley. Once you connect with the other side, soar the ridge north on to the higher plateau and on to Denizli (NNE) or over the mountain range toward Antalya to the east.

Alternatively, head SE across the valley to Palamutköy village (look out for the greenhouses). Top up here and drift to Dumanli Dag. From here, head east in the sea breeze convergence to the port of Kaş. The landing here is tricky, along the harbour.

GETTING TO LAUNCH

The road to the summits of Babadag is now paved and minibuses can do the trip in 30-40 minutes and sometimes faster. Tandem operators offer transport for solo pilots. A fee is also payable on the way up the mountain. You can pay for multiple flights in advance by getting a card from the small office at the east end of the beach in Olu. In addition, there is now a cable car and chair lift to the top and the launches have been further improved.

WHEN TO GO

April to November. Midsummer is stable and September and October dry and reliable.

ALTITUDE

Cloud base: 2,500-3,500m

Launch: 1,900, 1,800 and 1,700m

Landing: On the beach at 0m [nearest cold beer 20m]

HANG GLIDER ACCESS

Back in the day hang gliders were put on vehicles and taken straight to launch with minimal carrying. There was a rule that the Oludeniz beach was closed to HG in July and August, and pilots were asked to land up on the Hisarano plateau.

Nowadays, local pilots struggle to remember when they last saw a hang glider here, and because of increased development and crowds, hang gliders would struggle to land safely in Olu. Check with Sky Sports (see below).



On a glide towards the beach, Butterfly Valley is on the left -

Photo: Steven Nicholls

MUST BE FLOWN

West along the coast: over the lagoon and over the deserted Greek Kayser village beyond. Fly back or land in the many fields on the plateau and get a minibus (dolmus) back.

Butterfly Valley: 7km SE of launch is a narrow gorge with a beach that looks tiny. Don't worry, it's big enough. Land at the east end of the beach away from the restaurant, not in the fields behind the beach, otherwise you'll be fined. Once down, soak up the chilled hippy vibe and enjoy the tranquility before a 30-minute sea voyage home - there's no road out, although you can hike out to the road above in a pinch. Watch the pylons running across the very back of the bay.

Further along the coast, you can also land out at the small beach at Kabak, about 10km from launch. There's a small restaurant and a bus that runs up to the village above, from where you can get transport back to Olu.

DANGERS AND ANNOYANCES

No immediate danger zones or airspace, but north of Fethiye is Dalaman CTZ. Take care not to crash into holidaymakers on deckchairs when landing. Sand gets everywhere and in everything. If the wind is strong on launch, and the launches steep don't go in the lee side and don't follow the tandems blindly. They're either good or mad.

ACCOMMODATION

There are hundreds of hotels for all budgets and tastes. Package deals abound online.

GUIDES AND COURSES

There are many instructors who bring SIV groups from all over the world. It is without doubt SIV Mecca. If you're travelling independently, pop into Sky Sports (contact below) or any of the tandem operations and make friends. Sky Sports can also advise on repairs for damaged gliders.

EXPERT'S OPINION

Lots of local Schools here in Sussex regularly organize SIV courses in Turkey, as do many others too.

TAKE THE FAMILY

Definitely! Oludeniz is one of Turkey's premier holiday destinations.

RAINY DAYS

The ancient ruins of Tlos and Saklikent gorge are a good day trip. Also fly to Butterfly Valley and Kayer village and take a boat back, or a daily boat trip around the coast.

WEATHER INFO

The best local knowledge is from Sky sports or any other professional operators along the beach.

GETTING THERE

Dalaman is the nearest airport. From there it's an hour by airport/hotel transfer. Taxis from the airport can be booked in advance and are not too expensive.

USEFUL CONTACTS

Speak to Club members and local Sussex Schools. When there Sky sports are the most established tandem operator. Sky sports (+90 252 617 05 11). Most tandem operators will also give helpful advice.

This regular feature "Climbs in foreign climes" focuses on flying sites and trips taken abroad. The editorial team would encourage and welcome any first hand experiences with a focus on practical matters and information that would help, inform, and may encourage Club members to plan similar visits

08

Accelerated flight (Not stamping on the speed bar)

Pilot Skills Three

Accelerated flight isn't about stamping on the speed bar and praying, as Bob Drury and friends, Heavy-handed Henry' and 'Clued-up Chris', find out.

