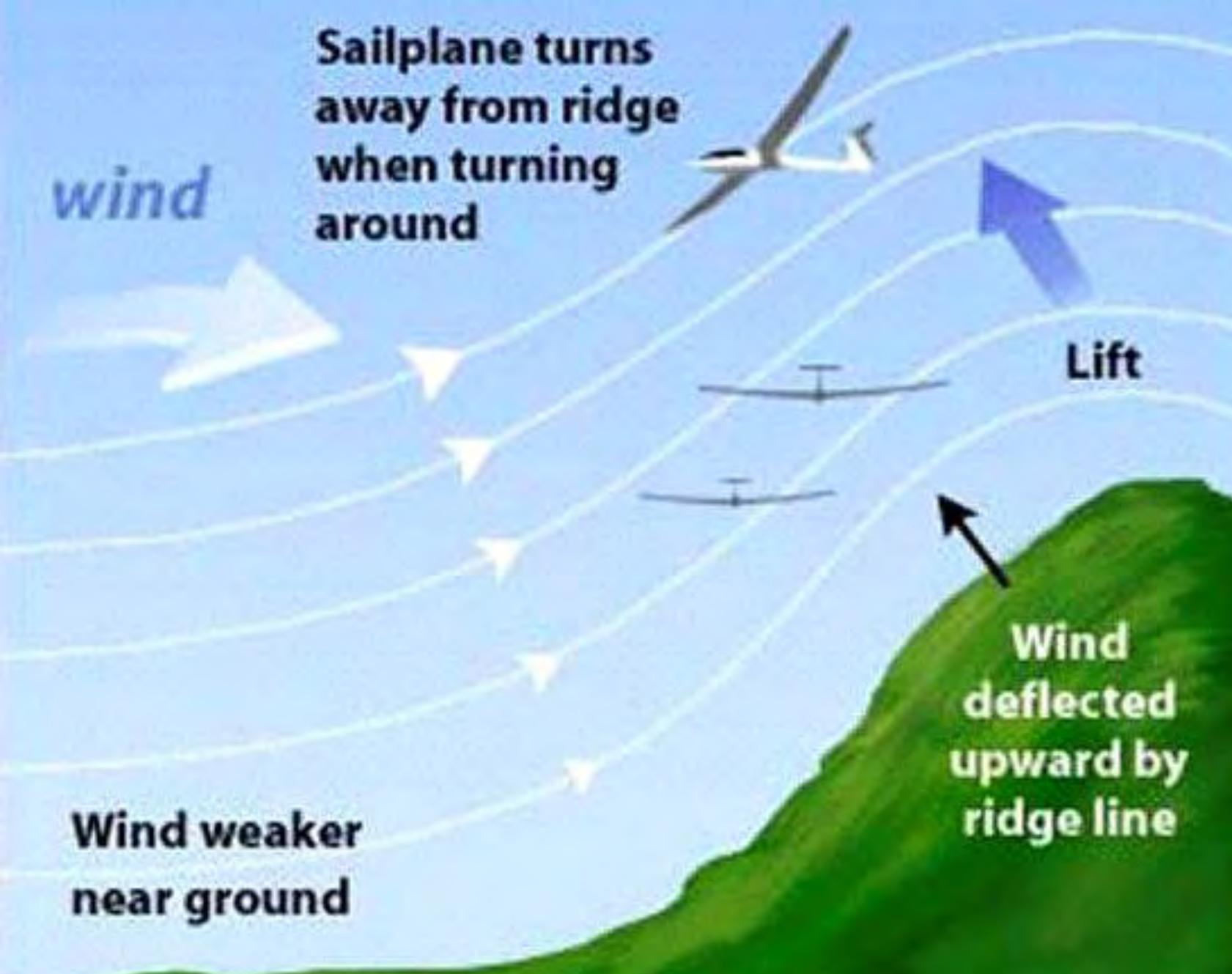


Ridge and Wave Flying at Porta Westfalica

Tudor Văcărețu, HLB-Streckenflugseminar, 7th of February 2026





How does Ridge Flying Work?

- Ridge flying at Porta takes place at low-altitudes.
- The way of thinking is different compared to a thermal cross-country flight.

Rules of ridge flying

- Always fly a controlled turn.
- Keep at all time a safe airspeed.
- Don't circle under the ridge top. Always turn away from the ridge. Always make ∞ turns under the ridge top.
- Aircraft with the right wing towards the ridge has right of way.
- Aircraft with the left wing towards the ridge has to give way .
- Overtaking a glider: only if really necessary, overtake on the valley side, by turning away from the ridge.
- Have a good lookout at all times.

Aircraft with the right wing towards the ridge has right of way.

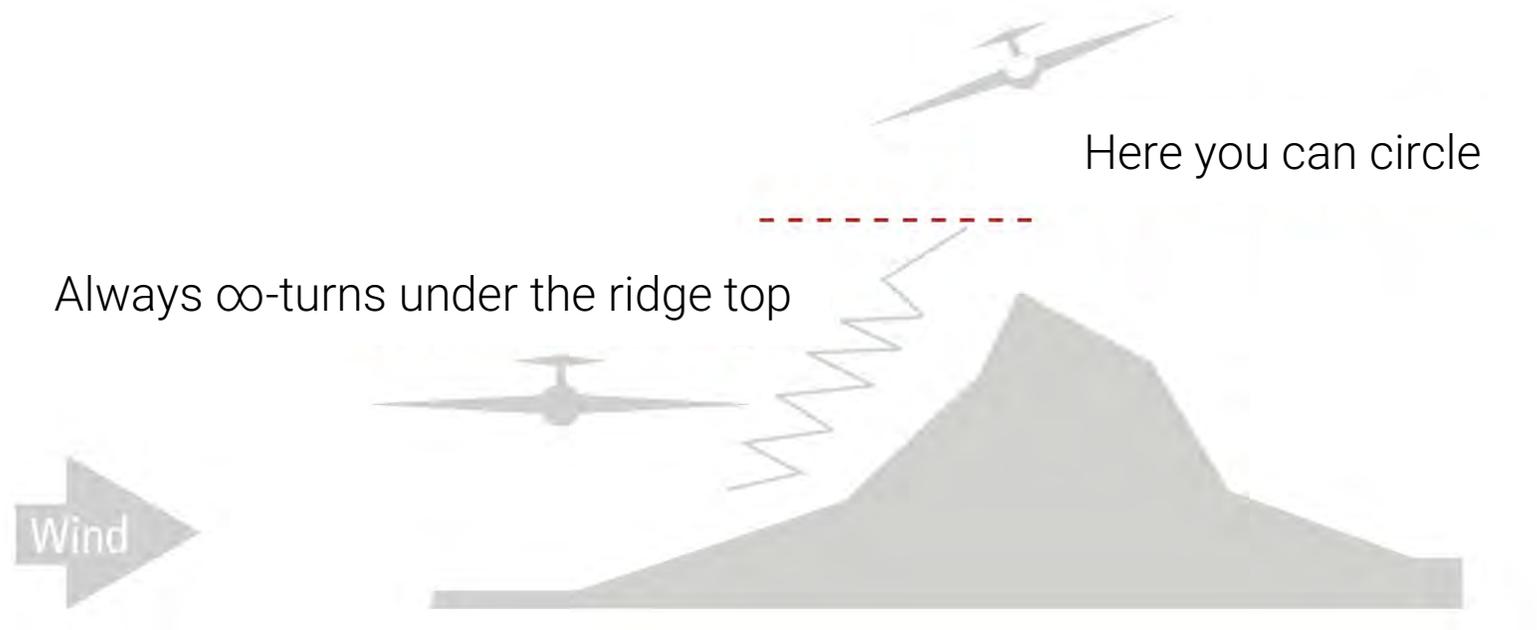
Gives way by turning away from the ridge



Has priority

Source: Hang- und Welle, Arndt Hovestadt, 2005

Always make ∞ turns under the ridge top.



Source: Hang- und Welle, Arndt Hovestadt, 2005

Don't forget the crab angle



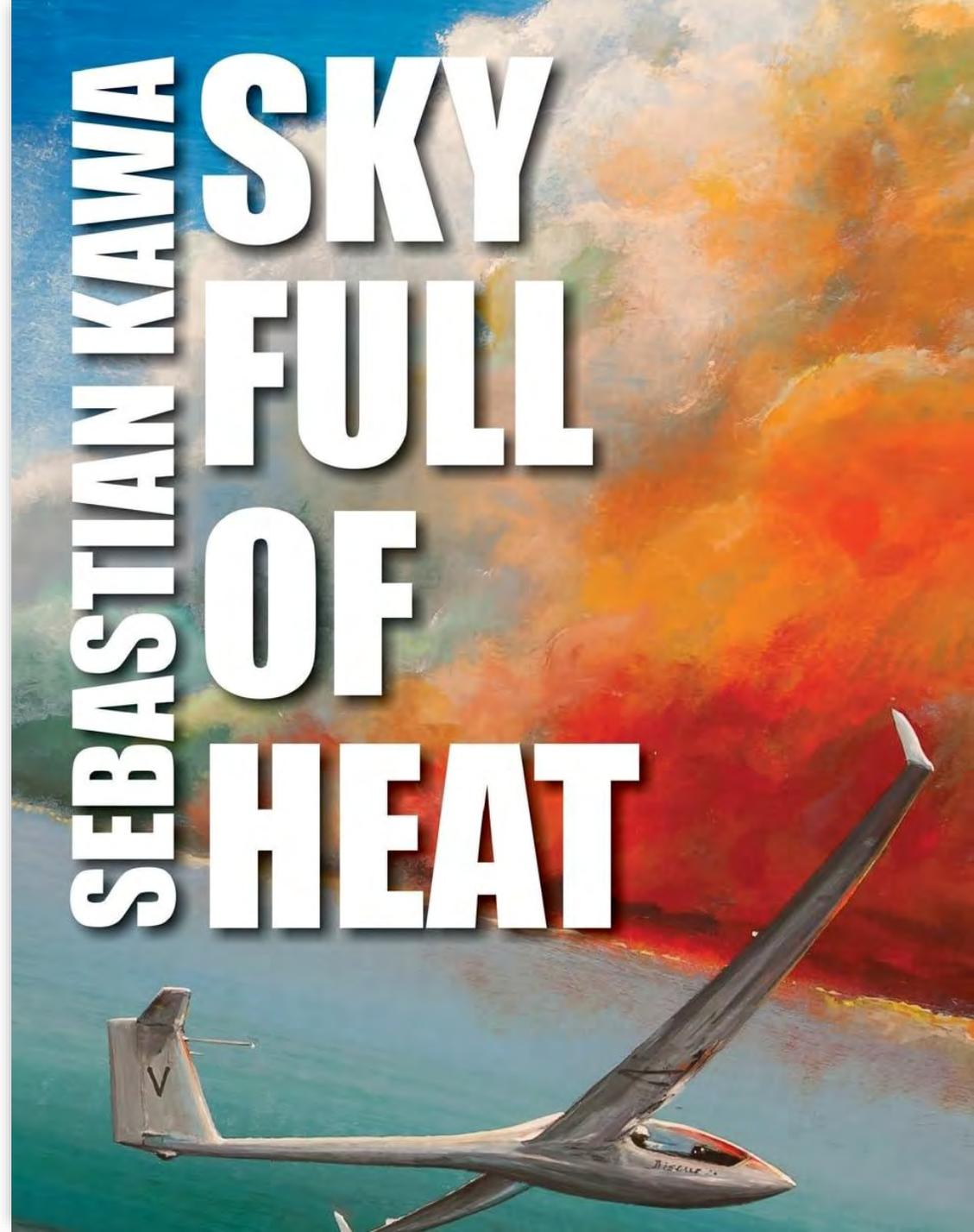
Why Ridge Flying?

- It is nice.
- First form of lift exploited by glider pilots.
- It makes you a better glider pilot.



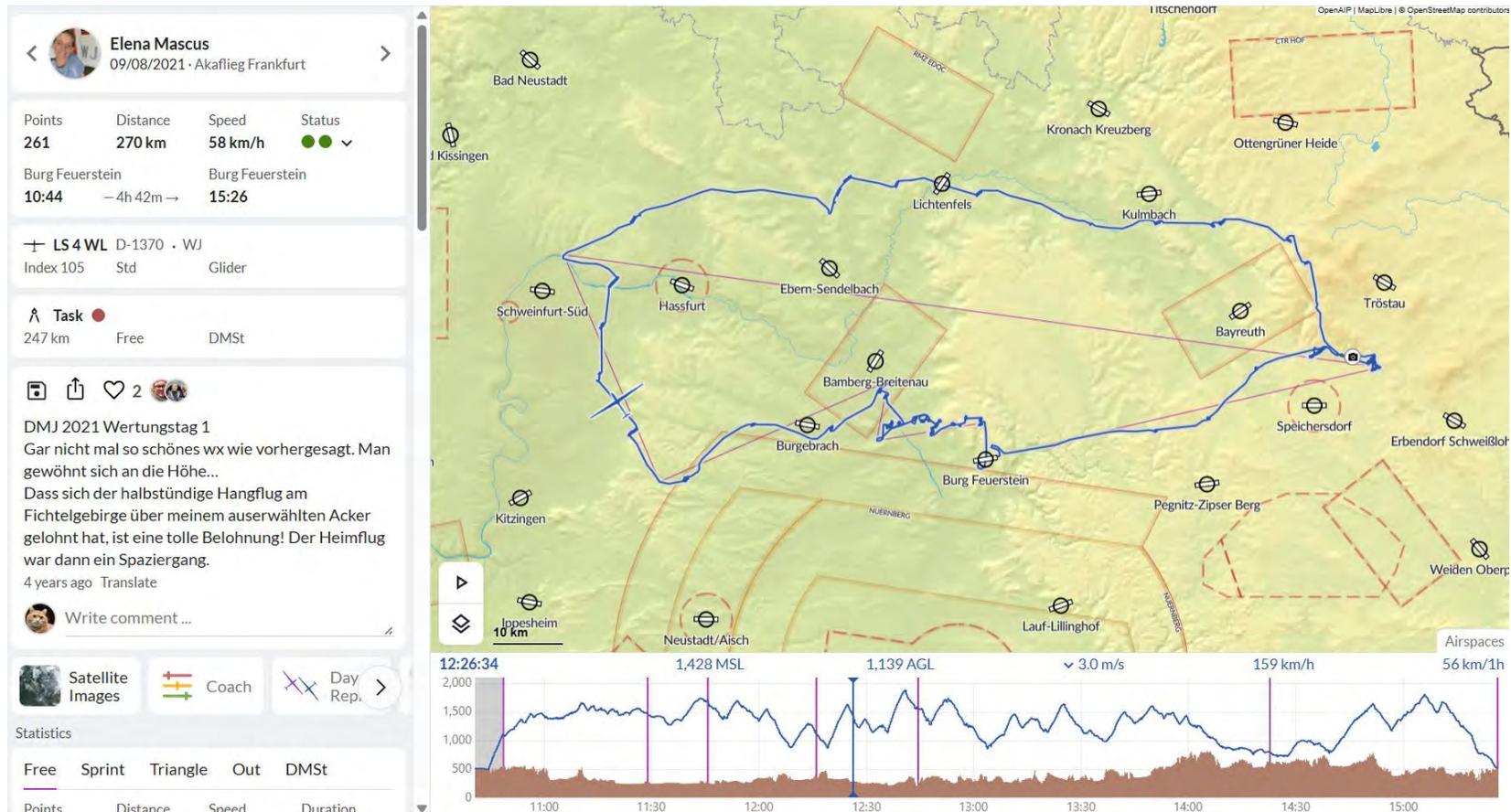
It makes you a better glider pilot

- In the book Sky full of heat, Sebastian Kawa: “Effective use of lift close to a slope always requires extremely precise flying, irrespective of the mechanism creating the lift....Ridge flying is crucial during a glider pilot’s training as it forces him to perfect his flying technique...Put simply, one hour of difficult ridge flying is the equivalent of 10 hours in thermals for a student pilot.”



Why Ridge Flying?

It can save your cross-country flight if you know how it works





Why Ridge Flying?

- Nice atmosphere on the airfields that organize ridge flying days, and an opportunity to meet other motivated glider pilots.



Why Ridge Flying?

- Beautiful views.



Why Ridge Flying?

You can fly the whole year round.



How can I start with ridge flying?

- Small steps:

- 1) First start flying locally (for me personally, when I started ridge flying I had little cross-country knowledge and the ridge next to my local airfield was too small for distance flights anyway).

- 2) Fly a little bit further local (for instance at Porta, on the main ridge, but still in glide range of the local airfields: Porta-Westfalica, Bückeberg-Weinberg, Rinteln).

- 3) Cross country on the whole ridge: for instance at Porta-Westfalica, Weinheim-Bergstraße, Oerlinghausen, etc.

