IT'S COMMON FOR NON-ALPINE PILOTS TO BE OVERWHELMED

FLYING THE ALPS

From following the flow of the day to bridge theory, Kelly Farina unlocks the secrets of flying in the Alps. Photos: Greg Blondeau

THE TRICK TO FLYING FURTHER IS ONLY TAKING WHAT YOU NEED

'COVER YOURSELF'
The route-planning and adaptation technique I've described here is what I call 'covering yourself'. From route planning to staying out of the clouds when climbing, there is truth in the saying, "a superior pilot will use superior judgement to avoid using his superior skills". Flying in the Alps at the strongest time of day and strongest time of year shouldn't be left to the result of a coin toss. Cover yourself guys.

IN THE BEGINNING...

Africa crashes north, indifferent to its legacy. The seabed rises with unstoppable force, twisting rock, driving it skyward. The Earth's crust buckles and cracks. Under immense pressure molten rock flows and cools to form the backbone of this newly emerged mountain range, a natural barrier that will go on to divide cultures, countries and the continental air mass.

Over millions of years, several glaciations and countless cycles of freeze and thaw, vast glaciated valley systems are created. This world is known as the Alps, and these valleys and peaks are now our playground. It is an incredible, ever-changing 3-D chessboard, upon which with patience, skill and some degree of luck, extraordinary experiences and panoramas can be earned. With modern gear the potential rewards are huge, even for intermediate XC pilots.

THE MAIN RIDGE

The 'main ridge' of the Alps runs from Slovenia to the coast of southern France and along this dividing line you'll find most of the Alpine 4,000m peaks. Crystalline granite makes up its lofty geology. Long-haul XC start points such as Fiesch, Wallis (CH) and Mayrhofen, Zillertal (AT) can be found along its length.

To both north and south you'll find limestone cliffs and ranges. Sedimentary rock formations make up the world famous paragliding sites of the Dolomites and Annecy regions.

In a perfect world pilots would be able to nomadically roam from site to site stashing the goods they had to offer then moving on. Just ask US pilot Nick Greece about his 2011 whirlwind European tour.

SOUTH VERSUS NORTH ALPS

Theoretically the Alps can be divided into four quadrants, NW, NE, SE and SW. However, you can simplify this in terms of weather patterns to just northern and southern Alps. East and west are roughly the same.

Typically, the synoptic situation controls the weather patterns on both sides of the Alps, with slight differences between each side. However, when the big synoptic picture dictates it, the weather on the north and south Alps couldn't be more different. This is the 'foehn' and is an important element of Alpine flying to understand – there's more on this in the glossary.

The southern Alps can be slightly warmer and a little drier (around 7-10% less precipitation). An exception to this is the far southwest quadrant of the Alps, the Alpes-Maritime. This area is very similar to the southern Pyrenees and is exceptionally dry. This is mainly due to prolonged periods of foehn effect caused by the Mistral, a strong north wind that sets up through the Rhone and surrounding valleys. As a result some areas in the southwest get less than 10% of the rain received on the north side, mostly from thunderstorms fed by moist valley flow from south.

In general in the north launch sites rarely get blown out, the days are longer and there is a higher base, which should mean longer XCs. However, it is slightly greener and cooler and pilots must think more about their route choice regarding low down leesides.

The south offers a slightly higher number of flyable days and no sunny-side leeside activity low down. However, launches can get blown out earlier (due to valley wind and thermals mixing), and the valley winds draw in from the Mediterranean and Adriatic seas so there are more thunderstorms on stronger days. All this means potentially shorter days. There is also more dust devil activity and stronger thermic turbulence.

THE KEYS TO UNLOCKING THE ALPS

It's common for non-alpine pilots to be overwhelmed by the size and complexity of free flight in the Alps. The sheer size of the naked rock walls can intimidate even the most experienced pilots, myself included.

But flying cross-country in the Alps need not be so daunting. For a start, the Alps are made up of valley systems, and like all systems have predicable patterns of behaviour. The main trick is to know what the pattern will be in the area you choose to fly.

There are many variables including season, time of day, the airmass as a whole and the upper level winds. These will all feature in an alpine XC flight to some extent. In extreme cases knowing about them will sometimes need local knowledge (hence 'speak to the locals'). However, some will be the similar or the same on any given cross country day.