This article is, sadly, used without permission. The Team have tried three different methods to get hold of Bob Drury, but to no avail. This article is, therefore, reproduced without his specific permission. We hope the publishing Gods' look leniently on our transgression.

'Full bar' on your speed system was once the exclusive haunt of the desperate, the crazy or the very skilled. Paragliders were neither built nor tested at high speeds, and accelerated flight was very much a 'rough science'. It was simple: a suitable amount of speed bar travel was allotted to production wings, whilst the competition models carried as much as the riser and pilot dare take.

ACPUL, the main US testing authority in early 90s didn't even conduct any tests on the glider's behaviour at accelerated speeds. It was a bizarre omission that meant that ACPUL certified gliders were only tested over the lower two thirds of their usable speed range.

Times changed though and most modern paragliders are now built with a very usable accelerated speed range and tests now include both symmetric and asymmetric deflations (up to 70%) at the wing's top accelerated speed. Reaching for your speed bar nowadays shouldn't just be a last ditch emergency measure to stop you being blown over the back of the hill, but should be an integral part of your everyday flying.

Consider an average, modern 2/3 glider. It will probably stall at around 22 km/h, flies at around 38 km/h at 'hands up' (trim speed) and accelerate to maybe 56 km/h with the speed bar. A glider like that has a speed range of 34 km/h with 18 km/h of that on the bar; meaning over 50% of the usable speed range is obtained by pushing the speed bar.

Knowing how best to use this additional speed range will give you greater performance as you penetrate into headwinds. Nearly every flight we make involves some kind of into wind glide, be it pushing forward under a cloud in the flatlands, to making a valley crossing in the mountains. However, you can't just stamp on the bar and cruise off into the sunset

To maximise your use of a speed system, we first need to understand what happens to your glider when you press the speed bar, and how this will affect your flight. It's also very important to realise how much the pilot acts as a pendulum weight sitting 10 metres beneath the wing, and consequently, how pilot and glider often fly at different speeds for brief moments.

On the initial press of the speed bar, the glider's angle of attack drops; the glider accelerates and pitches forward in front of the pilot. For a brief second the glider is flying through the air faster than the pilot. Eventually our pendular motion swings the pilot back under the wing and the pilot reaches the new accelerated speed of the wing. During that moment the glider can pitch a long way in front of the pilot and the resulting dive may lose substantial height. Consequently, how you initiate accelerated flight is incredibly important for both your safety and performance.

The subtle art of speeding up

Let's take the case of two well-known local pilots, 'Heavy-handed Henry' and 'Clued-up Chris' who are both competing in their country's National Championships. Let's look first at Heavy-handed Henry's method of acceleration.

Being a man with little feel for a paraglider and far more balls than sense, Henry likes to simply slam his feet down on the bar, jamming the riser pulleys together to send the glider instantly to full speed.

What Henry doesn't realise is that his heavy handed approach pitches the glider a long way forward, the angle of attack is greatly reduced, the wing is flying very fast, and for a moment his glider becomes very prone to big, violent deflations. (Remember, no certification system tests how easily a glider collapses, they only measure what happens once it does collapse).

The first three attempts to reach full speed see Henry accidentally induce 80% deflations that spin him around 180 degrees, and shed loads of his hard-earned altitude. The harder and faster Henry stamps on the speed bar, the further the glider pitches and the more likely it is to collapse.

When on Henry's fourth attempt the glider stays inflated and doesn't collapse, the sudden pitching of the wing forward results in a huge pendular swing, only settling when both glider and Henry return to the same speed. This dive eats away at Henry's altitude and again he loses more height unnecessarily.

Clued-up Chris, however, has got it sussed. He has a natural feel for the dynamics of flight and prefers to initiate accelerated flight slowly, smoothly and progressively.

Rather than stamping on the bar, he eases the speed on, carefully monitoring the pitch of the glider and allowing time for his body to catch up to the wing's now higher speed before pushing on more bar. Eventually he reaches top speed too, but without ever forcing the glider to pitch so far forward that it might collapse.

Also by allowing time for his body to catch up with the wing's new speed he has avoided most of the pendular dive, and has reached his top speed with substantially more height than his friend Henry.

