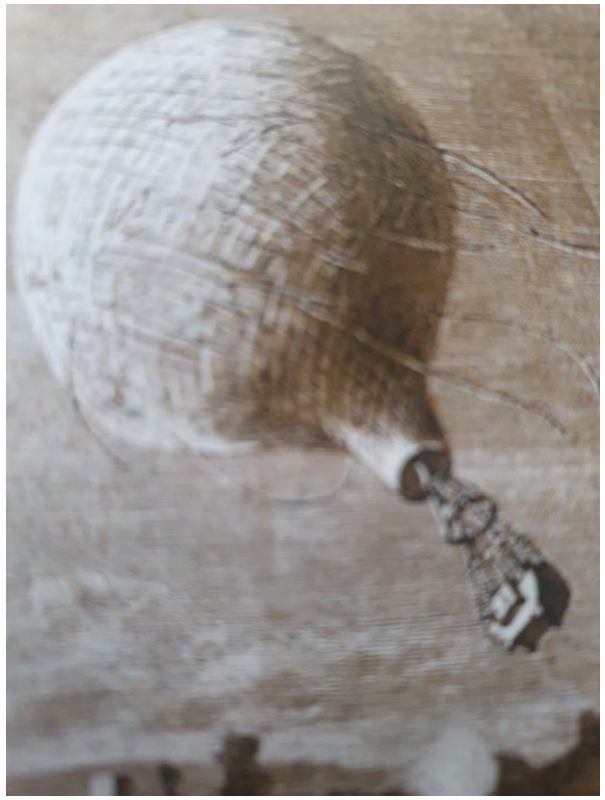
EUMeTrain Wind Event Week 28 February – 4 March 2022

