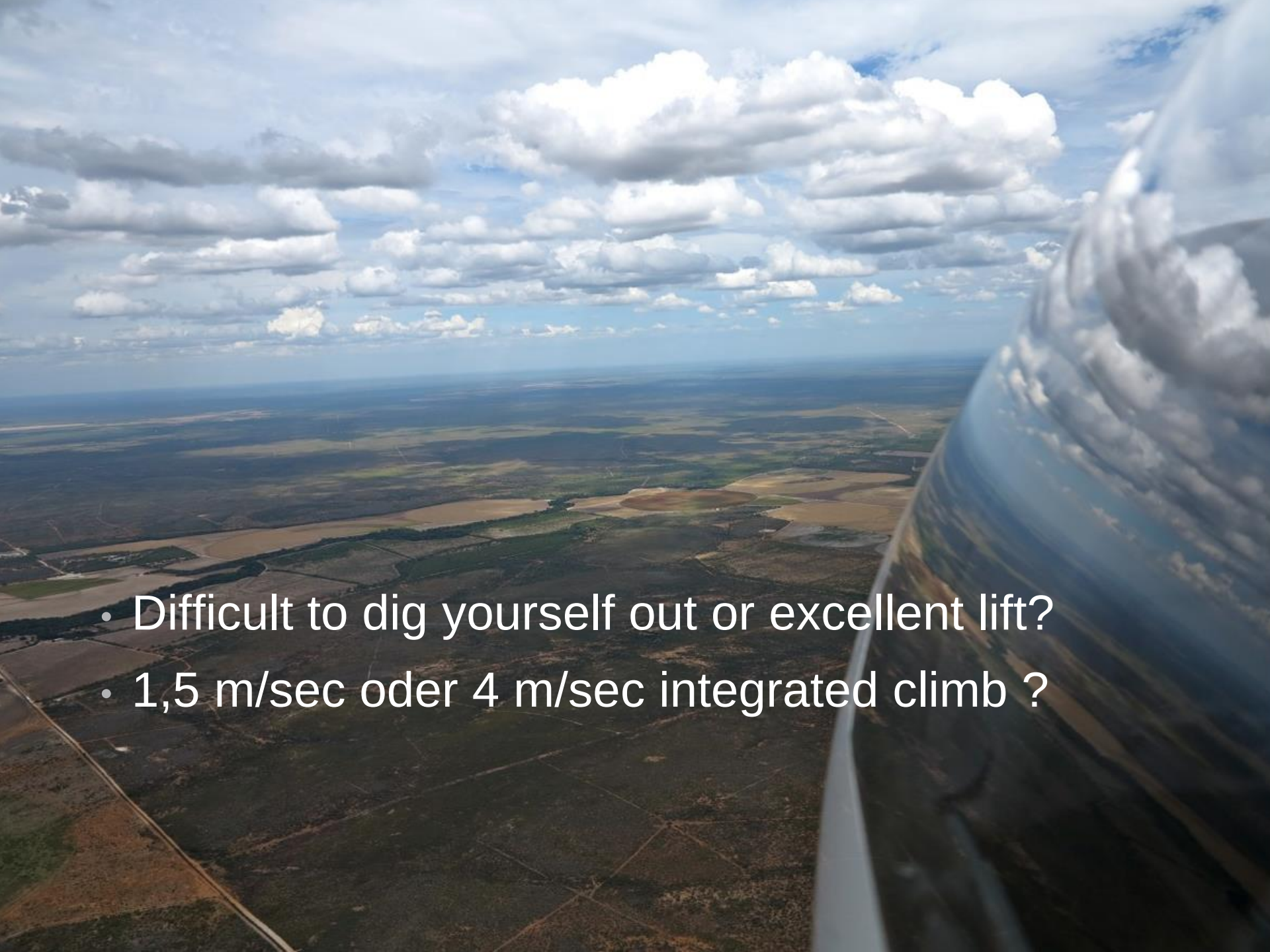


Svaeeflyvekonference 2015

Ejby

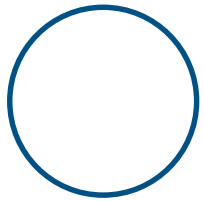


- 
- Difficult to dig yourself out or excellent lift?
 - 1,5 m/sec oder 4 m/sec integrated climb ?

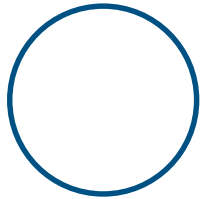
Thermals – A Mystery Uncovered



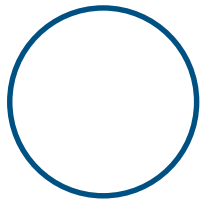
Request to the audience ...



