



**SOUTHERN HANG
GLIDING CLUB**

WINDSOCK

AUTUMN

EDITION

SEPTEMBER

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“When in doubt (and it is safe to do so) hold on to your altitude, no-one has ever collided with the sky”



1. Introduction

Finally, it is finished, Windsock – Autumn Edition, September 2019. For all the new members, of which, there seem to be many, a warm welcome!

A week or so ago, our very own Happy Flyer ('Phil') AKA as the Commander in Chief of the Club's Red Ribbon section was photographed at Devil's Dyke and seemed to be positively surrounded by 'Red Ribs' all anxious for their site briefing.

Any new members for whom this is your first experience of Windsock (gulp...!), this is the SHGC 'newsletter' and in it you will find numerous articles designed to keep you safe whilst flying and, if 'absorbed appropriately', will have the added benefit of extending your free flight 'career'; whether it is paragliding, and/ or hang gliding (or even for those petrol-heads who have slipped irrecoverably into the 'dark side' where their guilty pleasures include an engine and a large propeller). Think of it as Health and Efficiency Magazine for fully clothed, free-flying community who just love sitting on grassy hill tops/ sides waiting for the first faint breath of a thermal cycle coming through and the inevitable exclamation of "it's on". (NB. A full catalogue of past editions of Windsock are held on the SHGC website.)

Early 'Free-Flight Man' Para-Waiting...



The last edition of Windsock included articles on **interpreting synoptic charts** (with a case study of the conditions leading up to the "Great Storm of 1987"), **an introduction to atmospheric weather fronts**, and **the dangers of Sheep Ticks**. These pesky, and frankly dangerous little critters, are found on all the Club's sites, and can be extremely dangerous to humans.

The SHGC summer party held "on a field near Lewis" was a great success organised and executed by the inimitable Steve Hope. The weather glorious, the band stunning, the food tasty, and the entire evening rounded off by large quantities of booze and an enormous bonfire, hot enough to melt wine bottles (circa 1400 degrees C) and bright enough to be seen from outer space. Thank you Steve Hope, it was magnificent. Sadly, however, after four years as Social Secretary, Steve Hope has decided to 'retire' gracefully and he is worthy of our thanks for all his hard work. He and the Committee would like to pass the baton on to other Club members individually or working together in a small group. Steve Hope remains a member of

the Club and is willing and able to lend a hand in helping anyone get to grips with the role. **Willing Club volunteers are needed now – go on, give it a go..!**

Windsock is intended to be ‘your’ newsletter as much as that is possible. Here at Windsock, HQ buried deep in the Sussex countryside, we would welcome any contributions from members. If you have been away on holiday and sneakily stowed your wing in (or on the car) or into the hold of the aeroplane undetected by your significant other or packed as unobtrusively as possible (“its just extra tee shirts and shorts, honest”) a very big well done! But how about writing up your experiences? – Not, I stress, details of your relationship break-up and impending divorce, but your flying experiences! Others would love to know and maybe follow-in your flying footsteps: where did you go, was it fun, what was it like, and so on.

In this edition we have a newsletter just bursting with vitamins PG & HG for your continued enjoyment. The editorial team have decided to reprint an article from the December 2018 edition of Windsock. The featured ‘Climbs in foreign Climes’ featured Bir, in the Northern Indian State of Himachal Pradesh. In October each year, in the short window between the departing monsoons and the arrival of the cold weather and also in Spring before the Monsoons arrive, conditions in Bir can be truly epic as can Kamshet (near Pune) in India’s Western regions in the Spring. There are trips to both locations being organised by local schools (and others too). Ask on the hill for more details.

As an aside, for anyone interested in the Windsock sub-editor’s love life, his relationship with Josh’s mum (Josh was our summer intern – we offered him a glittering opportunity in journalism) highlighted in the July edition remains unrequited. He did think that he saw her in Waitrose in Lewis a few weeks back. He said he wasn’t sure as he was nursing the mother of all hangovers and having difficulty in focussing both eyes at once. But, determinedly, he has since switched shopping at Lidl to Waitrose on the off chance that it was actually her he saw...

So here we go...



Picture: Dave Lewis, Skylark Paragliding

2. Personal Information – All members please check your personal info

There are many members of the Southern Club with incomplete personal information on their SHGC account. In many cases there is even no emergency information provided. To be clear, the Southern Club does not collect your data rather it holds data you provide. There is an expectation that this is as complete as you can make it. The absence of emergency details, in particular, is extremely worrying. We can all be wise after the event! But...

Please log into your account www.shgc.org.uk to check all your personal information and, in particular, your emergency contact details.

3. Caburn – Dos and Don'ts

No matter how many times it is said, Mount Caburn is one of our most highly sensitive sites. It is a very special site for the Club and we simply cannot afford to lose it. Why then do some pilots seem not to know or, God forbid, not care. For the avoidance of doubt these are the specific rules relating to Mount Caburn where continual breaches are likely to cause most irritation and annoyance to landowners and residents alike.

- **Don't Climb the Gate (...or at any other sites, for that matter!)**
Climbing the gate at Caburn is against the Club's site rules. If you see anyone climbing the gate then please inform this is not allowed. No ifs, no buts, it's forbidden. Please don't say it's OK if I climb at the hinge side, it isn't.



- **Don't park anywhere in Ranscombe lane**
Members must park in the car park, secured by padlock and chain before and after entry/ exit.
- **Do not park in the Western end of Ranscombe lane and walk up through the Airworks field.**
It's not allowed.
- **Unlock the padlock and relock every time as someone else once said, 'clunk click every trip'**
Please do not leave the padlock open with the code showing. "My mate was

arriving in a few minutes” is not an excusable excuse.

- **Do not divulge the code to any one verbally or on any social media platform**
'Nuff said.



- **Do not park in the layby adjacent to the cottages**
No cars, motorbikes, skateboards, hovercraft, spaceships, boats, submarines, terrestrial/ extra terrestrial vehicles may be parked in the layby.



- **Keep noise to a minimum anywhere near the cottages**
Yes, its 8am and you have been up for hours, so everyone else is awake too, right? Nope! The ground dwelling folk living in the cottages may have just finished a night shift at 6am and are looking forward to 8 hours of uninterrupted shut-eye. Please let them sleep.
- **Do not overfly the cottages under any circumstances**
It's not allowed. Make your final approach well away from this area.
- **Air Experience Pilots (Tandems)**
Please note Air Experience Pilots must inform their clients and any spectating guests that, unless they are physically accompanied by the AE

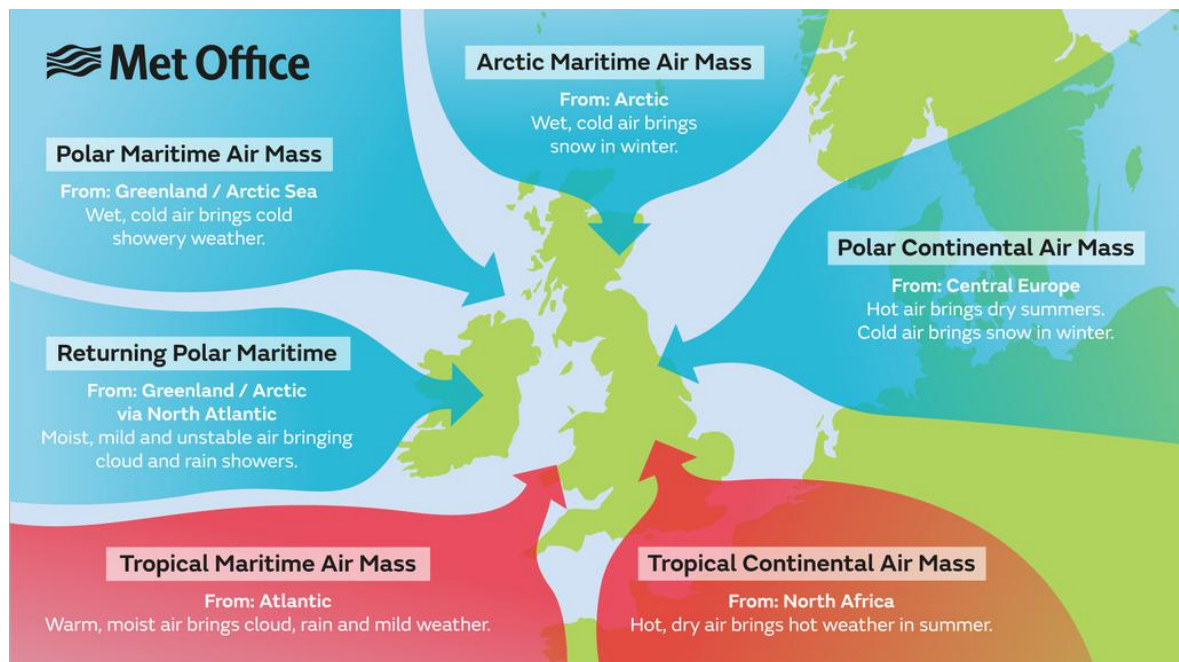
pilot (physically escorted in and out), they **MUST** not use the car park, particularly if the arrival instruction given is “meet me at the top”. If and when unaccompanied, then AEP clients and guests must park in the village and walk up. They must not be given the padlock code. There are no exceptions to this rule.