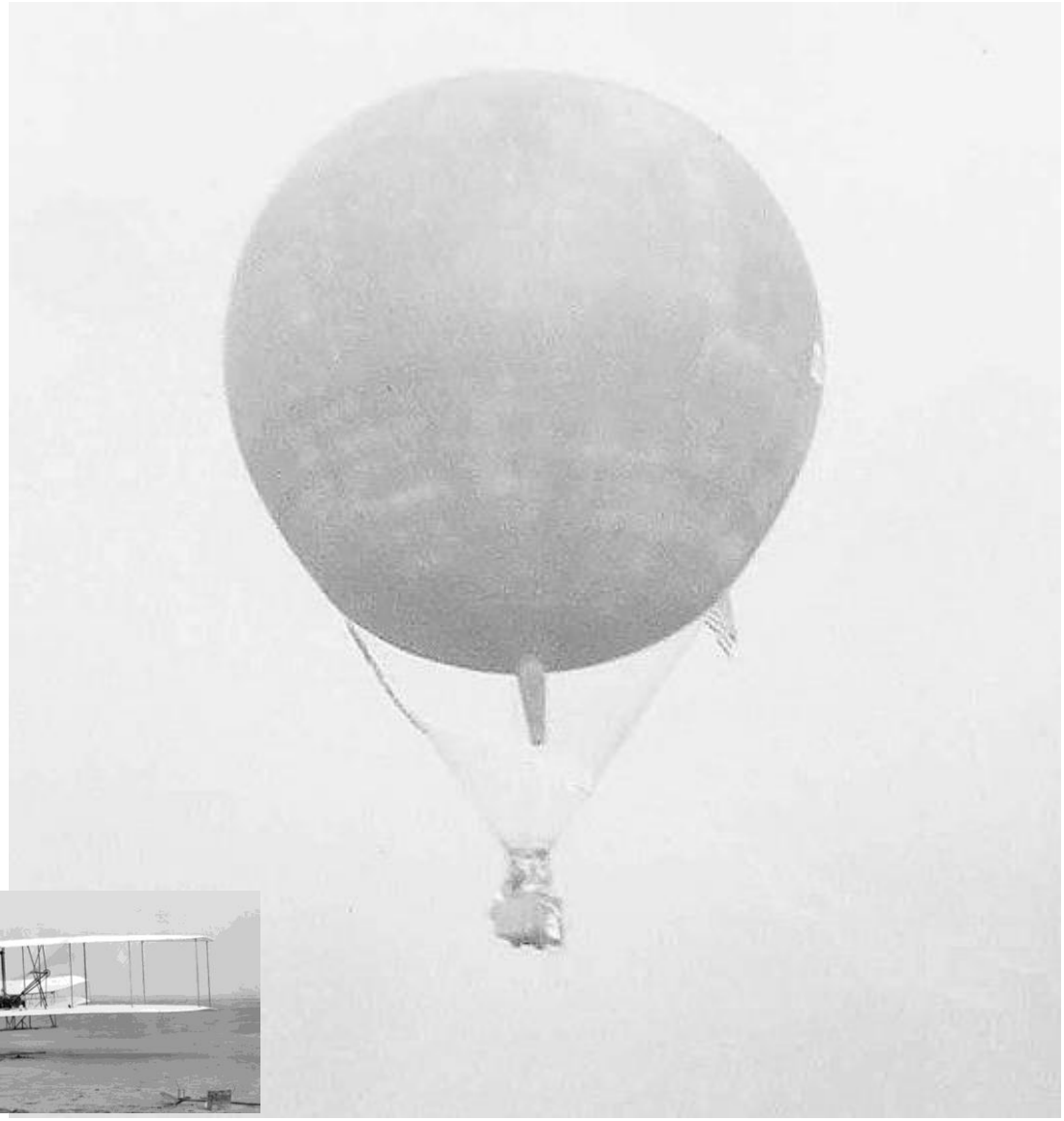
Ab Maas



The role of the wind in ballooning

Montgolfier balloon, first flight november 1783

Gas balloon, first flight 1 december 1783



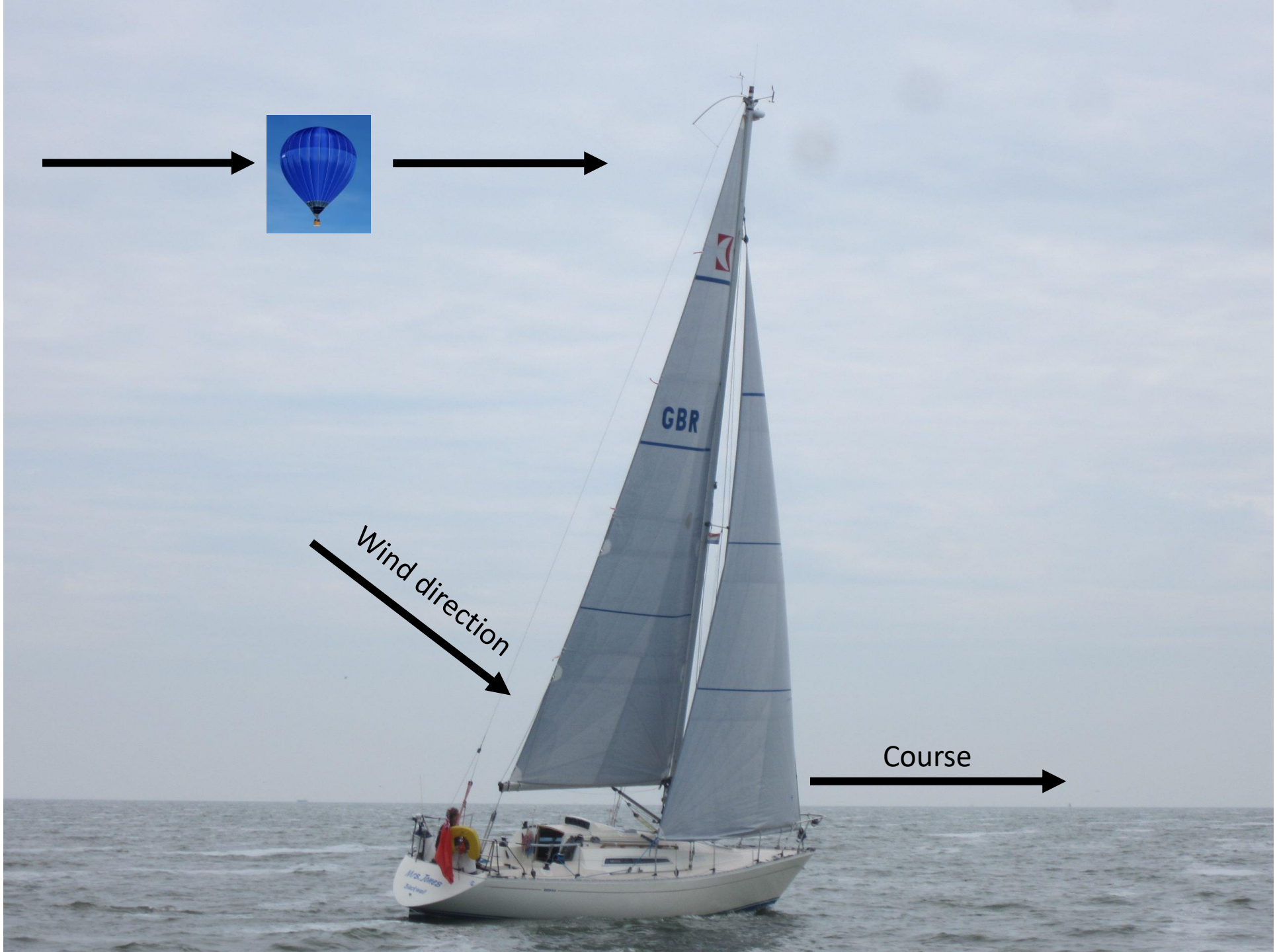
Aeroplane, first flight 17 december 1903

Wind is one of the biggest factor affecting hot air balloon flight since it will affect the stability and direction in which the balloon will fly to.