Active Gliding

Once both gliders are flying at full speed there is a marked difference in the way the two pilots use their speed bars. Heavy-handed Henry simply sits rigid with the bar jammed on full. He fails to feel or react to the movement and buffeting of the air he travels through and consequently suffers another three monstrous deflations, the last of which leaves him hanging in a tree just short of the goal line.

Chris on the other hand chooses to actively control the pitch of his wing as it moves through the air. Just as he actively pilots the wing with the brakes during non-accelerated flight, he now uses the speed bar to trim his glider's air speed, and consequently its angle of attack, to match the movements of the air.

As the wing pitches forward he eases off the bar, slowing the glider down slightly, allowing time for his body to catch up. Equally, when the glider pitches back behind him he gently pushes more bar on, speeding the wing up slightly which allows time for the glider to catch up with the pilot. By doing this Chris is able to keep the wing directly above his head and avoids any unnecessary pitching.

His legs are rarely still for more than a few seconds unless in completely calm air.

To steer the glider he uses only weight shift, as touching the brakes causes his glider to slow suddenly and then dive again, which is bad for both his security and performance. Also, some gliders react badly to brake input during accelerated flight. He only interrupts the glider if it feels like it's telling him that it's about to collapse.

Clued-up Chris passes over his friend's tree with several hundred metres to spare. To slow the glider down he eases off the bar smoothly and gently to avoid causing the wing to pitch back violently, climb, and then dive again. He crosses the line with ease, wins the task, and spirals down to buy Heavy-handed Henry a beer, which Henry unfortunately drops!

A word of warning

Regardless of how good you are with the speed bar almost every glider is more prone to deflations during accelerated flight due to the decrease in angle of attack. In addition, the extra speed you are carrying into the collapse means the wing reacts far more violently. During certification tests almost every glider pulls its highest grades during the accelerated tests, and even very safe wings react faster when collapsed on the speed bar. For these reasons you should only consider using the speed bar when you have enough height to recover from a major collapse. Skimming trees at full speed will eventually see you in them!

If you are unlucky enough to have a big closure when on the bar then pull your feet back immediately and slow down the side of the wing that's still flying. If you don't and you keep a lot of bar on you're likely to drop the glider into a tight, fast spiral.

If used with sensitivity, your speed system will see you arriving higher and quicker on long glides and in much more safety than had you just jammed on the bar, pulley to pulley, and prayed you'd make it. By utilising your glider's entire speed range you might open up a whole new level of performance that you didn't know your glider even had.

Practical tips

Make sure your harness is set up properly. Your speed line should run from your riser down through a pulley stitched to your harness directly below the harness, and then out via another pulley to your feet. If you find you are being tipped back in your harness as you push on the bar, then it means your first harness pulleys are located further forward than the centre of gravity. You might also find it useful to gently pull back against your risers with your hands to hold your flying position as you push on the bar.

To be able to use the full speed range of your glider you may have to shorten your speed bar cords or add a ladder system. Many ladder systems can be set up so that 'legs straight' on the lowest bar is around half speed in the accelerated speed range – good for cruising into gentle head winds. The second bar is only used to get you up to max speed on the rare occasions where it's both practical and safe to do so.

Arrange your speed system so you can access it without taking your hands off. Try pulling the top bar almost tight to the base of your seat and then leaving a loop hanging down to hook your heel in.

09

Controlled Air Space (CAA Website)

Feature Three

Although you can't physically see it, the airspace above our heads is divided into complex structures to enable its many different users, from commercial airliners to military jets and private pilots, to fly safely.

Across the world airspace is structured according to internationally agreed principles. Airspace is divided into 3-dimensional blocks which are classified from class A to class G airspace.

Controlled and uncontrolled airspace

In the UK class G airspace is uncontrolled. This means there are no restrictions on:

- Which aircraft can enter it,
- What equipment the aircraft must carry,
- The routes taken by the aircraft.

In the UK all other airspace is controlled and air traffic controllers direct aircraft. They decide the safest and most efficient routing for every aircraft (taking into account the surrounding conditions including the weather and other aviation traffic).

The most efficient routing for any aircraft is one that enables it to reach its destination most directly using the least amount of fuel. These decisions are sometime referred to as tactical vectoring of aircraft.

Controlled airspace can be split again into other blocks. For example around groups of airports there are terminal manoeuvring areas and for individual airports radar manoeuvring areas. These are decided on and run by air traffic control organisations through their operational procedures. Within this airspace air traffic controllers tactically vector aircraft to get them into and out of airports in the most efficient way.