4. Air Mass Types – The Met Office

Air masses are classified into groups depending on their basic temperature and humidity characteristics.

There are six main types of air masses that affect the British Isles. These air masses are classified primarily by the area in which they originate.

They are classified as Continental or Maritime - dependent on whether they originate over land or sea - and Arctic or Antarctic, Equatorial, Tropical, or Polar, depending on the particular region in which they form.



Tropical Continental

This air mass originates over North Africa and the Sahara (a warm source region). It is most common during the summer months June, July and August, although it can occur at other times of the year.

Our highest temperatures usually occur under the influence of tropical continental air (over 30 °C by day and around 15 to 20 °C at night).

Visibility is usually moderate or poor due to the air picking up pollutants during its passage over Europe and from sand particles blown into the air from Saharan dust storms. Occasionally, the Saharan dust is washed out in showers producing coloured rain and leaving cars covered in a thin layer of orange dust.

Tropical Maritime

The source region for this air mass is the warm water of the Atlantic Ocean between

the Azores and Bermuda. The predominant wind direction across the British Isles, in a tropical maritime air mass, is southwesterly.

Tropical maritime air is warm and moist in its lowest layers and, although unstable over its source region, during its passage over cooler waters becomes stable and the air becomes saturated. Consequently when a tropical maritime air mass reaches the British Isles it brings with it low cloud and drizzle, perhaps also fog around windward coasts and across hills. To the lee of high ground though, the cloud may break up and here the weather, particularly in the summer months, can be fine and sunny.

This is a mild air stream and during the winter month in particular, can raise the air temperature several degrees above the average.

Polar Continental

This air mass has its origins over the snowfields of Eastern Europe and Russia and is only considered a winter (November to April) phenomena.

During the summer with the landmass considerably warmer, this air mass would be classed as a tropical continental.

The weather characteristics of this air mass depend on the length of the sea track during its passage from Europe to the British Isles: this air is inherently very cold and dry and if it reaches southern Britain with a short sea track over the English Channel, the weather is characterised by clear skies and severe frosts. With a longer sea track over the North Sea, the air becomes unstable and moisture is added giving rise to showers of rain or snow, especially near the east coast of Britain.

The lowest temperatures across the British Isles usually occur in this air mass, lower than -10°C at night, and sometimes remaining below freezing all day.

Polar Maritime

This air mass has its origins over northern Canada and Greenland and reaches the British Isles on a northwesterly air stream.

Polar maritime is the most common air mass to affect the British Isles. This air mass starts very cold and dry but during its long passage over the relatively warm waters of the North Atlantic its temperature rises rapidly and it becomes unstable to a great depth.

This air mass is characterised by frequent showers at any time of the year. In the winter months when instability (convection) is most vigorous over the sea, hail and thunder are common across much of the western and northern side of the British Isles. However, eastern Britain may see fewer showers as here the surface heating is reduced. During the summer, the reverse is true, land temperatures are higher than sea temperatures and the heaviest showers occur over eastern England.

Arctic Maritime

An arctic maritime air mass has similar characteristics to a polar maritime air mass, but because of the shorter sea track the air is colder and less moist. Arctic air is uncommon during the summer, but when it does occur it may bring heavy showers or thunderstorms and unseasonably low temperatures.

Between October and May, the air is cold enough to produce hail showers or snow, and these are most frequent over Scotland and along the coasts exposed to

northerly winds.

An arctic maritime air mass has its origins over the North Pole and the Arctic Ocean. Polar low-pressure systems forming in this air mass can sometimes lead to widespread and heavy snowfall, but otherwise inland areas remain free of cloud in the winter months. In northern Scotland, arctic maritime is usually the coldest air mass, but over the rest of Britain, this air mass is not as cold as polar continental.

Returning polar maritime

Returning polar maritime is another version of polar maritime, but this time with a longer seas track which takes the air first southwards over the North-Atlantic, the north-eastwards across the British isles.

During its passage south, the air becomes unstable and moist but on moving northeast it passes over cooler water making it stable in its lowest layers. Although the weather across the British Isles in this air mass is largely dry, there can be extensive low-level clouds.

This article was sourced from the Met Office Website. The information is freely available and is used without specific permission.

5. Lapse Rates & Air Stability

A large amount of cloud formation and much of the dynamic behaviour of the atmosphere depends upon vertical movements of air. The tendency of air masses to move up or down is termed its **stability**. Unstable air masses are prone to vertical movements, while stable air resists vertical motion. The stability of air is a function of its **buoyancy** with respect to the surrounding air, which is in turn dependent on their relative densities. Density is related to both pressure and temperature: for constant temperature density increases along with pressure; and for constant pressure density decreases with increasing temperature. In other words, warm air will tend to expand and become less dense, making it more buoyant than cooler, denser air, and causing it to rise. Conversely, cool air will tend to contract and become denser, decreasing its buoyancy and causing it to sink. A huge amount of atmospheric behaviour follows from these simple relations.

Lapse Rates

To understand more about the stability of air masses, we need to examine the temperature changes undergone by an air mass as it rises or sinks, which in turn relate to pressure changes. The simplest case concerns **unsaturated air**, i.e. air that carries all the available moisture in gas form. Relationships between pressure and temperature lead to a simple linear relation between temperature and altitude for rising or sinking air. This is known as the **Dry Adiabatic Lapse Rate (DALR)**, and is equal to $9.8^{\circ}\text{K km}^{-1}$. Air lifted up will cool at this rate due to reduction in pressure; air sinking will warm at this rate due to pressure increases. The word 'adiabatic' is derived from the Greek word for 'impassable', and it refers to a system, which does not lose or gain energy. Thus, rising air is said to cool or warm adiabatically when its temperature changes are due entirely to pressure changes. In reality, some degree of energy exchange will always take place, but these are generally small on short timescales.

When **condensation** or **evaporation** occurs in the air, however, lapse rates of rising or falling air differ from this value. **Latent heat** is released by condensation and consumed by evaporation ($2,500 \text{ J g}^{-1}$). This alters the adiabatic lapse rate: because

energy is released by condensation, rising air will cool more slowly if condensation is occurring. Thus, there is a smaller change in temperature with height than would be the case for unsaturated air. The modified lapse rate is termed the **Saturated Adiabatic Lapse Rate (SALR)**. The varying amounts of water vapor that can be held in air at different temperatures means that the SALR is **non-linear**. The SALR is lowest at high temperatures, because of much higher saturation mixing ratios: i.e.: greater amounts of energy are released at the vapor/droplet transition; therefore temperature changes with altitude are reduced. At low temperatures, the SALR is more similar to DALR: smaller amounts of moisture are available for condensation, so the modification of the lapse rate is less.