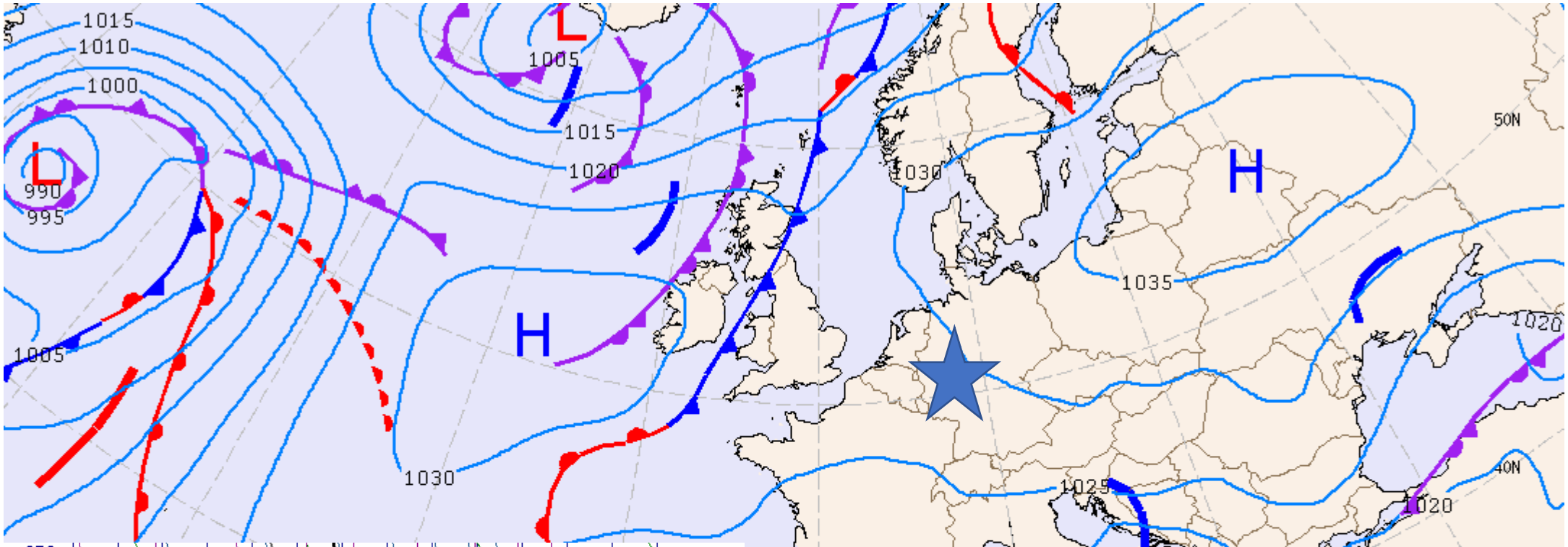
1. Without wind no balloon flights

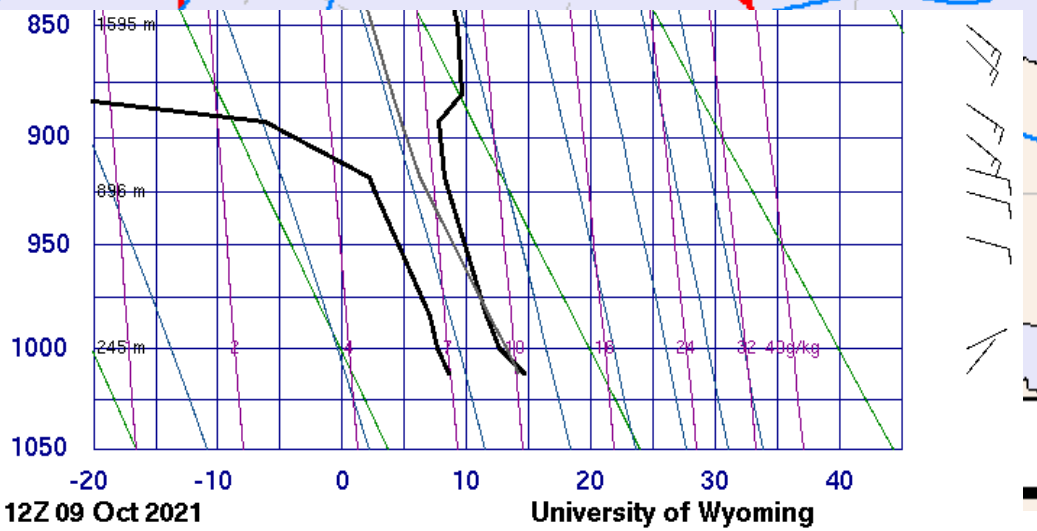
2. With to much wind also no balloon flight

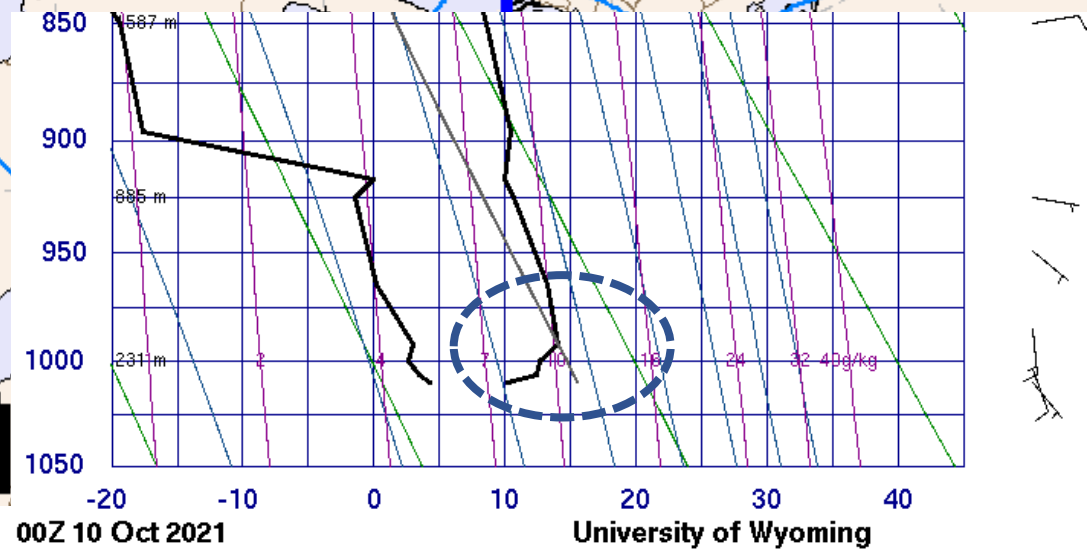
3. The only way to steer a balloon is by using different wind directions at different heights


GBR
Wind direction
Course

For a balloon flight a stable boundary layer is essential







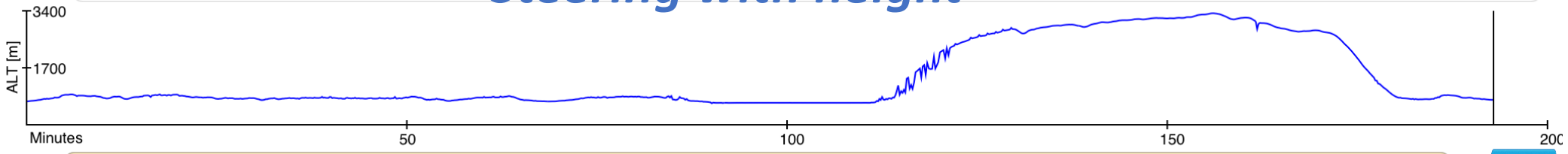
With a very stable atmosphere the wind direction is difficult to forecast and depends on local circumstances