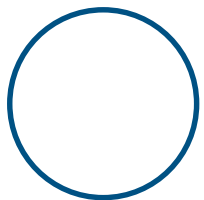
Perfectly understood,
makes sense



Mostly understood,
but questions



Did not understand,
serious doubts



Thinks it's nonsense
or complete bullshit



Content

- **Convective currents, - that's warm air, - or is it not?**







K6121

FALKENBERG

L422

verschiedene
vegetationen

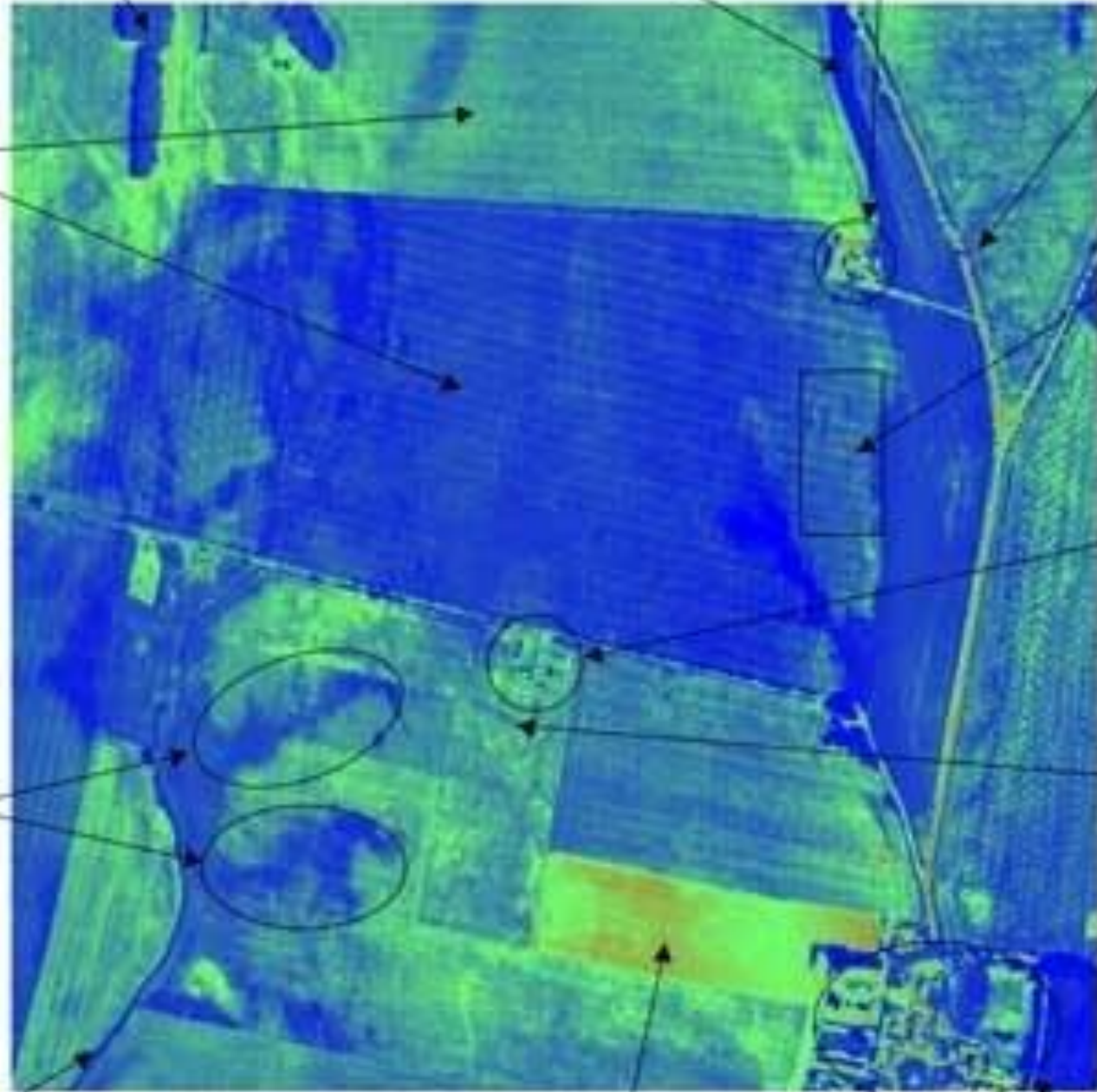
Traktorsp
auf dem
Getreidef