Adiabatic Lapse Rates are commonly different to the real vertical change in temperature, known as the **Environmental Lapse Rate (ELR)**. The ELR is influenced by patterns of heating, cooling and mixing, and the past history of an air mass. Actual vertical temperature gradients in the atmosphere are thus highly variable, and can even show an increase in temperature with height, a situation known as a **temperature inversion**.

Conditions Determining Air Stability

The stability of air masses depends on the relative values of the ELR and the appropriate Adiabatic Lapse Rate.

Stability

Air is stable if the ELR less than the ALR. If, for any reason, a parcel of air is uplifted, it will cool to lower temperatures than its new surroundings along the ALR. Hence the air parcel will be denser than its surroundings and will tend to fall back to its original level. This situation is encouraged by a small ELR or a temperature inversion.

Instability

There are two cases:

- **Absolute instability**
In this case, the ELR is greater than both DALR and SALR. Uplifted air cools relatively slowly, and will thus be warmer and less dense than its new surroundings. It will therefore tend to continue to rise.
- **Conditional instability**
In this case, the ELR is less than the DALR but greater than the SALR. Air will be stable unless forced to rise to altitude where condensation occurs, whereupon spontaneous uplift will occur.

Air Stability and Potential Temperature

“The temperature that an air mass would have if it were moved dry adiabatically to a level at which pressure is 1000 hPa”.

The equivalent concept for saturated air is the wet-bulb potential temperature, which is the temperature that air would have if it moved to a level where the pressure is 1000 hPa, along the **Saturated Adiabatic Lapse Rate**.

Potential temperature is an extremely important concept, because it allows us to directly compare air masses regardless of their altitude or pressure, and thus allows us to predict how air masses will interact. To illustrate the concept, let us re-examine the conditions for air stability, from the point of view of potential temperature. For simplicity, we will consider only the case of dry air.

Stability

A stable atmosphere is one in which potential temperature increases with altitude. That is, if the environmental lapse rate is such that potential temperature increases with altitude, then the atmosphere will be stable. This is the same as saying that the ELR is less than the ALR. Examples of this situation are when the lower levels of the air are cooled by a cold ground surface, or if warm air is advected over cool air. It is also the case in the stratosphere, where the air is heated from above by UV bombardment: this is why the stratosphere is so stable.

Instability

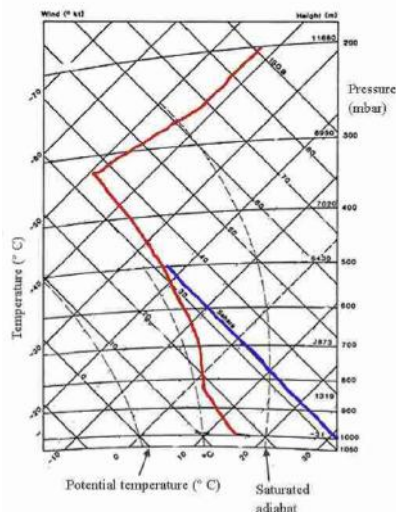
An **unstable atmosphere** is one in which **potential temperature decreases with altitude**. In this case, the lowest levels have the highest potential temperature: this upsets the hydrostatic equilibrium, and the lower air will thus tend to rise. This is the situation in which air is heated from below by long-wave emission from the ground surface. It is equivalent to the case where the ELR is greater than the ALR.

Neutrality

A situation we have not yet considered is a neutral atmosphere: in this case, **potential temperature is constant with altitude**. This is equivalent to saying that the ELR = ALR. This situation is quite common in windy, well-mixed conditions in the lower troposphere. Air heated at the ground is rapidly mixed upwards by convection and turbulent winds, thus equalizing potential temperature.

Representing Air Stability

One of the most versatile and useful ways of representing air stability is based on plots of actual temperature against potential temperature for vertical transects through the atmosphere. Such temperature-potential temperature diagrams are known as **T f diagrams** or **Tephigrams**. (This is because potential temperature can be regarded as equivalent to entropy, which is denoted by the Greek letter ϕ (Phi)). On the basic Tephigram, temperature is plotted on the vertical axis, and potential temperature on the horizontal axis. Air pressure then plots as a series of gently curving diagonal lines slanting up from bottom right to top left. Because air pressure decreases with altitude, it is useful to rotate such diagrams until the pressure isolines are approximately horizontal, with the highest pressures at the bottom (1050 hPa) and the lowest at the top (usually 200 hPa) so that the diagram then appears as a vertical slice through the atmosphere. The shape of temperature profiles then shows at a glance whether the air is stable or not. Furthermore, these diagrams also permit the exact calculation of the behaviour of air masses.



The Tephigram on the previous page shows lines of equal temperature (rising from left to right), potential temperature (rising from right to left), pressure (sub-horizontal curved lines), and saturated idiabats (steep dashed curved lines). Also shown are temperature curves derived from soundings over Northern Ireland (red) and the Sahara (blue). The Irish curve closely follows a saturated adiabat through most of the atmosphere, characteristic of a well-mixed, cloudy atmosphere. The abrupt change in direction just below 300 mbar is the tropopause: the abrupt change in thermal characteristics of the atmosphere between the troposphere and stratosphere. The Sahara line (blue) is parallel to a dry adiabat (line of equal potential temperature) this is characteristic of a dry atmosphere well mixed by convection.

Important concepts to note in connection with Tephigrams:

- For dry air, rising or falling air changes temperature along the dry adiabatic lapse rate. This means it will follow **lines of equal potential temperature**, which are marked as diagonal lines on the diagram. These are known as **dry adiabats**.
- For saturated air, rising or falling masses will follow the saturated adiabatic lapse rate. Examples of these cooling/warming curves are shown on Tephigrams as curved lines, beginning nearly vertical at the bottom of the diagram, then gradually curving into parallel with the dry adiabats. These are known as **saturated adiabats**.
- Lines representing the environmental lapse rate can thus be compared at a glance with the gradient of the dry and saturated adiabats, thus providing a rapid impression of air stability at all levels of the atmosphere.
- **The lifting condensation level:** this is the altitude at which condensation will occur for a given air mass raised adiabatically. It coincides very closely with the cloud base. Below that altitude, rising or falling air will follow a dry adiabat, above it, a saturated adiabat.
- **Dew point:** this is a related concept to the lifting condensation level. It is the temperature at which condensation occurs (for constant pressure).

Consequences of Instability: Convection and formation of Cumulus clouds.

Most of the heating of the atmosphere is accomplished by long wave radiation from ground or water surfaces. This means that, in the troposphere, maximum energy receipts are commonly at the lowest levels. This will raise temperatures (and potential temperatures) there, upsetting the hydrostatic balance and creating instability. This one fact accounts for a huge amount of atmospheric behaviour. It explains why vertical motions are so prevalent in the troposphere: the atmosphere is constantly mixed to evacuate energy from lower levels to the upper troposphere, where it can lose energy by long-wave radiation into space. Thermally driven vertical motions are known as convection.

Convection is initiated by heating at a ground or water surface. The vertical dimension of convective cells is determined by the temperature profile of the atmosphere, and the moisture content of the air. The temperature profile (or, as we have seen, the vertical potential temperature gradient) is the ultimate determinant of stability. Limited convection can occur in a generally stable atmosphere if excess heating occurs near the ground. In this case, energy can be gently lofted upwards in dry **thermal cells**. Such thermals can be hundreds or thousands of meters high in some warmed dry atmospheres, providing ideal conditions for paragliding and other aerial pursuits.

