

# CluedUp

SPRING/SUMMER 2015



SAFETY MATTERS FOR GA PILOTS

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# KEEPING A WEATHER EYE

*It's complex and always changing, but staying on top of what the weather might do isn't necessarily difficult*

WORDS AND PICTURES: DERRICK RYALL

I am lucky enough to have enjoyed flying for 20 years now, passing the 1,000 hour mark last year. For the last 10 years, I have been flying out of Exeter in Devon with the well-run Robin Flying Group that operates a fleet of Robin DR400s and a Super Decathlon. The Robin is highly capable with outstanding visibility from which to observe the weather, something I particularly appreciate as a weatherman. I'm also fortunate to be able to fly a somewhat more weather-sensitive 1941 J-3C Cub from a small Devon grass strip.

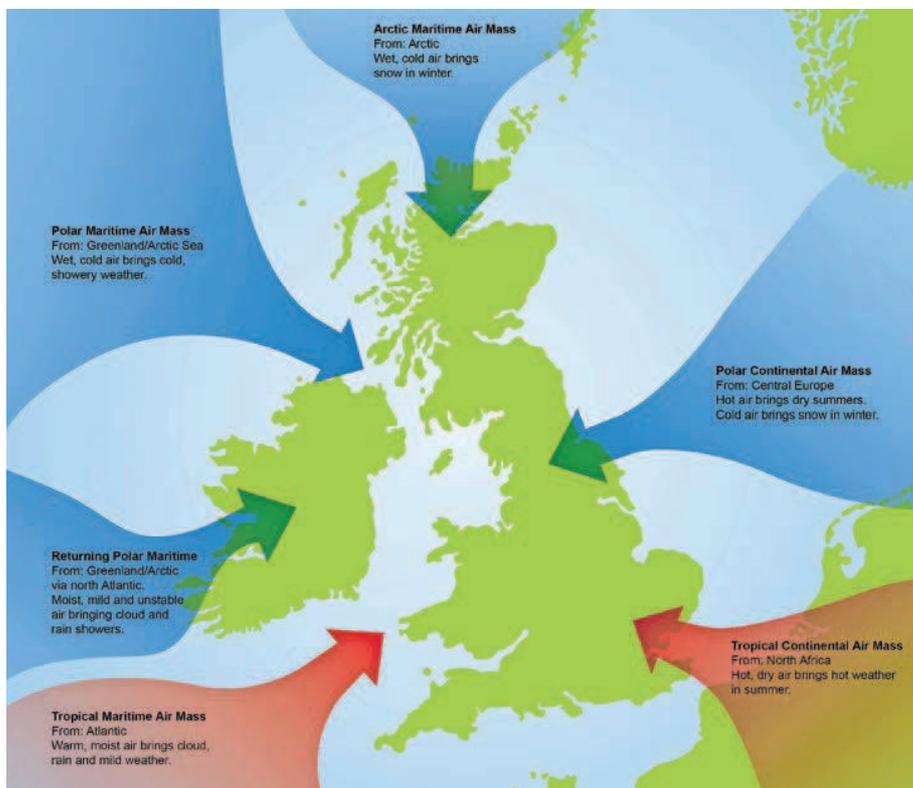
Last summer, I tried a completely different type of aviation with even greater weather sensitivity; learning to paraglide with my 17-year-old daughter Katherine in the Alps. Underneath a paragliding wing, you feel every lump and bump of turbulence and a gusting 15-20kt wind that wouldn't trouble you in a Robin would be a complete no-go.

Our flights in the Robins range from short locals and breakfast runs to overnight trips to northern France and occasional longer tours, with destinations including Scotland, Denmark, Italy, Spain and, the highlight, Morocco. These have been demanding yet rewarding, with weather often posing challenging decisions – often with limited meteorological information.

A pilot who always waits for perfect conditions will find themselves frequently grounded or missing the best weather and the wonder of a stunning cloudscape. They will lose currency and enter a spiral of declining confidence. Sadly, many new pilots give up flying soon after gaining their licence. There are various reasons, but I suspect a key one is a fear of the weather – possibly made worse by an unexpected weather challenge.

