

nothing at ground level. "We were a little bit high, and I couldn't turn; I wasn't sure about the time, and a whole circle would need 30 seconds. So I turned right and left to use up some height. It was a very fast landing but the runway is long."

Alois, an Argentinian with 4,000 gliding hours who flies from the Condor club near Buenos Aires, says: "When we landed we cracked open two bottles of mineral water! But later on we made it into the town and had a proper celebration with red wine." Klaus adds: "We needed two bottles of wine to calm down!"

Alois was chosen to fly on November 26 with Klaus after helping with work on the Stemme S10-VT's landing gear. "I said: 'tomorrow will be a good day, let's fly together' – and then we made this flight," explains Klaus. "It was unbelievable! Alois is a very good flatlands pilot but had never flown in these conditions. At 65, he was like a child. He was thrilled and for him it was really magic. To fly at 280-300km/h and climb at 5m/s; he couldn't believe it." Alois adds: "The last part was the most spectacular, and flying over snow-covered mountain ranges was beautiful."

The lowest point after launching from San Martín de los Andes was 2,800m at Zapala, an airfield about 150km away. Klaus' only mistake during the flight, he says, was falling out of the wave into turbulence. ("We had good luck," he adds, "and found 2m/s.") The highest point was around 6,500m. "With 500-700m more than I wanted, it was not possible to fly faster. You are always so close to the flight limits. I respect a speed of something like 200km/h at 6,000m."

The rarefied atmosphere and the cold are also problems. "You cannot economise on oxygen," says Klaus, "because all your decisions – and there are many – must be good. We use oxygen from the ground up: two bottles of five litres at 200 bars for each pilot." And how does he keep warm? "The onion system," he replies. "You need some layers at -20°C in the cockpit." Five, in fact. A solar panel recharges the main battery (for the engine) and the auxiliary

one (which powers the instruments). A third battery runs the logger.

The engine, seen by the uninitiated as a safety feature, is nothing of the sort. "At -35°C outside," says Klaus, "not even a car motor would start". Instead, he has noted several small airstrips in the mountains, and will land if necessary to warm up the engine for a retrieve: "You cannot say: 'I'll use the motor if there's nowhere to land,' or one day you will have a problem."

The story of this flight begins four years ago, when Klaus visited Argentina with his wife, Sidonie, an airline pilot. They instantly saw its potential and returned in 1998.

"That was my first experience here of wave," says Klaus. "It was great, and I saw the chance of making the biggest flight in the world. If there's anywhere you can do it, it's here: the country is so big and the conditions are so good. But you need local experience, even if you can already fly wave cross-countries."

It took three years to realise his dream. In 1998, he spent five weeks at the airfield of Chos Malal, and seven more in 1999, when he and Sidonie flew 1,833km (his previous longest flight). He decided to stay for three months in 2000-01, flying from San Martín, partly to test conditions in January. October might also be good for distance flights, though strong winds are a risk (once in the Rio Grande Klaus had an indicated airspeed of 100km/h and a groundspeed of 20km/h – backwards).

### **'To make cross-country flights in wave over wild country – that's very special,' says Klaus**

During November and December 2000, he thinks there were more than twenty 1,000km days; and two when more than 2,000km could have been flown. The first was November 26; the second, Christmas Eve. On the latter, he managed 1,700km.

But he warns flatlands pilots not to rush to Argentina in the hope of breaking records. He points out that no-one else has flown 1,000km there. "It is easy," he says, "to climb to 5,000m in wave, but to make cross-country flights over wild country in it, that's very special. Of course if you have good wave cross-country experience you will easily do 1,000km, but you need to know the local conditions. The day I did the 2,463km, pilots at Chos Malal didn't fly because they said that it wasn't a good day. When I passed there I had 11m/s."

What does he think is the longest flight possible? Perhaps, he says, he could have started 45 minutes earlier, or abandoned his O/R attempt 50 minutes sooner. An hour could be worth 150 to 200km. So, if all factors were favourable, 2,600km might be on. Flying for 14 or 15 hours without a mistake is no joke, he adds. "You need a very good day and especially good luck, too. Some people talk about 3,000km and I know that's not so easy. They don't

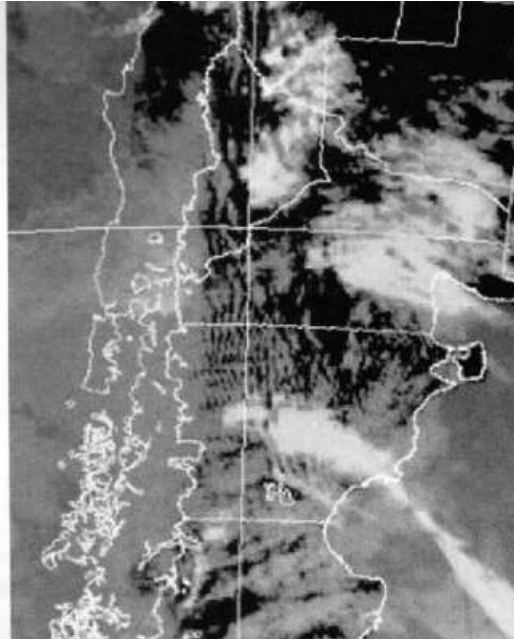


Figure 1: Conditions at 15.00hrs, November 26, 2000

## **Forecasting for long distances**

**ON THE DAY** Klaus flew his sensational record, most members of the Mountain Wave Project (MWP) team were gathered in a small town in southern Germany, where Wolf-Dietrich Herold gave a talk about the experiences and achievements of the MWP's 1999 expedition to Argentina, at the annual get together of OSTIV's meteorological panel.

Over the previous fortnight I had provided Klaus with prognostic charts of wind and humidity, using the regional wave forecast of the RBL (Relocatable Boundary Layer) model from the German Military Geophysical Service (see Figure 2, overleaf).

Pre-frontal situations are most favourable for long flights in the Andes. However, the often associated rapid increase of low-level wind speed and a marked advection of humidity in the Esquel region frequently pose difficulties. Rarely can this wall of clouds be penetrated towards the south (see photograph, overleaf).

The challenge, then, is to filter out and forecast situations where, in addition to the necessary south-westerly flow increasing with altitude, a rather strong gradient exists up to Chos Malal, about 300km to the north-east. Our observations so far indicate that there are perhaps one or two days during November and December displaying this favourable combination.

Thermals are not a viable alternative to wave lift. The rather wet valleys to the south are much less active convectively than the dry Pampas to the east. Furthermore, a frequent weak cold air advection from Chile tends to weaken thermal development considerably. Local synoptic observations and radiosonde data come from widely scattered stations and are rarely representative of the complex topography.

René Heise, MWP Meteorologist  
Translated by Wolf-Dietrich Herold

## **the bad weather**

back. The groundspeed rarely dips below 250km/h as we race north.

Then I face a critical decision: to head to the airfield at Chos Malal for a landing – wasting a lot of kilometres – or to gamble on the tailwind and try to make it north to Malargue, risking arriving too late to land in official daylight. At 20.10, with sunset at 20.34, to decide to fly another 180km would be a truly gutsy move. Our actual groundspeed of 300km/h pushes me towards an all-or-nothing bid. Just in time, after 14 hours and 20 minutes, our miracle bird touches down in Malargue.

See overleaf for a map of the record flight