The most vigorous convective cells involve the formation of **Cumulus clouds**. This is because cloud formation involves the release of **latent heat**, which, as we have

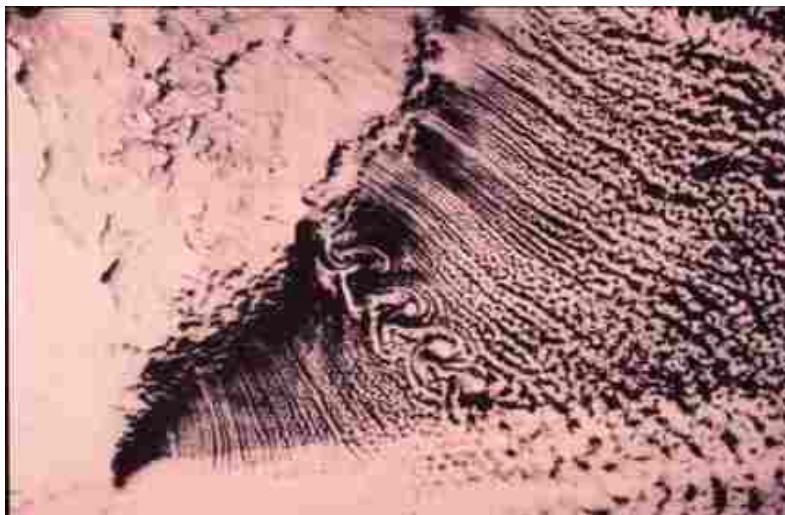
seen, provides an extra source of energy during condensation. Indeed, latent heat release provides the bulk of the energy involved in large cumulus systems.

Small Cumulus are the visible portion of small convective cells, which can form in the lower part of the troposphere due to heating from below. Small Cumulus are preferentially developed over land, due to greater heating compared with water surfaces where latent heat is consumed during the evaporation of water. Cumulus has a cellular form, either with the cloud in the center of the cell (closed cells) or around cell boundaries (open cells). In the latter case, clear air sinks in the center of the cell, and rises between cells. The type of cell pattern relates to air properties and rates of energy exchange.



Open convection cells seen from space

Cloud streets are elongated convection cells, which form when there is horizontal transport of a convecting air mass. Cloud streets are most common where a cool airstream blows over a warm surface; e.g. northerly winds in the Northern hemisphere mid latitudes and where cold air blows off pack ice over warmer water.



Cloud streets

Consequences of Stability: Lee wave clouds

We have seen that for stable air (where potential temperature increases with height), air that is forced to rise will return to its original altitude. One of the most beautiful consequences of this behaviour is **lee waves** or **mountain waves** downwind of

large obstacles to the flow. As air is blown against a mountain, it is forced to rise. If it is stable, then on the lee side of the mountain it will fall again. However, its momentum is such that it will shoot past its original altitude and go lower than it was before. It then is forced to rise again by its disequilibrium with hydrostatic conditions. It will again overshoot, this time going too high, and so on. If the resulting wave intersects the condensation level of the air, clouds will form at the crests of the waves. These clouds, among the most beautiful in nature, are commonly seen downwind of mountain ranges in stable, windy conditions. They resemble great plates or lenses. If the moisture content of the air varies with altitude, such lee wave clouds can form vertical stacks of lenses, called 'piles of plates'.

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6. Safety In Numbers – Safety Tips From the SHGC Safety Group (who've seen or had too many incidents, and want to share their experiences – and keep you safe)

“Is that lightening on the right-hand end of the cloud in the picture?!”



Illustration 1. There are times when it is not flyable...Small Cumulus clouds ahead of the Cu-nim are produced by the gust-front. Thunder (and lightening) adds to the acoustic ambiance

The top 10-ish rules for staying alive in free flight (PG&HG)

1. Always have a safe landing within easy reach (and sometimes more than one)
2. Don't fly if it's raining, or about to rain
3. Don't fly if a cu-nim is heading your way
4. Don't fly cliffs if there is no landing when the tide is in. (See point 1.)
5. Don't fly when knackered or flying the wrong size glider or with too spicy equipment
6. Don't fly a glider that you don't know how to recover in a hurry (a SIV course?)
7. If a parachute deployment is required, decide quickly & throw it whilst you still have enough height
8. Look where you want to go, not at the only tree for half a mile.
9. Pre-flight the glider, yourself and the environment properly, every time.
10. Remember you don't have to fly - the hill will still be there tomorrow.
11. Don't fly when it's too windy. More wind means more turbulence.

12. If you're not current, don't launch into the strongest bit of the day.
13. Make your own decisions – conditions OK for one pilot may not be OK for you
14. Don't think you know it all! Over-confidence is when 'bad stuff' happens. The meek shall avoid hitting the Earth
15. Get advice from more experienced pilots. Understand what's happening before you launch (not afterwards).
16. Learn about the sea breeze and respect it
17. Wear sunscreen. Skin cancer of the nose should be the worst risk of going paragliding



Illustration 2: Don't look at the tree... Don't look at the tree... Don't look at the tree. Damn, you looked at the tree. Pass the pruning saw. (See 'Target Fixation' article in Windssock, March 2019 for more details.)

And you will read this last

You will read this first

And then you will read this

Then this one

Remember, what you see isn't necessary ordered and logical

7. Vacancy: Help Needed To Develop The SHGC Website

URGENT NEED FOR A WEB SITE DEVELOPER TO HELP

UPDATE AND MODERNISE THE CLUB'S WEBSITE

IN DESIGN AND IN PROGRAMMING THE NEW SITE

(KNOWLEDGE OF DRUPAL, PHP, AND A CMS ESSENTIAL)

Background

The SHGC web site was built more than ten years ago, by Dave Massie and another Club member (who has now retired from flying).

It's based on a CMS called Drupal (Drupal 5.7), which is now somewhat ancient. The hosting package isn't being too kind to it either. The Club's website needs updating and modernising; requiring slimming down in some areas, made more up to date in others and, where possible, being made more user friendly (especially to hand held mobile devices). It would be an option to move away from Drupal altogether too as Dave M notes, "the latest versions are a nightmare to implement, being based on an object-based model with a new and enormous learning curve".

Dave Massie would like urgent help from:

- A willing and programming savvy member willing and able to lend a hand at first in the process to overhaul the website and then take on more of the effort as time progresses.
- Someone (or some people) willing to suggest ideas for existing/ new content; what do we have, what do we continue to need, what can we add, and what can we ditch? This review is essential to future proofing the website and volunteers are needed even if the programming side is not your forte. Ideas on sections on weather, links, and so on. All suggestions are very welcome.

Skills & experience needed

Programming experience of PHP is essential, together with knowledge of a CMS, and Drupal or another language (as it may be better to move away from Drupal).

If some/ or all of the above didn't make any sense to you, then you're probably not the one needed to help with the programming/ rewrite stuff, but you may be great at planning and design. Suggestions are very welcome!

Please give Dave Massie a call to discuss volunteering and any/ all design ideas for the Club's website (www.shgc.org.uk).

8. The Club's Air Experience Pilots' Code of Conduct

Introduction

It is a voluntary Code of Conduct. However, it is intended to be a clear expression of the Club's values and is provided to direct and guide the behaviors expected of all commercial Air Experience Pilots (AEPs) when using the Club's flying Sites.

Key Principles

This Code has at its heart two key principles:

1. Safety of All Persons; including but not limited to the AEP, the client(s) of the AEP, other pilots (whether they are members of the Club or not), members of the general public, all other persons engaged in any form of recreational activity (horse riding, walking, cycling etc.,) singularly or in a group, physical property (crops, buildings, fences, trees, hedges etc.,) and (all) animals found on or near the Club's Sites.

2. Maintaining an Unobtrusive and Inconspicuous Presence. All the Club's Sites are important, from an environmental, ecological, and historic perspective. All the Club's Sites are busy. All the Club's Sites are highly vulnerable and a landowner/licensee could easily revoke (long-standing) permission(s) at a whim and without any grounds for appeal. It should be remembered that agreements with landowners are typically granted on the basis of these permissions applying to recreational pilots only, hence the need for commercial AEPs to 'blend-in' as much as possible. Accordingly, this Code encourages all commercial AEPs to behave at all times, and in such a way, that their presence, and conduct, remains as unobtrusive and inconspicuous as is reasonably possible.