Example of local ridge flights

Flight information - Tudor Vacaretu (RO) - 18.10.2014

Type of glider: [Ka 8](#), Takeoff location: Cluj Napoca Some (RO)

OLC-Plus [Speed/League](#) [Destination](#)

Flight details

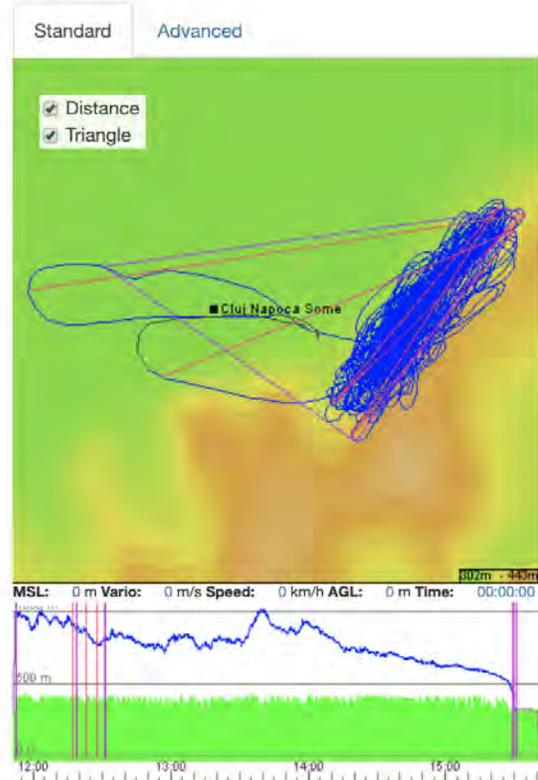
	Distance	Triangle
Points for the flight	16.2	14.03
scoring distance	10.7 km	5.5 km
Speed	3.0 km/h	1.5 km/h
Duration	03:36:58	03:38:06
Scoring class	club	
Scoring start	11:52:50	
Scoring end	15:30:56	
Index:	76.0	
Club	Romanian Airclub	
Date of claim	18.10.2014 17:29:06	
state	IGC-File: V Flight: S	

Flight path

MeetingPoints

TopMeteo - Weather Charts

Map



Flight information - Tudor Vacaretu (RO) - 19.04.2015

Type of glider: [Ka 8](#), Takeoff location: Cluj Napoca Some (RO)

OLC-Plus [Speed/League](#) [Destination](#)

Flight details

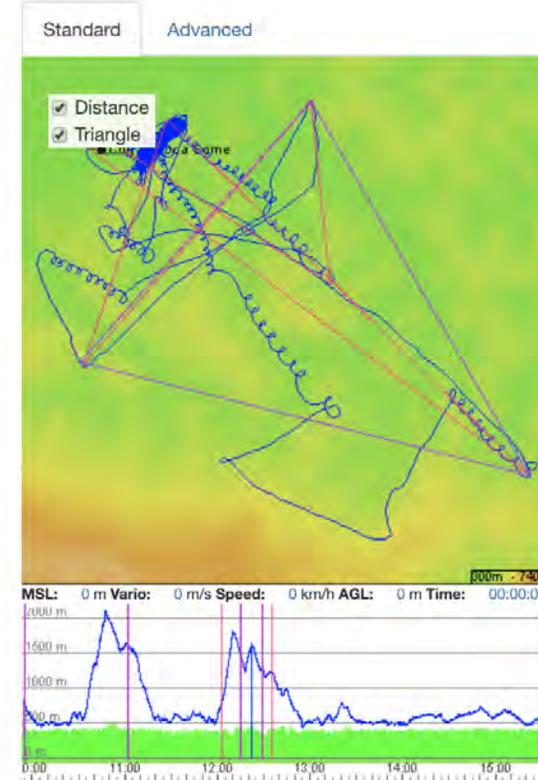
	Distance	Triangle
Points for the flight	70.08	59.49
scoring distance	45.2 km	26.8 km
Speed	8.0 km/h	4.7 km/h
Duration	05:39:12	05:39:15
Scoring class	club	
Scoring start	09:55:12	
Scoring end	15:34:27	
Index:	76.0	
Club	Romanian Airclub	
Date of claim	19.04.2015 16:59:57	
state	IGC-File: V Flight: S	

Flight path

MeetingPoints

TopMeteo - Weather Charts

Map



Example of extended local ridge flight

Flight information - Tudor Vacaretu (RO) - 07.11.2015

Type of glider: SZD 51 Junior, Takeoff location: Porta Westfalica (DE / NW)

OLC-Plus Speed/League Destination

Flight details

	Distance	Triangle
Points for the flight	178.6	172.04
scoring distance	154.8 km	19.7 km
Speed	52.8 km/h	5.2 km/h
Duration	02:55:54	03:47:10
Scoring class	club	
Scoring start	11:06:18	
Scoring end	14:54:27	
Index:	90.0	
Club	ZVC Eindhovense Studenten	
Date of claim	07.11.2015 22:10:39	
state	IGC-File: V Flight: S	

Map

Standard Advanced

Distance
 Triangle

Porta Westfalica

MSL: 0 m Vario: 0 m/s Speed: 0 km/h AGL: 0 m Time: 00:00:00

500 m

12:00 13:00 14:00

11m - 335m

Flight path

MeetingPoints

TopMeteo - Weather Charts

The Weather @ Porta Westfalica



Rain



8/8 Cloud Cover



Sunny with Clouds

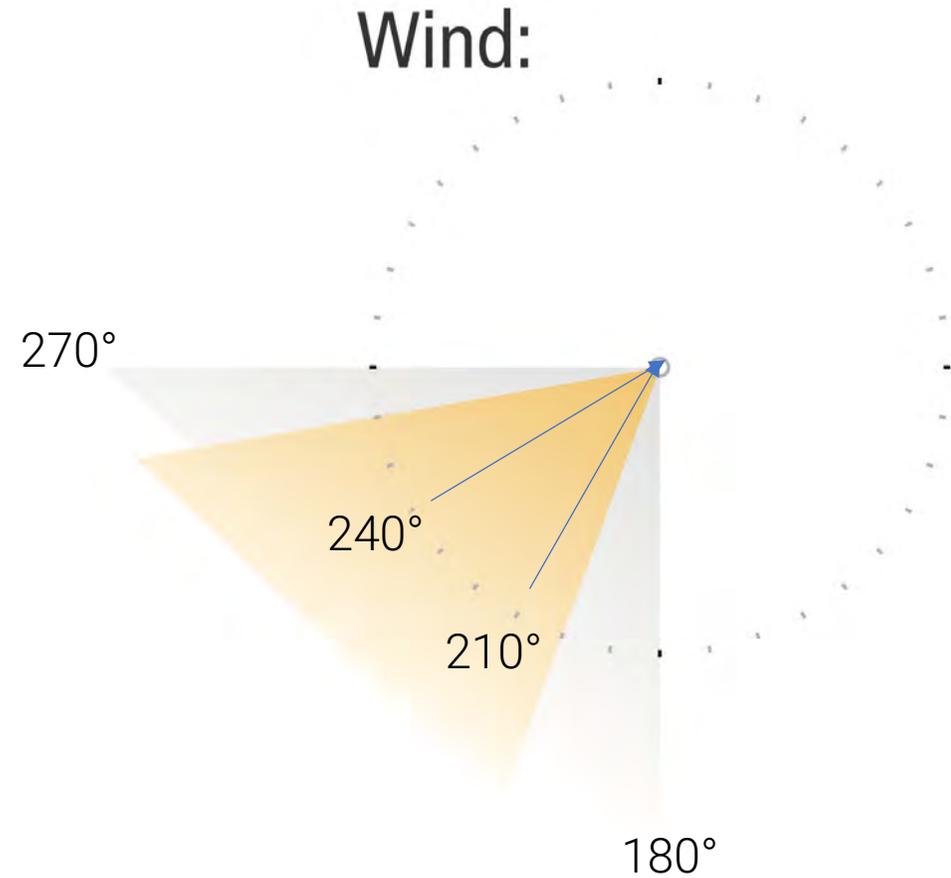


Blue



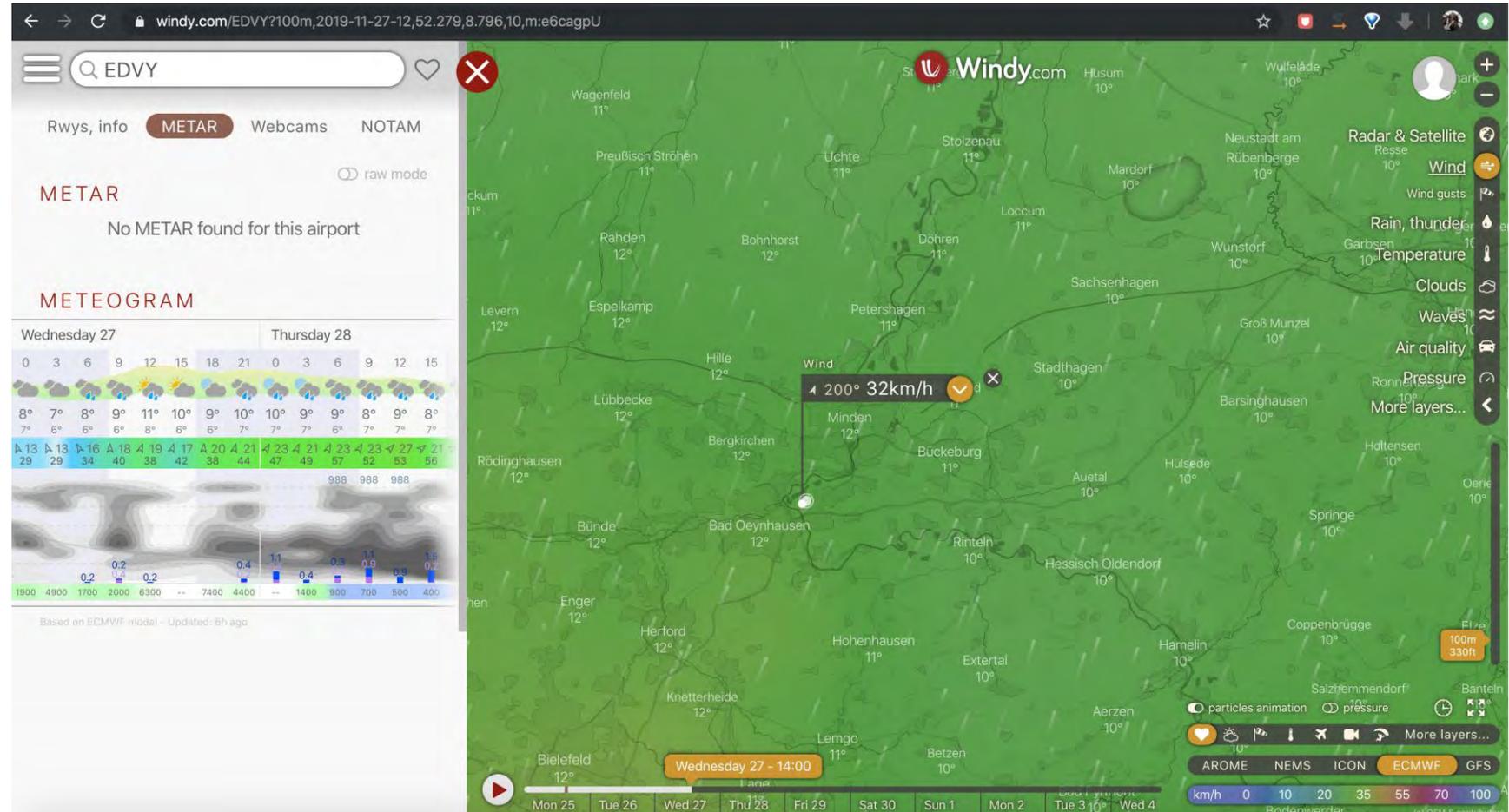
The Weather @ Porta Westfalica

- Wind: 210°-240° at 30 km/h - 35 km/h is ideal.
- But I've also experienced other variations.
- For flying at Porta-Westfalica on the ridge, you will need: Good wind direction and wind speed, no heavy rain, and sufficient clearance between the ridge top and the cloud base.



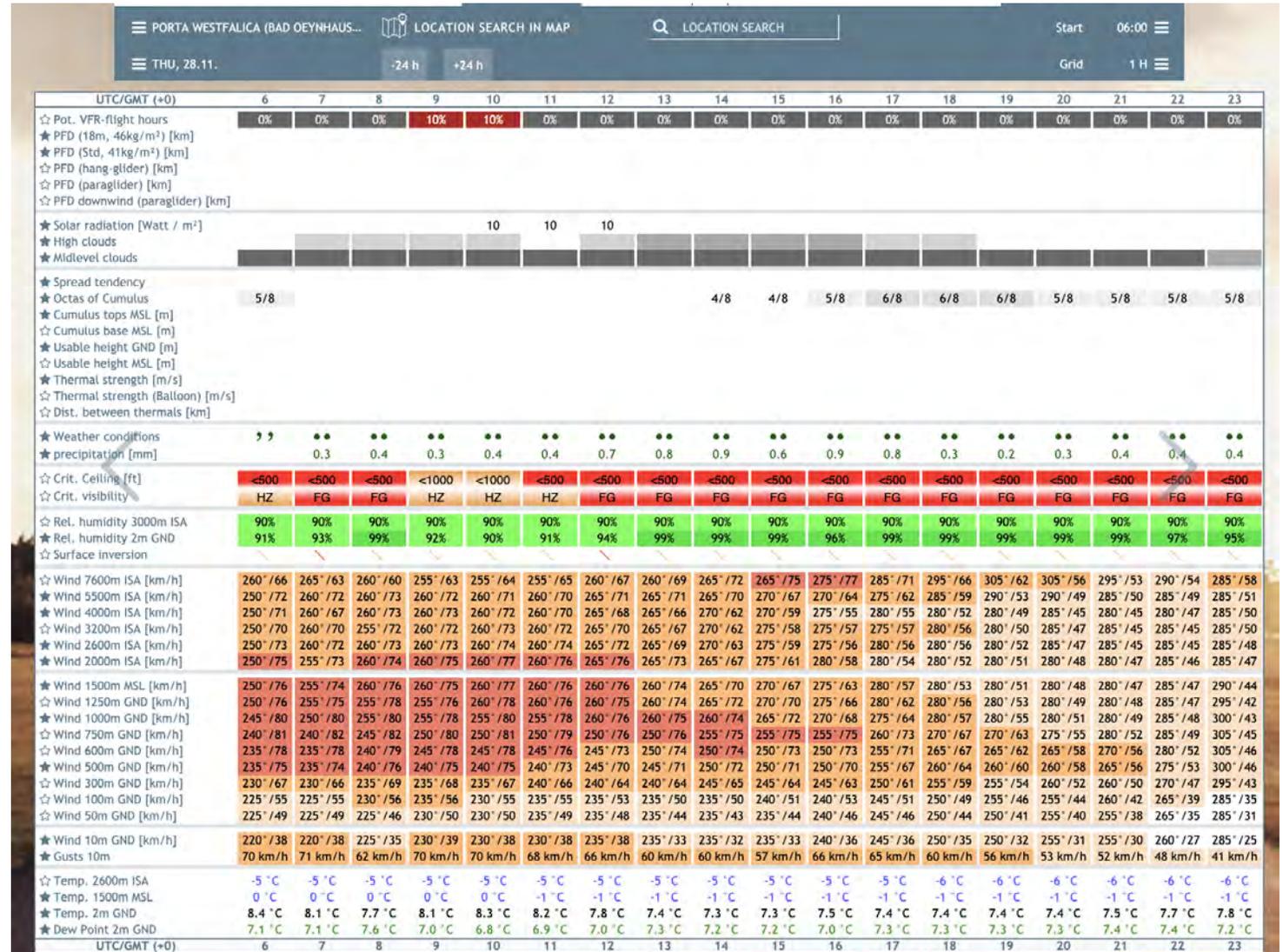
Checking the Forecast

- First, a quick look at Windy: Wind Direction, Wind Speed, Cloud Base, Cloud Cover, Rain.



Checking the Forecast

- Good wind speed and direction but too much rain and low clouds are forecasted.

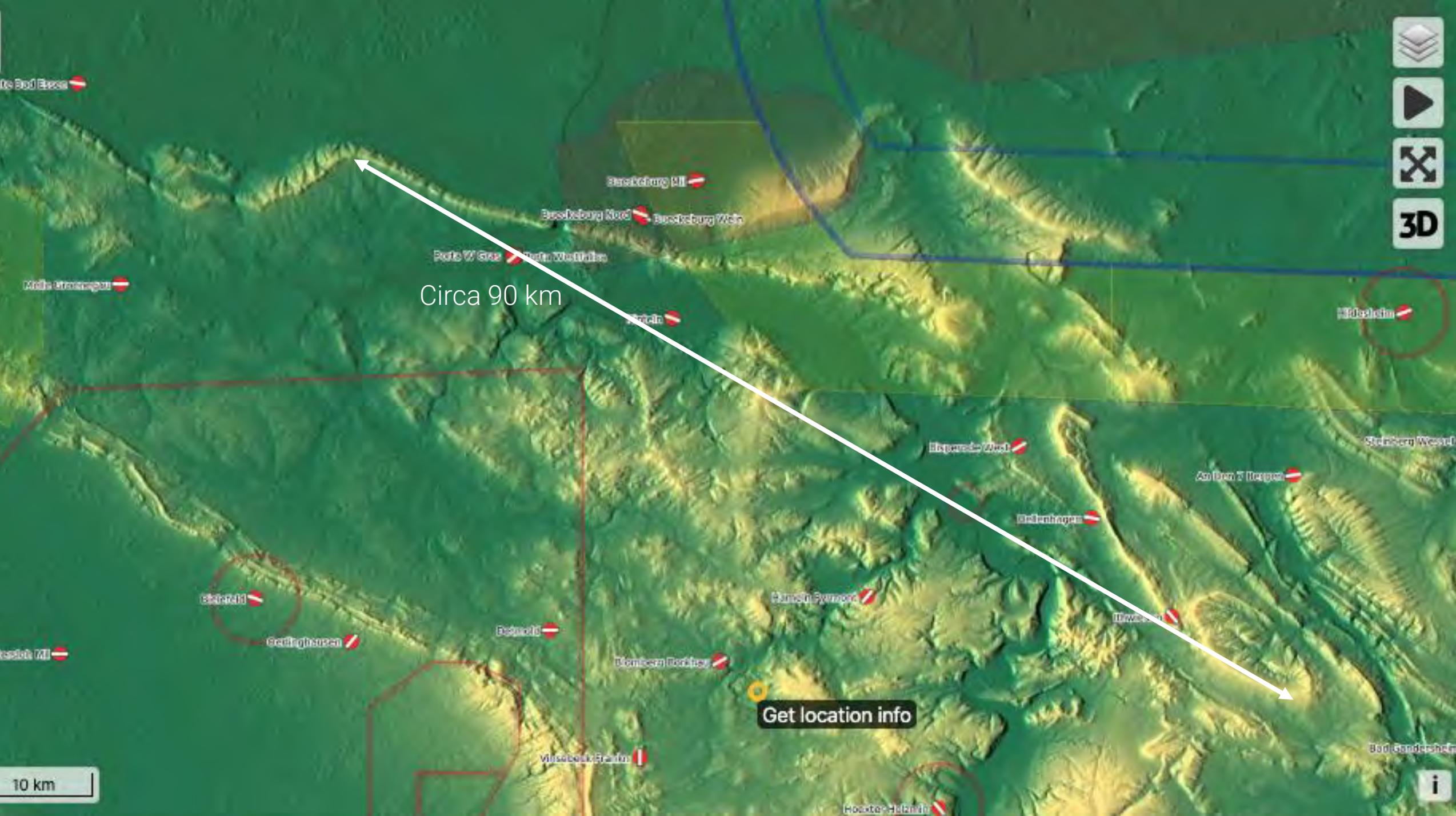


How do I get started with ridge flying at Porta?