THE PERFECT DAY

First, let's briefly look at what makes a 'perfect day'. In short, it's blue skies and light winds. But of course it's not quite as easy as that. There are five elements that should come into play for favourable XC conditions in the Alps, in fact anywhere for that matter. They are important but self-explanatory so I won't linger.

1. Sun: too obvious
2. Light winds at altitude: essential for comfort and getting back to where you started
3. Lapse rate: stability and inversions slow us down. Vice-versa and day can be short
4. Air pressure: too high = sticky conditions, too low = chance of over-development
5. Air humidity: too dry = blue day, safe but potentially slow; too moist = overdevelopment and short day

If all five line up when the days are long then expect to see many 200km flights logged throughout the Alps. This requires a high average speed and gives little leeway for getting 'stuck'. Most weekend warriors could use a day like this to pop their long distance cherry in the Alps, whether that be their first 50km or 100km.

But first you need a plan.

GLOSSARY OF ALPINE FLYING

Constrictions: Where the valley narrows. Expect the valley wind to be deeper and stronger than surrounding areas. Leeside and windward faces downwind will have earlier and exaggerated effects.

Convergence areas: Where two valley winds or air masses collide. This happens usually near mountain passes or where two (or more) valleys meet that both have the same bias, often making a 'U-turn' on a map. Caution should be taken as they can be turbulent and low down faces that should be soarable could be leeside.

Valley wind: low-level airflow drawn into the Alps by a pressure difference between the Alps and surrounding flatlands.

Foehn: A warm, dry turbulent wind caused by the main ridge of the Alps. Expect different weather on either side of the Alps. Not a situation favourable for flying rags around the mountains. This effect appears in most larger mountain ranges throughout the world.

WHERE TO FLY

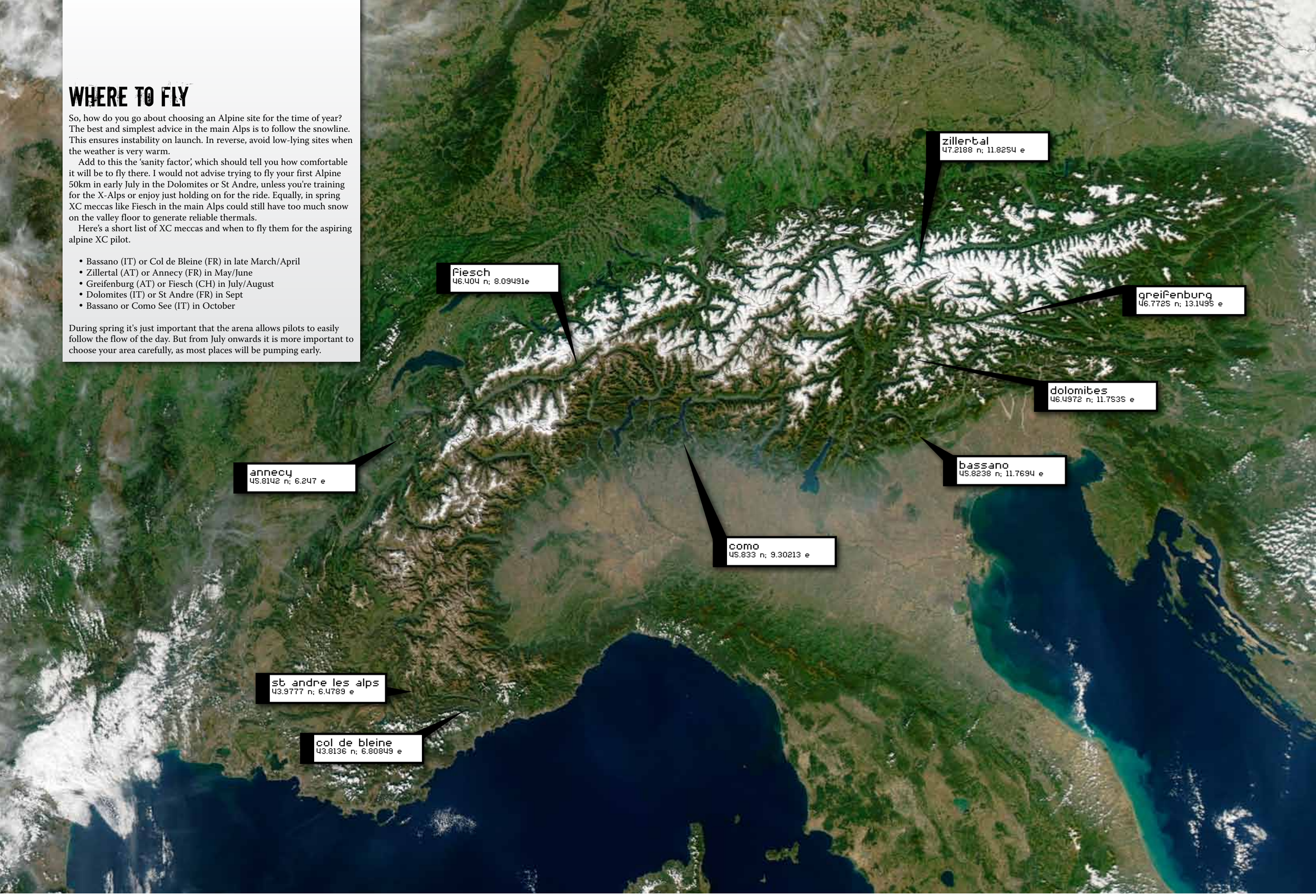
So, how do you go about choosing an Alpine site for the time of year? The best and simplest advice in the main Alps is to follow the snowline. This ensures instability on launch. In reverse, avoid low-lying sites when the weather is very warm.