For the avoidance of doubt please note the following:

- Adherence to this voluntary Code is expected of all commercial AEPs and should persistent breaches occur then the SHGC Committee are likely to review the commercial AEP's licence with the SHGC and the Site permissions granted therein.
- References to Hang Gliding (HG) and Paragliding (PG) (including all variants including, but not limited to, speed flying, mini-wings, and so on), should be considered as having equal meaning.
- The launching of all forms of motorized HG / PG from any of the Club's Sites is expressly forbidden.
- All commercial AEPs must be appropriately qualified, authorized, licenced, and approved by the BHPA. They must adhere to any/ all of the Club's Site rules.
- It is our expectation that SHGC licenced commercial AEP will have a minimum of 300 logged hours (with 100 hours flown from Club sites), will have participated, as a student' in several SIV training courses. However, each application, to be a SHGC licenced commercial AEP, will be assessed individually by the Chief Coach, a nominated Senior Coach, or another relevant individual.

The Code

1. Parking

We share all our Sites with many other users. At peak periods, parking can be a problem. The commercial AEP is responsible for ensuring that their clients, and any guests of the clients', park responsibly. Please ensure access is maintained for large

agricultural vehicles, gates are not blocked, and, where applicable, all parking fees are paid.

2. Caburn Gate code

Knowledge of the Caburn gate code must be limited to full SHGC members only and must not be disclosed to commercial AEP clients and their guests. Security is a concern of the landowner as well as the Club. Commercial AEP clients (and guests) can easily park in the village and walk to Caburn. It is been proven that members of the public cannot be trusted to close gates so don't assume they will.

3. Solicitation

Solicitation for AE 'clients' from the inevitable spectators at any of the Club's Sites is actively discouraged. Active solicitation runs counter to the Code's second key principle of maintaining an 'unobtrusive and inconspicuous presence'. For example verbal solicitations, flags, signs, advertisements (e.g. sandwich boards), and similar on-site advertising must not be used. We recommend that sign written vans are parked inconspicuously. It is precisely these types of 'behaviors' that are likely to draw negative attention from Site owners.

4. Equipment

All commercially used tandem equipment must be of 'relatively recent manufacture', certified, fit for purpose, and in good condition (both gliders and harness). Helmets (conforming to EN 966) must be provided and worn. Reserve parachutes must be carried. Paragliding harnesses should have effective back protection.

The use of lightweight and/or high-performance equipment is discouraged. C-rated tandem paragliders are acceptable only when flown by appropriately qualified pilots familiar with the characteristics of 'hotter gliders' and in different (and difficult) conditions and particularly those found on the Club's Sites. Cheap(er) Alpine tandem gliders, designed for commercial top-to-bottom flights, are not considered suitable as their poor performance makes it much harder to move away/ avoid other pilots.

5. Site Briefings & General Safety

Full site briefings should be given with particular reference to the likelihood of other pilots making top landings. Clients, naturally, expect to turn up and fly. They will not understand the concept of 'weather' and the (possible) need to wait for conditions to improve. Whilst waiting and at any other time, clients and their guests should not picnic smack in the middle of a launch, the top landing, and/ or slope landing, area. Please encourage all clients, and their guests, to take their litter home. We would prefer to implement a firm 'no dogs' policy on Club Sites, for the safety of pilots and to ensure cordial relations with farmers, but understand that this is not always possible. In the event that dogs, belonging to commercial AEP clients or relatives thereof, arrive unexpectedly, then they should be suitably restrained and all 'debris' bagged and removed.

6. General & Professional Conduct

By law a Commercial AE flight must be conducted in the style, and as part, of a course of instruction. Commercial AE clients must receive an introductory flying lesson.

Whilst certain exuberance (from a client) is to be expected, it should be as unobtrusive as is reasonably possible and in keeping with the key principles of this code.

Commercial AEPs should move well away from the Club's Sites before engaging in any form of 'aerobatics'. Note that the BHPA have asked dual pilots not to perform any form of aerobatics.

Please give your AE clients' value for money both in time and flying experience. In the past Client dissatisfaction has often been directed at the Club's Committee (and also to the BHPA). The Committee will take a dim view of having to deal with your clients' dissatisfaction should it arise.

7. Wake Awareness

Tandems create significant wake. When flying the thermal pattern efficiently and predictably, wake vortices are normally not a significant problem. High wing loadings and special maneuvers such as collapses and aerobatics can create powerful vortices, which are enough to collapse a solo glider. Please be conscious of this and the likely impact on others some of whom may be very inexperienced, low-air time pilots, and completely unaware of this phenomenon. The reaction function of an inexperienced pilot is likely to be highly unpredictable. Please refer to recent guidance from the BHPA.

8. Congestion & Over Crowding

Club Sites are frequently very busy. Please be prepared to wait for the Sites to become less populated. Commercial AEPs DO NOT have a superseding priority to fly ahead of any other pilots, Club members or otherwise.

If the Site is busy, then it may be preferable, at your discretion, to keep flight times to a sensible minimum. As an experienced Commercial AEP, it will be easier for you to fly along the ridge, push out and climb (helpfully marking climbs for others) and to get away from the cluster of pilots that inevitably forms at or close to launch. Offering clients the experience of a proper (although, naturally, time limited) XC flight is always encouraged as it gives other (newer) pilots (SHGC or otherwise) an excellent example of what is possible and, whilst indirect, it is a form of 'pilot mentorship'. This is something that the SHGC Committee actively encourages.

9. Poor Conditions

Please be prepared to wait for conditions to improve or to postpone to another day. Taking off in poor conditions is inadvisable. While an anchor can increase safety in most launches, if it is difficult or impossible to launch safely without one then it is probably too strong.

10. Canceling

Sometimes it will be necessary to cancel/ postpone your client's AE flight due to all sorts of reasons. This will be inevitable. Please manage their disappointment.

11. Camera use

It is understandable that clients want photographic records of their AE flight. Cameras, particularly those protruding on long sticks, should only be used when high and clear of all other pilots.

Not-with-standing the provisions of this Code of Conduct, the SHGC Committee cannot and will not have any liability in law for the actions of the Commercial AEP or any resulting injuries.

This code of Conduct has been produced by the SHGC Committee, for all commercial Air Experience Pilots using the Club's sites and is also published on the Club's website.

9. Be Comfortable On Speed bar by Pat Dower

For XC flying, even on the latest, and best ENA gliders, use of the speed bar is a big benefit. In summary:

- It helps you improve your glide over the ground in sink and in a headwind.
- It helps you reach the next climbs quicker.
- It improves your XC speed and therefore your distance.
- It might be needed to keep up with other pilots, which will allow you to work with a gaggle rather than alone.
- Many gliders stiffen when you press some speed bar so actually feel nicer on the glide as they cut through minor turbulence better, rather than getting bounced around.

Of course using the bar has potential downsides such as the glider being more prone to collapse and it being more dramatic when it does go. Flying full speed is generally more stressful, especially in active air.

So... is there a balance to be struck for pilots not pushing at the front of a high-level competition task? I think there is.

The most obvious first thing is to allow enough terrain clearance. What comprises "enough" depends on a lot of individual factors but generally would be: enough height to recover a collapse. After that, a good starting point is to use 30% - 50% bar on every glide unless there is a good reason not to. This setting gives you a healthy gain without the disadvantages stacking up too much. The rewards are less in downwind XC flying and greater if you are following mountain ridges. Pilots getting more from their flying days will be gliding significantly faster than trim whenever they feel it is safe to do so.

It takes practice and mental acclimatisation but if it becomes your new default, your flying can only benefit. You can build it into your on local soaring flights, so that you ready when the big day comes.

And remember - never apply brakes whilst you are on the bar!