- Do you have no experience with ridge flying? Ask an experienced instructor or glider pilot to take you first in a double seater.
- Do you have ridge flying experience? (Do you also have cross country experience and experienced with outlandings?).
- Do you have a glider available and a car with a tow hook?
- Think about arranging a retriever to come with you as well.
- Ask a club near Porta-Westfalica whether there is a possibility to launch.

Take off options around Porta-Westfalica:

- Porta-Westfalica
- Bückeburg-Weinberg
- Rinteln
- Bisperode
- Hellenhagen
- Ithwiesen
- Other (further) options: Melle or Oerlinghausen



Circa 90 km

Get location info

10 km



de Bad Eisen

Wille Gromspatz

Wald 711

Wald 711

Geddinghausen

Eschold

Wiesebeck Brunn

Wormsberg Rottbus

Münch Pyrmont

Hoexter-Holzlin

Burscheburg III

Burscheburg Nord

Burscheburg West

Park W Gasse

Stufe Westhofen

St. An

Hilgards West

Bedenhagen

Am Brun 7 Dargen

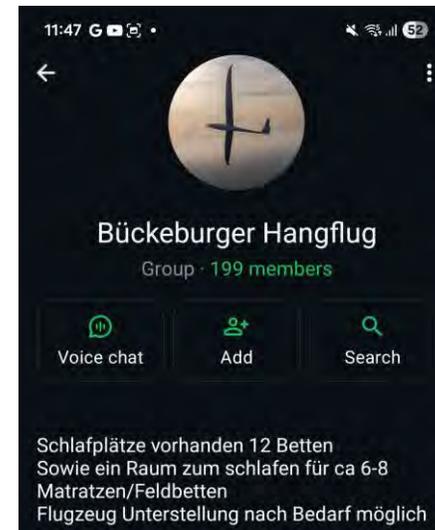
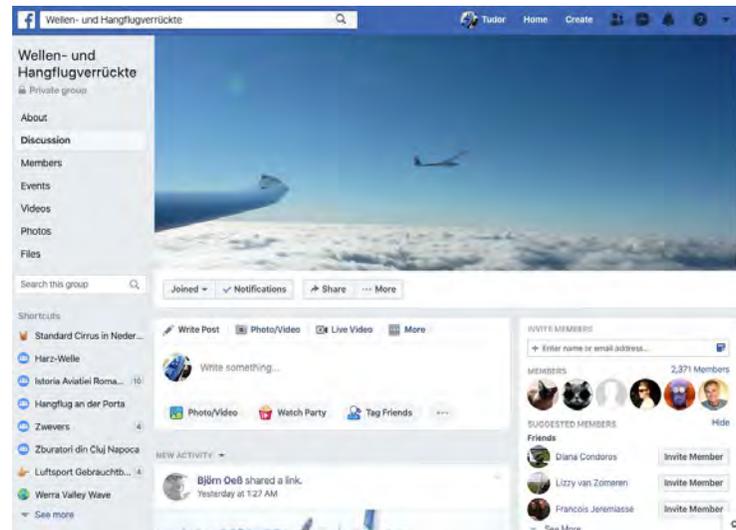
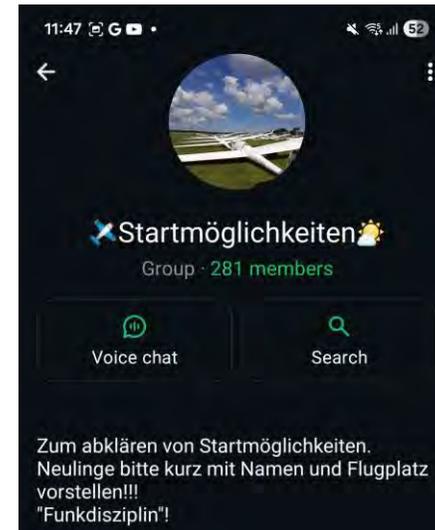
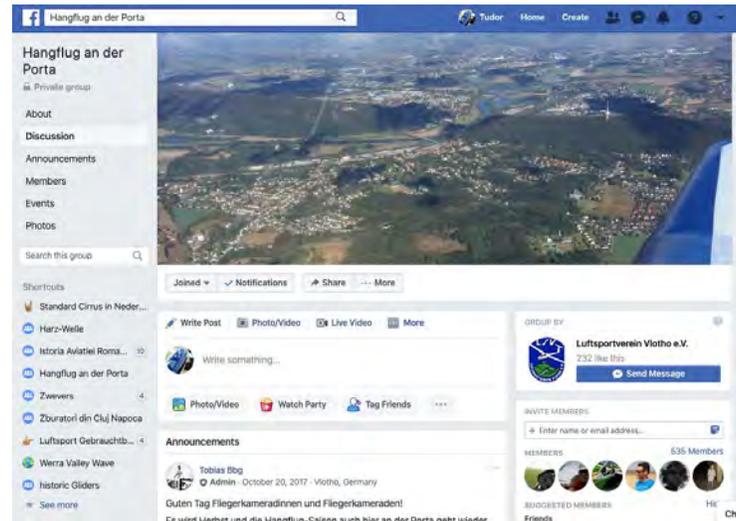
Steinberg West

Diw...

Bad Gandersheim

Waldstein

How can I find out about launch possibilities?



How can I prepare for the flight:

- Meteo Check.
- Subscribe/enroll/announce your intention at the airfield for takeoff possibility.
- Do you plan to drive in the evening or morning? Will you have enough sleep? If not think of driving in the evening and sleep at the airfield or hotel.
- Distance of closest/furthest airfield from Hessen Bundesland:
Der Dingel – Porta (140 km). Heppenheim – Porta (377 km).

How should I prepare before the flight?

- Is my glider ready? Technical status, Logbooks, Battery, TE tube in their place, etc.
- Food, drinks? (Flights can be long, > 10 hour flights possible)
- Money? Prepare some cash for takeoff costs and airfield fees + some reserve in case of an outlanding.
- Your documents: ID, SPL, etc. (also if no one asks for them, they are good to have)
- Clothing: In the winter it can get very cold, so you should be well dressed. Alternatively, in the other seasons, especially on the sunny days, it can be warm. So don't overdo it.
- Take an extra pair of socks and shoes (in case you get wet shoes before takeoff).

I arrived at the airfield, now what?

- Ask before driving on the field where you can drive/rig. The airfield can be wet, and the local members won't be happy if you leave your car tracks in the field.
- Rigging: Leave the stress behind and take your time to rig.
- Put your glider in the takeoff queue, and make sure you are ready to step in for takeoff. Don't let the queue wait for you. And have the money with you, because this is most of the times the moment when you will be asked to pay for your launch.

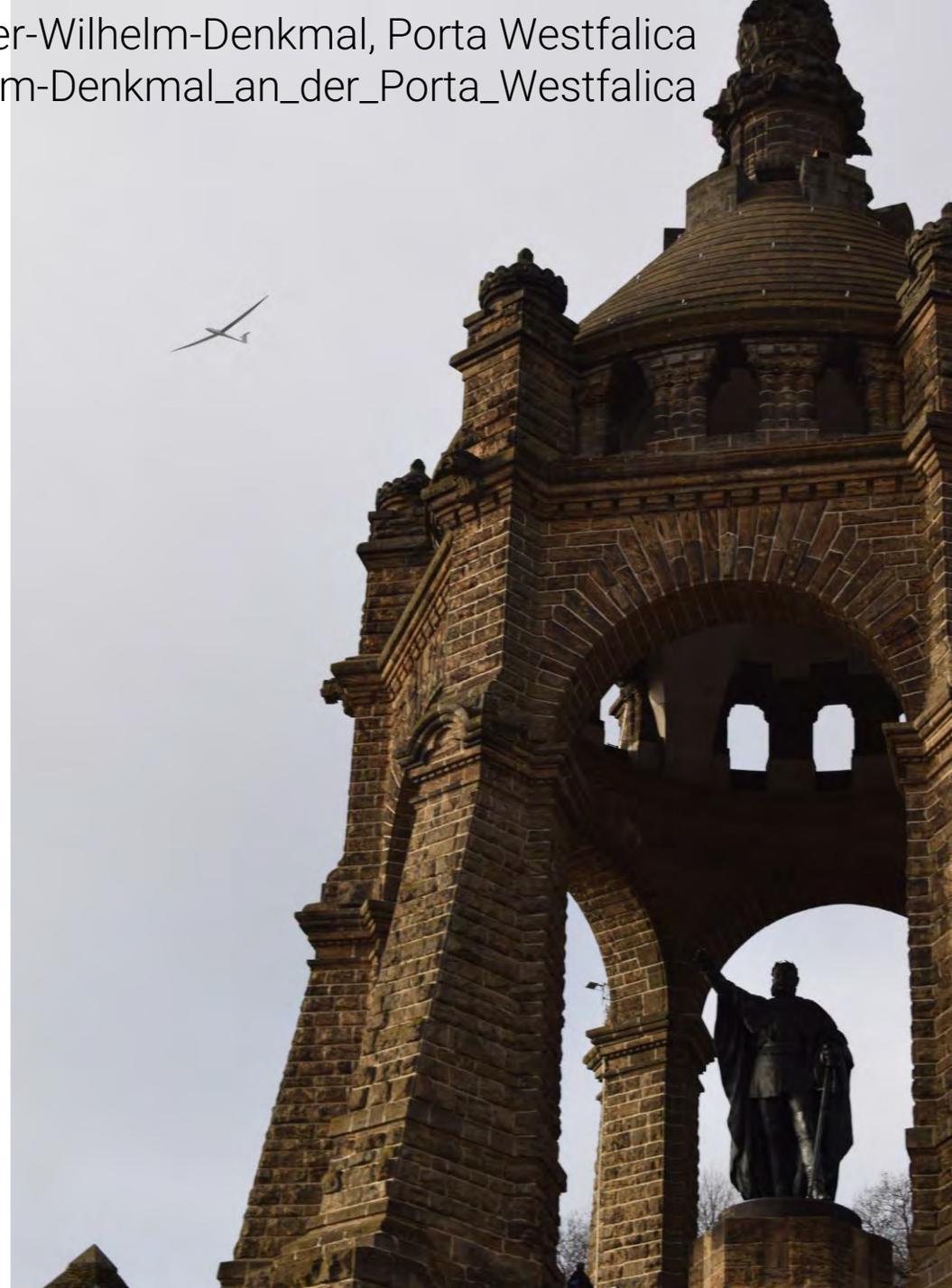


Launch possibilities

- Winch: This is usually not available during the winter break. You can reach the ridge from the winch (both from Porta-Westfalica, and Bückeberg-Weinberg),
- Airtow: It can be turbulent when you airtow. Make sure you are current enough with towing, be prepared to use the airbrakes during the tow to stay behind the tow plane.

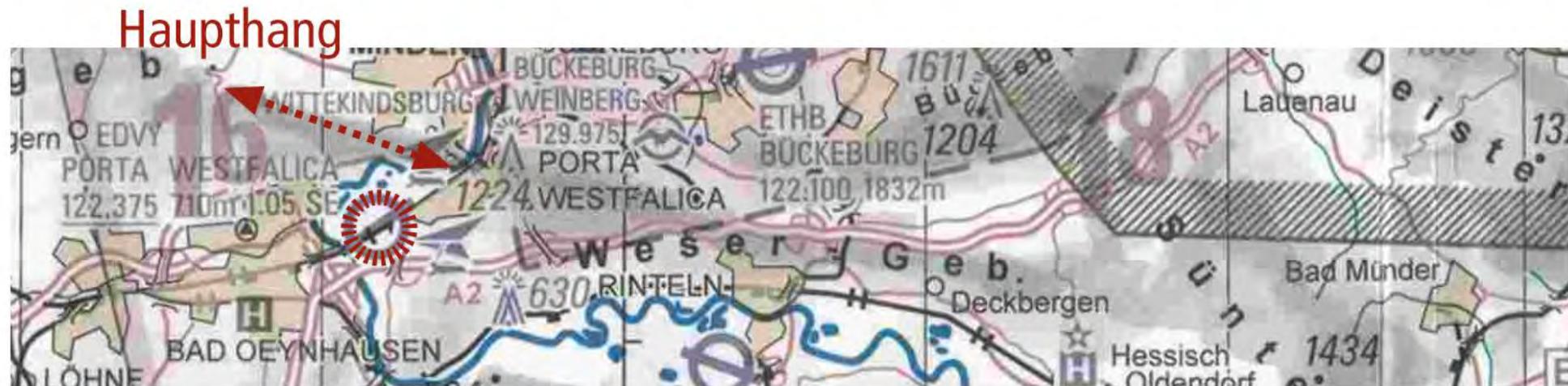
First on the ridge at Porta? A few thoughts.

- Don't be disappointed if you do not make a very big flight on your first try. It takes time to learn all the tips and tricks.
- The tow/launch should bring you close to the Denkmal (talking about a launch from Porta-Westfalica here).
- The Ridge at the Denkmal works best.
- If it won't work here, it won't work further away.
- Turn here a few ∞ turns, see how it works.
- Make small steps on the ridge, and expand your flying area step by step.



Step by step further away

1) Fly ∞ turns at the Denkmal, Haupthang, Wittekindsburg Area.



Source: Hang- und Welle, Arndt Hovestadt, 2005

Step by step further away

2) Fly to Sender 2 from the Denkmal.



Source: Hang- und Welle, Arndt Hovestadt, 2005

Step by step further away

3) Jump over the Weser to the Fernseh-Turm and further towards Schaumburg and Süntel.

Am Haupthang Höhe tanken, dann Richtung Schaumburg (Höhe tanken), dann zum Süntel (Höhe tanken)



Source: Hang- und Welle, Arndt Hovestadt, 2005

Fernseh-Turm, Schaumburg...

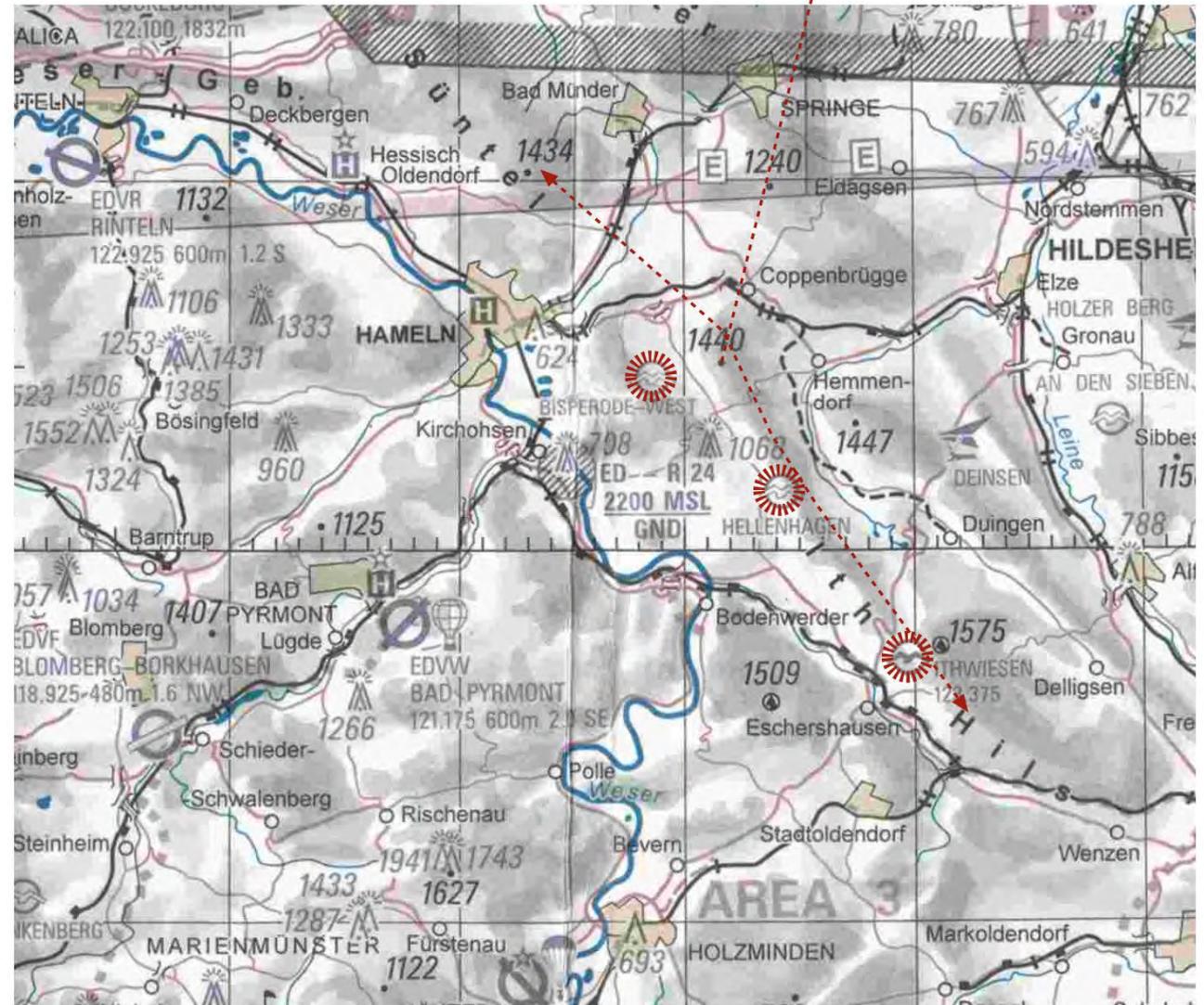


...and Süntel



Step by step further away

- 4) Jump to the Ith and back.
- At Süntel get enough height (circa 750 m MSL). You can reach this altitude on Thermals, Ridge Lift, Wave.
 - Coming back consider taking a little bit more height because you will have a headwind component (in South Westerly Conditions)
 - Maybe do not try this in wooden airplanes.