Containere
dem Mes
Falkenbe

Höhere
odenfeuchte

Schatten
Messmas

Graben mit
Wasser

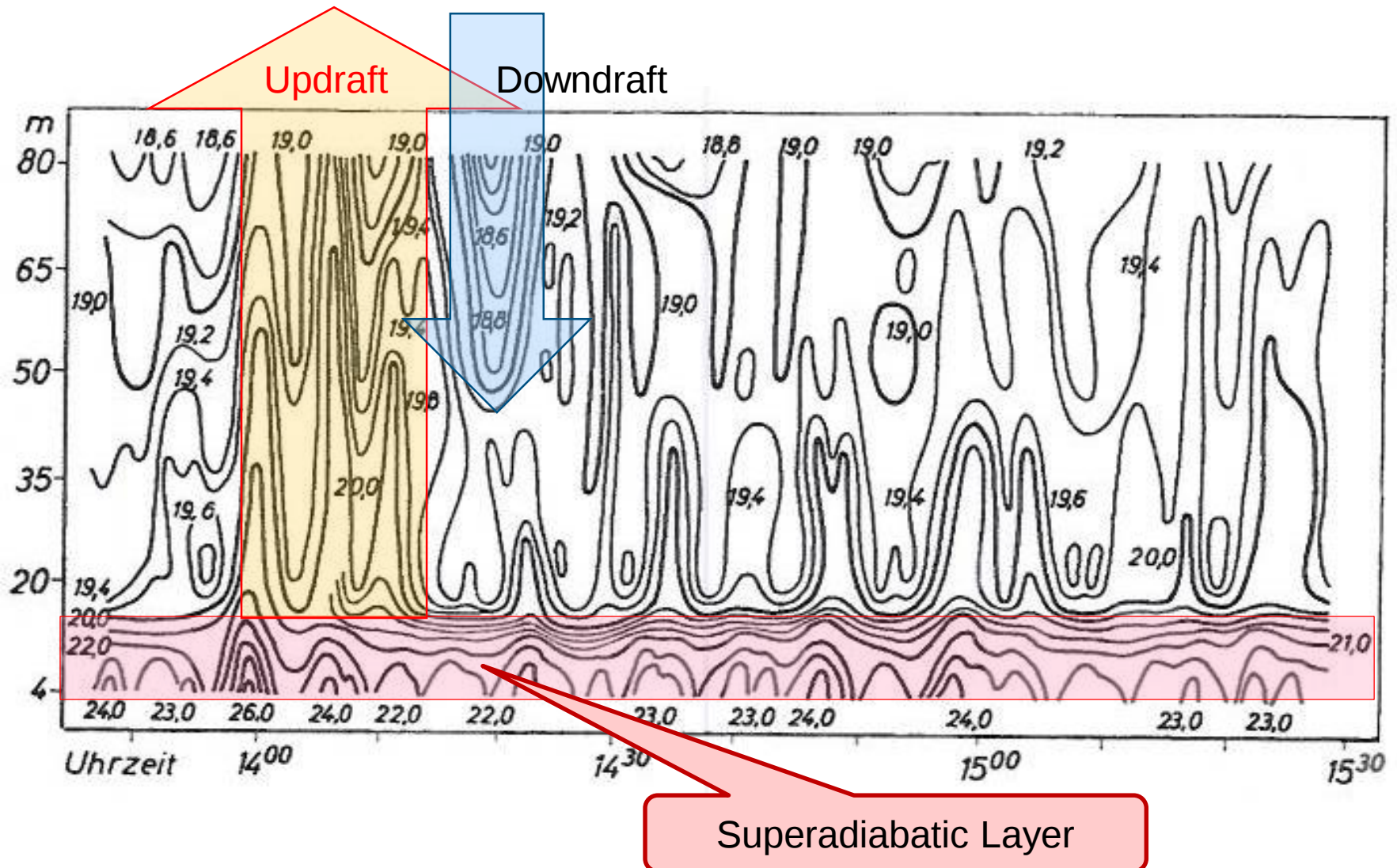


19°C

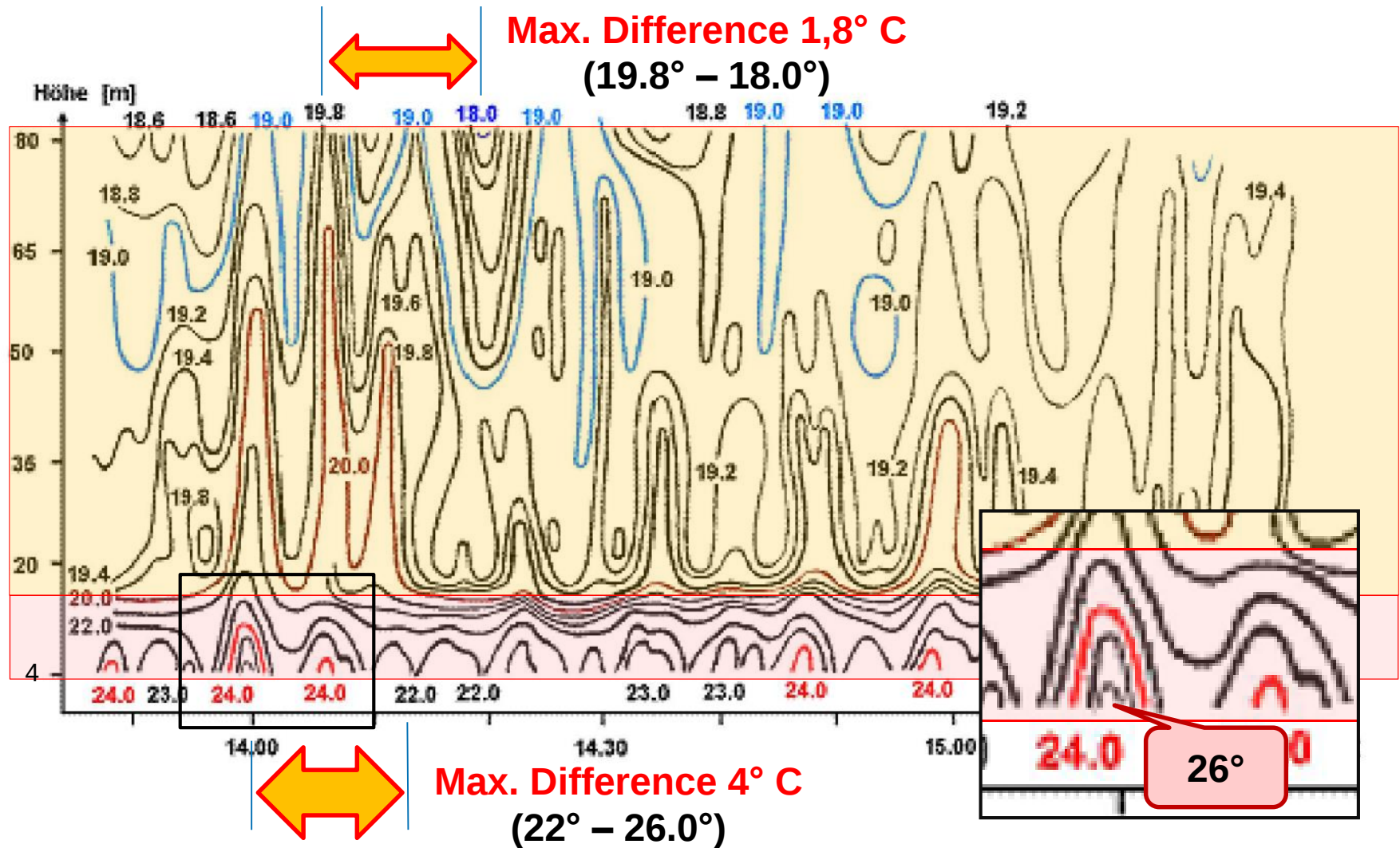
38°C

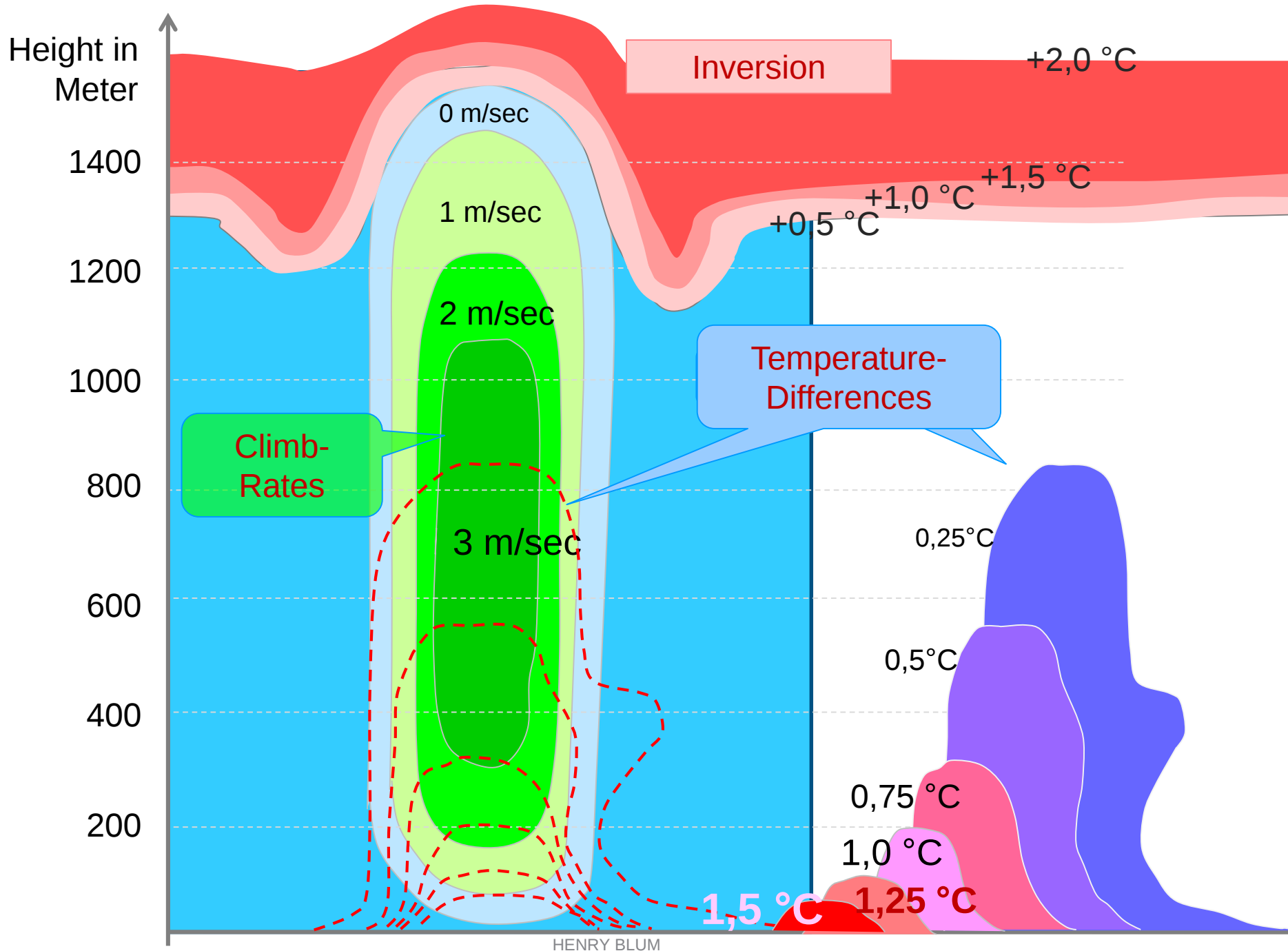
57°C

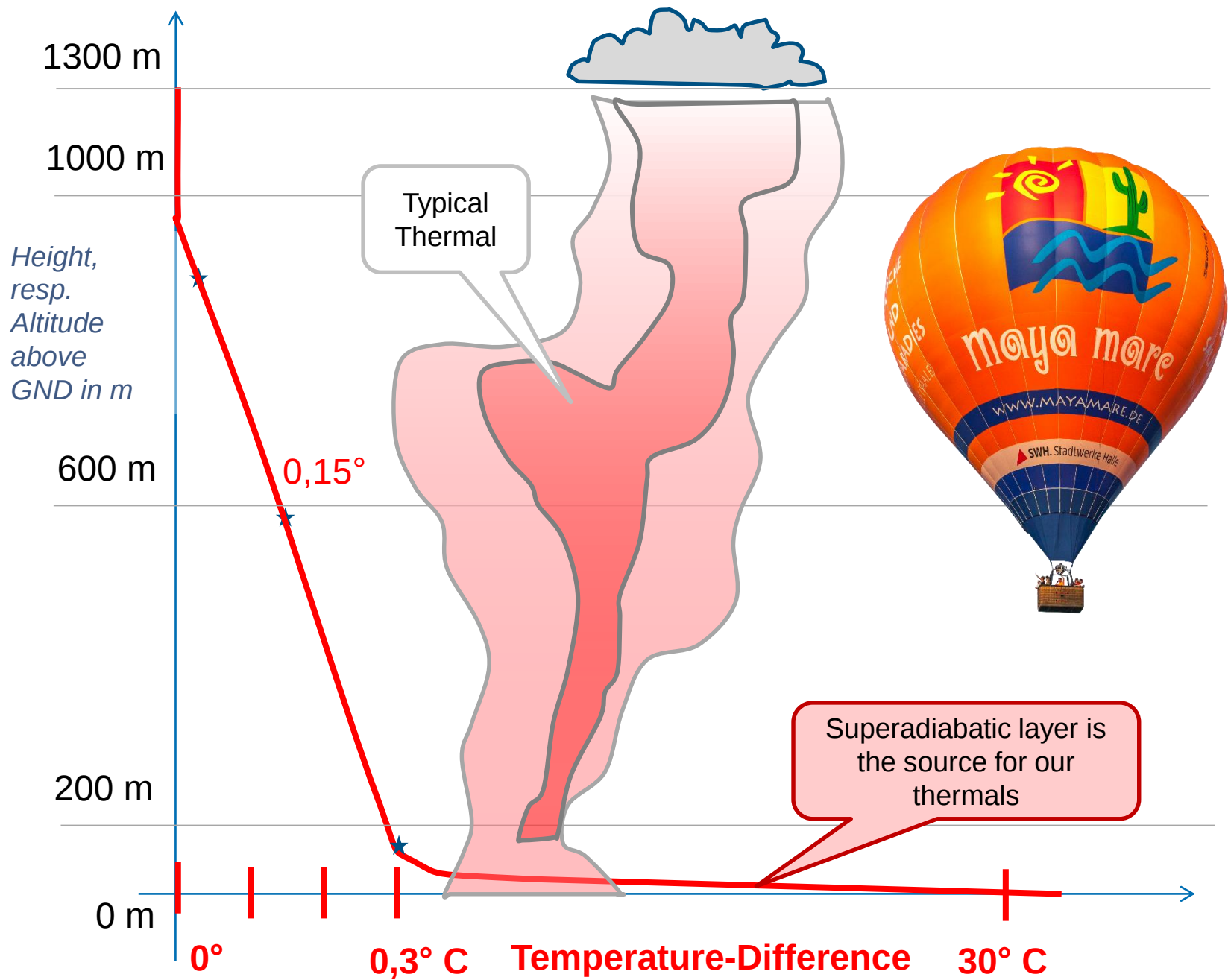
The Boundary Layer

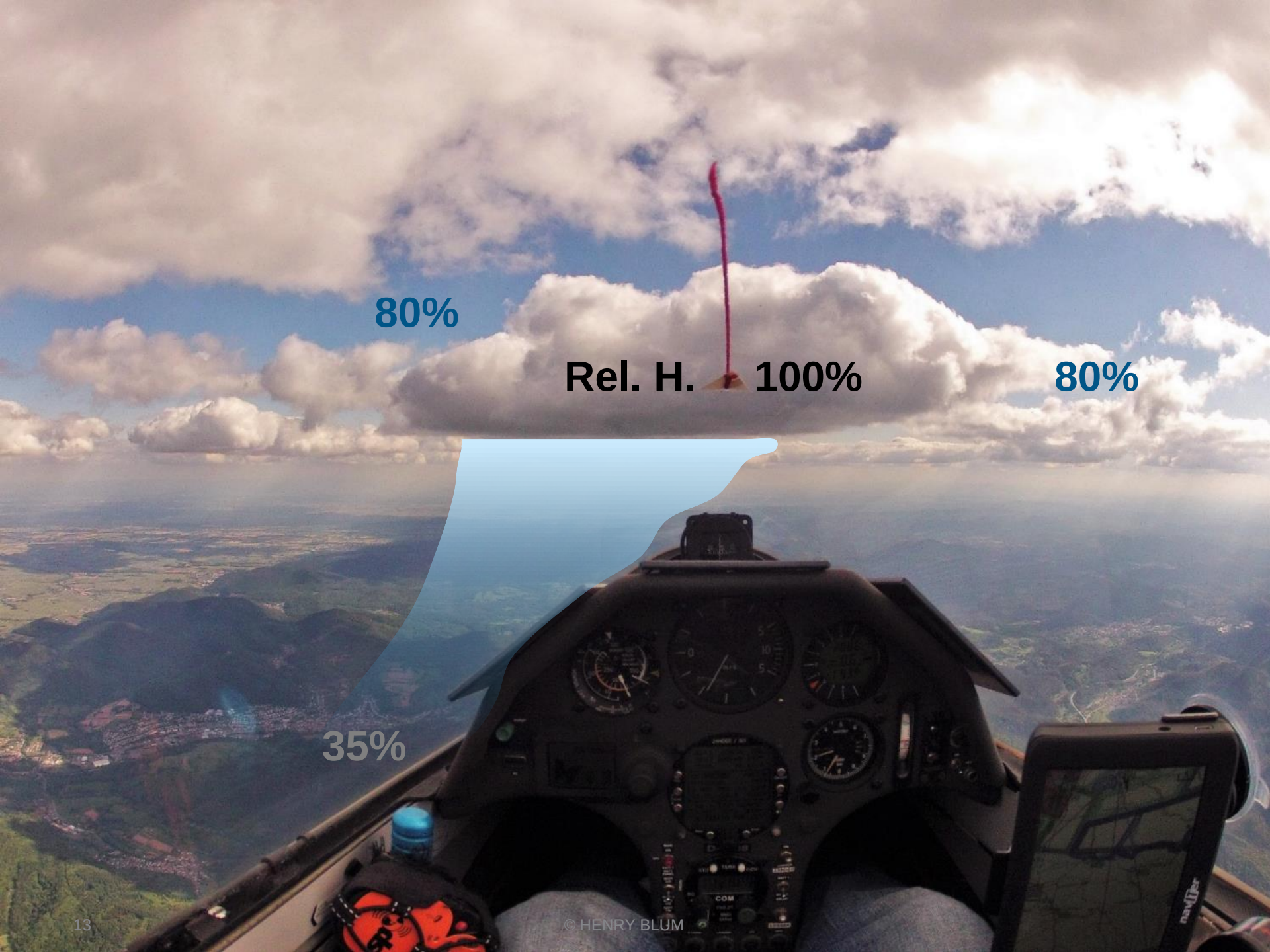


The Boundary Layer







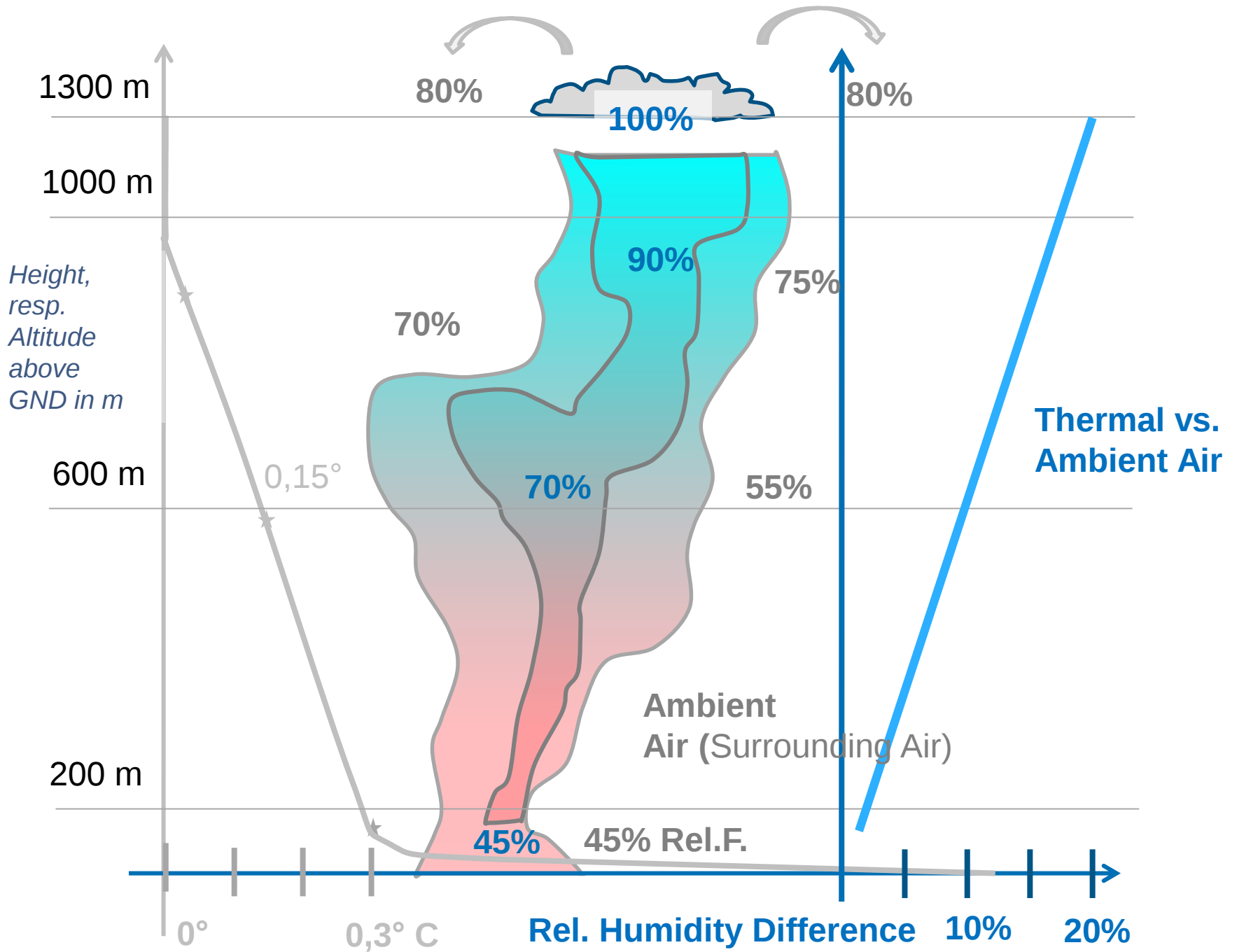