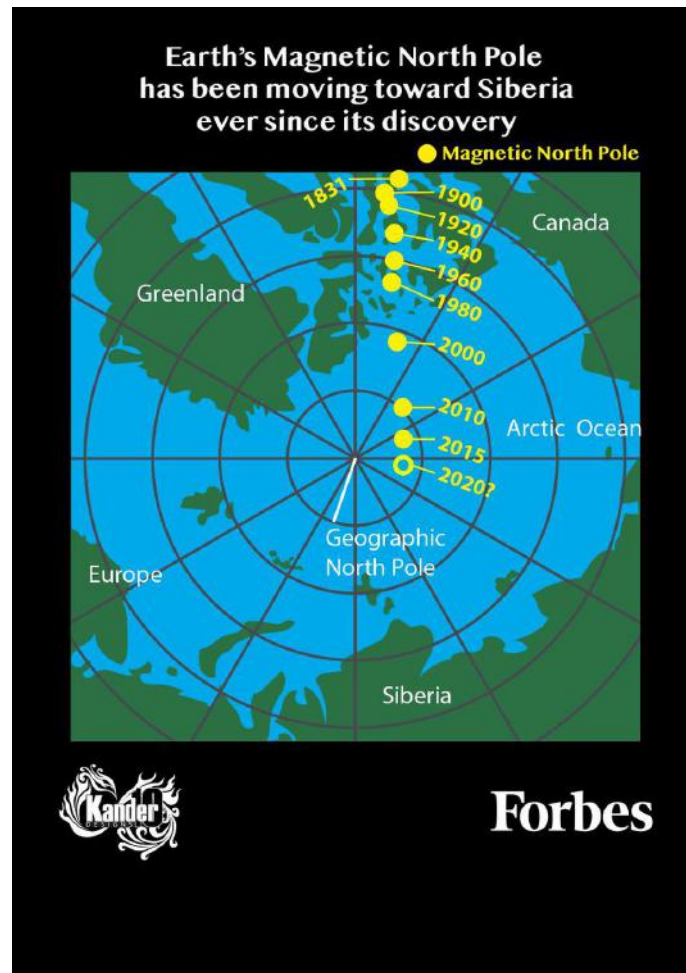
This article was written by Pat Dower and is published in Windsock with his express permission. Pat Dower's flying philosophy is to fly higher, further, better, faster, and with no glass ceilings. Pat is a talented pilot who has competed at both national and international level, he is best known for his keen enthusiasm for supporting and teaching other pilots how to progress in the sport. Pat regularly organises pilot development skills workshops

10. The Magnetic North Pole Has Moved

Earth's magnetic pole is moving in the direction of Siberia and away from Canada. This is something that scientists have been tracking for a long time. It's fairly easy to look up the location of the magnetic pole dating back to the early 1900s. The recent changes of the drifting pole are raising some concerns but the direction is not the problem. In fact, the direction of the drifting pole has been roughly the same for as long as scientists have been tracking it. The speed is the issue.

Every five years scientists recalculate the location of the magnetic pole. This is important information for global navigation, which includes GPS satellites and other technology. These changes can make a big difference in our everyday lives.

Scientists at NOAA and the British Geological Survey check how accurate the World Magnetic Model is every year and when they did their check this year they noticed some large differences. Primarily that the pole's movement had sped up. The location data for the pole was supposed to last until 2020 before it needed to be updated but according to experts at the National Oceanic and Atmospheric Administration, it needs to be updated now.



The movement of Earth's magnetic field since its discovery

Why is this happening?

The movement of the pole is caused by flows of molten liquid iron in the Earth's core. This liquid and how it moves creates the Earth's magnetic field. Variations in the liquid flow cause the magnetic field to change over time and cause the location of magnetic north to move.

The global model was off because of a geomagnetic pulse that occurred beneath South America in 2016. This pulse just came at a bad time. The 2015 World Magnetic Model was brand new and not scheduled to be renewed until 2020. It seems that in the future we may not be able to wait as long between updates. **The poles movement has sped up in recent memory from 9 miles a year in the 1990s to about 34 miles a year at present day.** A new model needs to be implemented as soon as possible and even then they will have to rework the model again in 2020. Until then navigation systems might be affected.

What caused the geomagnetic pulse beneath South America is unknown. If you

have been seeing headlines that imply the scientists are clueless or don't understand what is happening this is what they are talking about. Anomalies like this happen from time to time and honestly, it's nothing to be worried about.

Why is the pole moving?

In the northern hemisphere, deep within the Earth, there are two large areas of magnetic strength being generated by the liquid metal surrounding Earth's core. One is under Canada and the other is under Siberia. What we are seeing now is the result of those two areas pulling against each other.

Earth's north magnetic **pole** is moving, researchers say.

It has moved so much, so quickly that a group of scientists hurried to change a model that helps guide shipping, airplanes and submarines in the Arctic Ocean.

Compass needles point toward the pole. As a child, you might have received a simple compass as a gift. It has a magnetized pointer, which shows the direction of magnetic north.

Liquid metal at the centre of our planet produces the magnetic field. Unpredictable movements in the liquid mean the field and the **location** of magnetic north are always changing.

The World Magnetic Model records those changes. The model is a joint product of the British Geological Survey and the United States National Oceanic and Atmospheric Administration.

The two agencies were planning to report changes in the magnetic north pole, as they do every five years, at the end of 2019. But the pole has moved so quickly they had to release the information much sooner.

Scientists have found that the magnetic north pole is moving at a speed of about 55 kilometres every year. One hundred years ago, the pole was located near the coast of northern Canada. It crossed the International Date Line, the imaginary line running through the Pacific Ocean from the North Pole to the South Pole, in 2017.

Now, the magnetic north pole is in the middle of the Arctic Ocean and moving towards Russia.

Importance to navigation systems

Airplanes and boats mainly use Global Positioning System (GPS) instruments for **navigation**. The movements of the pole do not affect GPS because it is satellite-based. But airplanes and boats do depend on magnetic north in emergencies, Chulliat noted.

Names for some airport landing areas are based on their direction toward magnetic north, and the names change when the pole moves. For example, an airport in Fairbanks, Alaska, renamed landing area 1L-19R to 2L-20R in 2009.

Ciaran Beggan is with the British Geological Survey. He told the Reuters news agency the magnetic North Pole "didn't move much between 1900 and 1980, but it's really **accelerated** in the past 40 years."

Since 1831, when the pole was first measured in the Canadian Arctic, it has moved about 2,300 kilometres toward Siberia. The speed of its movement has increased from about 15 kilometres a year to 55 kilometres per year since 2000.

The reason is movements in Earth's liquid outer **core**, said University of Maryland geophysicist Daniel Lathrop. There is a hot liquid ocean of iron and nickel in the planet's core, where the movement produces an electric field. Lathrop said the changes in movement of the liquid are similar to changes in the weather.

Possible reversal of Earth's North and South Poles

Earth's magnetic South Pole is moving far slower than the north. In general, Earth's magnetic field is getting weaker, leading scientists to say that it will eventually cause the north and south poles to change positions. Such a change has happened several times before, but not in the last 780,000 years.

"It's not a question of if it's going to **reverse**, the question is when it's going to reverse," Lathrop said. The reversal will take 1,000 years or more to come into effect, experts said.

But Lathrop sees a reversal coming sooner, not later, because of the weakened magnetic field. An area over the South Atlantic has already reversed beneath Earth's surface.

That could cause problems for birds that use magnetic fields to navigate. And a general weakening of the magnetic field is not good for people, especially astronauts. The magnetic field protects Earth from dangerous radiation, Lathrop noted.

Ciaran Beggan said the recent movements of the north magnetic pole would be unnoticed by most people outside the Arctic. Navigation systems in cars or phones depend on radio waves from satellites high above the Earth to identify their position on the ground. "It wouldn't really affect anyone driving a car," Beggan added.

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11. Vacancy: The Clubs Needs A Social Secretary, Somebody (Or A Small Team Of Somebodies) To Organise Social Events. Could that somebody be you...?



The Social Secretary, which is a Committee position/ appointment, is responsible for performing a vital role in the Club: Namely to create and implement an effective social program for members.

Key duties:

- To arrange the Club's social events: Currently the Christmas Dinner/ awards evening and summer events (but other ideas/ events are possible).
- To co-opt (coerce) volunteers to assist in the organisation/ running of an event.
- Motivate Club members to attend Club events.