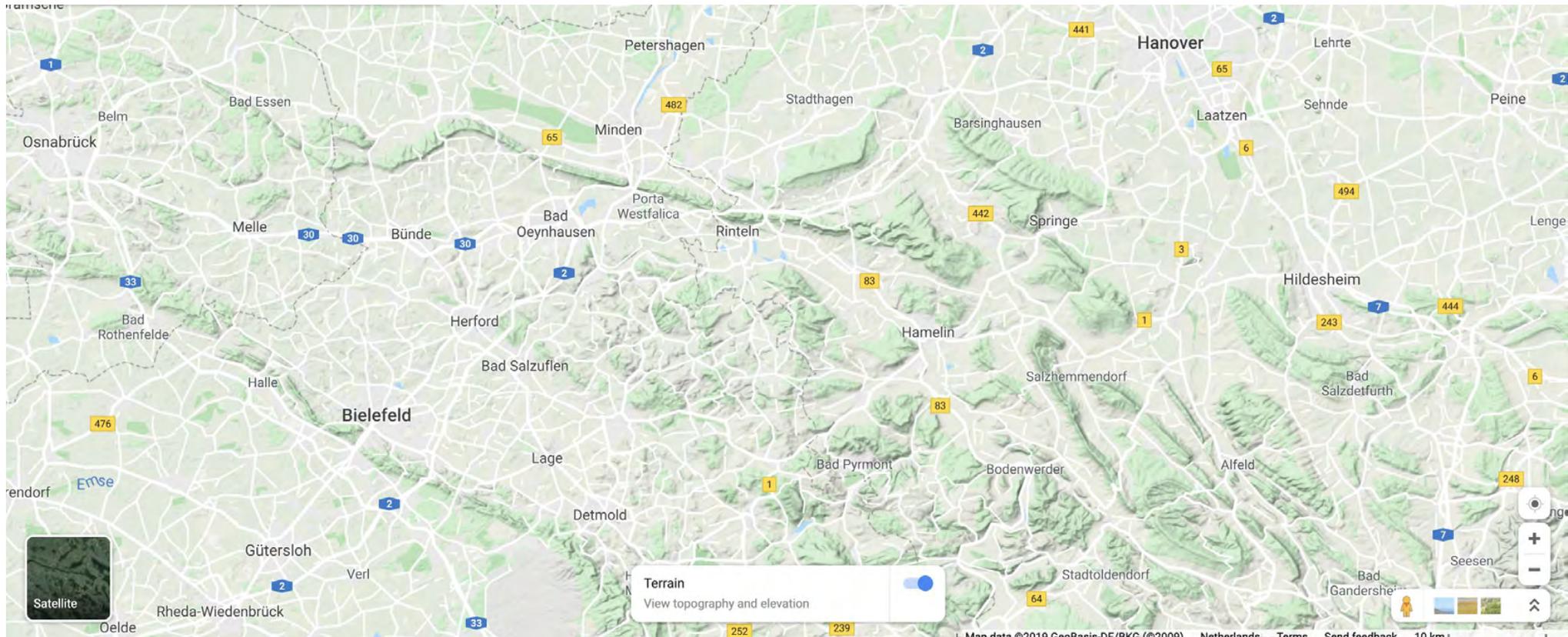


Ith Slopes and Ithwiesen Airfield



Areas of lift on the ridge

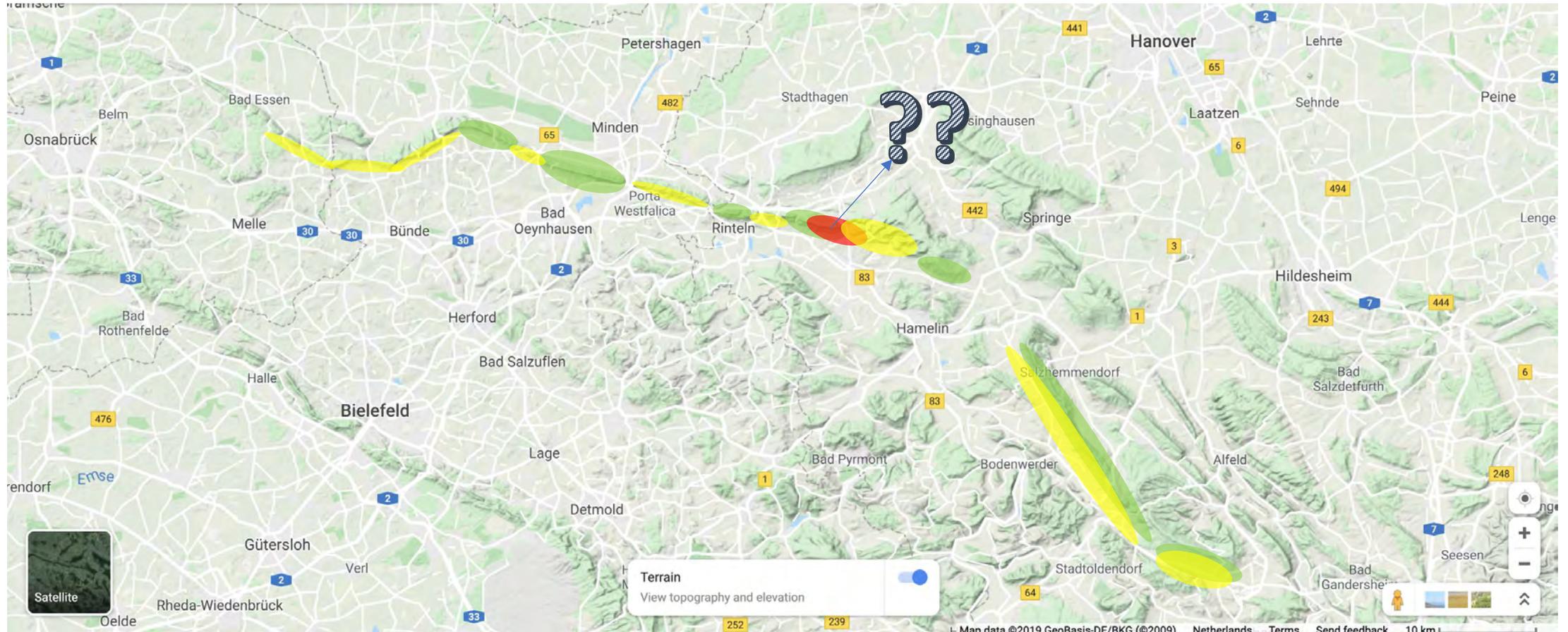
- Green: Works usually without a problem.
- Yellow: Works only sometimes, or it does not work that good.
- Red: Often difficult.



Areas of lift on the ridge



Areas of lift on the ridge



Coincidence? I think not...

OLC INNOVATIONS FOR SOARING Segelflugszene **Gliding** ParaHangGliding ModelGliding

Flight information - Tudor Vacaretu (RO) - 05.12.2015

Type of glider: **LS 4**, Takeoff location: Porta Westfalica (DE / NW)

OLC-Plus Speed/League Destination

Flight details

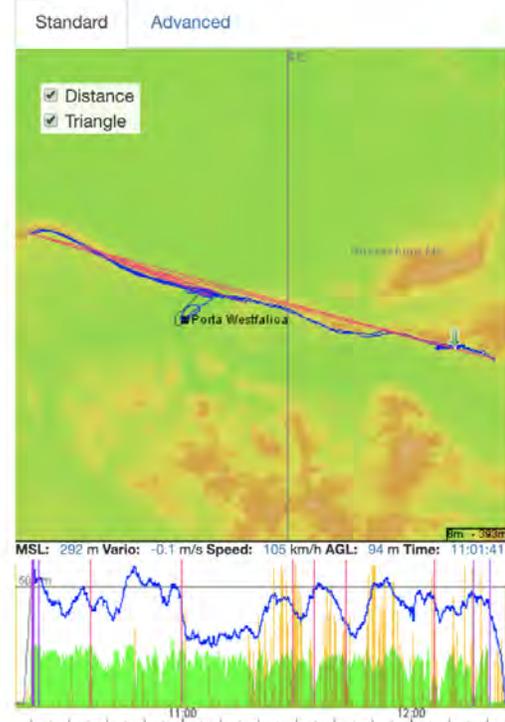
	Distance	Triangle
Points for the flight	132.74	131.74
scoring distance	137.0 km	1.00
Speed	78.0 km/h	3.5 km
Duration	01:45:23	1.7 km/h
Duration	02:00:06	
Scoring class	standard	
Scoring start	10:20:38	
Scoring end	12:25:08	
Index:	104.0	
Club	ZVC Eindhovense Studenten	
Date of claim	05.12.2015 22:18:52	
state	IGC-File: Flight:	

Flight path

MeetingPoints

Name of Aircraft Name of Pilot Duration of Meeting

Map



OLC INNOVATIONS FOR SOARING Segelflugszene **Gliding** ParaHangGliding ModelGliding

Flight information - Tudor Vacaretu (RO) - 28.09.2019

Type of glider: **Std. Cirrus**, Takeoff location: Porta Westfalica (DE / NW)

OLC-Plus Speed/League Destination

Flight details

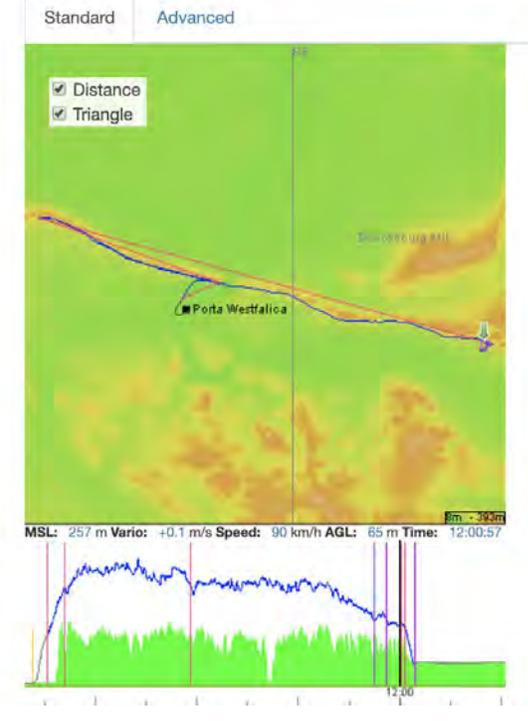
	Distance	Triangle
Points for the flight	66.87	65.93
scoring distance	65.2 km	0.94
Speed	108.0 km/h	3.1 km
Duration	00:36:16	45.7 km/h
Duration	00:04:06	
Scoring class	club	
Scoring start	11:26:11	
Scoring end	12:02:27	
Index:	99.0	
Club	Nijmegen Aeroclub	
Date of claim	28.09.2019 19:26:00	
state	IGC-File: Flight:	

Flight path

MeetingPoints

Name of Aircraft Name of Pilot Duration of Meeting

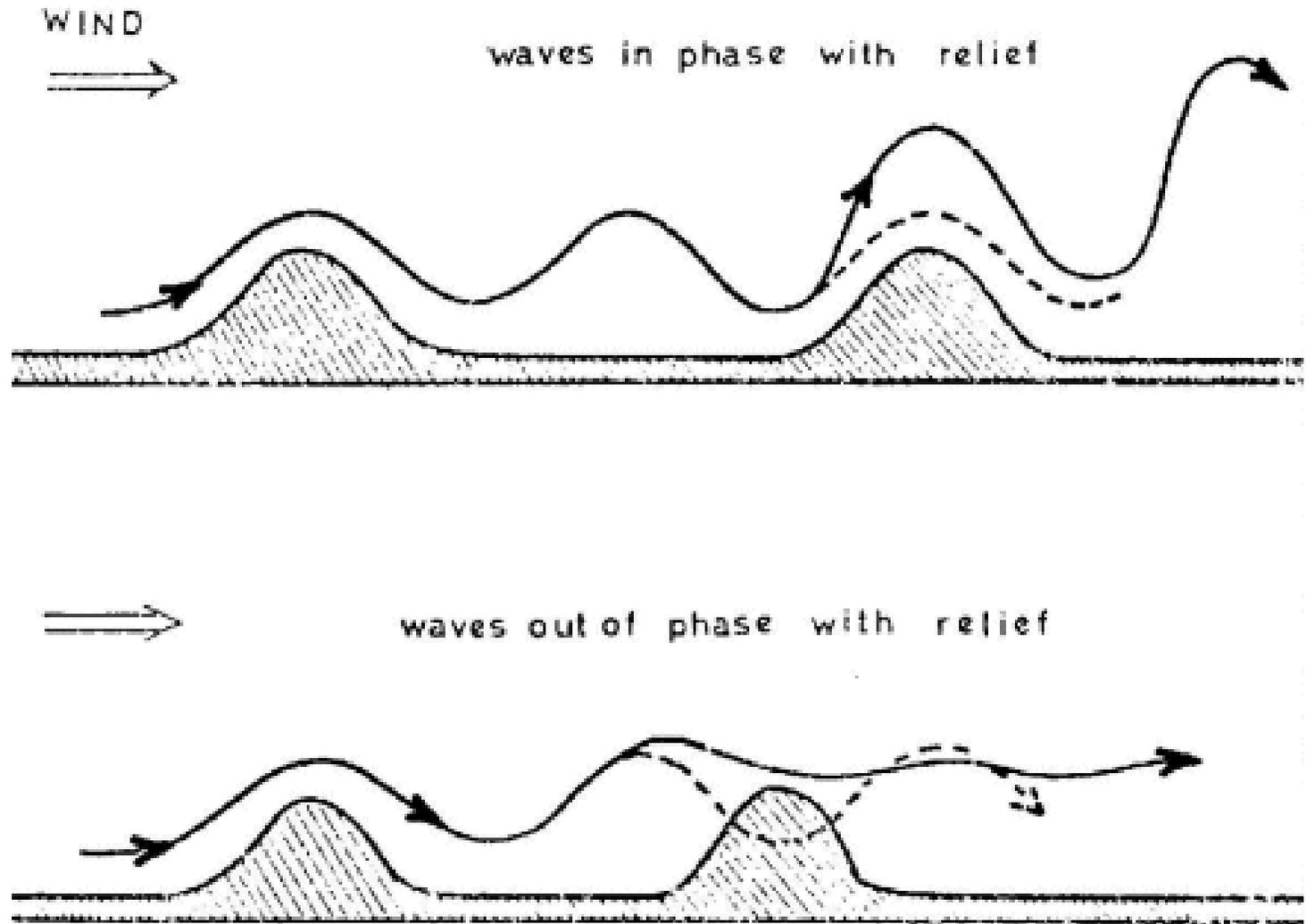
Map



Coincidence? I think not...

- What's going on there?

If you look closely to a terrain map, there's another hill (Rumbecker Berg) in front of our ridge. This hill is responsible for the Schaumburg wave. It usually resonates exactly on our slope, but when it's not aligned, we get the downdraft of this wave on the slope.



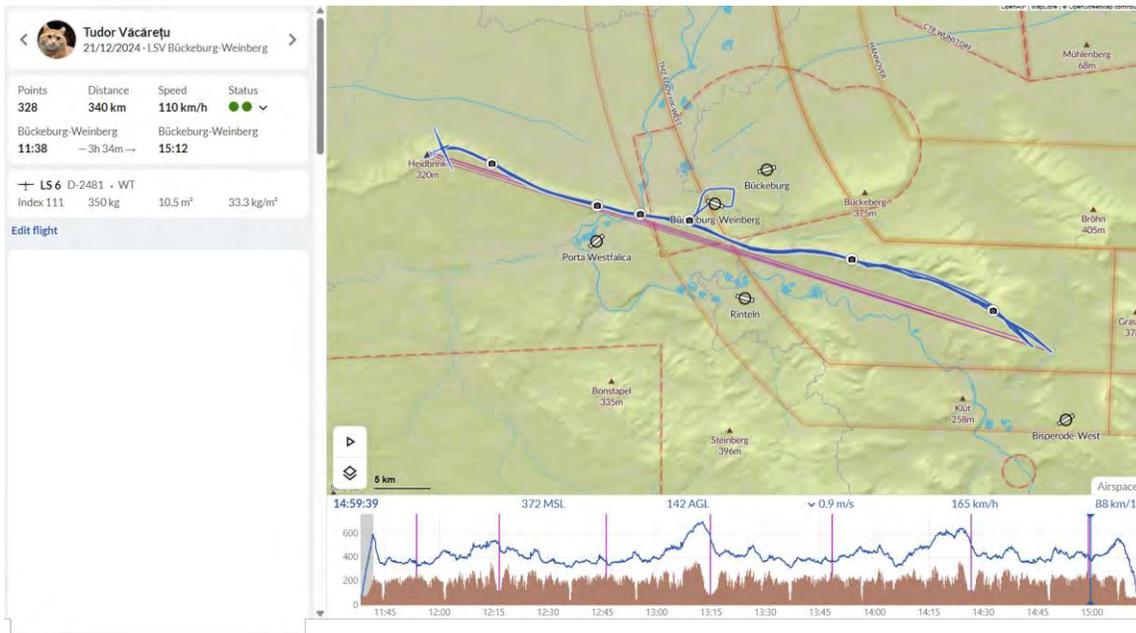
Source: https://omarama.net/briefings/Mountain_Lee_Wave.html

Wind directions and possibilities on the ridge.