Weather is to be respected, not feared. Developing an understanding of it and how it might change can only help in developing confidence, so enabling pilots to expand their flying horizons safely and take to the air when many stay on the ground.

When it comes to weather, understanding the context is an invaluable tool. Air masses – essentially, where the weather has come from – are a good example of this. That which reaches the UK from the south over Europe is



Knowing where the air mass has come from gives a pretty good guide as to what to expect, so here's a quick reminder of what the general air masses are likely to bring with them and what to expect from the weather

more likely to be dry, but might be hazy and polluted. Weather from the south-west is likely to contain moisture, bringing rain and low cloud, while weather from the north-west is likely to bring clear air following a cold front but with a higher risk of showers. This level of understanding will help pilots prepare, respond and react to conditions accordingly.

With advances in science, computing and satellite technology, forecasts have improved dramatically over the years. A four-day forecast now is as good as a one-day forecast was just 30 years ago and they contain far more local detail. However, our weather is extremely variable and changeable – both in time and geographically.

In training, we're taught the basics of weather and how to read and interpret standard aviation forecasts and charts including METARs, TAFs, 214 and 215s, and ASXX and FSXX charts. However, the age of the internet and mobile apps – such as the new Met Office General Aviation app – has brought ready access to a wealth of weather information. The challenge is to make the best of the information available to build a 'weather picture' that makes the go/no-go decisions more straightforward and weather changes en route less of a surprise.

While METARs and TAFs are an invaluable resource and should always be consulted before a flight, they cannot convey the full weather story with all its complex variations in time and space. It's our responsibility as pilots to build that picture, both through experience →



### LOWERING CLOUD

Either due to an approaching front, but also due to moist air being forced up over hills. METARs and TAFs reflect weather at or near an airfield, but do not capture the risks that a nearby range of hills may bring.

Taking off from Exeter for a short flight to Compton Abbas or Old Sarum, for example, it's not unusual to hit lowering cloud and poor visibility just 20 miles to the east as you approach the Blackdown Hills – particularly in a warm sector, behind a warm front and ahead of a cold front.

One tip I picked up from Sparky Imeson's excellent book *Mountain Flying* is to try to leave a good spacing between you and the cloudbase above.

If you 'scud run' just below cloud to try to maximise ground clearance, you run the risk of running into the cloud if it lowers further, visibility is reduced as humidity approaches 100% and the risk of carb icing rises. Drop just a couple of hundred feet and the view ahead can be much improved.

and by building an understanding of the weather and its many drivers. Watch the forecasts on TV, keep an eye on METARs and TAFs even when not flying, study radar and satellite imagery, talk to fellow pilots, share your weather experiences, read books and articles, attend courses and never, ever be afraid to ask questions.