Skills:

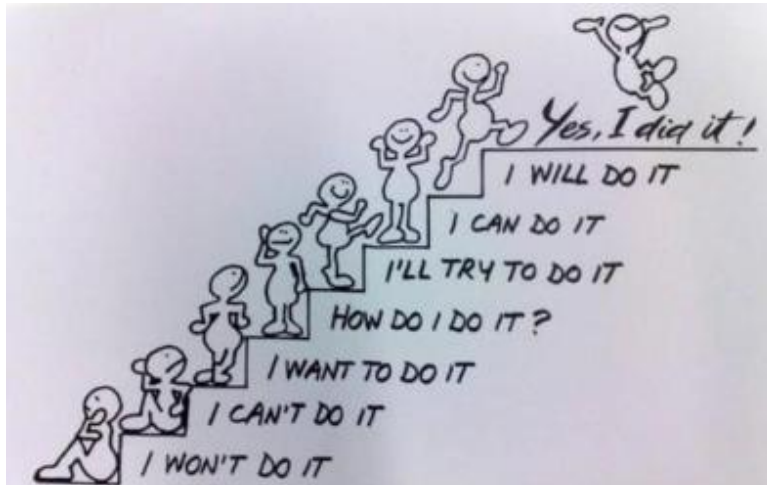
- Confident and effective communicator.
- Ability to organise and delegate duties.

Commitment to the Club:

- Will attend Committee meetings (in Glynde/ Firle area) as required.

The Club's commitment:

- The Committee recognises the importance of social events to the overall well being of the Club will fully support the Social Secretary in this role.
- Will refund any expenses incurred in the performance of this role on behalf of the Club



Could the Social Secretary 'somebody' be you?

12. Climes in Foreign Climes: India

Popular Paragliding locations:

- MANALI – HIMACHAL PRADESH.
- KAMSHET – MAHARASHTRA.
- BIR BILLING – HIMACHAL PRADESH.
- NAINITAL – UTTARAKHAND.
- NANDI HILLS – KARNATAKA.
- MUSSOORIE – UTTARAKHAND.
- YELAGIRI – TAMIL NADU.
- PANCHGANI – MAHARASHTRA.

Guide to Bir

What's it like?

Bir offers a fantastic and relatively safe introduction to flying in the biggest mountains of the world in an adventure that immerses you in one of the most diverse and fascinating countries and culture on the planet. India is an explosion of people, colour, food, and sound; a true sensory experience. A flying trip to India will never be forgotten.

Bir is a small Tibetan colony that sits at the bottom of the first ridge of the Himalayas. The ridge runs continuously for almost 100 km and offers a great out-and-return adventure on even a half decent day.

The take off is at Billing a 40-minute taxi ride away at a beautiful grassy meadow served by a chai shop where food and refreshments are available. Top landing is simple, but nevertheless take care, as you wouldn't be the first to crunch in a bit too hard. Some Indian hospitals are as appealing as a dose of typhoid and to be avoided as much as possible – although the big cities have top-class facilities.

The main route heads west, with a choice of soaring the higher back ridge or hopping spine to spine along the front. Every flight is accompanied by a flock of vultures that peer curiously at you and your wing.

Behind the main ridge the high mountains glisten and gleam, painting the horizon with an inspirational backdrop, reinforcing the feeling that you're flying in the Himalayas.

Most pilots head west towards Dharamsala (50 km away). Whether you make it that far or not, you can ride the afternoon westerly back to Bir with much greater ease than the journey out.

The landing in Bir is large and open and often crowded with kids all keen to pack your wing for a few sweets, and then it's a two-minute stroll into town for a chai or a beer and a bite to eat.

Flying Conditions

Classic big-mountain flying in good thermals that form on almost every spine, with a cloud-base that's normally around 4,000m, but often drops during the day as the moister air from the plains is drawn in. The plains out front are very stable and harder to fly in.

Heading northeast towards Manali offers fantastic but committing flying in high mountains with difficult retrieves on foot or by mule.

When To Go

Pre-monsoon in March through to May when it's stronger, higher, but less reliable. Post monsoon in October through to November when it's more stable but very consistent (and cold!).

Altitude

Cloud base: 4,000 – 5,000m + [these are big mountains]

Launch: Billing 2,428 m

Landing: Bir 1,525 m

Hang Glider Access

Taxis will take HGs to launch, and the take off is suitable.

Landing Out

This is going to happen, without question. As with any out landing the most important thing is to look for a large flat field, several hectares in size would be ideal, without any buildings or other pesky obstacles in the way, and, once found, land in it. When flying in India you should look for such a landing site. Unfortunately, a cursory examination of the topography, from the air, will reveal that such a place does not exist [unless it is a cricket pitch], so best give up and move on to plan B.

Fields viewed from above reveal themselves to be terraced paddy fields, and are often flooded. Across the fields will inevitably be high-tension electricity cables, and running from these will be progressively smaller cables that will be at any/ all angles. Set yourself up over the 'obstruction' and choose the best and safest landing you can. Then work out how to get home by bus, train, or taxi. Good luck!

Must Be Flown

Dharamsala and back for a simple but satisfying 100 km out-and-return. Cross the high mountains to Manali – wild and committing, but a flight of a lifetime.

Dangers And Annoyances

Overdevelopment has led to several accidents here with pilots going missing and very real [and hungry] wild animals. Treat big clouds in Bir with great respect.

Don't over fly the Dalai Lama's residence in Dharamsala, and the soldiers at the Yol military base nearby get a bit shirty if you land there.

Be very careful going over the back as the terrain is committing with gorges, big walkouts and often-strong valley winds.

Accommodation

There are several cheap Indian and Tibetan lodges and some rooms in local houses. Better accommodation is found at the Colonel's Resort www.colonelsresort.com, a traditional local-style place in a tea garden. Half an hour away is the Taragarh Palace, a stunning ex-Raj residence owned by the Prince of Kashmir. www.taragarh.com.

Guides And Courses

All-inclusive guiding 'holidays' are available and will take responsibility for many/ all of the 'on the ground' logistics. Several of the local schools here in Sussex have been organising trips to India for many years and are highly experienced in the delights and vagaries of Indian life. It would pay to ask them and also other members for their recommendations and experiences.

Take The Family

Trekking, horse riding, hot springs, monasteries and temples and all the other crazy cultural experiences India has to offer!

Rainy Days (there will be some)

Visit Dharamsala and meet the Dalai Lama, or wonder at the temples and monasteries nearby.

Weather Info

You're on your own here. Look out of the window and make an assessment or try a local pilot.

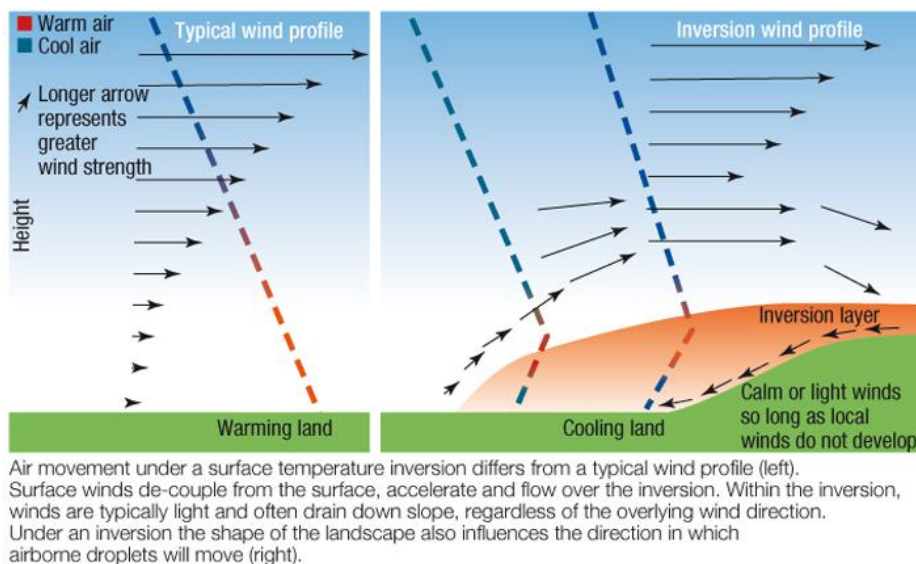
This Article was first published in Cross Country Magazine. It is used with the permission of the Editor.