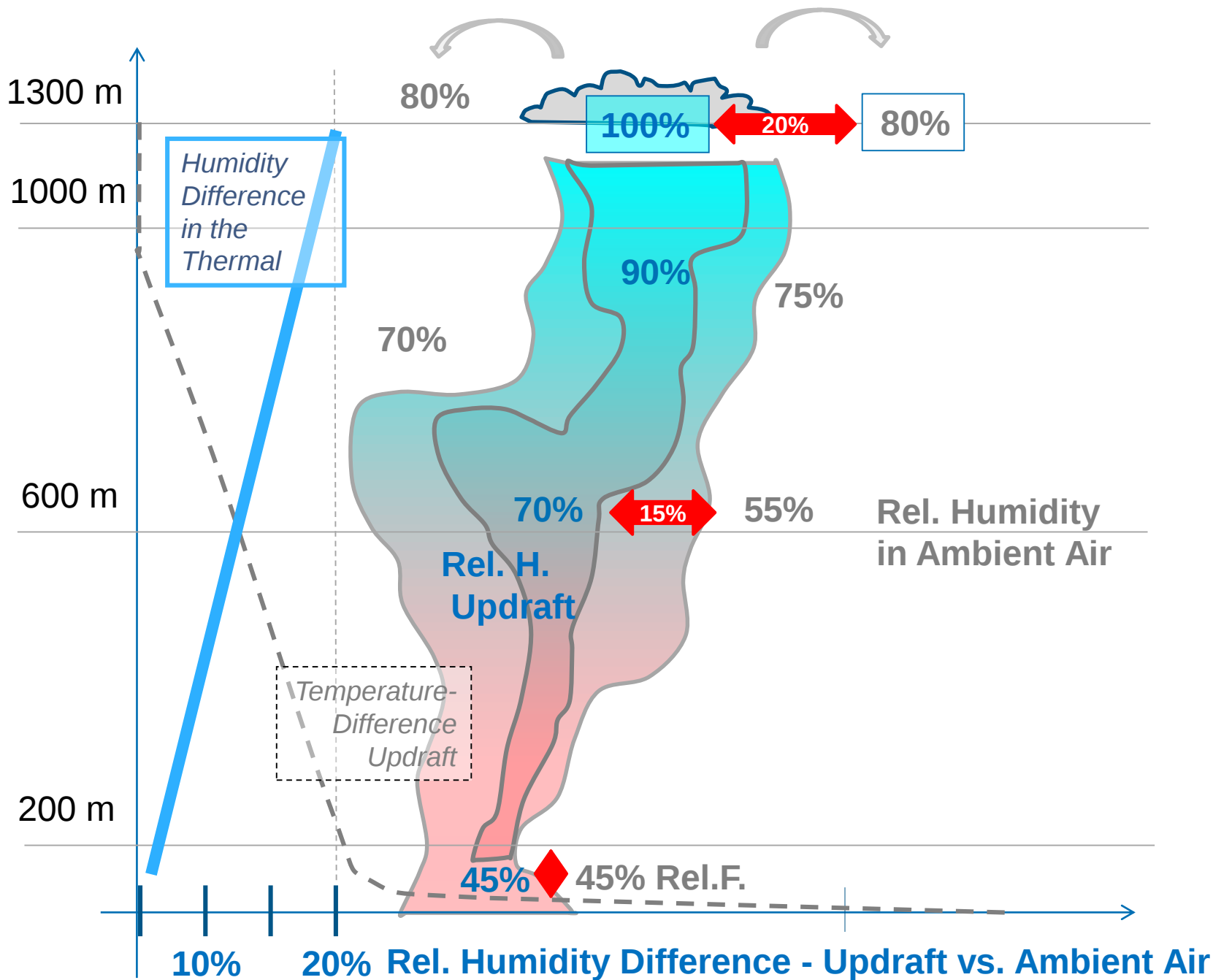
80%

Rel. H. 100%

80%

35%





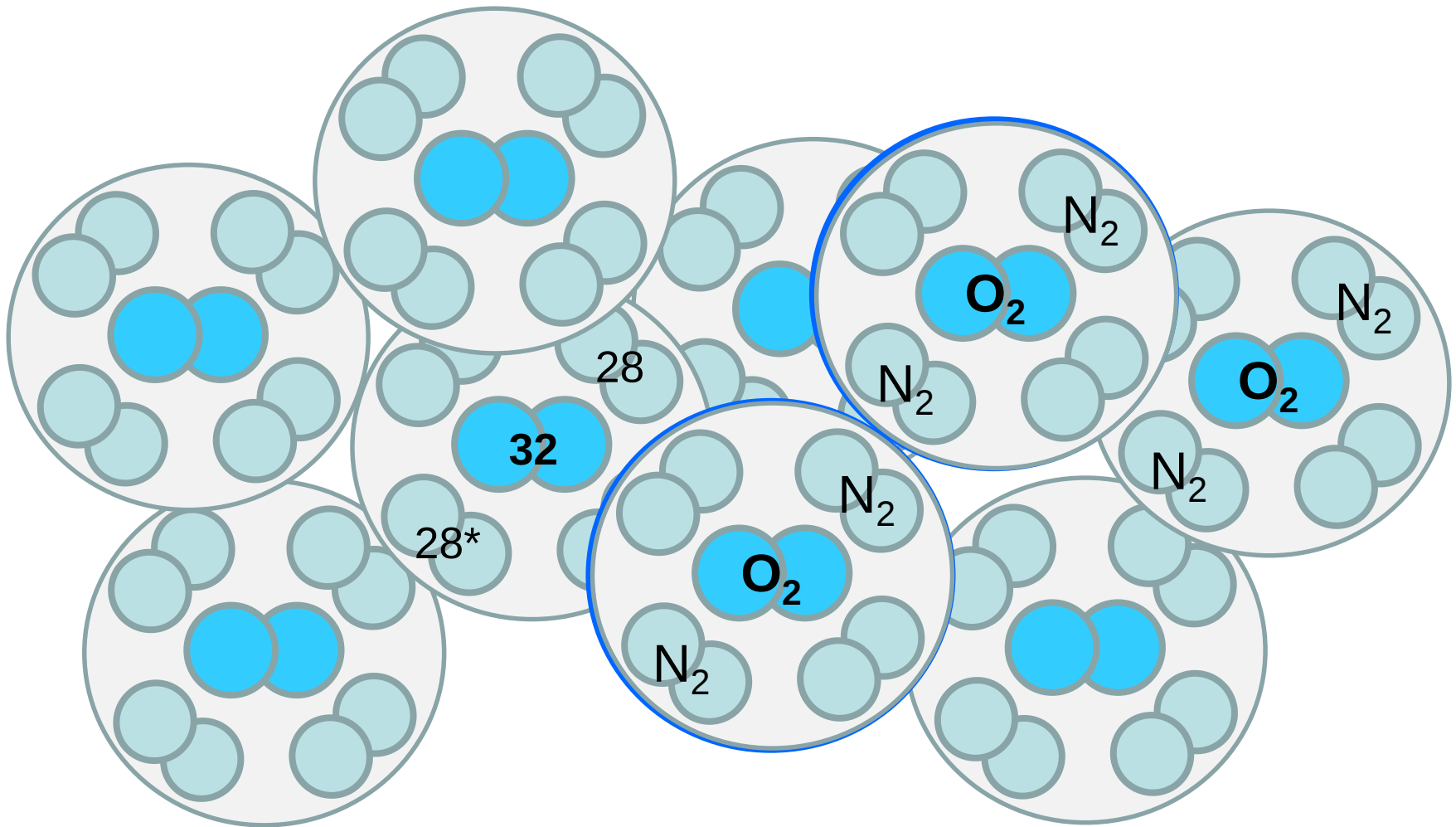
- **Moisture is the „Soul of Thermals“, because**

- **Humid Air is Lighter than Dry Air !**



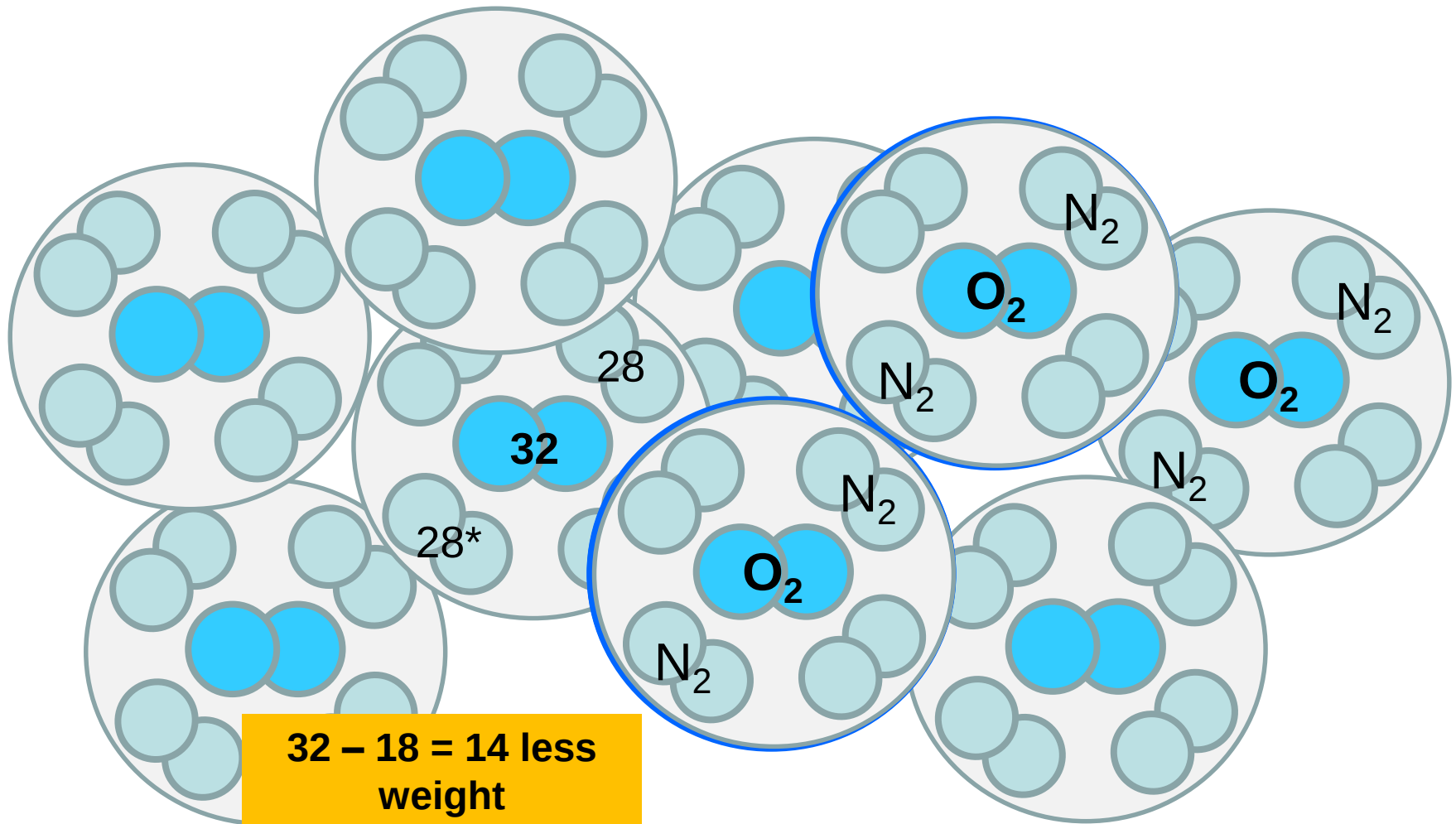
Compounds of Air:

78% nitrogen, 21% oxygen



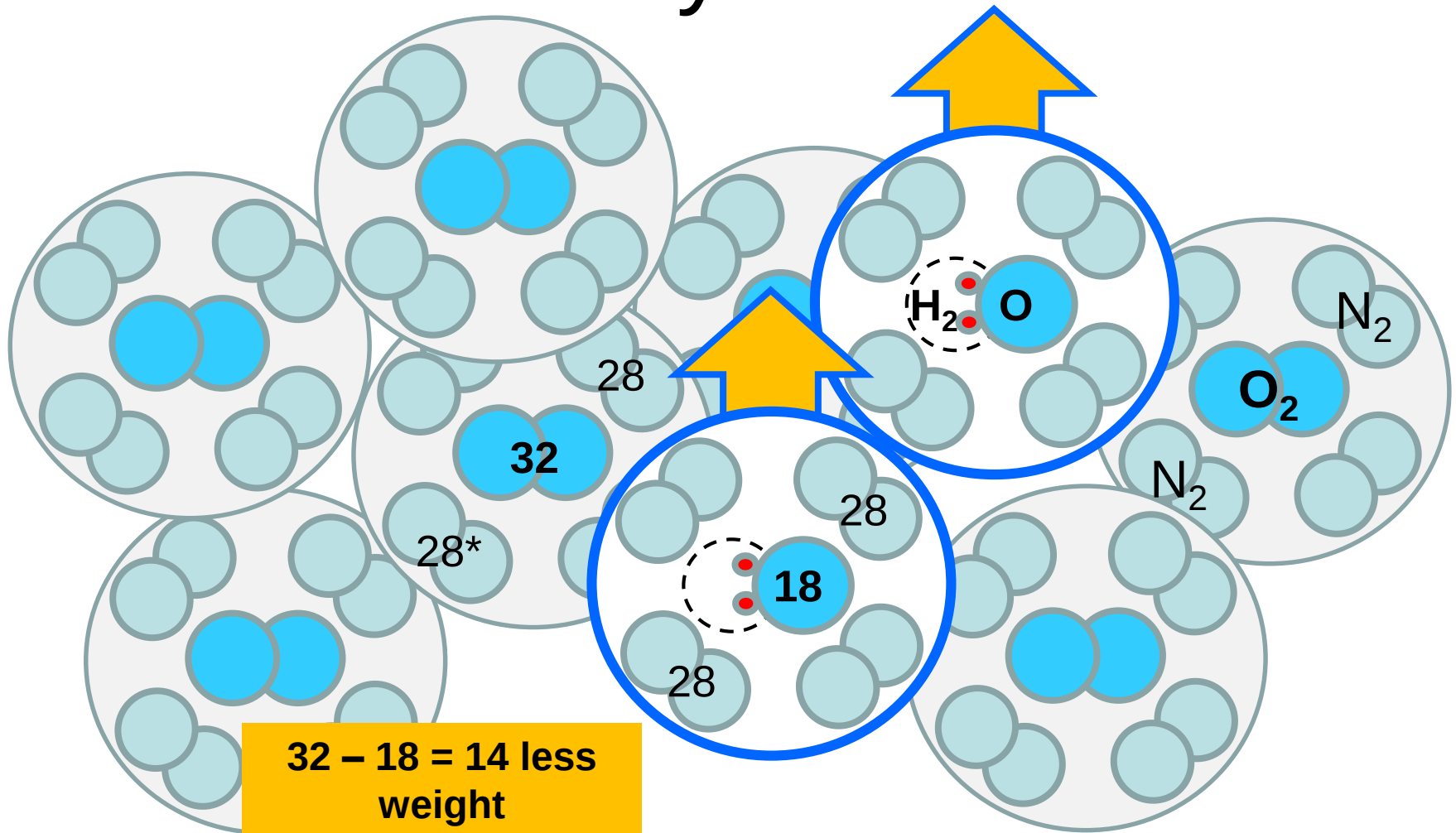
*Molecular weight

Humid air has less weight – why that?