An international network of routes links these sectors of airspace. Near to airports these are called Standard Instrument Departure Routes or SIDs and Standard Arrival Routes or STARs. Although aircraft plan to follow these routes they are not motorways in the sky, which aircraft precisely follow but a framework. Aircraft taking off from some airports are also required to follow specific flight paths called Noise Preferential Routes (NPR) designed to avoid the over flight of built-up areas where possible (link to page). Once an aircraft reaches the end of the NPR, normally around 4,000 feet, the air traffic controller determines the path that is flown by an aircraft through the airspace structure.



WHO IS INVOLVED?

1. The Government

The government tasks the CAA with developing policy for the design of UK airspace and Parliament has set out in law what we must consider when doing this.

These include:

- Safety,
- Efficiency and
- An environmental objective or duty.

The Secretary of State for Transport has given us guidance on how we must interpret and carry out our environmental duty. This includes the policy that in general aircraft descending to or climbing from airports should be concentrated along the fewest possible specified routes and that these routes avoid densely populated areas as far as possible. This is known as concentration over dispersion.

In some cases the Secretary of State for Transport's approval is needed before changes to the airspace structure are implemented. These are changes, which might have a significantly detrimental effect on the environment or a significant effect on noise emissions.

At Heathrow, Gatwick and Stansted the Secretary of State for Transport is also responsible for monitoring and managing aviation noise. One way this happens is the declaration of Noise Preferential Routes or NPRs.

2. The CAA

The CAA works within the legal and policy framework set by Parliament and the Secretary of State to:

- Develop long-term strategies for UK airspace
- Consider requests by airports and air traffic control organisations to change the structure of UK airspace (these are known as airspace change proposals).

3. Airports and air traffic control organisations

Airports and air traffic control organisations design and ultimately request changes to the UK airspace structure.

Air traffic control organisations develop, maintain and seek to continually improve (by trying out new concepts) the operational procedures, which their air traffic controllers follow when determining the paths aircraft are directed by them to fly.

Airports and air traffic control organisations design proposals for changes to the airspace structure by conducting trials (link to section below).

Before submitting a request for a change to airspace airports and/or air traffic control organisations are responsible for conducting a consultation on the proposal and supplying us the results of this (together with technical information on how the change will work).

10

Lasham Gliding Society

Legal Challenge

Notwithstanding the article on controlled air space, airspace is under threat. Lasham Gliding Society has mounted a Challenge to the egregious air space grab at Farnborough. *Recently, (December 2018) the SHGC made a £1000 donation to help them meet their legal costs.*

APPLICATION FOR A JUDICIAL REVIEW GRANTED BY HIGH COURT

Lasham Gliding Society's application to the High Court for leave to apply for a Judicial Review has been granted by a High Court judge.

In October 2018, following the CAA's decision in July to implement a large [and unreasonable] amount of controlled airspace for Farnborough aerodrome in the busy south-east of England, Lasham filed a claim in the High Court for leave to apply for a Judicial Review of what it believes is a flawed and unlawful decision, which will badly affect it as well as many other General Aviation pilots and organisations. This important judgement means that the High Court has given permission for the case to go ahead because it considers that the claim meets the threshold of arguability.

This is good news for Lasham, which along with other aviation bodies has been opposing the imposition of what they consider to be an unreasonable and disproportionately large amount of controlled airspace that would have a significant and negative impact on safety, and on Lasham's operations and financial health.

To help fight this case, Lasham has set up a fighting fund and asks all those supporting it to contribute what they can. The target for the fund is £100,000 and so far, £63,000 has been raised from 300 donors. SHGC has supported their actions.

For details see: <https://www.lashamgliding.com/pages/airspace-campaign>

UPDATE: in November 2018 LGS were granted leave for a judicial review on two of the three grounds of complaint against the Farnborough ACP. Leave for a third ground [of complaint] was given only in so far as it was linked to the first two.

LGS made an application for renewal of the decision for leave, which had been partially refused in relation to ground three and this application was listed for a hearing on 17 January. The purpose of this hearing was to have leave for the third ground re-considered on a stand-alone basis so that, if LGS were successful it would reinstate that ground of challenge in addition to the first two grounds. The judge has now given LGS leave for a third ground, in addition to those of safety and efficiency.