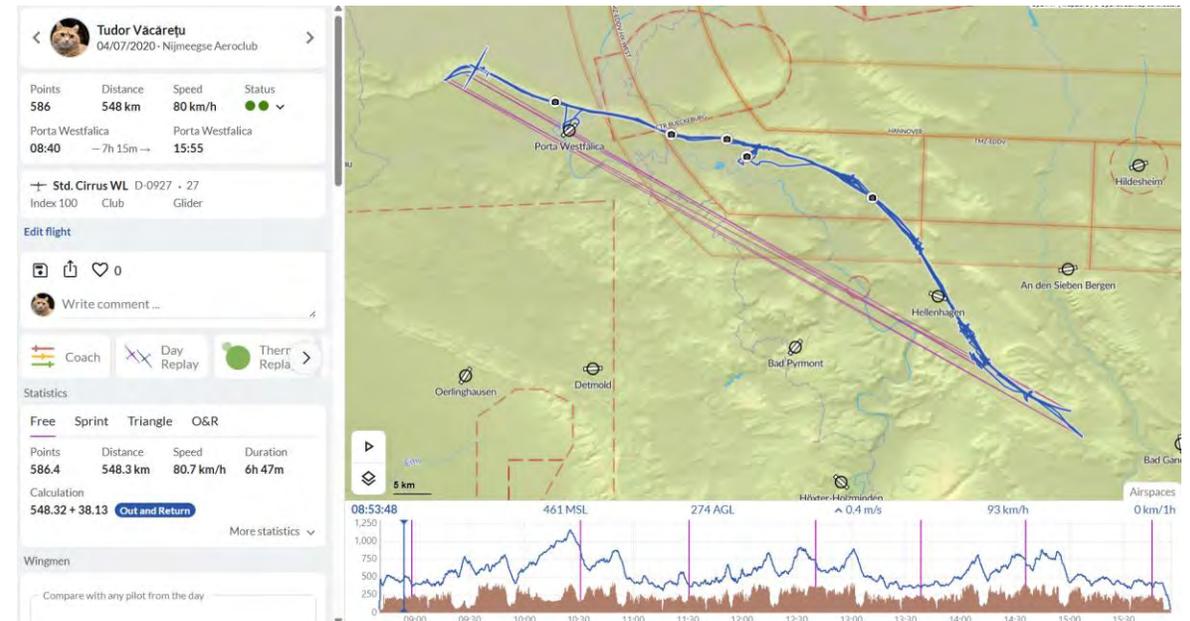
- With South West Wind: 210° - 240° Ith ridge works with very good but I colored it yellow as it depends whether the jump from Porta to Ith (and back) is possible (can you get enough height at Süntel / or is the Schaumburg Wave working?)



Wind directions and possibilities on the ridge.



Main ridge, without a jump to lth maximum optimized will result in a (aprox.) 330 km flight



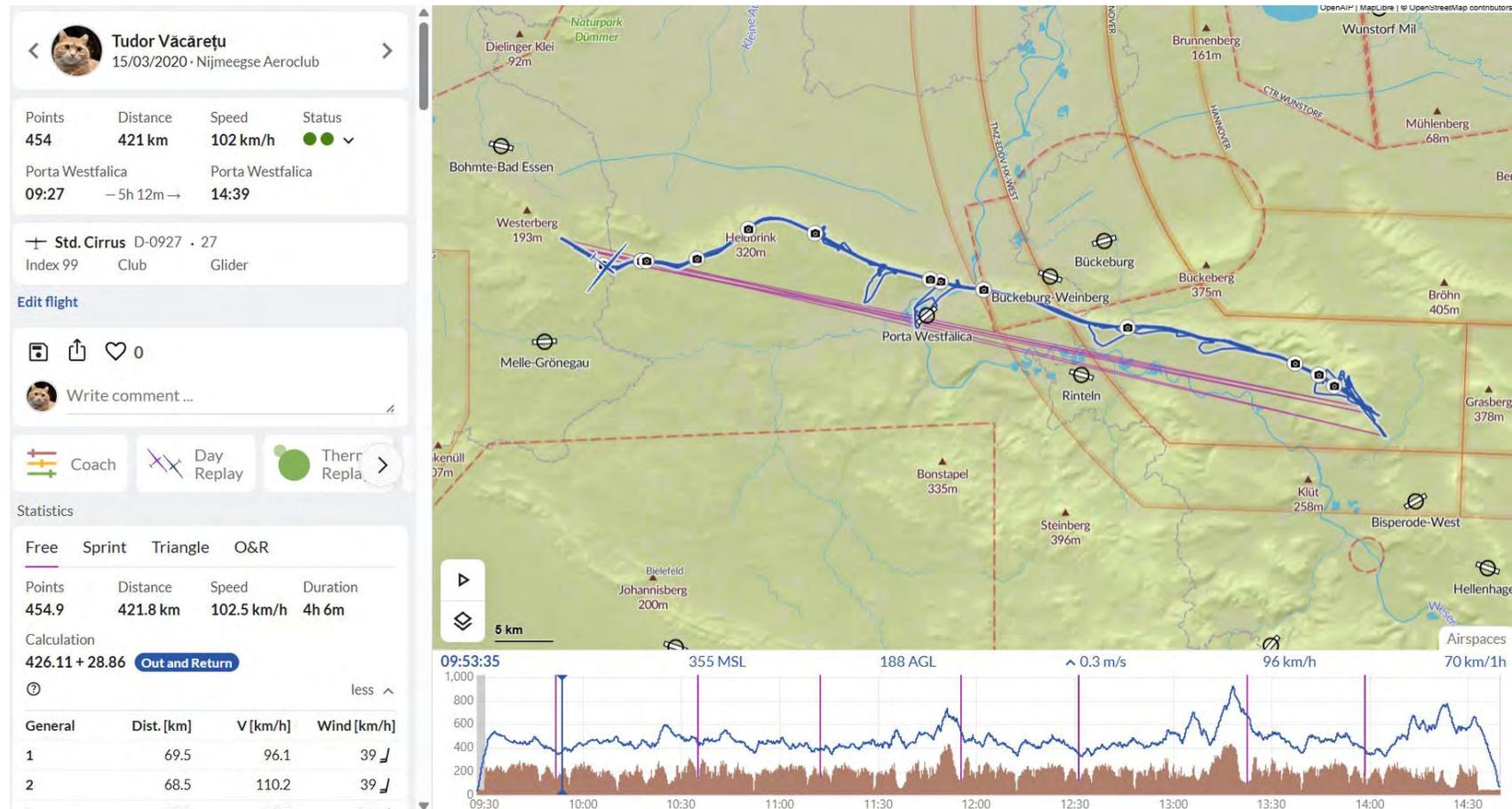
Entire ridge, with a jump to lth maximum optimized will result in a (aprox.) 540 km flight

Wind directions and possibilities on the ridge.

- With South or South-East Wind: 170° - 210° .
- Marked with yellow is the ridge turning towards South-West from Hüllhorst towards the Linner Berg. In South-West wind conditions (from 210° higher) it is not possible to fly this section, and only with South or South-East wind it is possible to fly from Hüllhorst towards the Linner Berg.

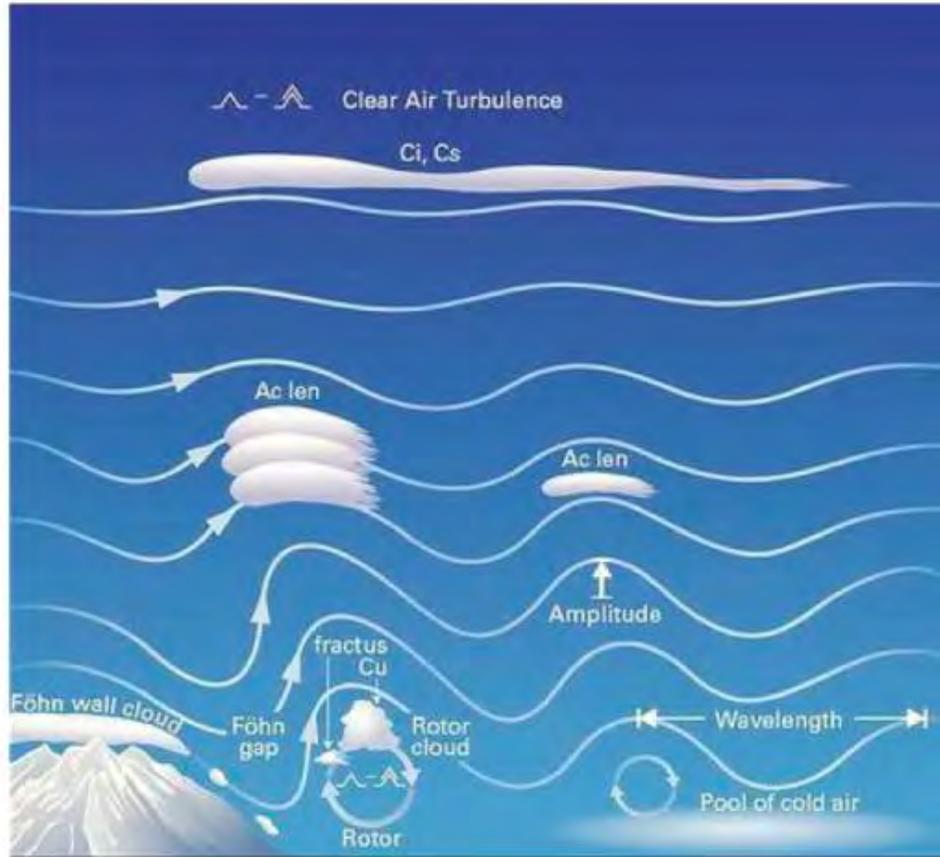


Wind directions and possibilities on the ridge

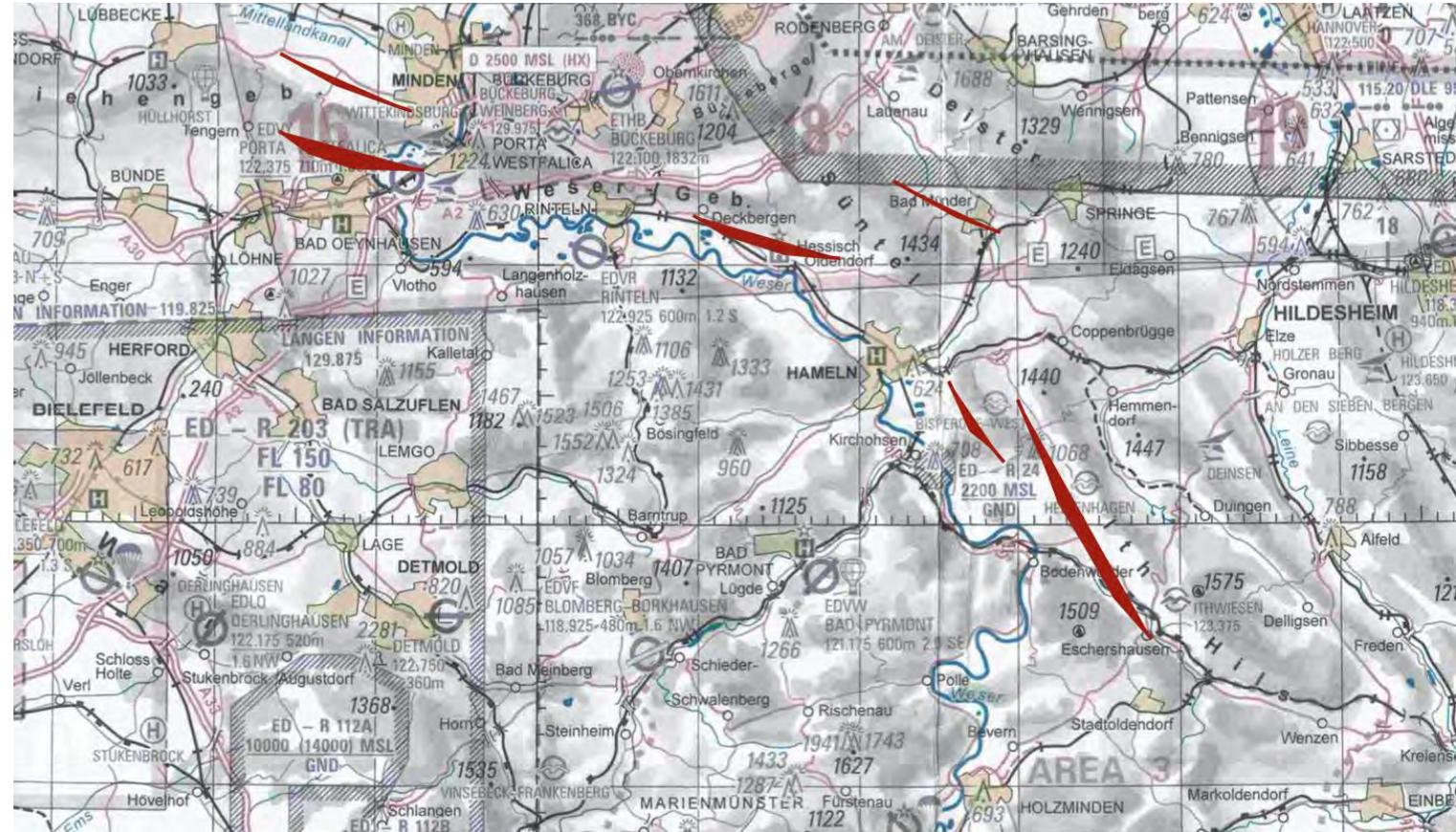


Main ridge, with the segment from Hüllhorst towards the Linner Berg resulting in a (aprox.) 420 kilometers flight when optimized to the maximum.