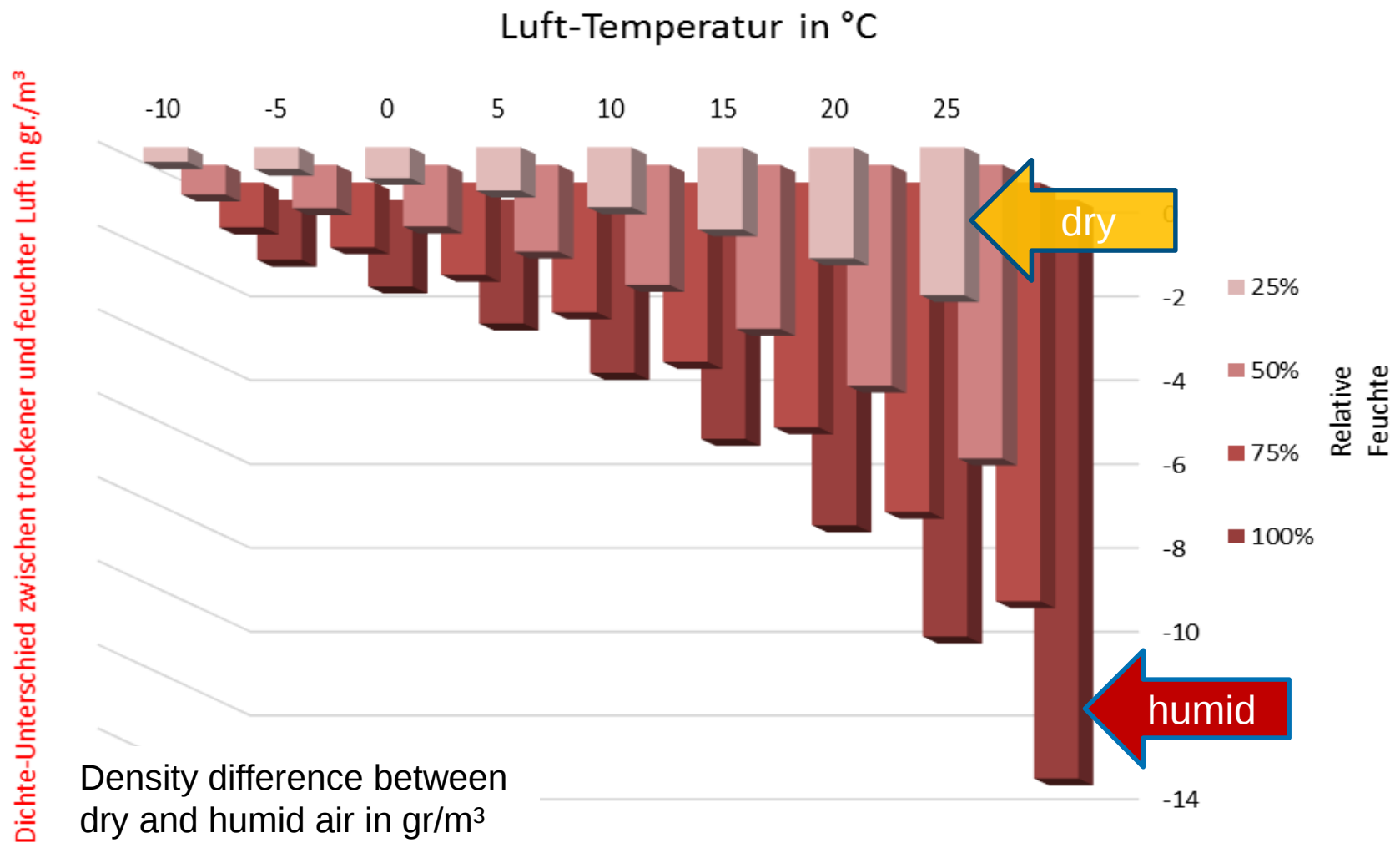
*Molecular weight

Humid air has less weight – why that?



*Molecular weight

Humid air has less weight than dry air... !



Important

- Horizontal temperature differences between thermals and surrounding air disappear
- Humid air is lighter than dry air!
- Warm air can store a lot more water vapor than cold one!

Sample-Thermal

Base: T 6°C, rel. H. 100%

- 0,9 gr/m³ air

Ambient air: T 6°C, rel. H. 80%

1400 m
GND

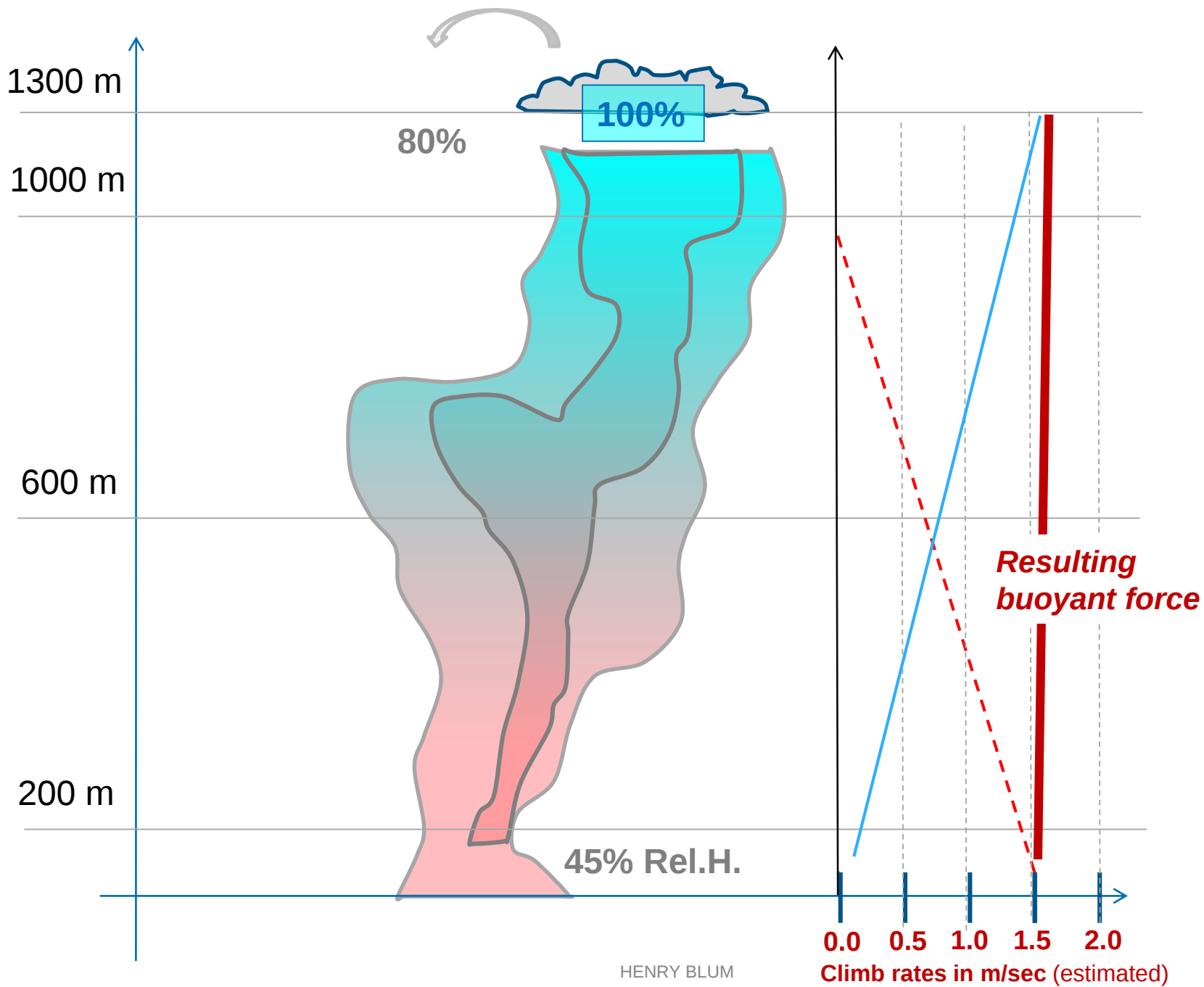
Thermal-Diameter: 500m

Volume of air: 274.907.500 m³

0,9 gr Density-Difference/m³
→ Total Buoyancy: **123,6 to**

T 17,6°C, rel. H. 46% *

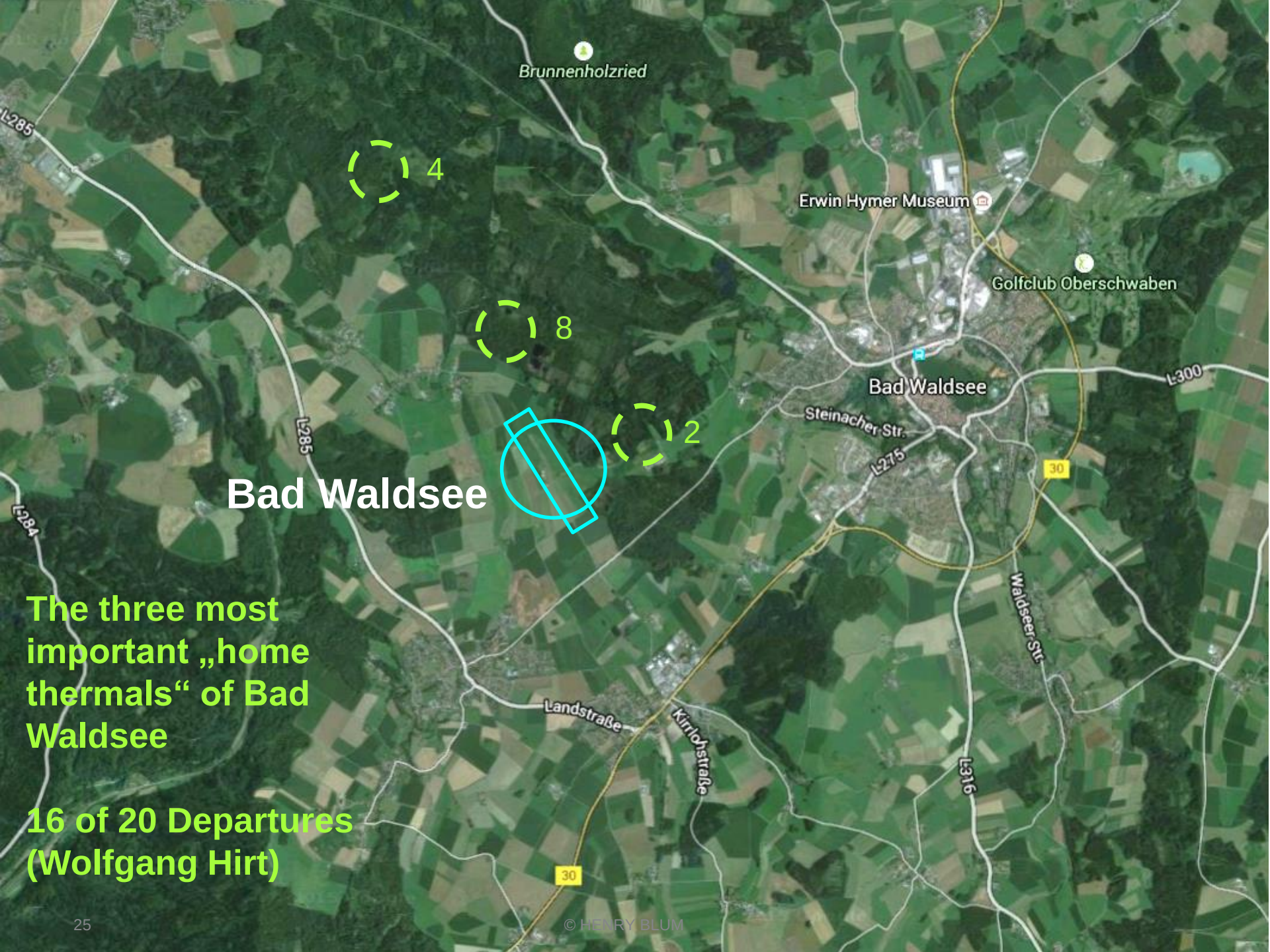
*No humidity related density difference per m³ Air



Where please can I find the thermals?

Here!