10:20 Zo 30 jan. 94%

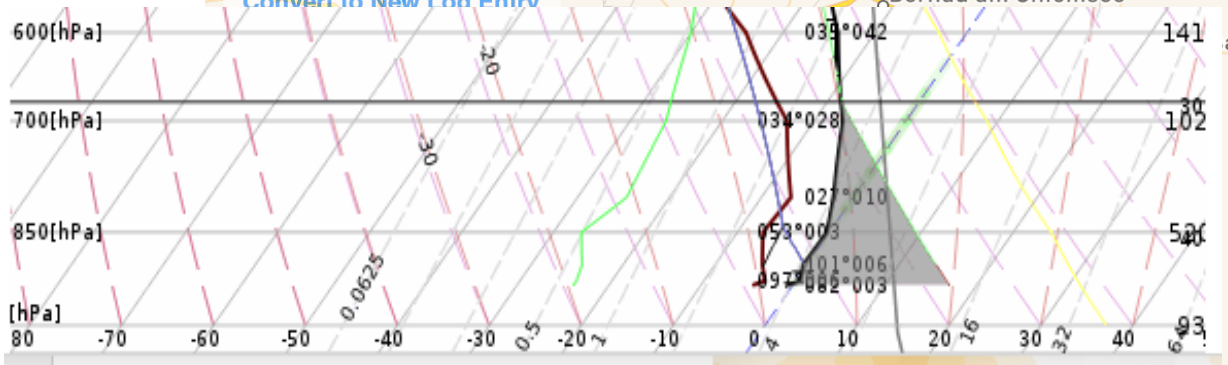
Flight Tracks | Track Details

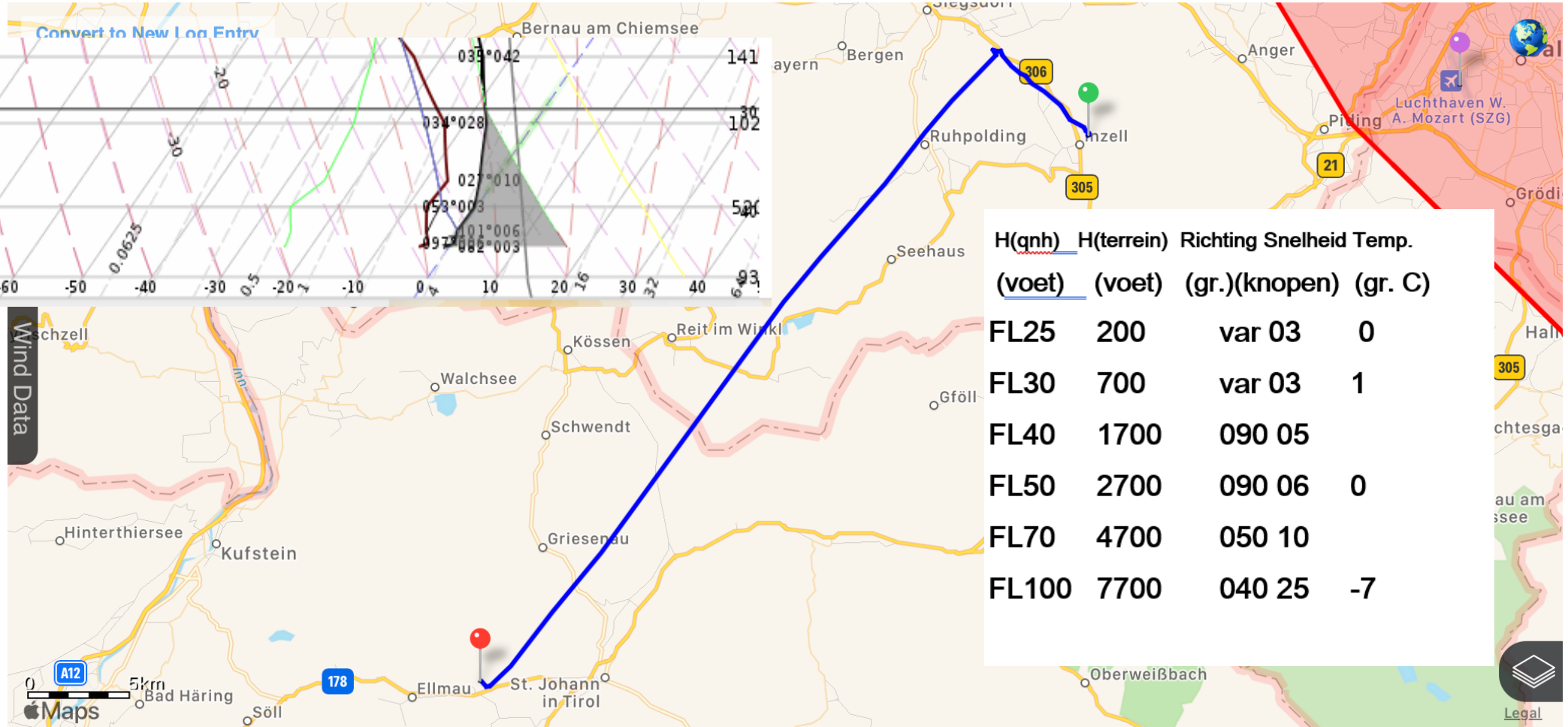
Title: 2022 Jan 24 10:58 [pts: 1061]