13. It's autumn, it's Ground Inversion Season. How To Avoid a Nasty Surprise – By Dave Lewis (Skylark Paragliding)

Looking out of my window at 0700 this morning, the wind in my trees makes it look flyable, but the clouds at around 1000 feet are belting along. I wonder if I should take a paramotor up and investigate the shear layer between the two? Or could I simply fly Firlie for an hour and let the shear layer come to me?

I hate to mention the word, but it's beginning to feel autumnal early morning and late evening some days. What we're feeling is a ground inversion, which has provided more than a few nasty moments for pilots. It works like this:

We're all familiar with the ground heating in the day, heating the air touching it and making thermals. As the sun goes down the reverse happens. The once-hot ground radiates its heat energy. If there's no blanket of cloud to bounce it back, the energy is lost into space and the ground gets cold. The air touching the cold ground gets cold and dense. As evening draws into night, the layer of cold air gets thicker and colder, anything between a few feet and a up to several hundred feet, perhaps even a thousand. We now have a lake of heavy, cold air over the land with the real air doing it's own thing over the top.

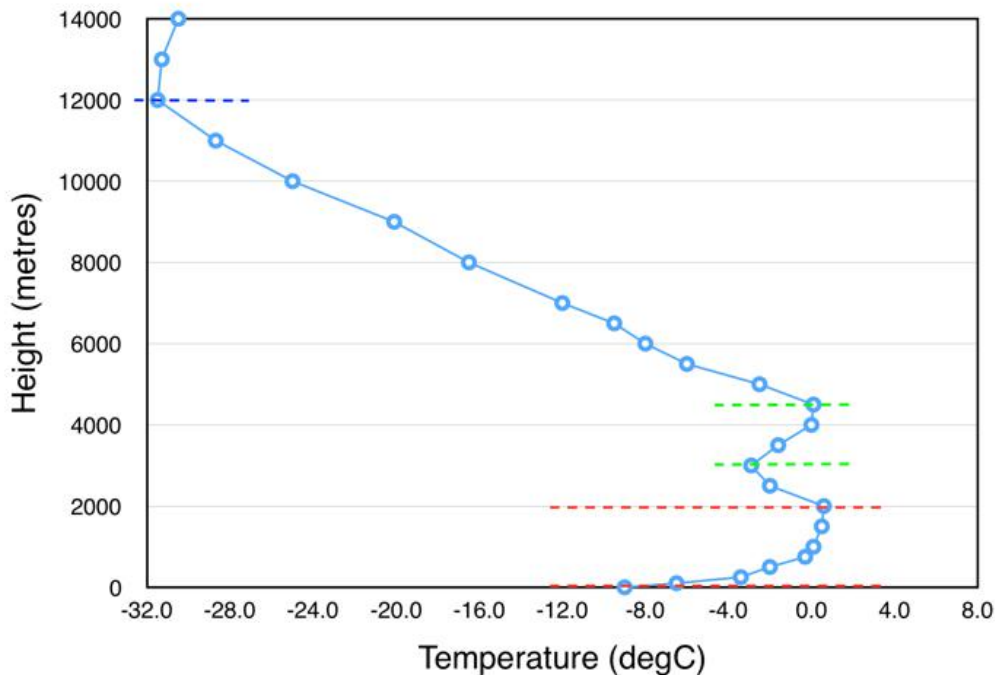


The autumnal feel happens when we're standing in the cold layer - it's cold, humid (even forming dew or mist) and less windy than in the day. Risks to the unwary pilot are:

- It's been windy all day and close to sunset the wind drops to flyable. If you fly and climb a bit, you might get up to the windy layer and find a turbulent surprise in the shear layer between the two. Above the shear layer it will still be as windy as it was all day.
- The wind early morning is light and flyable (possibly with plenty of wind from the north as the cold layer flows out to sea, just like a river). With some sun on the ground, thermals start and climbing begins. If you get a decent early climb, you might get to the shear layer and receive a battering from the turbulence. If you get through that in one piece there might be a lot more wind above.
- At about the point in the day when the thermals are strong enough to get our intrepid shear-layer researcher aloft, all those thermals belting through the

cold layer stir up the whole system and mix the cold air in with the normal air above. That usually takes 10 minutes to half an hour and is not a nice time to fly. The thermals race up through the cold air, lumps of windy air from above are brought down and sensible pilots will be on the ground having coffee.

- Once the mixing is complete and the ground inversion is gone, all the cold air having mixed up with the air above, thermal activity will slow right down. That's because the air over the fields is now warmer and the fields and their thermals need to get hotter to make the required temperature difference. After another coffee it should get going again and this time the climbs will go all the way up.



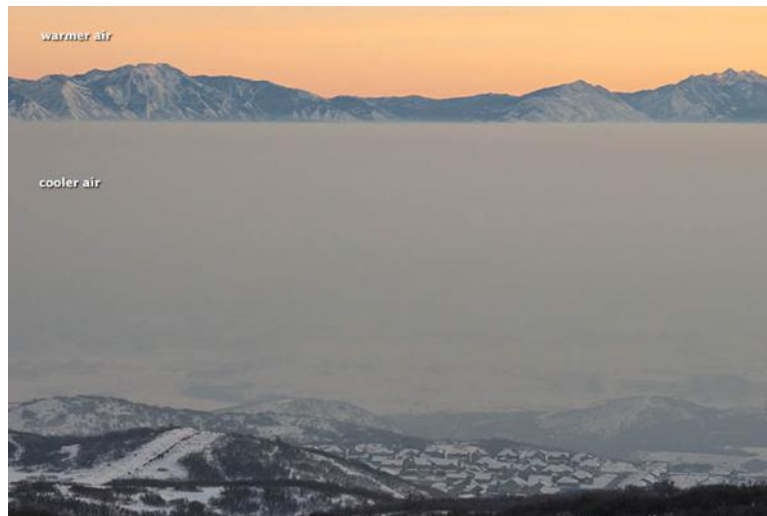
Example of a vertical temperature profile with a deep inversion at the ground surface at 0-2000 metres (between red dashed lines), a second inversion at 3000-4500 metres (between green dashed lines), and the usual inversion found as we head from the troposphere into the stratosphere (above the dark blue dashed line). The light blue line joins temperature measurements (blue circles) throughout the troposphere.

Signs that this might be the situation:

- It's been a warm, breezy day and in the evening the wind slows as it cools off.
- The skies are fairly clear allowing the energy to escape.
- It's not windy on the ground, but the clouds are moving well.
- The forecast is for wind, but it's not windy on take off.
- The isobars and other higher-level wind forecasts show wind but the simple forecasts for ground level wind show much less.
- It's clearly shown on the forecast soundings.
- You're soaring around take off where there's plenty of wind but not much lift. You get a bit low and slope land only to discover there's no wind at all. You're in the cold lake and only the top bit of the hill was sticking out in the breeze.
- You're landing at the bottom of the hill facing into wind and at 10 feet the glider dives as it enters the cold, still layer and you land long (and fast).

Hopefully you followed procedure and came in with excess airspeed and legs down so you didn't stall.

- You've watched someone take off half-way up, climb 100 feet above the hill, take a series of collapses, then start going backwards.



14. An Ode To Autumn – John Keats 1820

*"Season of mists and mellow fruitfulness,
Close bosom-friend of the maturing sun;
Conspiring with him how to load and bless
With fruit the vines that round the thatch-eves run;
To bend with apples the moss'd cottage-trees,
And fill all fruit with ripeness to the core;
To swell the gourd, and plump the hazel shells
With a sweet kernel; to set budding more,
And still more, later flowers for the bees,
Until they think warm days will never cease,
For Summer has o'er-brimm'd their clammy cells...
Where are the songs of Spring? Ay, where are they?
Think not of them, thou hast thy music too,
While barred clouds bloom the soft-dying day,
And touch the stubble-plains with rosy hue;
Then in a wailful choir the small gnats mourn
Among the river sallows, borne aloft
Or sinking as the light wind lives or dies;
And full-grown lambs loud bleat from hilly bourn;
Hedge-cricket's sing; and now with treble soft
The red-breast whistles from a garden-croft;
And gathering swallows twitter in the skies."*

15. Remember...