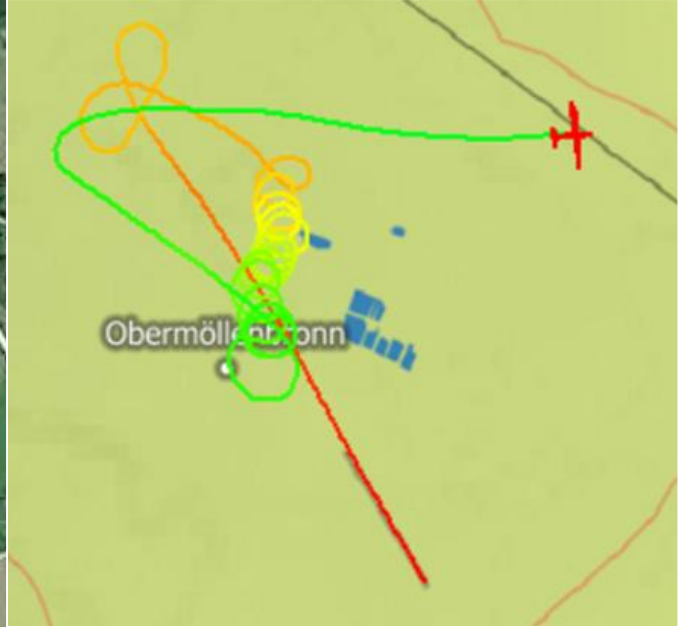




Bad Waldsee

The three most important „home thermals“ of Bad Waldsee

16 of 20 Departures (Wolfgang Hirt)



The #1 „Hotspot“,
a swamp in the
forest



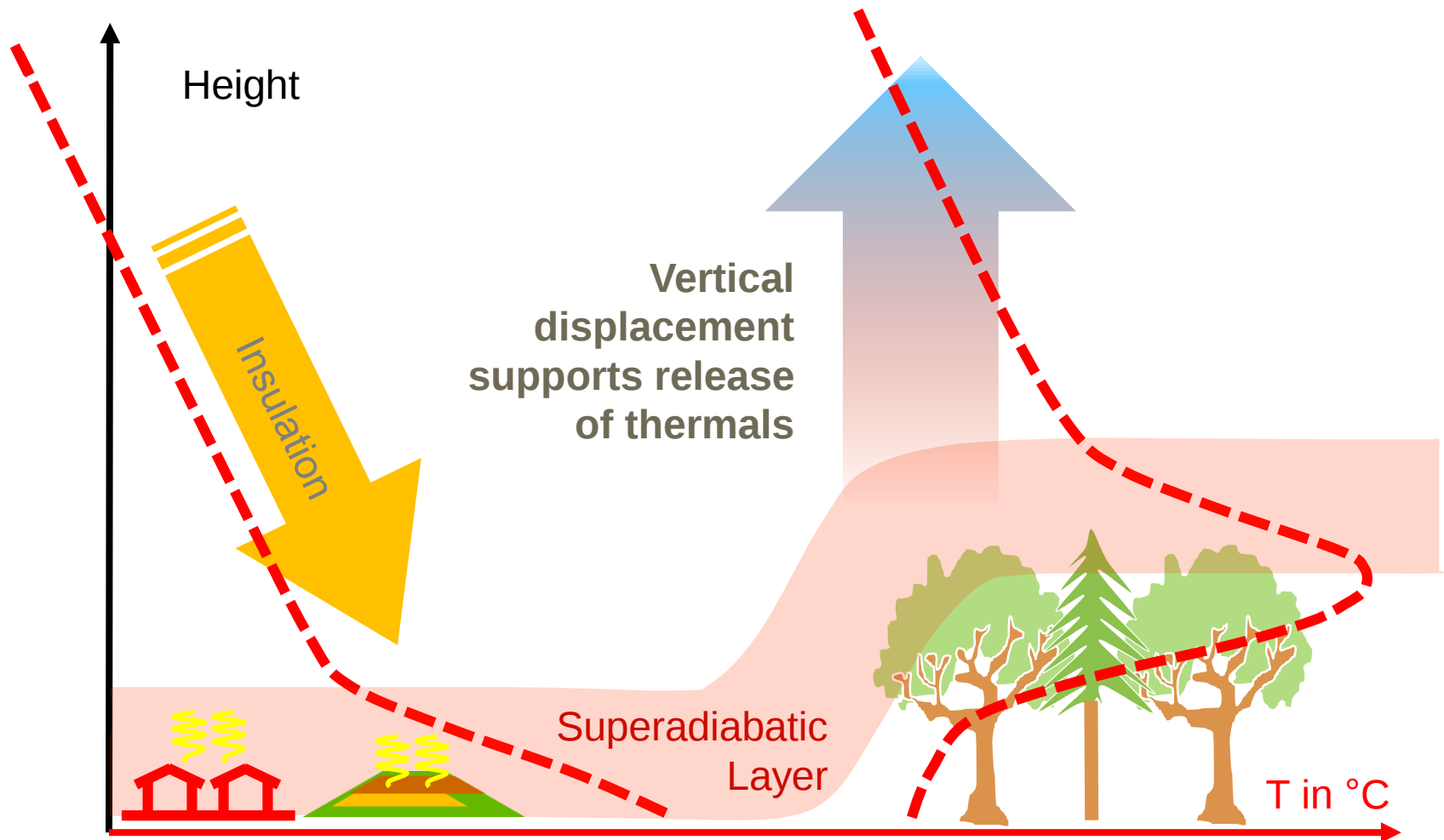
UNTERMÖLLENBRONN

L-285

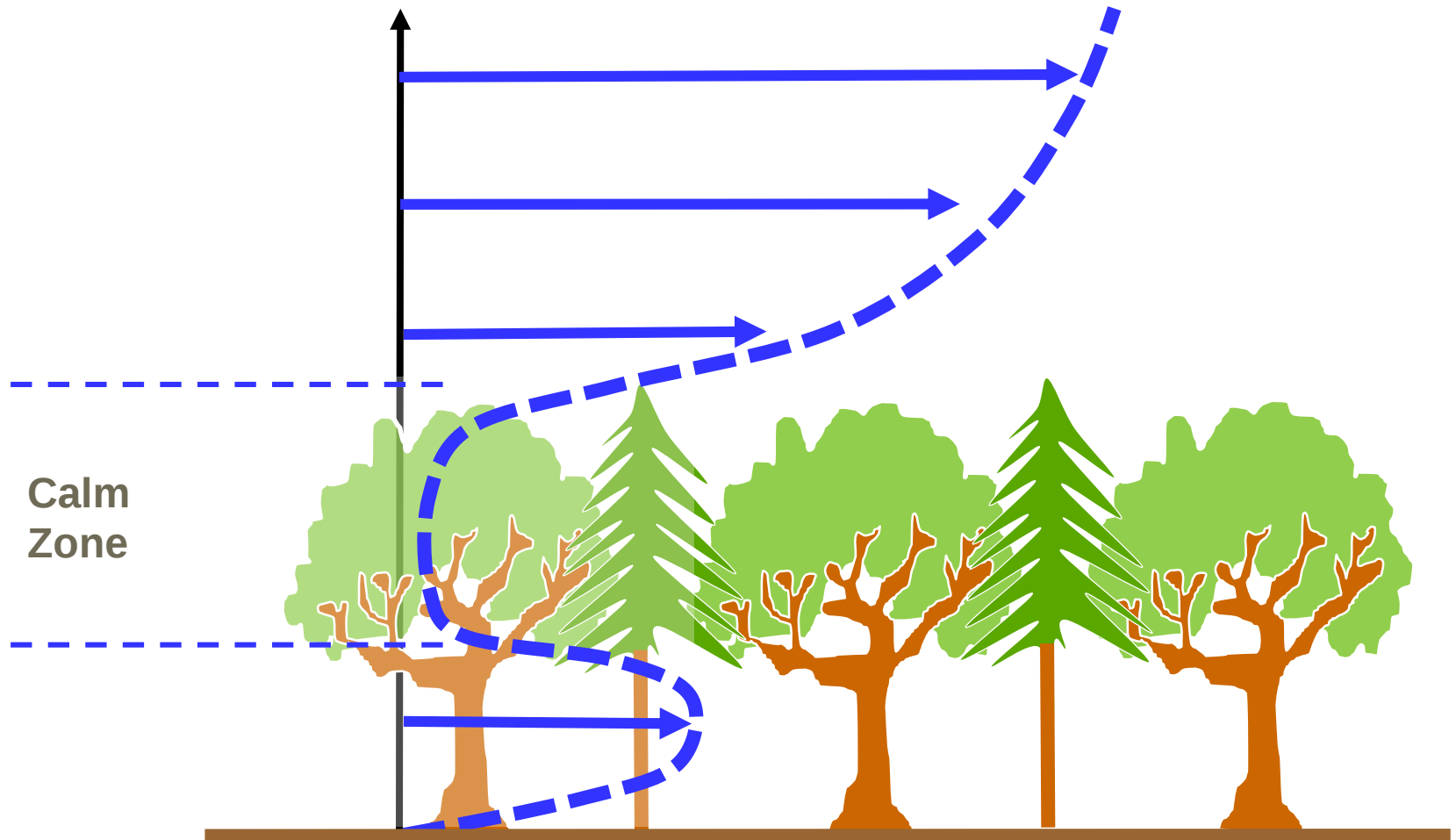
K-7941



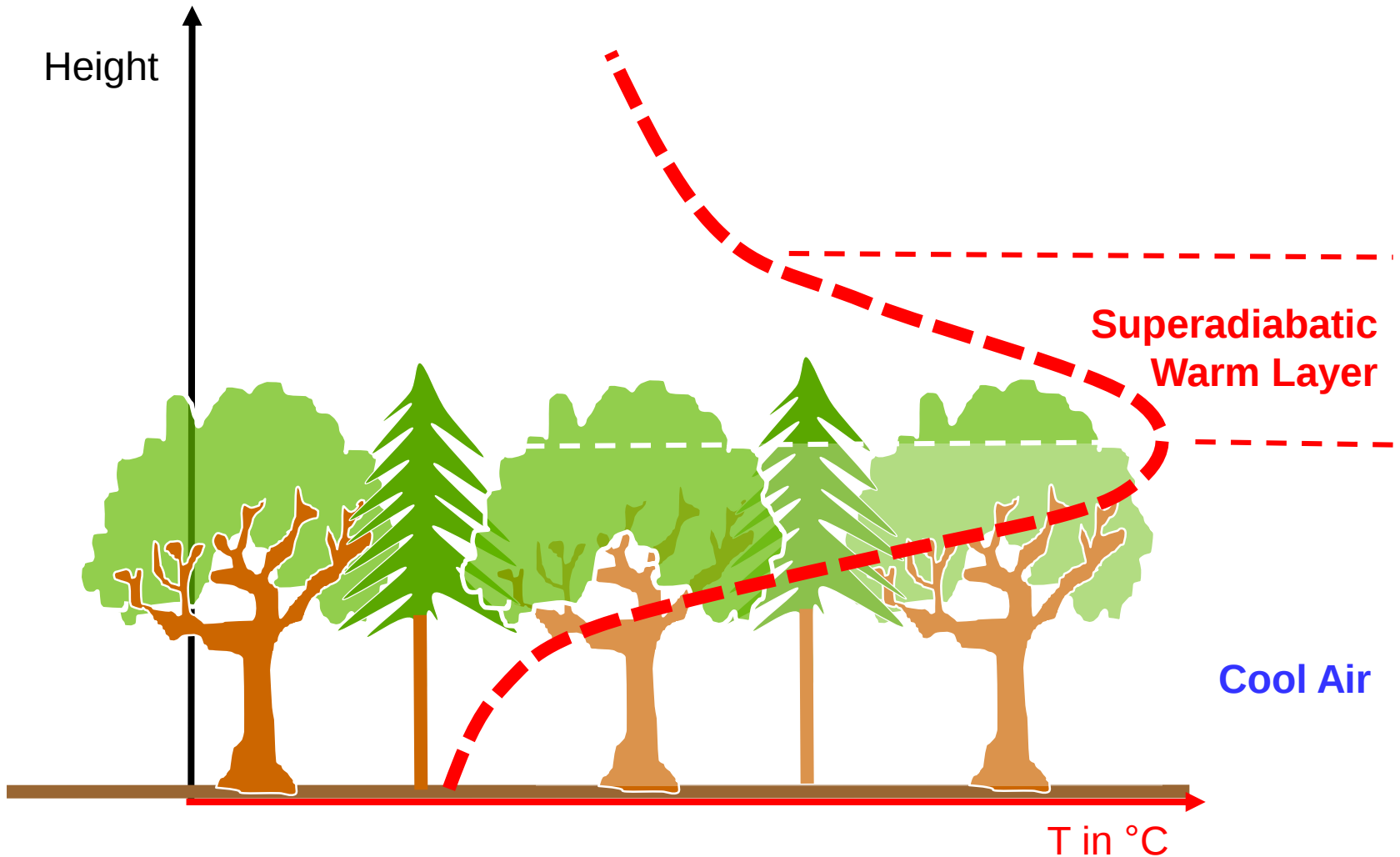
Temperaturprofil in the Field and in a Forest