Steering with height



Trim





H(qnh) (voet)	H(terrein) (voet)	Richting Snelheid (gr.)(knopen)	Temp. (gr. C)
FL25	200	var 03	0
FL30	700	var 03	1
FL40	1700	090 05	
FL50	2700	090 06	0
FL70	4700	050 10	
FL100	7700	040 25	-7

Photo by Victor Banta

FIESTA®


V Sue Cleveland
High School
*Our flight path
Bernalillo
Pueblo of
Sandia Village
Corrales
Rio Grande
Launch field
Balloon Fiesta Park
Alameda
Elementary School
North Valley Bike Park
Anderson Abruzzo
Google Earth

Threads

Strong winds and wind gusts, therefore the limits for hot air balloons are around 10 knots (gasballoons 15 knots)

Wind gusts, not more than 5 knots above surface wind force

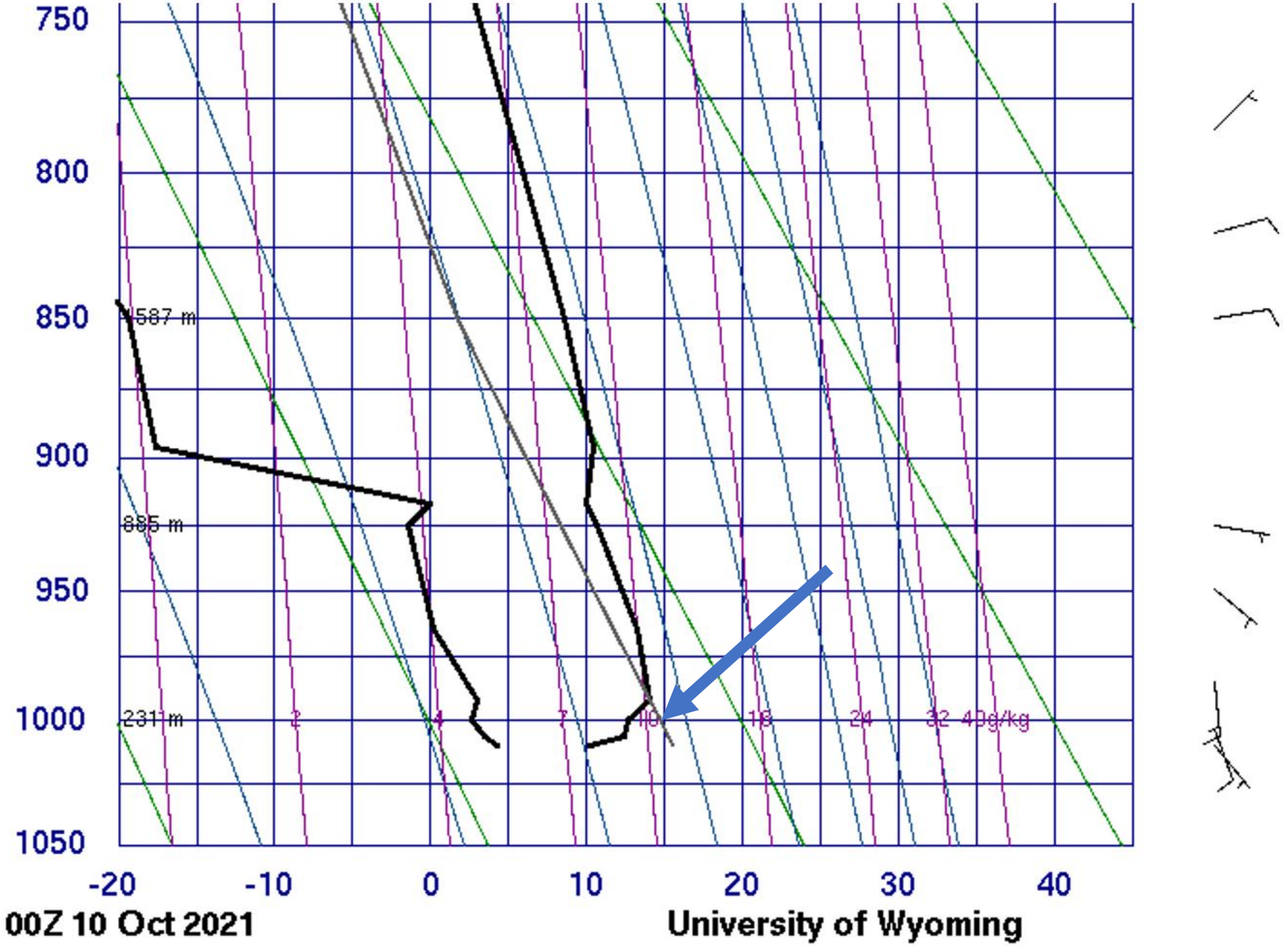
Thermals, thermals are dangerous for HAB because of deformation of the canopy (gas balloons are less vulnerable because of their rigid canopy)