Add to this the 'sanity factor', which should tell you how comfortable it will be to fly there. I would not advise trying to fly your first Alpine 50km in early July in the Dolomites or St Andre, unless you're training for the X-Alps or enjoy just holding on for the ride. Equally, in spring XC meccas like Fiesch in the main Alps could still have too much snow on the valley floor to generate reliable thermals.

Here's a short list of XC meccas and when to fly them for the aspiring alpine XC pilot.

- Bassano (IT) or Col de Bleine (FR) in late March/April
- Zillertal (AT) or Annecy (FR) in May/June
- Greifenburg (AT) or Fiesch (CH) in July/August
- Dolomites (IT) or St Andre (FR) in Sept
- Bassano or Como See (IT) in October

During spring it's just important that the arena allows pilots to easily follow the flow of the day. But from July onwards it is more important to choose your area carefully, as most places will be pumping early.



THE PLAN: GETTING ROUND SAFELY

Apart from flying fast along lifty lines, keeping the wing open in rowdy air and not getting stuck enroute what else are the Alpine 'cracks' doing to fly such long distances here? Well, a lot of it comes from route planning, and the rest from route adaptation. The real finesse then comes from lines they take over terrain or under clouds and what speed to fly. Also, don't underestimate the importance of staying out of trouble and not wasting time, especially low down.

Let's look at the planning stage first. Being able to plan a route is one thing, but what if situations change? What if your route choice shows signs of overdevelopment and a whole new route is required? More subtly, what if you're flying faster or slower than planned, therefore arriving at crucial points too late or early? This could mean getting low after a long valley crossing when that side is not yet working properly, or worse, being stuck on a side that is no longer producing good enough thermals to gain the height needed for the transition. That is when route adaptation is king.

ROUTE PLANNING

First get a decent map of the area you'll be flying. Google Maps is a great source when zoomed in. Now, like all plans it relies on being able to take some things as read. For us it means that the weather forecast gives light winds aloft and a day length long enough to complete your route, ie chance for early overdevelopment is low.

How far you then fly depends on your average speed. Over many years guiding and coaching I have noted that recreational pilots seem to have around three or four hours in them before they succumb to fatigue or bladder control problems. With an average speed of between 15-25km/h it will be theoretically possible to complete a 60-100km route. However, for your first XCs in the Alps, try planning simple 50-60km routes if you're not used to flying in strong conditions. Be realistic about both your ability and goals.

SO MANY XC WAR STORIES END THIS WAY

FLOW OF THE DAY

As previously mentioned valley systems behave in very similar patterns on good XC days. A keystone we can lean on is that the sun will rise in the east and set in the west. During its progression through the day different faces will heat up and draw warm air from below. The sun acts like a magnet and draws the super-heated air from the valley to trigger at the usual places.

How often and where these columns of hot air trigger depends on the stability of the air mass of the day. This is the first part of the flow of the day theory. Understanding where the triggers are and what time they will work can help pilots flow over the terrain, following the path of least resistance. This is a common theme with all soaring craft. Gliding to a cool west face early in the day will see you slide off the hill.