It was decided that, in this third ground, it is arguable that the needs of General Aviation (including gliding), and Lasham in particular, had not been properly taken into consideration by the CAA in making its decision. Although the judge also decided that the CAA did not have to show that SIDs & STARs (procedural routes for arrivals and departures) were necessary, or that the CAA was in breach of its procedure in failing to undertake a further round of consultations with LGS, this does not affect LGS's arguments in the grounds on efficiency or safety points.

In summary, LGS now have three independent grounds (instead of just two) for which they only need to win one for the CAA's decision to be struck out.

Lasham is probably the largest gliding operation in the world and since 1951 has built itself into one of the very best organisations for training pilots and as a world-class centre for recreational aviation.

11

Target Fixation - AKA: The Moth Syndrome

Feature Four

It had been a lovely flight, and now it was time to land. I spied an ideal spot... a huge, wide, grassy field, devoid of any significant obstacles... except one, a pesky tree. No problem for me, I thought. How was it then, that I landed in that one sodding tree...?



The phenomenon is commonly referred to as target fixation and can be a huge problem in many sports [e.g. motor racing], and, the long and the short of it is that it can [and does] happen in free flight.

Let's begin with a scientific definition. Target fixation is an attention phenomenon observed in humans in which an individual becomes so focused on an observed object (be it a target or hazard) that they inadvertently increase their risk of colliding with the object. It is associated with scenarios in which the observer is in control of a high-speed vehicle or other mode of transportation, such as fighter pilots, racing car drivers, motorcyclists, and free flight pilots. In such cases, the observer may fixate so intently on the target that they steer in the direction of their gaze, which is often the ultimate cause of a collision. The term target fixation was used during World War II when training pilots to fly into targets during a hazardous bombing run.

Put simply, target fixation is a panic reflex. When confronted with a dangerous situation or something unusual suddenly appearing in our field of vision, our natural instinct is to look directly at the object posing the threat, and exclude everything else. Unable to look away and even consider an escape route, we tend to go where our eyes take us, often directly into the object. This is when target fixation grabs hold.

Of course, the objective in the first place should be to not get in a situation where target fixation even becomes an issue, but there are obviously situations out of your control that can't be avoided. What then? Avoiding target fixation is a matter of controlling your vision before and as you deal with a crisis and managing the panic that arises.

Your vision and where you are looking is a critical part in avoiding panic altogether as well as dealing with it when it does occur. Do not focus exclusively on one spot; scan, scan, and scan again. Coping with panic is a matter of having a plan for whatever situation arises and executing that plan in a calm manner.

Part of executing your plan effectively is to look, and focus on, where you need to go rather than at the hazard that may be directly in front of you. Yelling inside your helmet, "Don't look at the tree!" by the very nature of the statement puts emphasis on the tree rather than going around it, but it's helpful to take a positive view of the situation rather than a negative. That means focusing on and looking for the path around the hazard itself. And maybe yelling, "Go around!" or, "Look at the grass!" to yourself instead.

Your vision continues to play a key role here because while you do have to tear your eyes away from the danger to look where you want to go, you still need to know as much as you can about the hazard itself. Fortunately, in free flight hazards [save for ground dwelling folk and animals], hazards tend (but not always) to be immobile; that sodding tree for example. In other sports, such as motorcycling, obstacles move on the ground and an avoidance plan may have to adapt accordingly. Here, you'll have to use your peripheral vision to take in the bulk of your surroundings and absorb as much information as you can—without looking directly at the danger zone. You should be comfortable with scanning and peripheral vision in everyday riding so that you use them as a matter of course in a tricky situation.

Becoming more adept at vision techniques and constantly planning those escape routes will go a long way to preventing target fixation from even occurring, will help you avoid hazardous situations in the first place, and it will help you deal with the panic and target fixation that do occur when you find yourself in a tricky situation.

This article was written by Andrew Trevitt and is published on the Sport Rider Website (www.sportrider.com). Despite the best efforts of the Windsock Editorial Team we have been unable to contact either Sport Rider or Andrew Trevitt to gain formal permission. Given its relevance to both PG and HG we have decided to use it in Windsock.

Do Moths Just Have A Bad Press: If Moths Like The Light So Much, How Come They Don't Come Out During The Day?

