

Gliding 2499km in 14 hours

ON THE 13th of December World Champion New Zealand glider pilot Terry Delore with co-pilot John Kokshoorn set a new world record in New Zealand. In a flight of over 14 hours they flew a distance of 2499.2 km around a course with 3 turnpoints that took them across Cook Strait twice. Their average speed on course was 227 kph. His rival, record setting pilot German Klaus Ohlmann, heard of his efforts and the next day in Argentina (but because of international time zones the flights are recorded as the same day) beat his distance by 12 kilometres to take the record from him. Nothing however can take anything from Delore's achievement. After the late Ray Lynskey's 2000 km record in 1990 it was thought that no more long distances gliding records were possible in New Zealand. Delore now has his sights set on a 3000 km flight, and just for fun, he wants to fly from Bluff to Cape Reinga. It won't be a record, but it hasn't been done before.

The mystery and principles of lift

How does he do it? How does an aircraft without an engine stay aloft so long and travel so far? Gliders use energy from the atmosphere to gain height. They convert that height into distance when they want to travel. I'll give you a very simplistic view of the three types of lift, the term glider pilots use to describe rising air. There are much more detailed explanations available on the web, in books or from your local gliding club should you wish to find out more. Thermals are convection currents caused by the sun heating the ground. Once the ground heats enough that the bubble of

air above it breaks free and starts to rise, the resulting low pressure will pull the surrounding air into the space where it too will be heated and follow the original parcel of air upwards. This creates continuous columns of rising air, often capped by a



Wellington under cloud as the glider heads back across Cook Strait.



Terry Delore (front) and John Kokshoorn, happy and relaxed after the flight.

flat bottomed fluffy cumulus cloud. Over-development of the clouds can eventually cut off the sun and stop the ground warming - the air stops rising, the clouds dissipate, the sun breaks through, the ground warms and the cycle starts again.

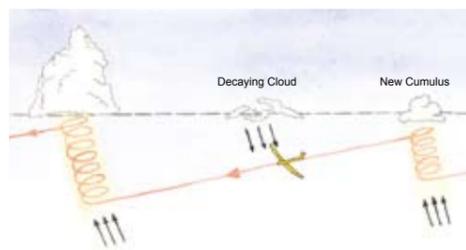
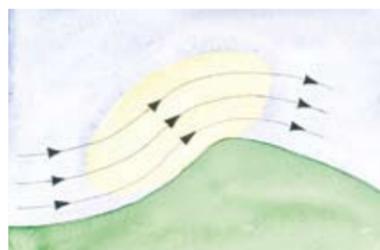
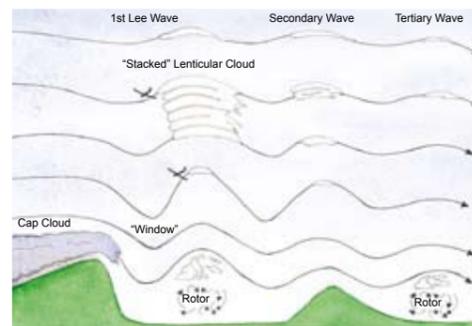
To use thermal lift, the glider pilot must find the column of rising air, find the core

Contributed by Jill McCaw

of strongest lift and circle in it. This is a skill that develops with practice. There are clues to help find thermals. Heavy black flat bottomed cumulus will probably have lift under them. Ploughed paddocks heat faster than their green neighbours. Spotting birds or other gliders circling is nearly always a giveaway. It is a particularly joyful experience to take a thermal to cloud base, watching the altimeter climb.

Ridge lift is common in New Zealand. Many gliding airfields are sited near to a ridge that sits across the prevailing wind. Air is a fluid. Wind flowing across a ridge must be pushed up it on the upwind side. Think of how water flows over rocks. There is a little wave that is higher than the rock. Air works in the same way and ridge lift will usually extend higher than the ridge itself. Geography and wind direction plays a part as the air will flow around the ends of spurs and through gaps, but predominantly, air across a ridge flows up and over it. A glider can fly along this rising air gaining height. Long ridges like the Kaimai Ranges can let pilots run at high speed, not needing to turn to maintain height for the length of the ridge. Pilots in the Southern Alps can do the same using long spur lines down the side of lakes and rivers.

The type of lift that allowed Terry Delore and Klaus Ohlmann to complete their epic distance flights is called wave. Wave is an awesome phenomenon that happens when there is a significant ground feature, such as the Southern Alps or the Andes, sitting across a prevailing wind. Wave is the downwind ripples in the air after the ground feature and can rise to heights considerably higher



Gliders use wave (at left), ridge (centre) and thermal lift (at right) to stay aloft, as illustrated by these diagrams.

than the ground feature that triggered it. Again think of water in a stream and the standing waves you see downstream of a significant sized rock. Standing waves in the air can reach into the stratosphere, and Steve Fossett and Einar Enevoldson initially brought the Perlan Project here in 2002 in an attempt to take a glider that high. They weren't successful and the project moved back to Argentina where in 2005 they gained a world altitude record height of 15,460 meters (50,727 feet).

Daylight - the limiting factor

Because the Southern Alps and the North Island mountains of the Rimutakas and Ruahines sit across our prevailing westerlies, our wave systems can cover the length of the country. Once established in the smooth upward flow of air at the leading edge of a wave (and avoiding the downward flow in the back of a system) a glider can fly huge distances in rising air without the need to turn. Using oxygen over 10,000 ft, useable daylight becomes the only limit to the length of time a flight can take.

A consuming sport

Record breaking flights such as Delore's take a tremendous amount of skill and planning, but many club pilots make use of wave systems in combination with other lift types to fly tasks of 300 to 500 kms or simply to take themselves into scenic mountain areas. When learning to fly gliders, once the basic skills of controlling the aircraft have been mastered, it is learning to identify and use lift to take your aircraft where you want it to go that is, to my mind, what makes gliding such a consuming sport. It is the pilot and his skills against the elements. You can always improve. No two flights are ever the same.

For more information

I'm Jill McCaw and I'm the editor of SoaringNZ. I've been gliding for more than twenty five years and I still think it is the best thing I ever learned to do. See the Gliding New Zealand website for the location of your nearest club and come out and give it a try yourself. For feedback, queries and to subscribe to SoaringNZ, email me at soaringnz@mccawmedia.co.nz. Ohlmann's flight trace can be downloaded from <http://records.fai.org/file?i=1&f=15679> Delore's can be downloaded from <http://records.fai.org/file?i=1&f=15678>



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