Back to the map. Early on look for long, unbroken ridges that have a SE-S aspect. Working with the scale and your personal average speed pilots can work out how far to go before making a 180-degree turn to come back, or perhaps make a valley transition when the sun starts to warm the S-SW faces.

KEY POINTS WITHIN THE FLIGHT

Work out where it is likely that you will be able to push on – say along an unbroken ridge facing west late in the afternoon – and places where you'll need every metre to stay comfortable, eg a long valley crossing.

Treat everything as an obstacle. How much height do you need to cross that small valley, mountain or even to get over that next big trigger down route? In the beginning take more height than you need. The trick to increasing average speed, therefore covering more ground, is not having a heavy foot but only taking what you need to push on. This can be risky in the beginning, so set challenging but achievable routes and get a good hit rate of success. Only then try to push on and/or extend the route.

VALLEY FLOWS

Another given in Alpine flying is that if it's a good XC day in late spring/summer then expect a potentially strong, low-level wind in the valley – a valley wind. This will almost certainly have the same direction every decent XC day. (There are a few exceptions, mainly near shallow mountain passes or near known convergence areas). Using the flow of the day theory while plotting your route you can plan to use this valley wind as your free ride home on the last leg of the flight. Doing it this way will ensure you follow the path of least resistance – trying to push upwind into a strong valley breeze will put you on the ground almost as quick as a spiral dive.

Knowing the direction that the flow is running in the valley is crucial, yet relatively straightforward to work out. Only in the deep central Alps does it become confusing. Warm, buoyant air travels uphill, so at its most basic the direction of valley flow can be determined by reversing the river flow.

The big picture way to work out the flow though, is to understand which quadrant/s of the Alps your route is going to cover. This is because all the air around the Alps is running towards the theoretical centre of a low pressure, which forms over the Alps during the day. This is known as the 'heat low'. So on the northeast side of the Alps the main flow will run from the northeast, in the southeast Alps the main flow will run from the southeast and so on. Being a low-level wind the lie of the land will guide this river of warm air towards its destination.

This flow can be anything between 500m to 1000m deep depending on time of year and topography and it can be strong: in some areas at the height of summer it is known to regularly exceed the trim speed of modern gliders.

This low-level wind is also responsible for much of the uncomfortable turbulence associated with alpine flying. However, it doesn't have to be. The following is, in my opinion, the most important aspect of alpine flying: the pilot's ability to choose a safe place to cross valley systems.

THE BRIDGE THEORY

If we understand the depth, direction and time of day at which this low-lying valley wind reaches a critical strength we can plan our route to use, and not fight, this flow. A 'critical strength' is wind strong enough to produce an area of rotor – or the opposite, a soarable, windward face.

When choosing places to cross this giant, fast flowing river we need to choose carefully. This is not so important in the southern Alps as the valley flow will be biased from the south, therefore rendering sunny faces soarable. This is why launches blow out on the south side way earlier than their north Alps counterparts.

However, on the northern side care should be taken when the heat low is drawing in a 25-30km/h flow. Thermals that form in the rotor of this flow are potentially very hazardous to your health. Cross the valley to one of these inviting, sunny faces low down often enough and you'll be sure one day to find out what colour your reserve is. At best it could end the flight with the pilot feeling both shaken and stirred. So many XC war stories end this way: "It was going well until the crossing then all hell broke loose, no idea what happened." Sound familiar?

Fear not though, for wherever there is leeside activity there will undoubtedly be a safer soarable windward side close by, simply look downwind. It's the Yin and Yang of Alpine flying. I have to stress here that this theory should only come into play when you expect the wind to be strong below, in the valley – around 3pm on a strong June day for example. And only when you will come into its influence. If you're at 4,000m and a valley crossing won't put you within 500m of the top of the flow then you need not worry.

Planning your 'bridge' is important to continue safely and with comfort. The ability enroute to spot other potential bridges will keep you in the game should things not go 100% according to plan.

There are many other advantages to knowing places to avoid, as this will as a consequence show you the way to go. By joining the dots along your route of places to avoid you will naturally find your flow.

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LEARN MORE

Kelly Farina's video explanations of alpine flying are well worth watching. They include The Definitive Foehn explanation and Valley Wings – What Are They? See them online at Austrian Arena TV at ***vimeo.com/user5728112***.