Windshear, wind at 500 feet less than 15 kts

Thunderstorms, extremely dangerous, gust fronts

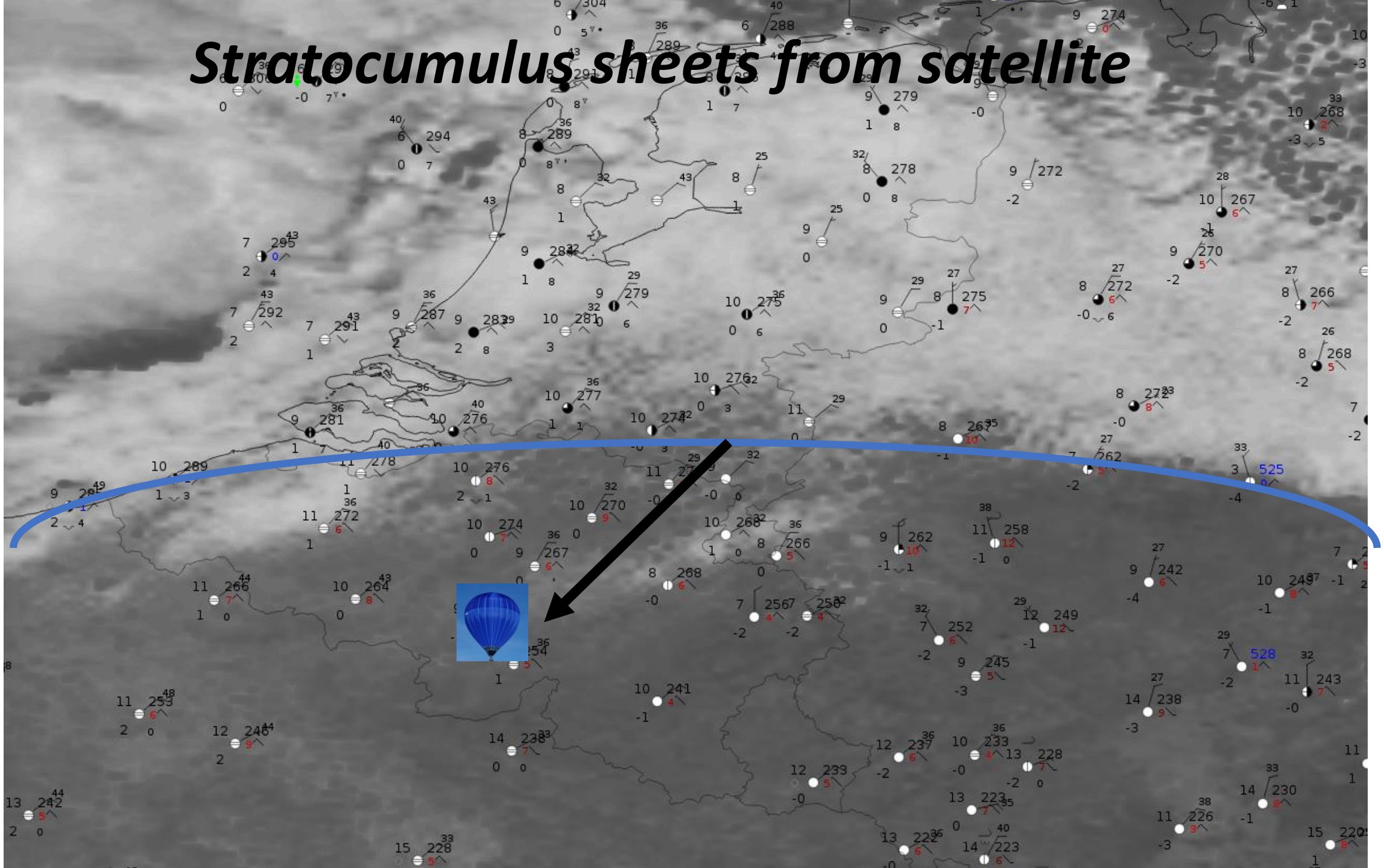
Precipitation, enhances the weight of the balloon, only light rain/snow possible

