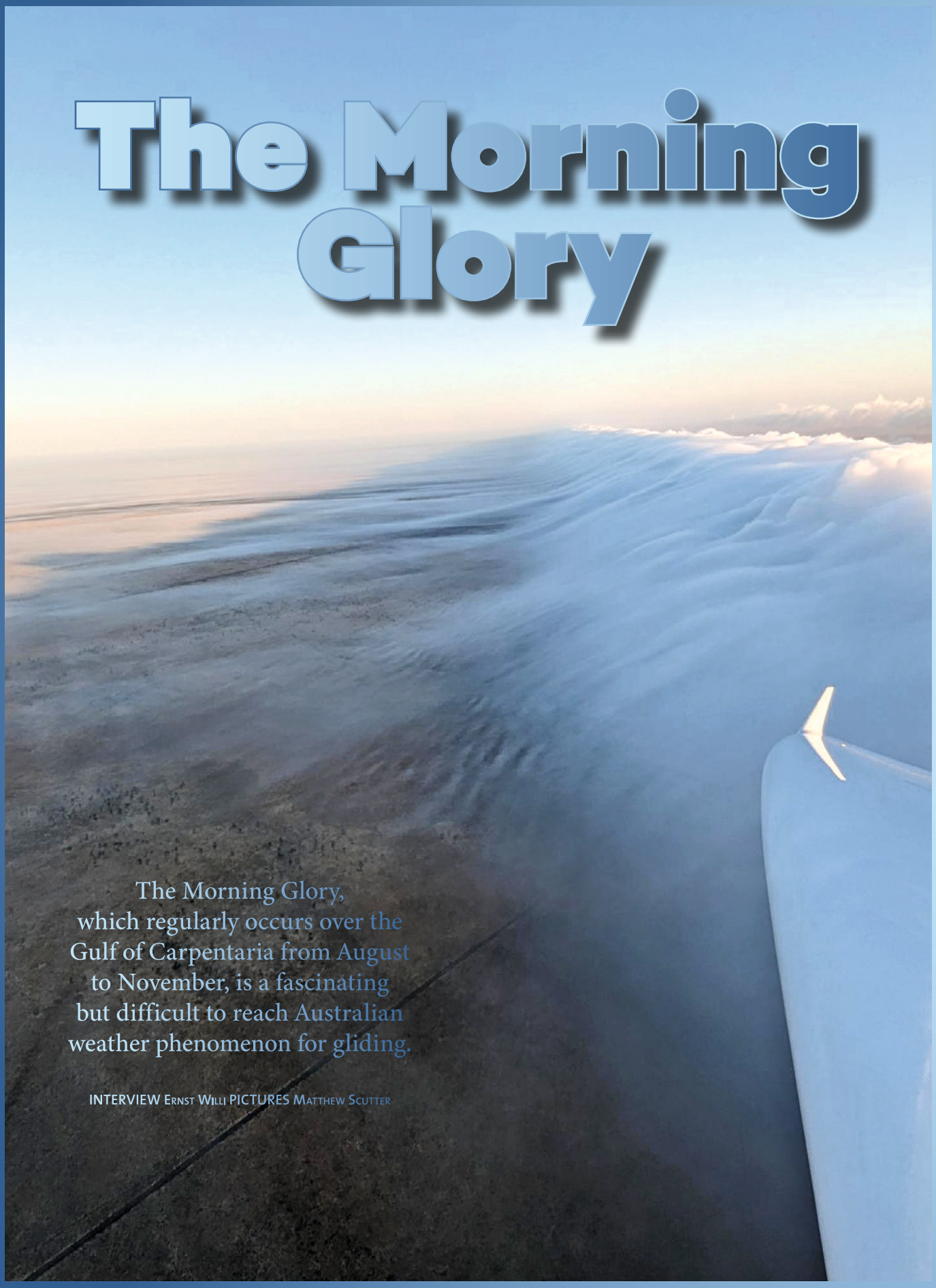
The Morning Glory



The Morning Glory, which regularly occurs over the Gulf of Carpentaria from August to November, is a fascinating but difficult to reach Australian weather phenomenon for gliding.

INTERVIEW Ernst Willi PICTURES Matthew Scutter

Left The Morning Glory literally sucks the moist air close to the ground into its wave form. Above A powerful meteorological phenomenon: the Morning Glory can extend over several hundred kilometers. **Bottom** Preparations for take-off begin long before first light, as the Morning Glory forms overnight from the sea breeze of the previous day

The Morning Glory is created by the special geographical situation of the Cape York Peninsula, over which a pronounced sea breeze forms during the day from both coastlines. During the night, this breeze travels across the peninsula at a ground speed of 20 - 60 kmh and forms the „Morning Glory“ cloud sausage, which is up to 1000 km long, long before the first sunlight. Matthew Scutter recently towed his Diana (FES) from Brisbane 2100 km through Queensland and the outback of the Northern Territories to Burketown to fly the Morning Glory in the first light of day. segelfliegen magazin asked him the following questions afterwards:

What is the difference between the Morning Glory and the wave systems over the Alps/Andes?