Wave @ Porta



Source: <https://chessintheair.com/what-is-wave/>



Source: Hang- und Welle, Arndt Hovestadt, 2005

Schaumburg Wave



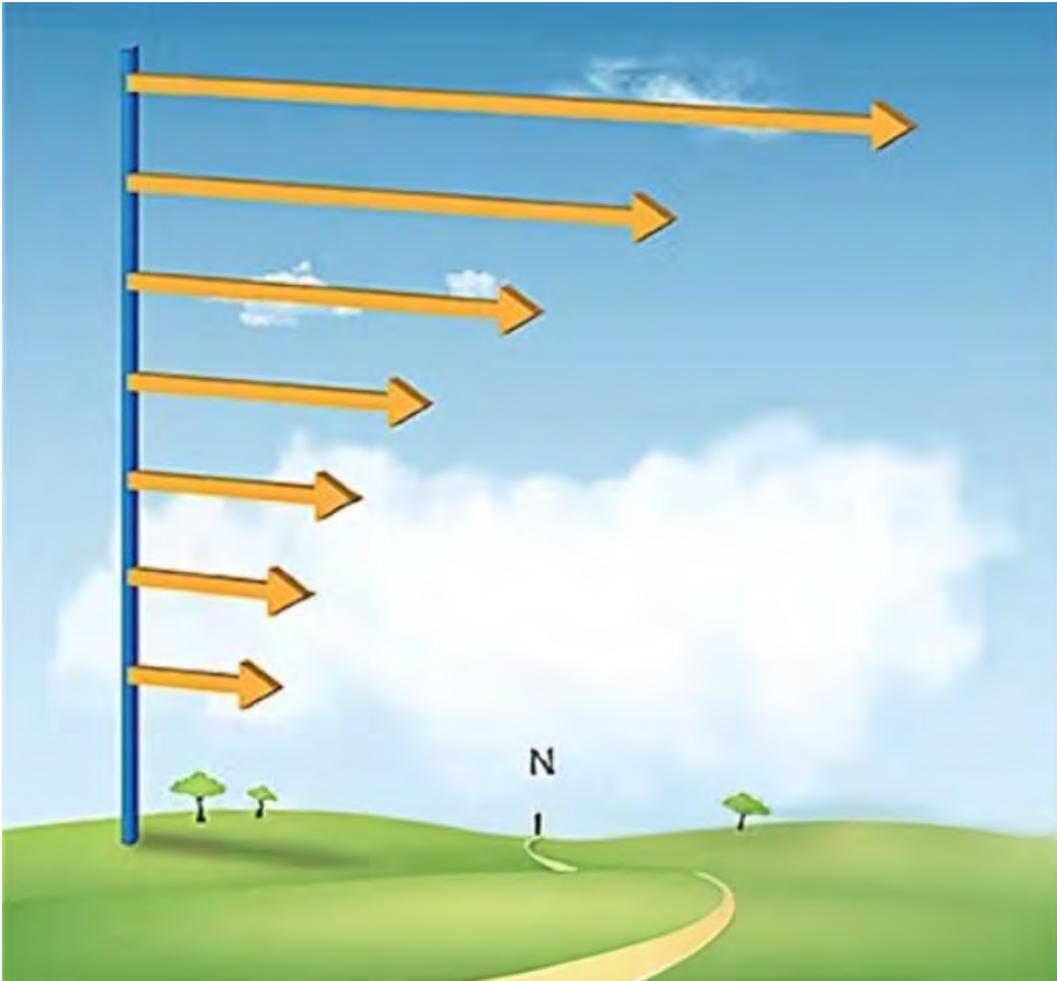
Schaumburg Wave



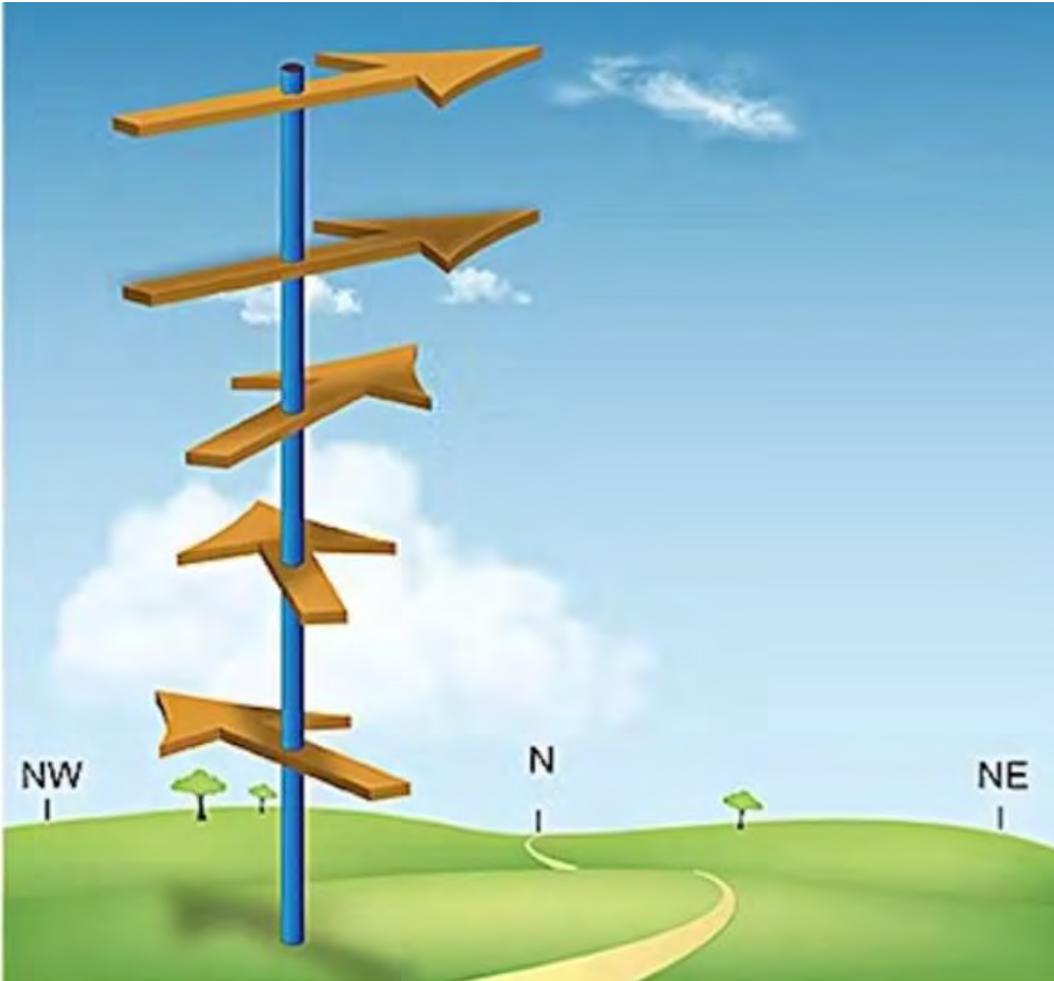
Schaumburg Wave



Wind direction and strength estimation



Wind gradient



Wind shear

Wind direction and strength indicators

- HAWK.
- ANEMOI.

HAWK vario stand-alone



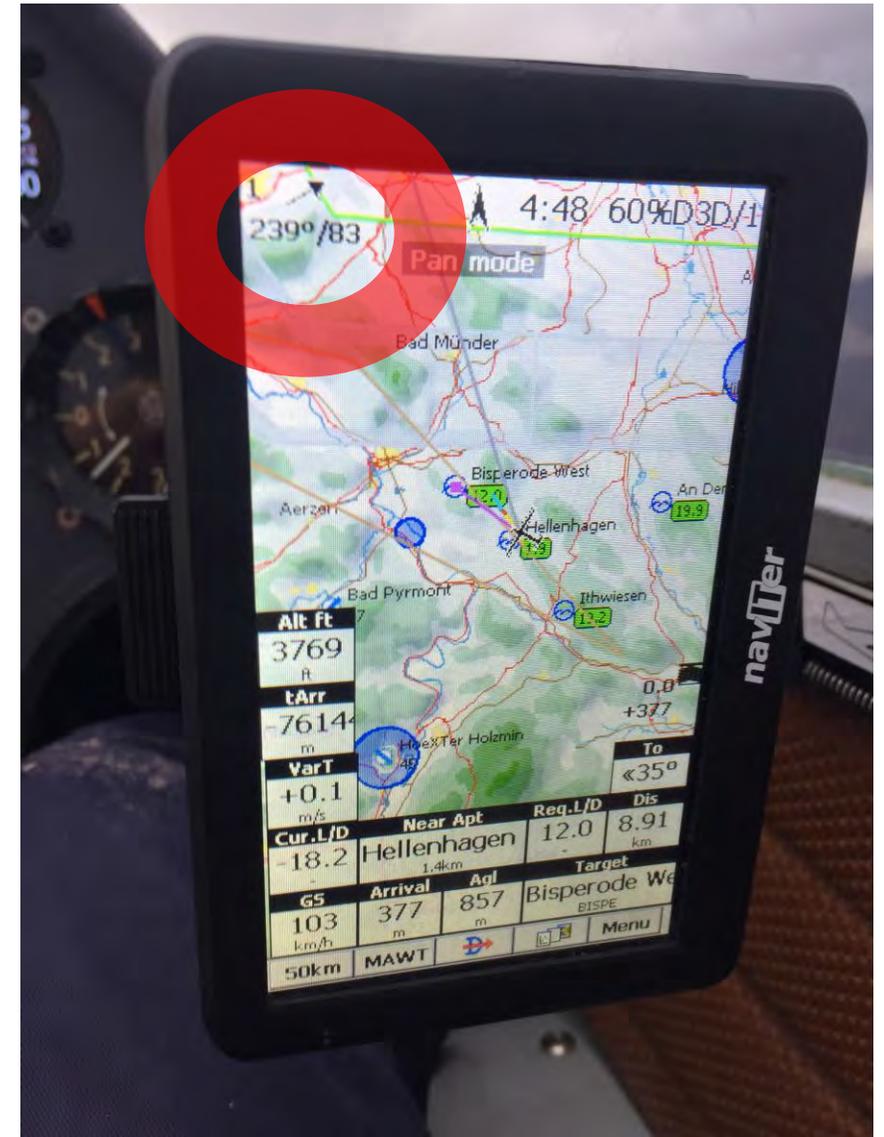
anemoi

live wind indication



Wind direction and strength indicators

- From your Oudie/LXNAV/LX Navigation.
- Or any other navigation device / flight computer that has such a function implemented.



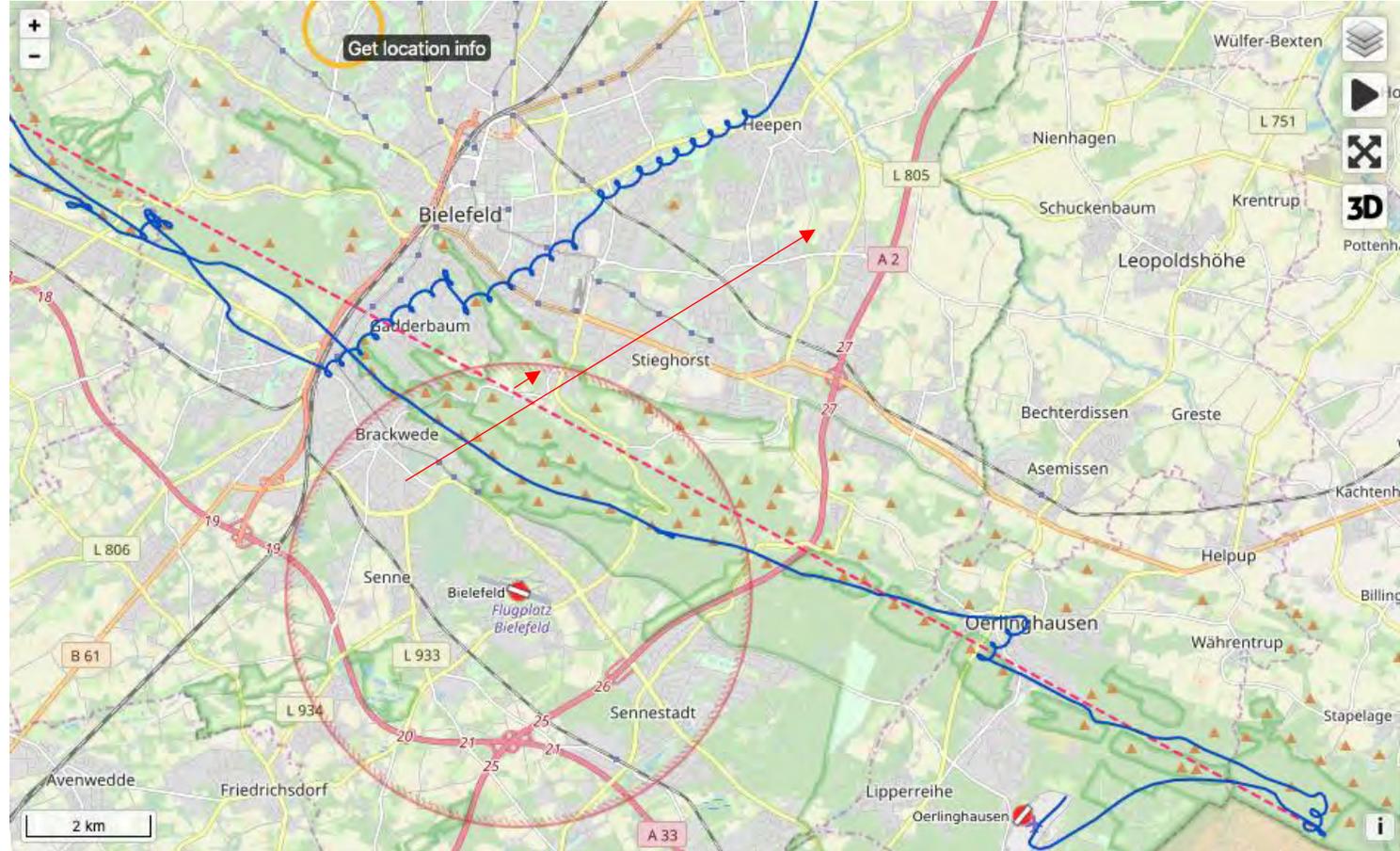
Wind direction and strength indicators

- Look at the smoke plumes from chimneys



Wind direction and strength indicators

- If you are high enough turn a few constant circles.



Wind direction and strength indicators

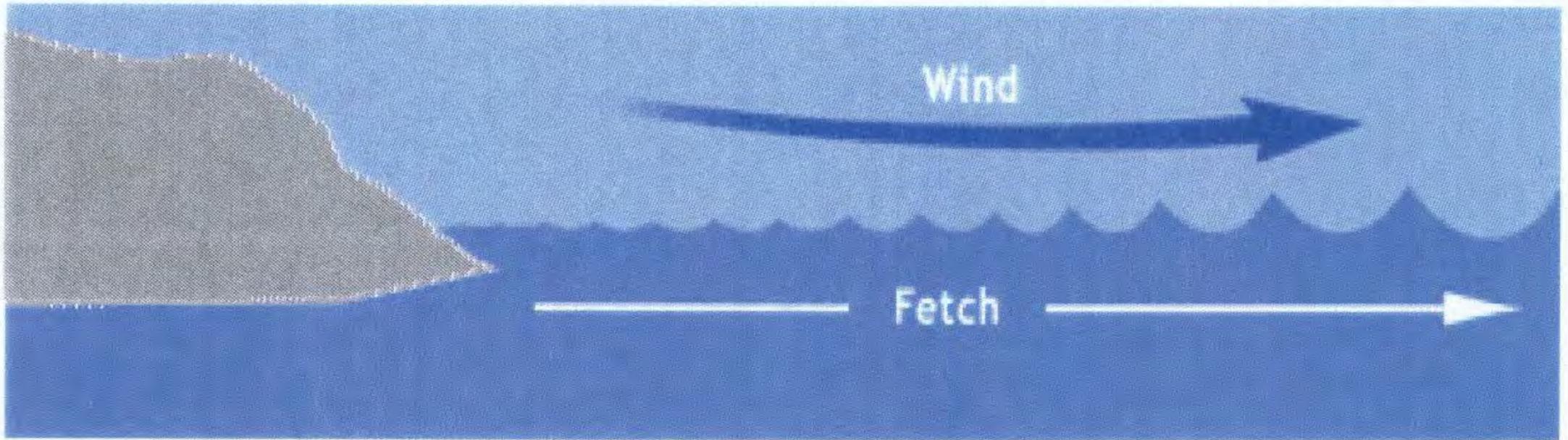
- Movement of treetops



Wind direction and strength indicators

- Look at water-surfaces (lakes).

If you see waves, and shadowed parts on the water surface you can have an indication of the wind direction and strength.



Wind direction and strength indicators



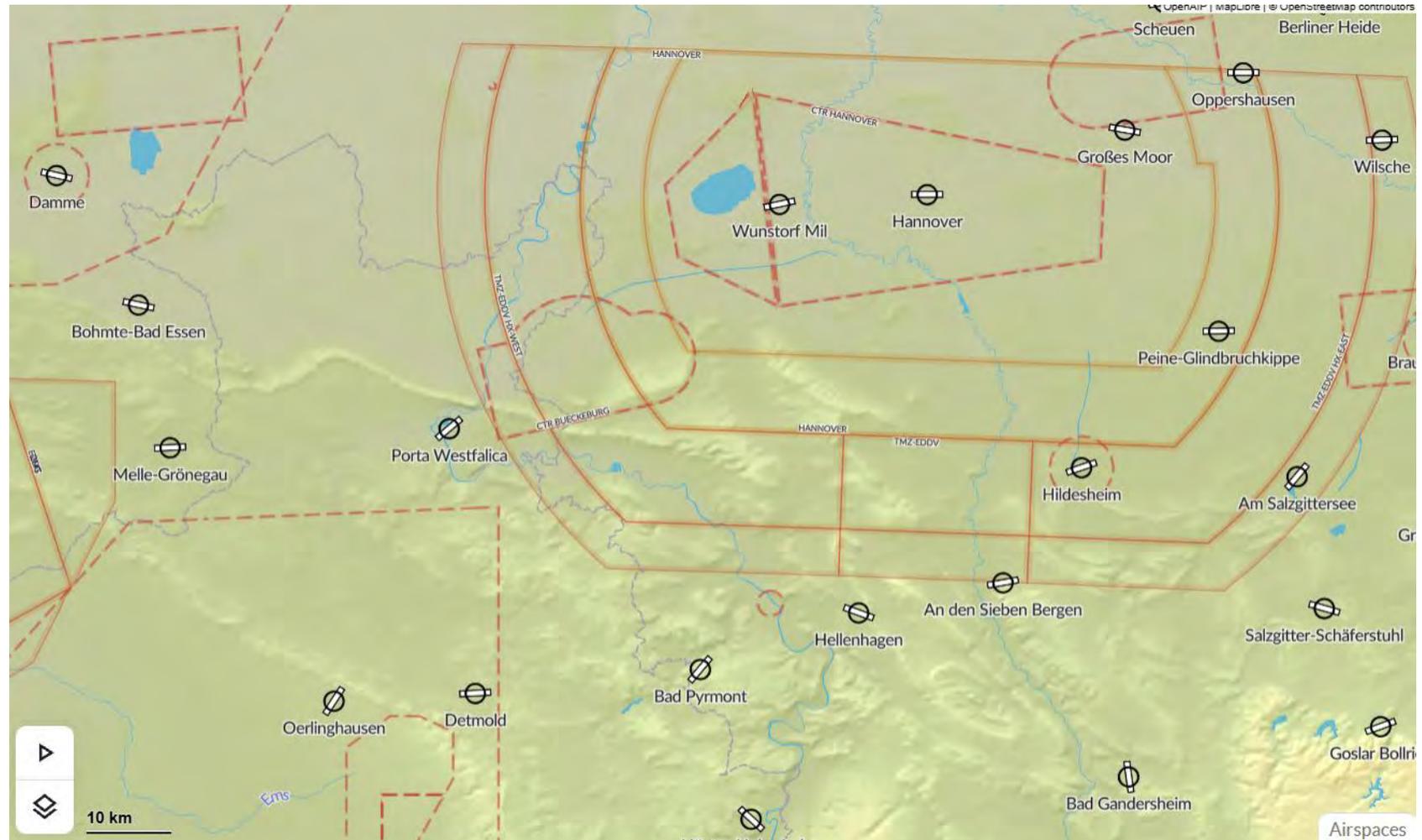
Wind direction and strength indicators

- Check the speed of windmills and the direction of the blades.



Airspace

- Bückeburg CTR - GND-2500MSL - active during the weeks. Mostly not active in the weekends. If you are not sure, call the tower or ask Langen Information.
- Outer ring overlapping the ridge - TMZ-EDDV FL75-FL100
- Inner ring overlapping the ridge - TMZ-EDDV FL65-FL100





Outlandings

- Outlanding is an exercise.
- You should be current with outlandings.
- Make sure you have enough outlanding experience before you fly the ridge at Porta.

Outlandings

- If possible, try to land first on one of the airfields next to the ridge: Porta-Westfalica, Bückebug-Weinberg, Rinteln, Bisperode, Hellenhagen, Ithwiesen
- Pay attention: Hellenhagen and Ithwiesen are not flat and you should land upslope.
- Especially Hellenhagen as the landing is usually done upslope even in tail wind conditions.



Ithwiesen airfield

Outlandings

- Hellenhagen runway overshoots:
- <https://www.youtube.com/watch?v=p4IHYxSGrCc>
- <https://www.youtube.com/watch?v=35B0xbHAjus>



Hellenhagen airfield

Outlandings

Fields at the base of the hill are usually not flat. It is better to land out a little bit more into the valley than next to the ridge.