Hot air balloons need a stable boundary layer to launch and to land



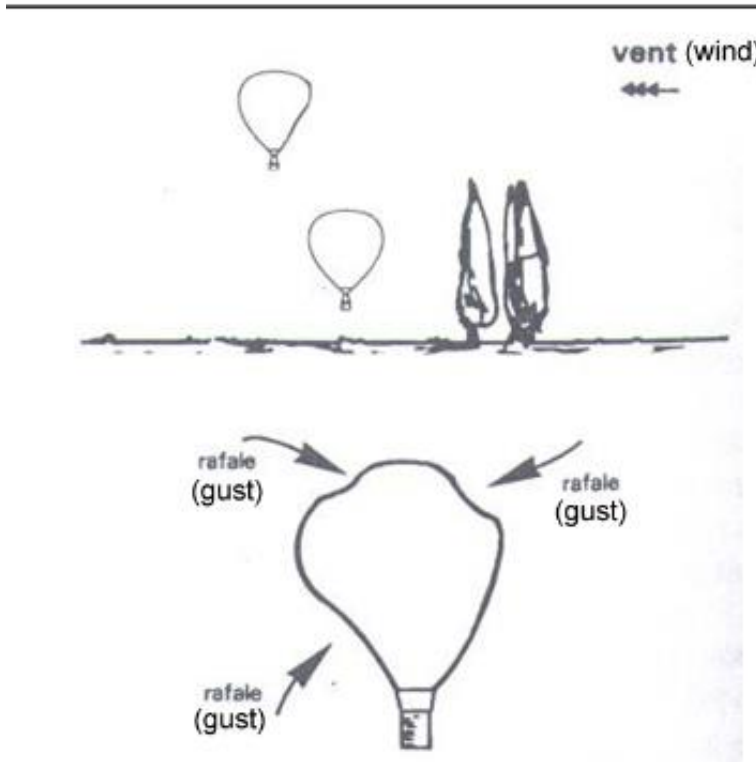

Clouds can disturb the stabilizing proces
Stratocumulus sheets

Stratocumulus sheets from satellite