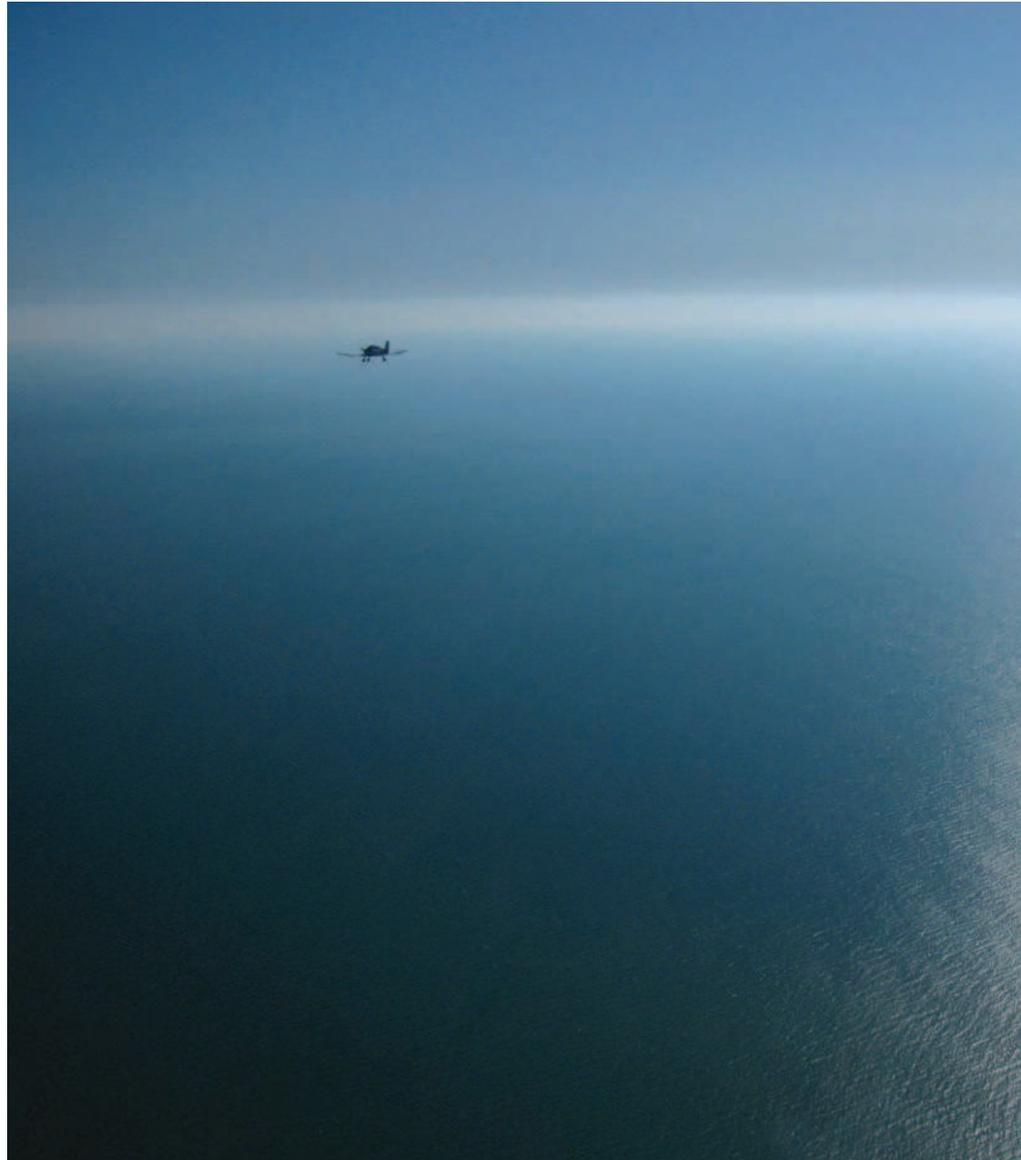
By consulting an array of information sources in the days leading up to a flight, pilots can achieve a greater understanding of how the weather is evolving. This reduces the chance of any surprises on the day or, worse, during the flight.

To give another example of the importance of this context, a TAF can only inform of the chance of a challenge developing. A Prob 40 reading (a 40% probability of rain) may not be hugely useful. However, consulting a rainfall map allows a pilot to see how showers are developing and to have a greater understanding of how rain might impact a flight. A TAF can also be lacking when it comes to understanding the intensity of showers and thunderstorms – and, therefore, how big the risk is. Again, looking at a rain radar can help build up a much more comprehensive picture.

Having worked at the Met Office for more than 20 years, I'm lucky to have been immersed in the weather and to have built up a reasonable understanding of its drivers. However, with all its complexity, it continues to surprise. I have made my fair share of mistakes and have been caught out by fast-changing situations, even when good forecast information has been available.

### WEATHER TRAPS

There are many potential traps that can catch pilots unaware – even those with significant flying time under their belt. Reflecting over the years, the weather challenges of note can be grouped into lowering cloud and reducing visibility, showers and thunderstorms, fog, wind and turbulence and performance.





There are many potential traps that can catch pilots unaware



**Top left:** This dreadful visibility could be down to a continental air mass, or possibly simply rising humidity as the day progresses.

**Bottom left:** Flying over the sea can bring its own visibility challenges, as any seasoned over-water pilot will know. First time out, it can be disconcerting.