Moths don't 'like' light at all. The reason they fly maniacally around bulbs is that in the pre-electric world in which they evolved, they used the moon to navigate by night. By keeping the moon at a constant angle to the direction of their flight, they could ensure they travelled in a straight line. Unfortunately, they now confuse electric lights with the moon and try to navigate by them. Because the bulb is not a quarter of a million miles away, its position relative to the moth is not constant.

The result is that they just go round and round in circles.

The comments above were first published in a Q&A section ("Speculative Science") on the Guardian Newspaper website. The authors of the answers to the title question were Max Wurr and Peter Brook. The Windsock team have been unable to contact either contributor.



12

Notices and Events

What is going on?

A. Pilot Lectures. John Turczak will be continuing the series of pilot lectures held at Glynde that may culminate in you sitting the pilot exam. Look at the SHGC website for details.

B. SHGC AGM 6th April 2019 in Glynde Working Mens' Club. The evening begins with a hot meal and a free drink. An annual general meeting is a key requirement of the Club's Constitution. It provides an opportunity for the elected officers of the Club to report to YOU on the actions they have taken on your behalf; top of the agenda will, of course, be safety. A number of members regularly comment about matters and aspects of safety on the SHGC web site and other social media platforms. This is a chance to do it in person. All that and a scrummy meal and drink as well; what's not to like! See you there!

C. Competition and Events Calendar (From Sky Wings)

Date	Key	Name	Location	Contact	Web Site
2 March 2019	🕒 🚀 🧑	BHPA AGM	Nottingham	Stef Blankley	
19 April 2019 - 21 April 2019	🕒	Paragliding Accuracy World Cup	Alanya, Turkey		http://www.pgawc.org
3 May 2019 - 6 May 2019	🚀	British Paragliding Cup Pennine Leg	Parlick, Lancs	Viv Fouracre	http://www.bpcup.co.uk
31 May 2019 - 1 June 2019	🚀	Buttermere Bash/Lakeland Charity Open	Buttermere, Cumbria		http://www.jockysanderson.com
5 June 2019 - 22 June 2019	🚀	Naviter Open	Tolmin, Slovenia		http://naviteropen.org
6 June 2019 - 12 June 2019	🚀	FlyFurther XC Camp	Tolmin, Slovenia		http://flyfurther.org
21 June 2019 - 21 June 2019	🚀	Lakes Charity Classic	Grasmere, Cumbria		http://www.cumbriasoaringclub.co.uk
28 June 2019 - 30 June 2019	🕒	Paragliding Accuracy World Cup	Taldykorgan, Kazakhstan		http://www.pgawc.org
7 July 2019 - 13 July 2019	🚀	BGD Weightless competition	St Jean Montclar, France		http://www.bgd-weightless.org
11 July 2019 - 14 July 2019	🕒 🚀 🧑	Parafest	Caerwys, North Wales		www.parafest.co.uk
8 August 2019 - 11 August 2019	🚀	British Paragliding Cup Peaks Leg	Bradwell, Derbyshire	Viv Fouracre	http://www.bpcup.co.uk
23 August 2019 - 26 August 2019	🧑	British Open Paramotor Championships	Crewe, Cheshire		http://www.ppgcomps.co.uk
24 August 2019 - 26 August 2019	🕒	UK Classic Accuracy Nationals/European Grand Prix	South Cerney, Gloucestershire		http://bhpa-accuracy.org.uk
30 August 2019 - 1 September 2019	🕒	Paragliding Accuracy World Cup	Mungyeong, Korea		http://www.pgawc.org
31 August 2019 - 1 September 2019	🕒	UK Paragliding Accuracy National Championships	Woldingham, Surrey		http://bhpa-accuracy.org.uk
8 September 2019 - 16 September 2019	🕒	Paragliding Accuracy World Championships	Vrsac, Serbia		http://www.fai.org
2 October 2019 - 6 October 2019	🕒	Paragliding Accuracy Pre-Europeans	Sibiu, Romania		http://www.fai.org
4 October 2019 - 6 October 2019	🕒	Paragliding Accuracy World Cup	Wasserkuppe, Germany		http://www.pgawc.org

Key: 🕒 Accuracy Event 🚀 Paragliding Event 🧑 Hang Gliding Event 🧑 Foot Launched Powered Aircraft Event 🧑 Human-Powered Flying Event

**Remember:
It's all in the
dangle...**



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Southern Hang Gliding Club

WINDSOCK

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