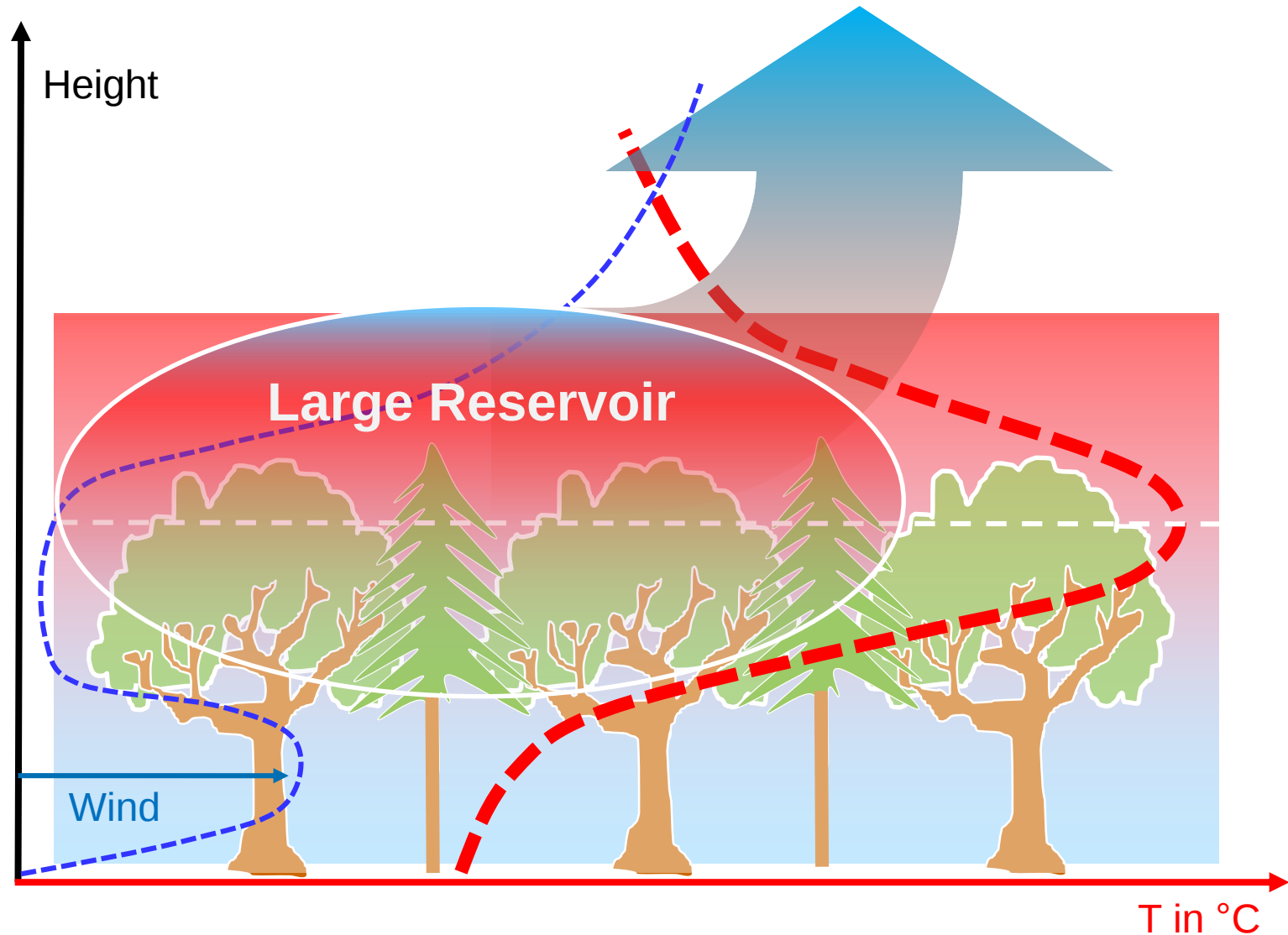
Windprofile in a forest



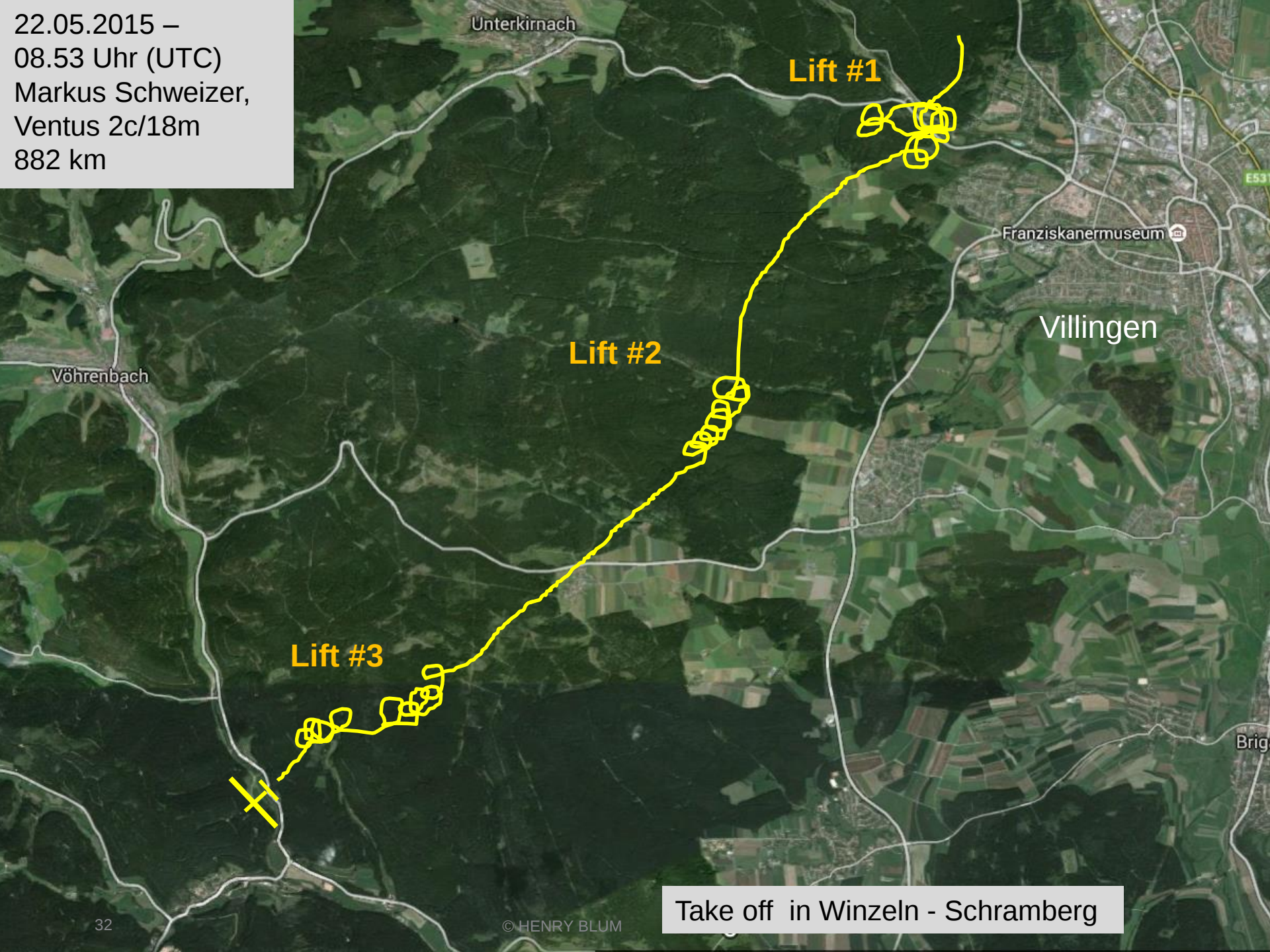
Temperature Profile in a Forest



Forests release warm, humid air ...

