



From the Cockpit – A Bit of Rough

‘What a beautiful day, and a great day for flying.’ What looks to the non-pilot like a lovely day isn’t necessarily a good flying day. A hot, clear, sunny day in June is not going to be good, especially in the hours around mid-day. The sun is strong, heating the Earth’s surface strongly. Because of the different surfaces, they will heat unevenly, and strong thermal currents will result. With every column of rising air, there must be a corresponding downdraught to replace the rising air.

This rising air can cause an aircraft, which was nicely set up in the cruise condition, to climb at over 1000 feet per minute. Not only does this make it hard to maintain the chosen altitude, it has the danger of lifting the aircraft into controlled airspace – in much of the south-east, general aviation is limited to 2500 feet. Simply pointing the nose down to counter this doesn’t work well, as the aircraft’s speed will rise quickly, so it’s good practice to reduce power. However, even with the engine at idle, strong thermals will still cause the aircraft to climb. Once out of the updraught, then sinking air will be experienced, and this will often need a healthy dose of power to maintain a safe altitude.

Even in overcast conditions, flying doesn’t always progress smoothly. Strong winds will be deflected up and down as they pass over the terrain, creating turbulence up to 2000 feet or beyond. In either case, it can be a bit like flying in a tumble dryer. I’ve occasionally found it necessary to hold on to part of the aircraft with my ‘spare’ hand (the one that isn’t on the control stick, to stop me being thrown around the cockpit. In extreme conditions, it can be quite scary. Even in conditions that aren’t as bad as this, flying any distance can be hard work, with constant adjustments to the throttle, and constant corrections to keep the wings even remotely level.

When flying in these conditions, the landing is often ‘interesting.’ If it’s windy, then turbulence around trees on the approach path (‘final’) can make for a challenging time, and thermal activity can also cause the aircraft to float upwards, before losing height rapidly in the inevitable sink. For an experienced pilot, this can be anticipated, and generous and positive application of the throttle keeps the approach stable. For the inexperienced, the amount of response needed can catch them out.

For passengers, who have much less to occupy their minds, they can quickly become airsick – yet another addition to the pilot’s workload.

In contrast, in light winds and at each end of the day, the clear conditions that produce long days of sunshine can produce some great flying weather. When the power of the sun’s rays is reduced, thermal activity dies away. It’s often

possible, in many aircraft, to take the hands off the controls (but keep eyes on the sky, of course) and just let the aircraft fly itself. These are the conditions we mean when we refer to hands-off flying.

So how do we know what conditions to expect before we take to the skies, or plan a trip? The weather forecast will tell us whether it’s likely to rain, the cloud-base and temperature, but generally has little about turbulence. If there is likely to be ‘moderate’ or ‘severe’ turbulence, then it should appear on the forecast. There are specific symbols used on the weather charts to show these. Forecasts of weather at airfields, which pilots use quite extensively, show conditions on the ground, and don’t always reflect conditions at altitude.

A look at the clouds can be informative. The height of clouds, especially cumulus clouds (the very fluffy ones), is an indication of how much energy is in the atmosphere. More energy indicates less stability – so an increased tendency of the air to rise. The worst clouds are cumulonimbus, which often lead to thunderstorms. We definitely don’t want to be flying around those. But even many miles away from the thunderstorms themselves, a phenomenon called microbursts can happen, and these are associated with very strong updraughts and downdraughts. In the extreme, downdraughts can be so strong that they exceed the ability of the aircraft to climb at all, and simply dash it to the ground. Whilst this sounds scary, thundery conditions can be forecast well in advance, and the prudent pilot stays on the ground. As the saying goes, ‘it’s better to be down here wishing we were up there, than up there wishing we were down here.’

Ray Wilkinson



Towering cumulus, like the clouds here, are an indication that conditions are likely to be quite active, as the height of the cloud is an indication of instability
image: Janne Naukkarinen