Outlandings

- Land into the wind.
- This is an example with tail wind component, luckily nothing went wrong as far as I can see, but it is definitely not the best choice.



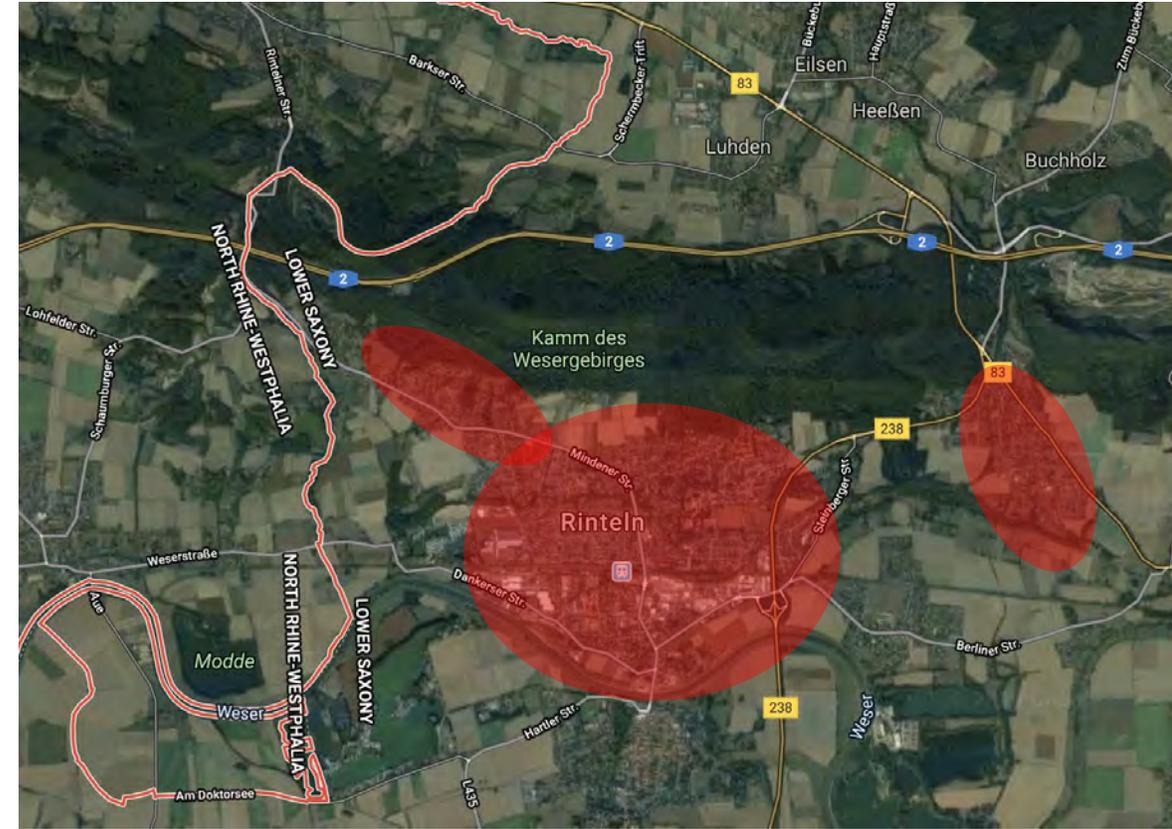
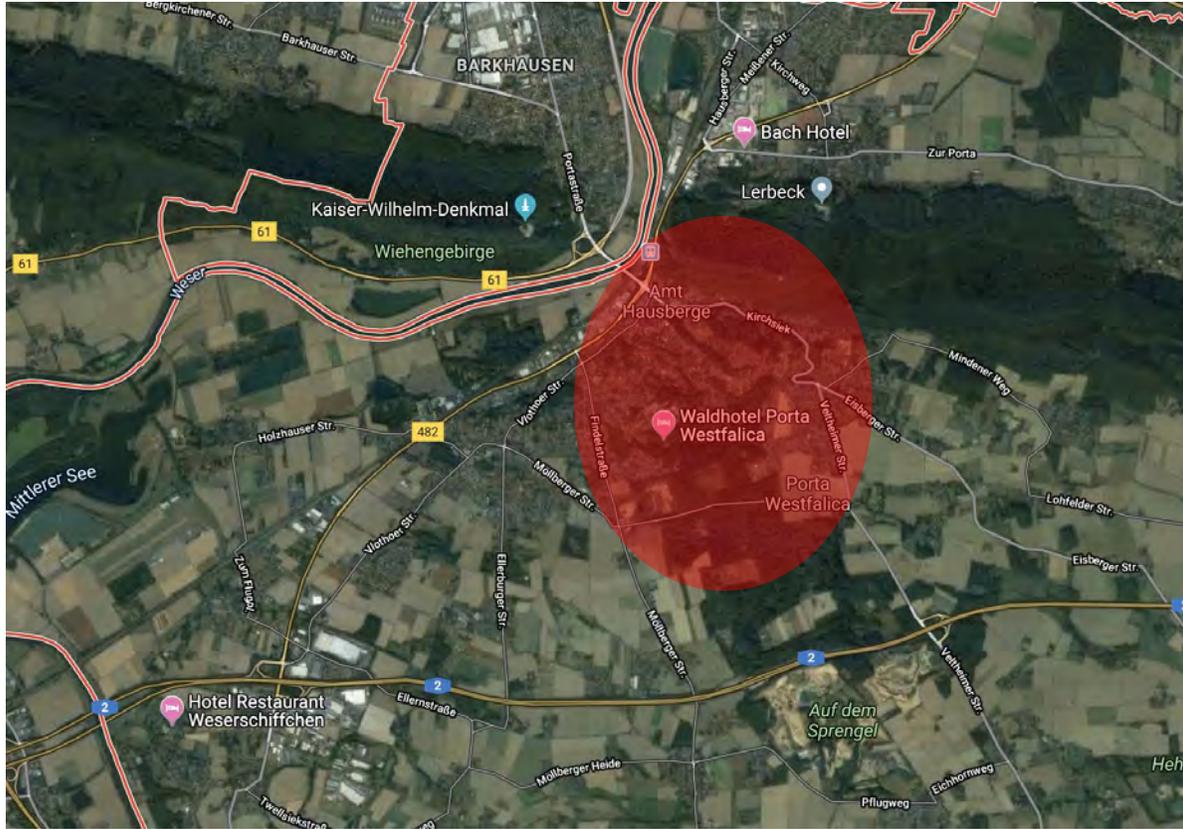
Outlandings Ridge Flying in the Summer Season

- Keep in mind that there are less options available due to high crops.
- Fly with a higher margin and make your decisions earlier.



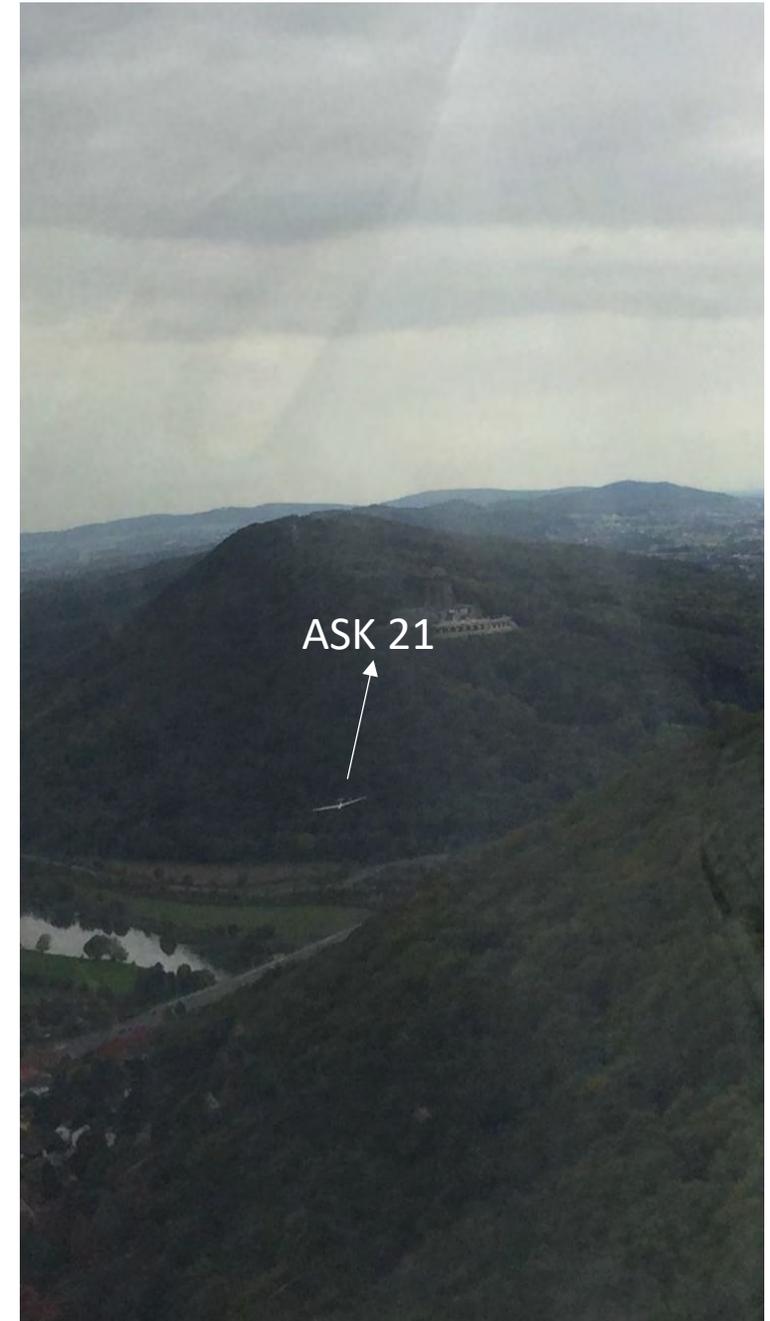
Photo: Christian Barton

Areas that are difficult to land?



These areas aren't really difficult, they still have some options and they are not too long to cross.

Outlandings – 12 October 2019

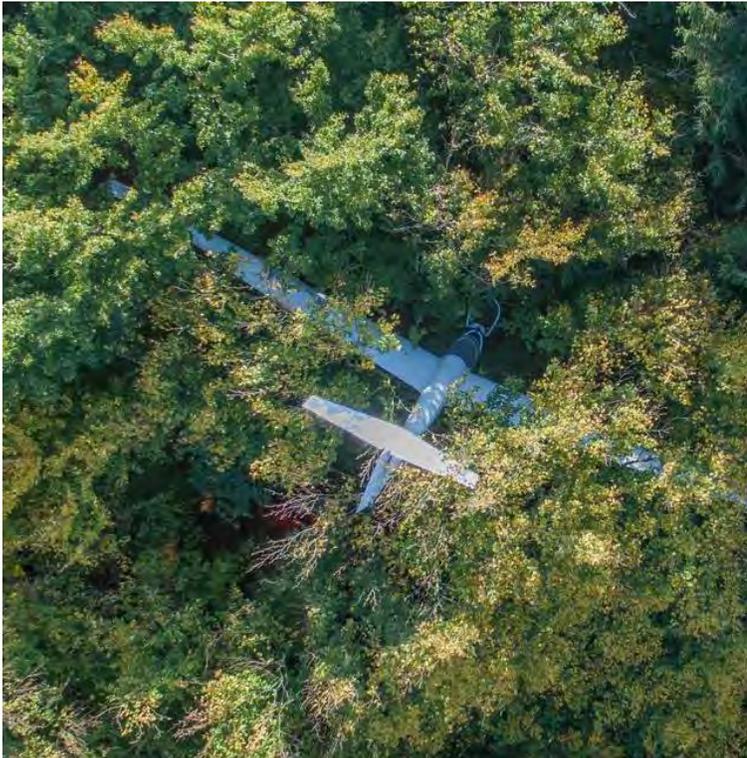


Outlandings

12 October 2019

<https://aviation-safety.net/wikibase/229925>

Always have an escape route, and don't fly yourself into a situation you cannot get out of.



Photos: Unknown Author

And then you make new friends

- If you outlanded, it is highly likely more will follow.
- If possible, move your glider on the side of the field so others can land safely on your field.



Busy on the ridge?

- Sometimes it can be very busy at the ridge, and sometimes you can have the ridge for yourself.
- Keep a good lookout and adhere to the ridge rules.



Busy on the ridge?- FLARM

- Make sure that your Flarm works and is updated.
- Make use of it but don't sit with your nose in the device .
- On the very busy days, your Flarm will make more noise than your vario.
- What I do: I use the acoustic signal of the flarm and look out really well.
- A good lookout is the most important.



Busy on the ridge?

- Pay attention to the deltafliers and paragliders @ Wittekindsburg.



Busy on the ridge?

- Don't fly fast here when the paragliders and deltafliers are present.
- They fly at low airspeeds and sometime are unpredictable.



Low on the ridge. How low is too low?

- A flight on the ridge at Porta is between aprox. 100 m AGL -300m AGL.
- Sometimes you can find yourself higher or lower.
- The judgement of how low is too low is yours.
- You have to take all the elements into account: wind direction, how strong is the wind, what slopes do I have ahead, rain, cloud base, etc.
- Always have a safe escape route to an outlanding field.
- Do not postpone your outlanding decision until it is too late.



Rain

- Ridge days at Porta sometimes have rain.
- Is it an isolated rain shower or is it a rain band sweeping the entire ridge?



Rain

- Sometimes you can keep flying if the rain is an isolated shower and wait somewhere else on the ridge where it is not raining. Find a good spot on the slope and fly ∞ turns until the rain shower passes.
- Rain can affect the wind, sometimes it takes a while for the wind to regenerate after a shower has passed.
- If you think you can't avoid the rain, it's safer to go to the airfield (or another airfield) to land.



Flying with weak wind

- You won't be able to use the entire ridge.
- You should stop in lift hotspots to make a few ∞ turns
- You will have to fly slower.
- It is still very nice and rewarding.

Flight information - Tudor Vacaretu (RO) - 14.10.2018

Type of glider: [Std. Cirrus](#), Takeoff location: Porta Westfalica (DE / NW)

OLC-Plus [Speed/League](#) [Destination](#)

Flight details

	Distance	Triangle
Points for the flight	136.26	130.63
scoring distance	129.3 km	18.6 km
Speed	69.2 km/h	7.3 km/h
Duration	01:52:03	02:33:03
Scoring class	club	
Scoring start	11:08:50	
Scoring end	13:41:53	
Index:	99.0	
Club	Nijmeegse Aeroclub	
Date of claim	14.10.2018 19:54:30	
state	IGC-File: V Flight: S	

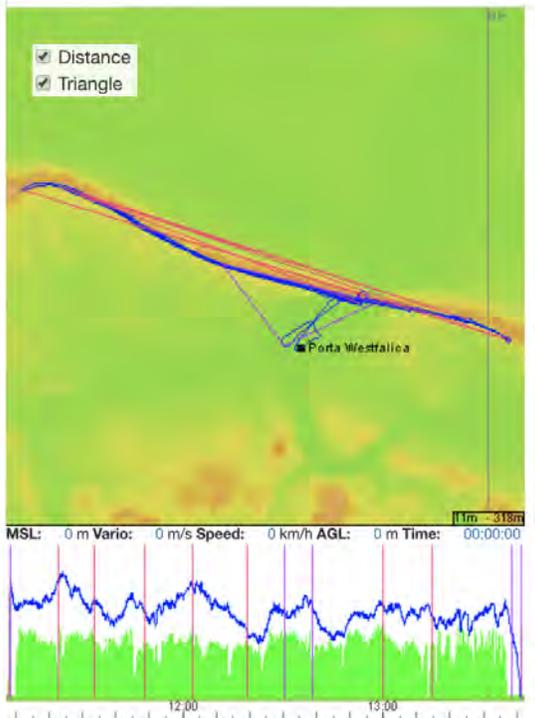
Flight path

MeetingPoints

[Name of Aircraft](#) [Name of Pilot](#) [Duration of Meeting](#)

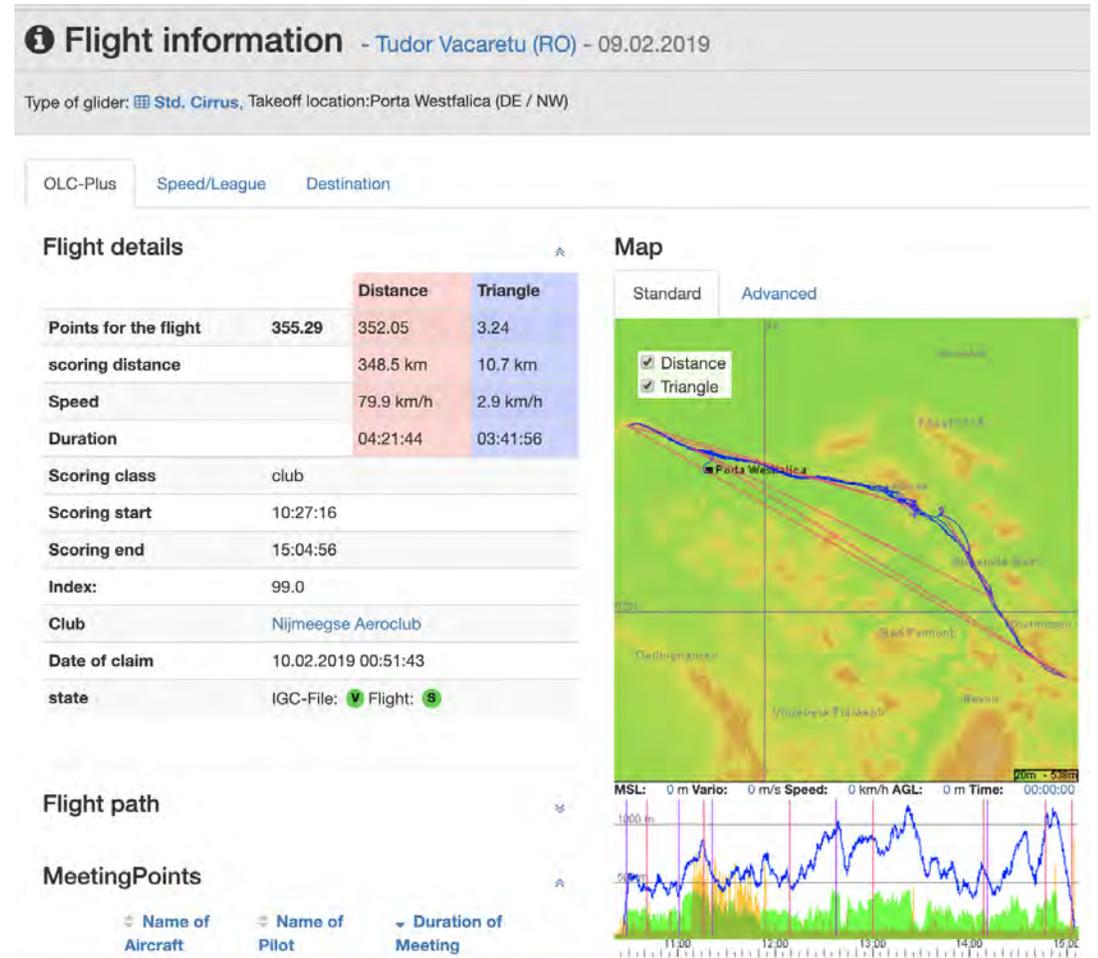
Map

Standard [Advanced](#)



Flying with strong wind

- Too much wind is also not good.
- Turbulent airtow.
- Turbulent on the ridge.
- If you make the jump the 1th, on your way back take some extra height on the ridge at Bisperode, as the front wind component will be felt on your way back to Süntel.