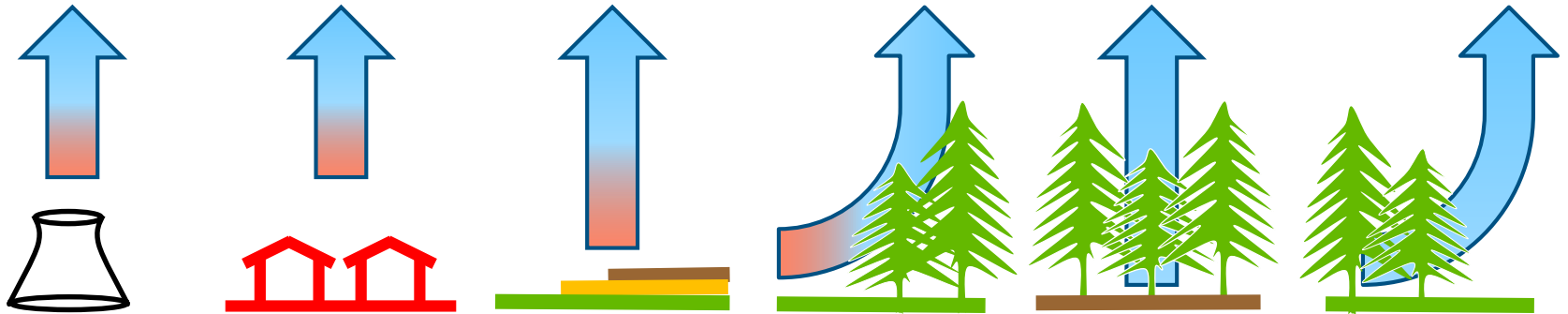


22.05.2015 –
08.53 Uhr (UTC)
Markus Schweizer,
Ventus 2c/18m
882 km

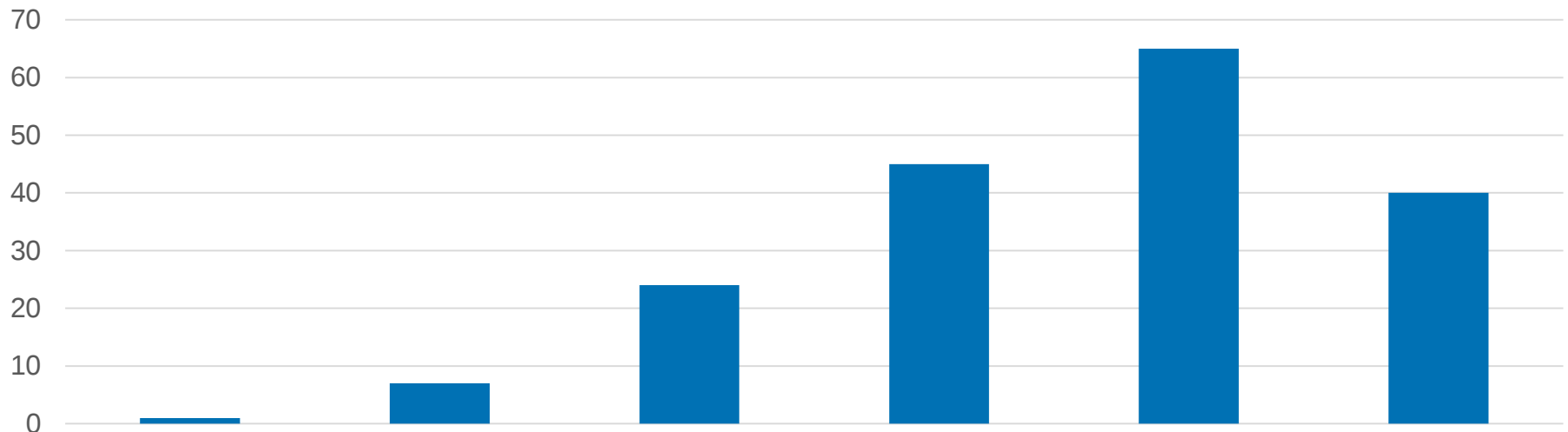


Take off in Winzeln - Schramberg

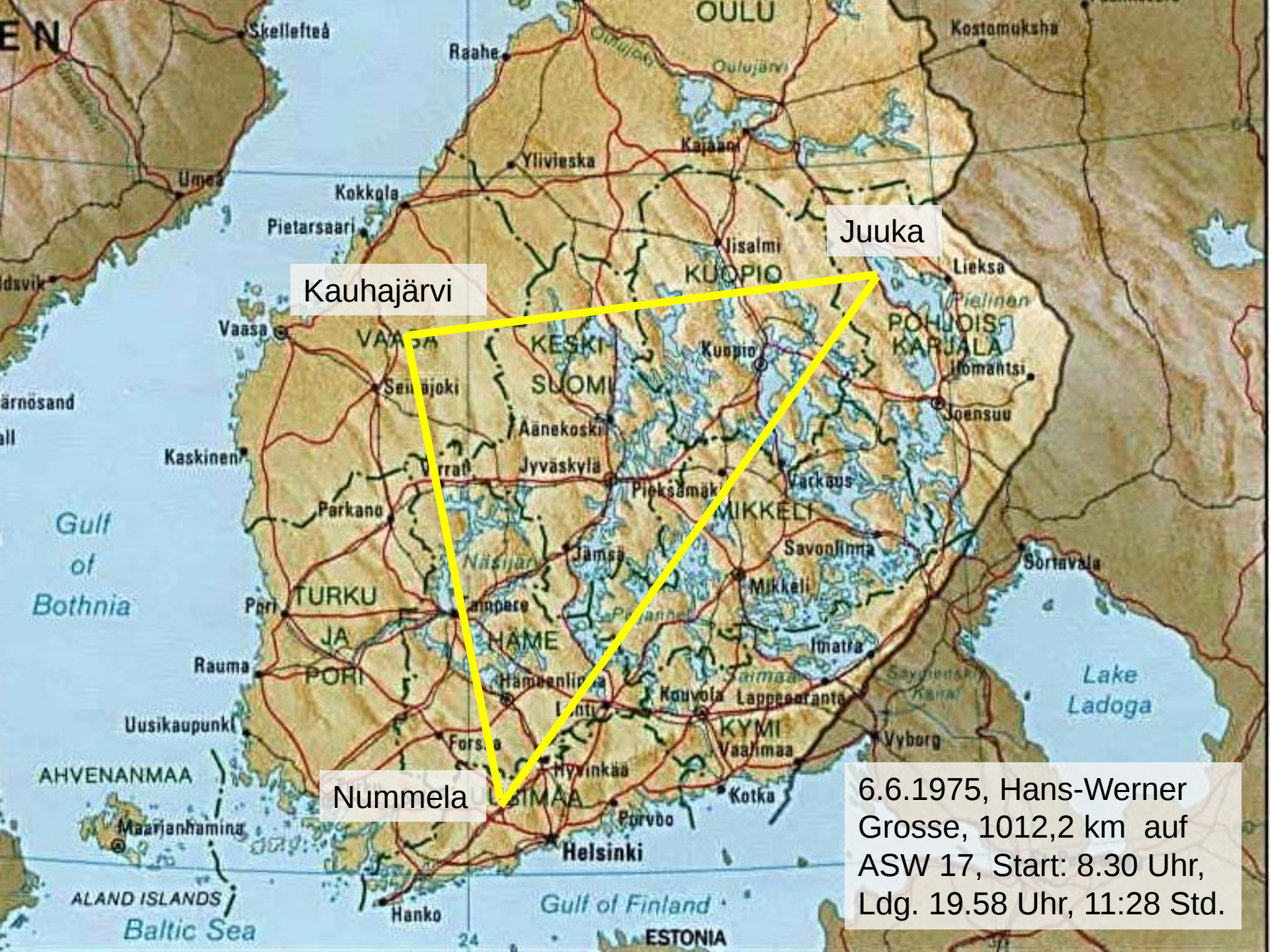
182 investigated thermals* and their initial release point ...



Powerplant	City	Field, Meadow	Edge of Forest	Middle of Forest	Out of edge of Forest
1	7	24	45	65	40







Kauhajärvi

Juuka

Nummela

6.6.1975, Hans-Werner
Grosse, 1012,2 km auf
ASW 17, Start: 8.30 Uhr,
Ldg. 19.58 Uhr, 11:28 Std.



18.04.2015 –
08.26 Uhr (UTC)
Simon Schröder,
ASG 29/18m 1090 km
(1005 km FAI)

Höhe

1030 m

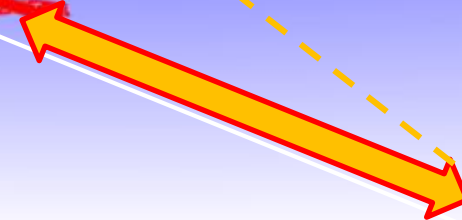
550 m

160 m

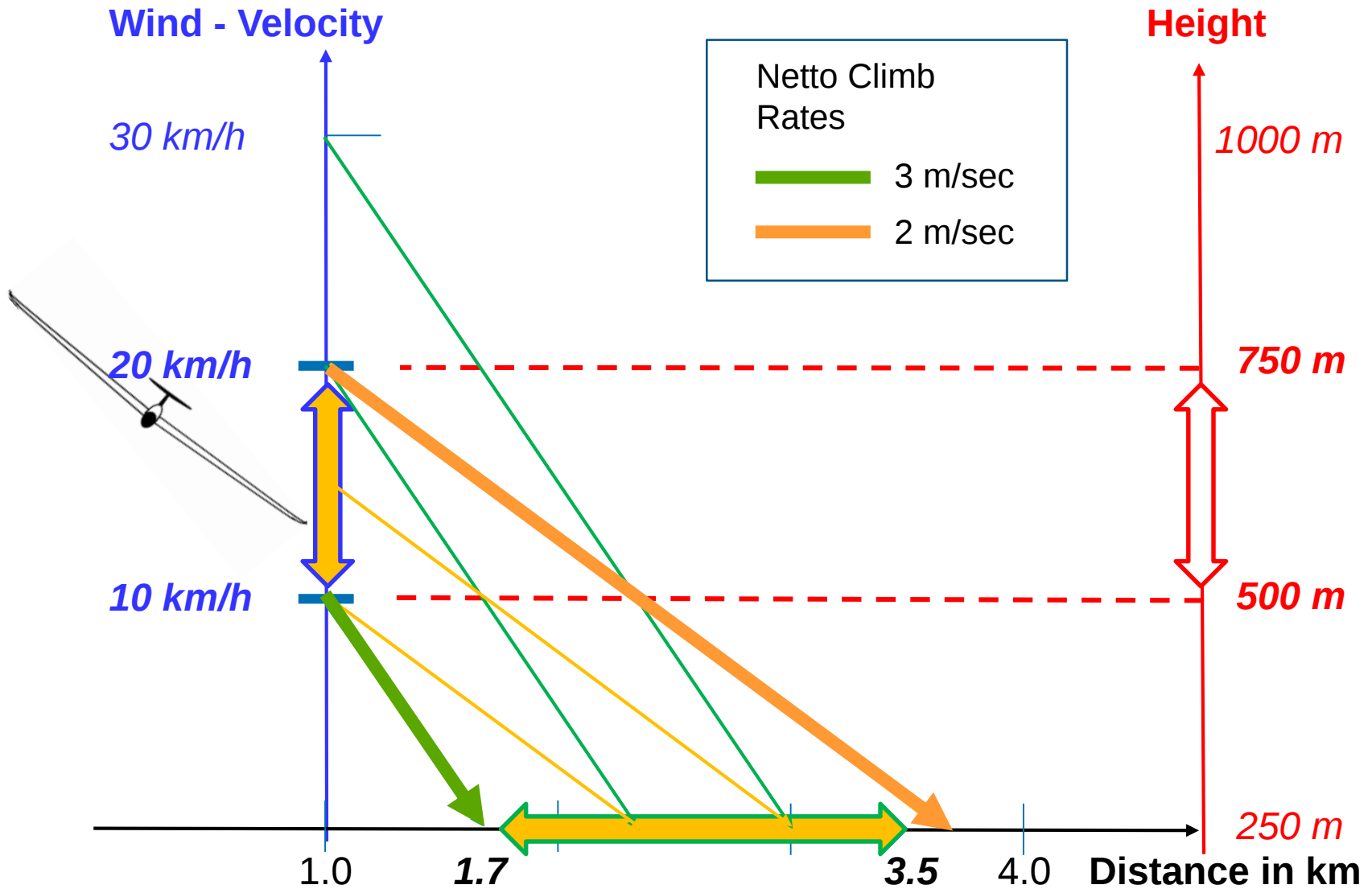
Wind



S1

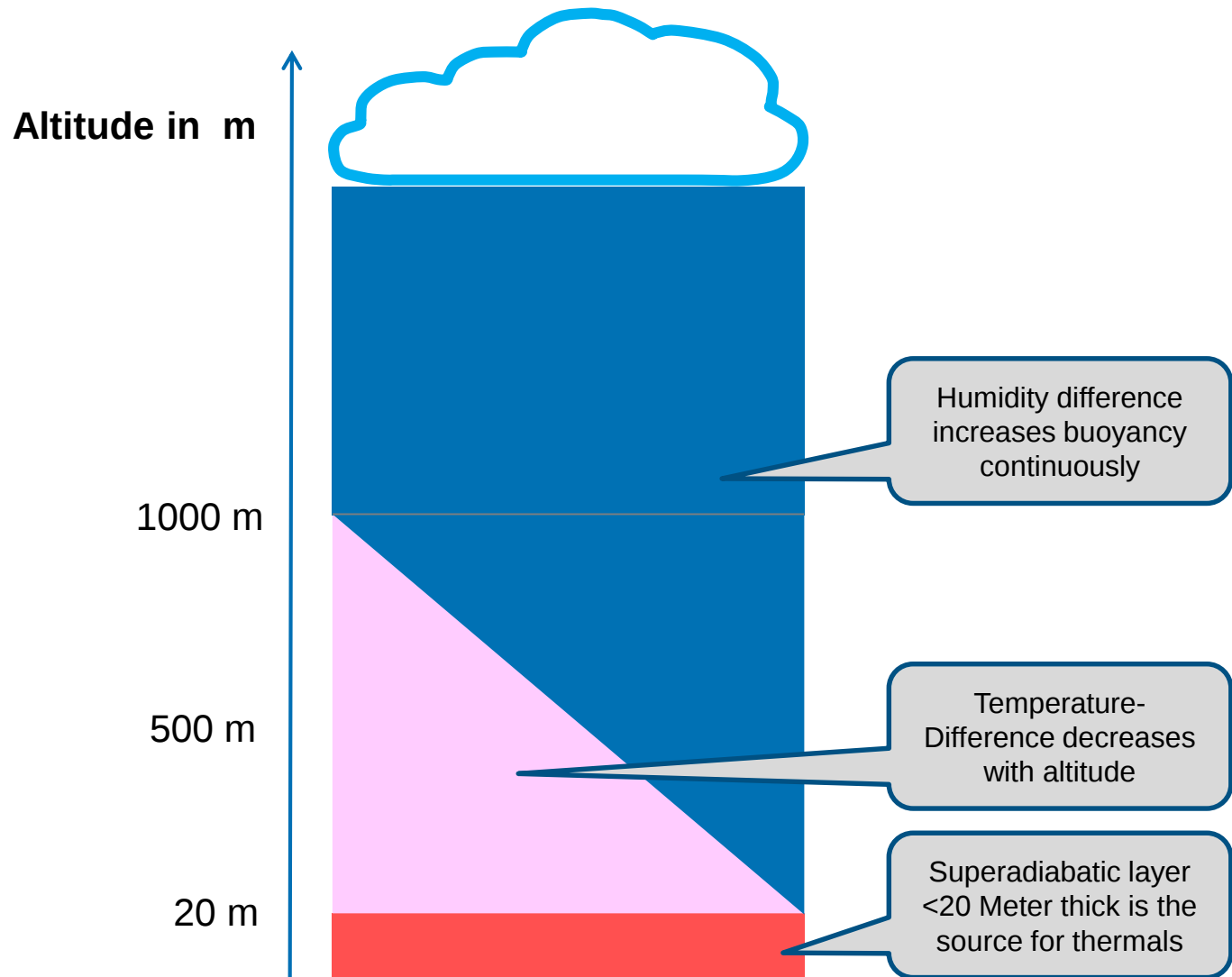


Distance of the release point

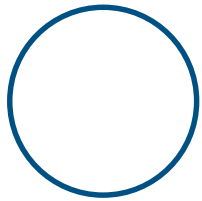




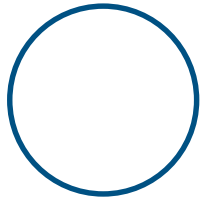
The Standard-Thermal-Model



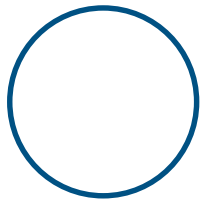
Question to the audience ...



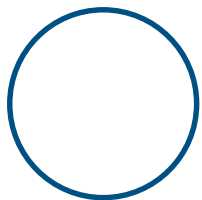
Perfectly understood,
makes sense



Mostly understood,
but questions



Did not understand,
serious doubts



Thinks it's nonsense
or complete bullshit