The Morning Glory is a soliton, or undular bore. That basically means, a wave that travels, like in the ocean or a radio wave. It is a unique physics phenomenon entirely distinct from the standing wave systems in the lee of mountains.
They can be formed by fronts, storm outflows and many other situations. Almost certainly you have experienced «Morning Glories» without knowing it before.
What is unique about Australia is we have the Cape York Peninsula, which for a couple of months each year provides the ideal conditions not only for it to form but also for it to be marked by a cloud and become visible.

What makes flying in the Morning Glory so spectacular?

The Morning Glory was easily the most picturesque moment in all my thousands of hours gliding. The size of the Morning Glory as it bears down on you is daunting, more than 1km tall with the air ahead totally still.
Underneath there is extreme turbulence and violent wind shear, gusting more than 30kts. Behind is calm with a gentle breeze following.
There is nothing else that is close to flying a silky smooth carpet ride along it‘s front, with the fog ahead of you getting sucked up into it.

What possibilities do you see for using the Morning Glory for long-distance flights?

It is only just now that we really have the technology through SkySight to predict the Morning Glory clouds accurately enough that it might be possible to set a task. Certainly 100km triangle or potentially 300km O/R tasks are achievable. A very long free or even declared 3-TP distance task is also achievable. Operating only during daylight, potentially you could fly 600km on the Glory, then transition to thermals and fly potentially 1000km more. If you are equipped to fly Night VFR, you could potentially start flying the sea breeze the day before as it turns into the Morning Glory, fly it all night, then fly back to the east to join the sea breeze again for the following day!

How do you assess the risks of a long-distance flight that could take you far out to sea and over the Australian outback at the same time?

Outlandings are simply not an acceptable risk around Burketown. Destroying your glider would be a certainty, and the rescue services are limited to non-existent. If you landed far out to sea, I don’t know who would come for you. You must either trust your engine to start, or land on an airstrip. Fortu-

At first light, the Morning Glory pilots are already flying in the wave. The take-off takes place before sunrise in the humid, colder air close to the ground. A misted canopy often makes for an „uncomfortable“ early start. You can enter the Morning Glory just a few hundred meters above the ground

nately there are some airstrips in the vicinity which let me extend my flights along the Morning Glories out of range of Burketown.
You can feel very safe up at a nice altitude above the Morning Glory, but if you have to jump over the back of it to return home, you may find sink just as strong on the lee as the lift on the front, so you need a large safety margin.

Is the Cape York Peninsula sea breeze system also used for long-distance flights over land?

As far as I know, no one has really flown gliders XC in this area. There are very few places to land and very few towns. It is oppressively hot for most of the year. There are certainly good possibilities for long and fast XC here, the only significant limitation is the length of the day is quite short as it is so close to the equator, only 12 hours even in summer.

What type of glider is best suited to use the Morning Glory?

Good question. The best glider is the glider you have, and I don‘t think the ideal glider exists. I ‚only‘ have my Diana 2-FES, which has very limited range, so I was unable to go more than 100km from Burketown.
The lift is (usually) stronger down lower, which means even in a low-performance glider you can fly lower on the wave and still achieve a good speed, but the safety risk is higher. You must have a very reliable engine, because the wave will

Cross-country flights close to the crest of a wave are also possible, but this means a higher risk of making an outlanding if you lose the wave or if it breaks up partially or completely

quickly take you places without landing options. You could have an extremely reliable electric engine, but then your range is not good enough for longer flights. A petrol engine can bring you home from a lot further away, but with more risk. Probably the best glider is some future iteration of a Stemme, or something like my Diana but with significantly more battery capacity.

Can motorless gliders be used at all today; is it possible to take off from Burketown with an F-tow?

It's possible, and I believe it has been done, even with hang-gliders, but I think you will have very short flights and the trip will not be worthwhile.

Perhaps 1/3rd of days there are Morning Glories, and of those only another 1/3rd come over the land near Burketown. So you could be waiting a long time for something that might not happen in your trip.

How can local glider pilots predict the emergence of the Morning Glory?

The traditional forecasting method was, the day before would have a strong sea breeze, and the fridges at the pub in Burketown would frost over with dew in the late evening. These were both strong indicators that a visible glory would come. Now of course we have technology such as SkySight, which can predict the Morning Glories even several days ahead with enough accuracy to potentially plan a task on the Glory. We also have the amazing Himawari satellites, which let us see even invisible Morning Glories approaching. By 2am you can already see the Morning Glory advancing.

Apart from the north-east of Australia (Burketown, Gulf of Carpentaria), do you think there are other possible locations where the Morning Glory phenomenon can occur?

As far as I know, there is nowhere in the world where they form as consistently as Burketown. I believe from SkySight forecasts though that they are happening ‚in the blue' much more regularly than is known, and in combination with SkySight and new ultra-high-resolution satellites, it could be possible to utilize them.

Matthew, many thanks for the interview.

Our author:
Founder of Skysight, 32 years old, software engineer, lives in Brisbane, often visits Europe.

Sporting achievements

1. **1st place, Junior World Gliding Championships, Narromine**
1. **Place, Rieti, Coppa Intern. del Mediterraneo**
1. **Place, 3x Hahnweide competition**
1. **Place, eGlide St. Auban, Varese and Großrückerswalde**
3. **Place, World Championships in Montluçon-Gueret**

Australian champion as a junior and in the standard-/ 15-m-/18-m- and open class