Duration of the flight

- Sunset in Porta (for example 27.11.2019) is at 16:19 local time.
- If you want to make a long flight you should wake up early.
- If you land late, you might be landing with the sun in your eyes (landing direction is aligned with the sunset at Porta, Bückeberg - Weinberg, Rinteln).

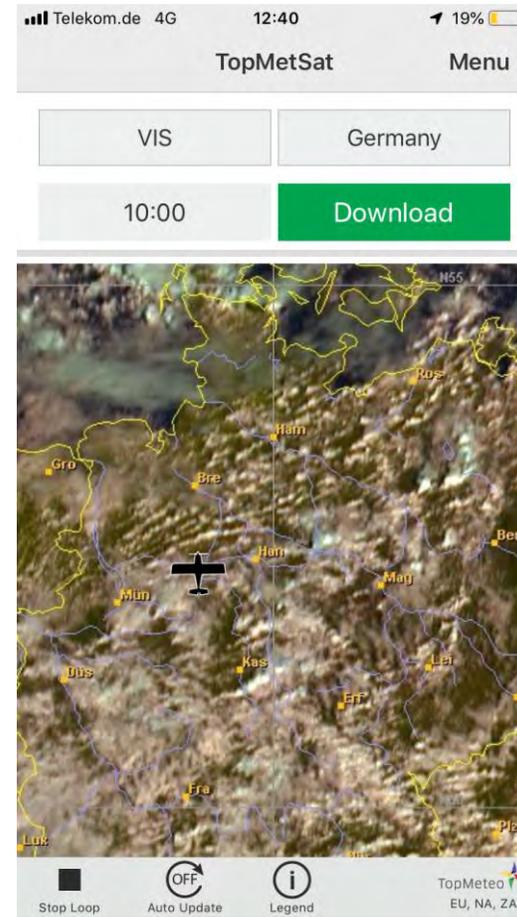
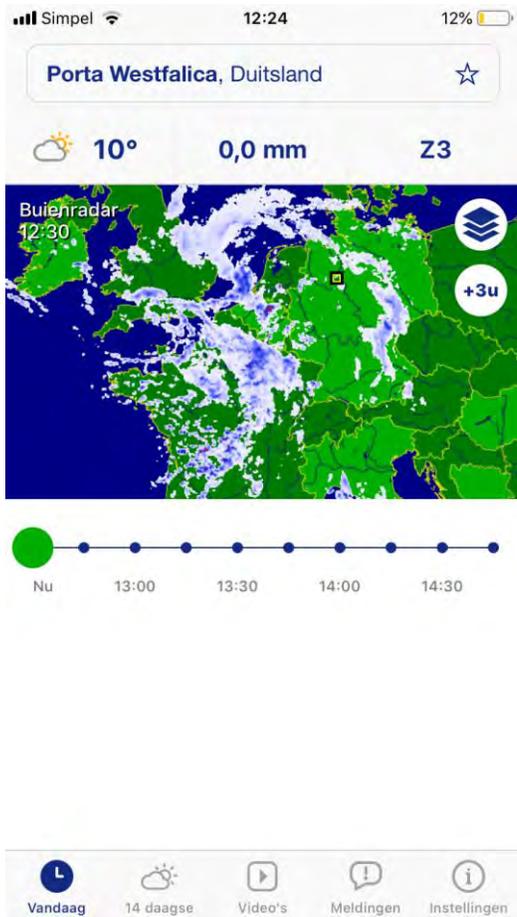


Duration of the flight

- If you land late (after sunset/civil twilight) don't let yourself get into an outlanding situation. Visibility is really poor, and it is really hard to see cables, fences, obstacles.



Apps that I use while flying



Inspiring flights

Flight information - Torsten Linstädt (DE) - 02.11.2012

Type of glider: Discus 2/18m, Takeoff location: Rinteln (DE / NI)

OLC-Plus Speed/League Destination

Flight details

	Distance	Triangle
Points for the flight	578.24	576.99
scoring distance	657.8 km	4.8 km
Speed	88.9 km/h	0.6 km/h
Duration	07:24:04	08:20:56

Scoring class: 18m
 Scoring start: 06:53:22
 Scoring end: 15:17:46
 Index: 114.0
 Club: Fliegergruppe Wolf Hirth
 Date of claim: 02.11.2012 16:47:10
 state: IGC-File: V Flight: S

Map

Standard Advanced

Distance
 Triangle

MSL: 0 m Vario: 0 m/s Speed: 0 km/h AGL: 0 m Time: 00:00:00

Flight path

MeetingPoints

Name of Aircraft	Name of Pilot	Duration of Meeting
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Flight information - Torsten Linstädt (DE) - 26.10.2019

Copilot: Thomas Meder (DE), Type of glider: Arcus T, Takeoff location: Witzzenhausen Bur (DE / HE)

OLC-Plus Speed/League Destination

Flight details

	Distance	Triangle
Points for the flight	451.73	428.37
scoring distance	488.3 km	88.8 km
Speed	67.1 km/h	11.8 km/h
Duration	07:16:52	07:29:45

Scoring class: double
 Scoring start: 08:30:29
 Scoring end: 16:02:26
 Index: 114.0
 Club: Fliegergruppe Wolf Hirth
 Date of claim: 26.10.2019 16:51:59
 state: IGC-File: V Flight: S

Map

Standard Advanced

Distance
 Triangle

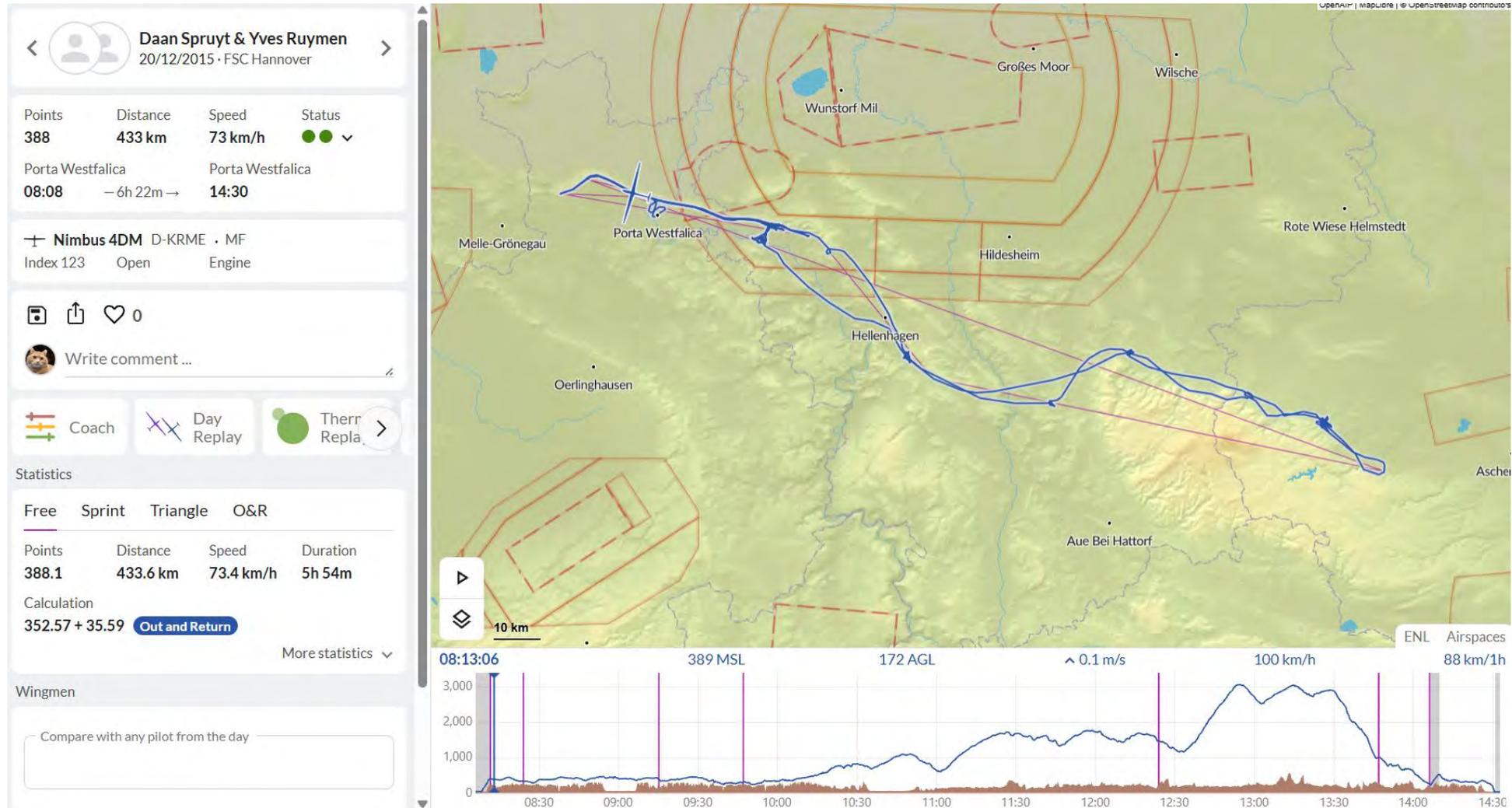
MSL: 0 m Vario: 0 m/s Speed: 0 km/h AGL: 0 m Time: 00:00:00

Flight path

MeetingPoints

Name of Aircraft	Name of Pilot	Duration of Meeting
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Inspiring flights



Inspiring flights

 **Daan Spruyt**
15/01/2020 · FSC Hannover

Points	Distance	Speed	Status
305	336 km	76 km/h	●● ▼

Porta Westfalica
09:12 -4h 50m → 14:02

✈ **ASW 27** D-1091 · FS
Index 114 15 m Glider

  0

Kleines Abenteuer in Januar. Danke an Adolf aus Crawinkel, super versorgt da! Jetzt 5 Stunden Bahn von Ilmenau nach Minden. Schade das es im Lee vom Thüringerwald nicht geklappt hat. Hat sich aber trotzdem gelohnt!
5 months ago [Translate](#)

 Write comment ...

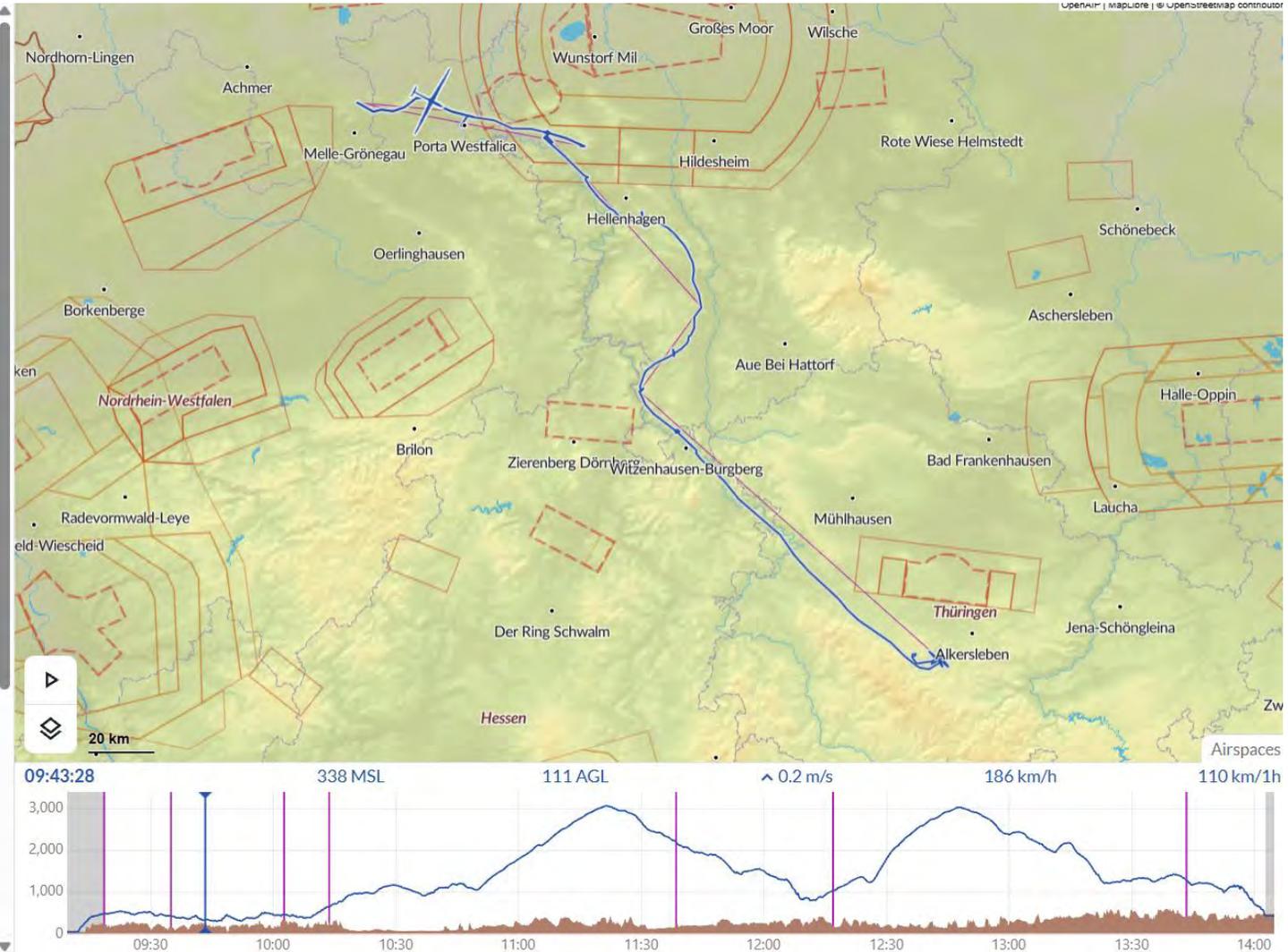
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Statistics

Free	Sprint	Triangle	Out
Points	Distance	Speed	Duration
305.0	336.7 km	76.3 km/h	4h 24m

Calculation
295.38 + 9.71 **Out and Return**

[More statistics](#) ▼



What can retrievers do at Porta?



Visit the Denkmal



Visit the Helicopter Museum in Bückebug

Some last thoughts

- Fly safe.
- Don't take risks.
- Don't do any stupid things.
- Ask yourself: do I feel comfortable with what I am doing? If not, perhaps landing is a better option.
- And last but not least, have fun on the ridge.

References and Literature:

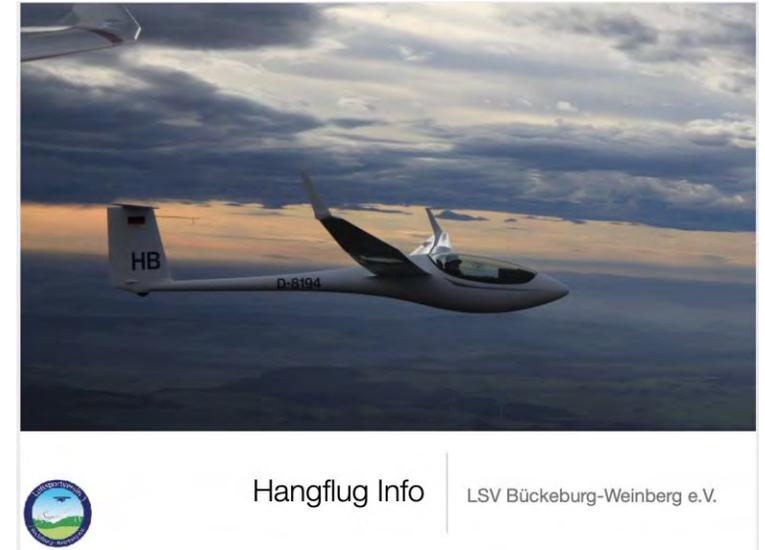


HANG- UND WELLE

Fliegen an der Porta Westfalica

Stand 2005

By: Arndt Hovestadt



Do you have any questions?