**Right:** Paragliding is fun and provides a whole new appreciation of weather.



## HEAVY SHOWERS AND THUNDERSTORMS

One 'I learnt about weather and flying' moment was flying out of Madrid for Cordoba on our trip to Morocco. Six of us in three Robins had enjoyed perfect flying weather and fabulous views all the way down from Exeter. Madrid had proved a difficult arrival, with complex airspace, mountains to cross and poor radio reception controllers who were difficult to understand.

Having landed safely, we were keen to fuel up, deal with the 'please call the tower' request, complete the long list of paperwork needed and press on to our overnight stop in Cordoba. Lulled into a false sense of security by perfect weather, we departed over the Spanish mountains and were happy to be in the air again. Visibility unexpectedly deteriorated, the cloudbase lowered, and then a flash of lightning ahead and to our left focused our minds.

A tense flight followed as we routed around the weather, eventually landing in Cordoba with a beautiful hazy sunset. As we taxied in, the lady from air traffic ran out to say they had lost contact with one of our planes. An even tenser wait followed before we heard the welcome sound of a distant Robin approaching. It turned out that loss of contact had been due to transponder finger trouble and each of the aircraft had successfully

weaved their way through the weather. In the rush to get airborne, I hadn't checked the weather properly. After all, what could go wrong? It was CAVOK...

Looking back, all the clues were there. Afternoon thunderstorms over the mountains are frequent and the thunderstorm risk was obvious from even the most basic inspection of charts and TAFS. A year on, this was definitely in the back of my mind when suggesting we stay on the ground in Albenga in northern Italy rather than press onto Sienna late in the day, over the mountains with limited weather information.

## WIND

I learned to fly at Compton Abbas and it remains a favourite destination, surrounded by the best of English scenery and not far from family. However, you soon learn that just 10kt from the south can result in challenging turbulence as air spills over woodland to the south, while 20kt+ from the north is far more manageable with much of the crosswind easing as you flare.

Learning to look at and read the terrain is a valuable skill for anticipating turbulence and local changes in wind direction, particularly in hilly and mountainous regions. I won't forget the turbulence immediately downwind of Ben More flying out of Glenforsa in a 20kt breeze, or the turbulence experienced crossing the →

Gibraltar Straights as the wind is funnelled through the Gap between Spain and Morocco.

Flying out of Exeter in the summer, a gentle into-runway wind can turn into a stiff crosswind from the south as an afternoon sea breeze cuts in. This shouldn't be a surprise on a warm summer day, but it might put you out of personal or aircraft limits.

### FOG

Either radiation fog forming as the sun goes down or banks of sea fog or low cloud being driven inland by a gentle breeze. It has caught me out approaching Le Touquet, necessitating a return to the UK, and it has caught me out approaching Brighton to clear customs from Kortrijk in Belgium. Just 20 miles out, it was CAVOK but rapidly turned into OVC002 approaching the field. The result was an initially tense diversion onto Exeter. Again, this should not have been a surprise with the charts showing the remnants of a weak occluded front with wind from the south.

Heading home late in the day, I'm sure many pilots will recognise that slight worry as the haze appears to thicken in the valleys and visibility into the sun all but disappears. The TAFS and forecast charts will help identify the risk, but there is nothing like having a back-up plan in your mind.

### PERFORMANCE

A short runway may rarely present a problem in winter, but a windless summer's day makes a huge difference to performance – sometimes doubling the take-off roll.

A friend and I once flew a 180hp Robin into Truro for a fly-in on a warm summer day. With 500m available, it is usually well within the Robin's capability. On the ground, we were asked if we minded giving a lift home to a couple of stranded passengers. The departure



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was slightly uphill with a hint of tailwind. The clearance from the fence at the end of the runway was less than we would have liked. With the benefit of hindsight, a quick calculation would have highlighted the risk and we should have insisted on a downhill-into-wind departure.

Whatever your flying habits, a sound understanding of the weather can only make it safer and more enjoyable. Just as flying currency is important to keep your flying skills up-to-date, so is 'weather' currency. [G](#)

*Derrick Ryall is Head of the Public Weather Service at the Met Office.*