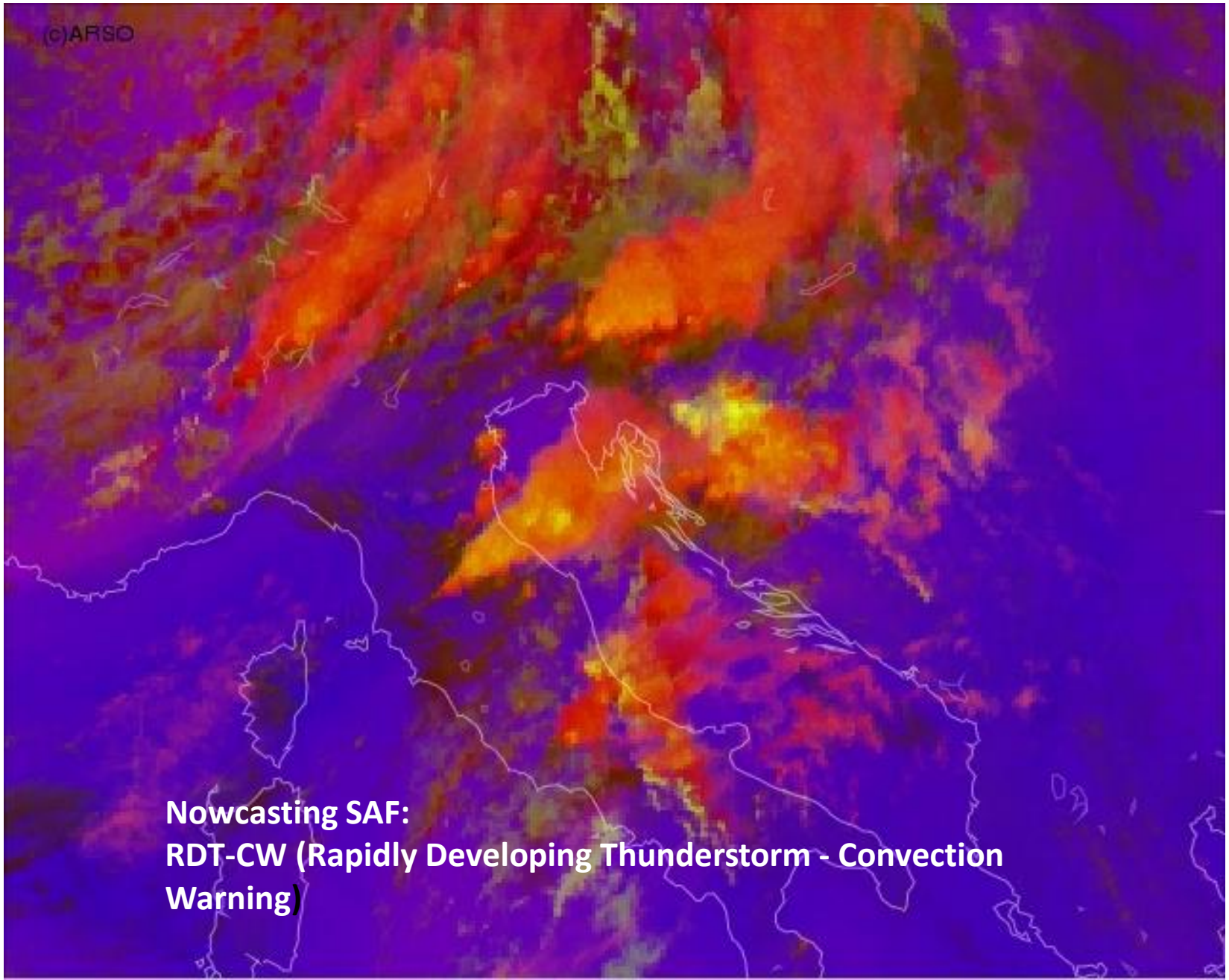


Thermals and gusts

What thermals can do with a balloon when the boundary layer is not stable yet

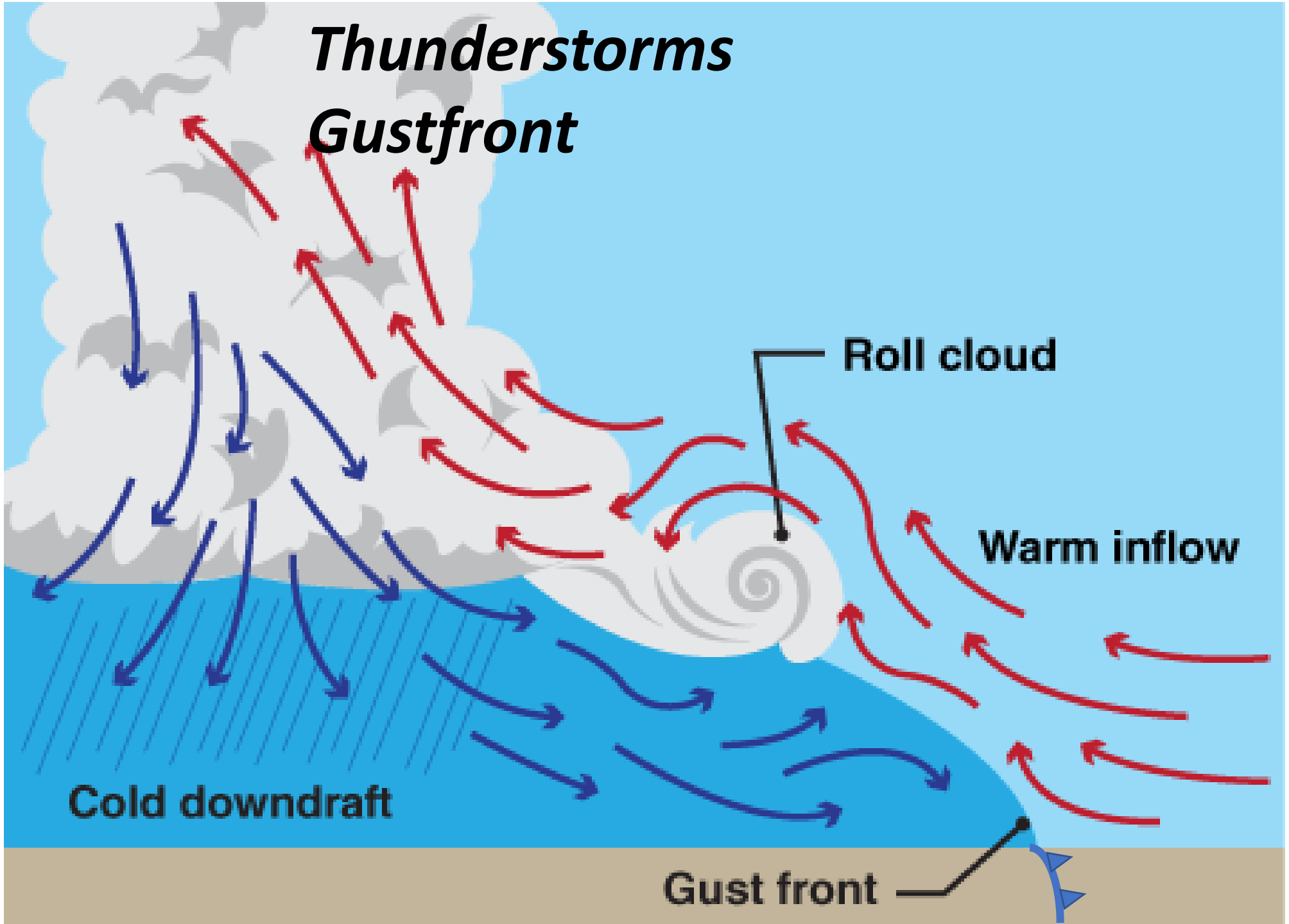


Thunderstorms

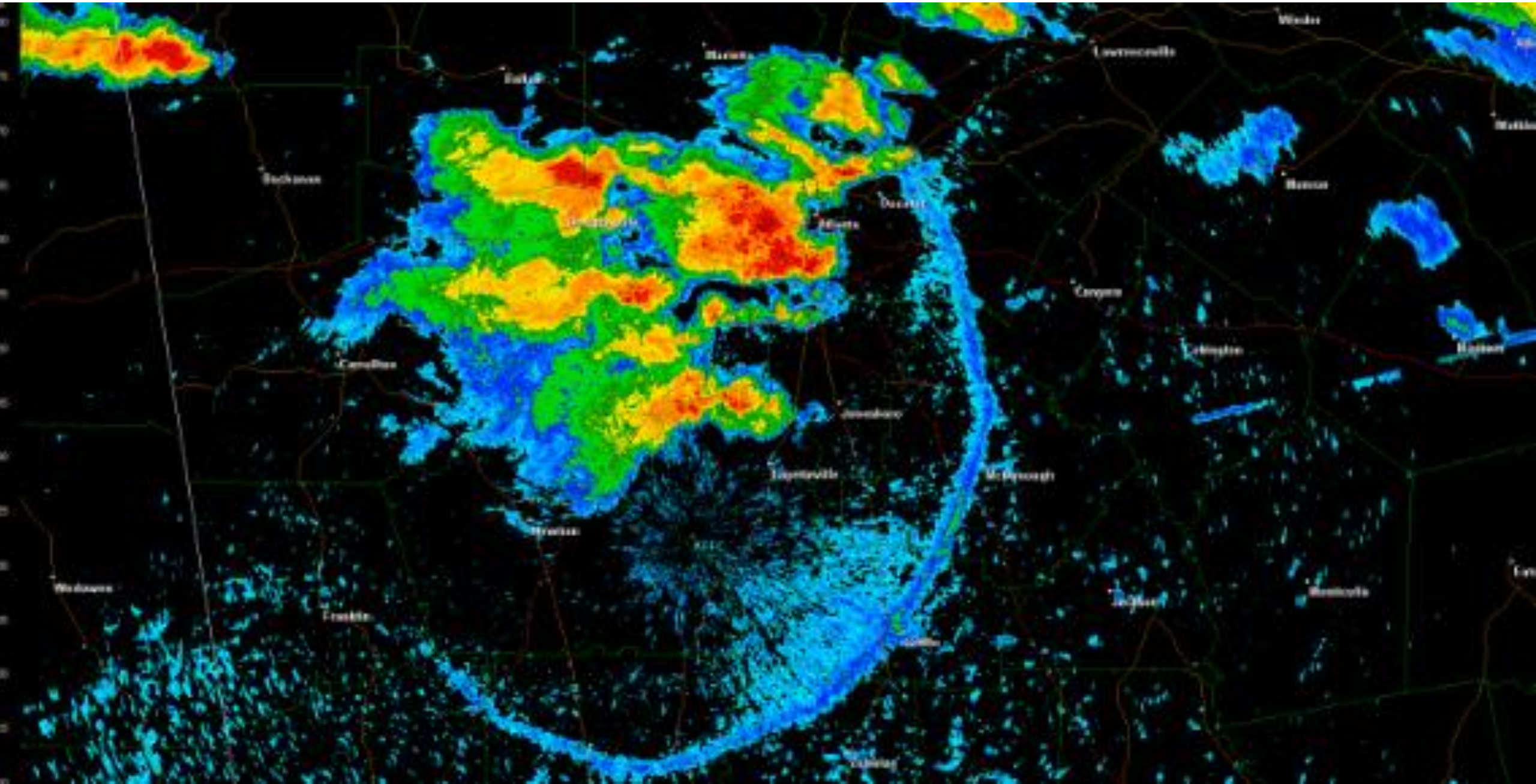


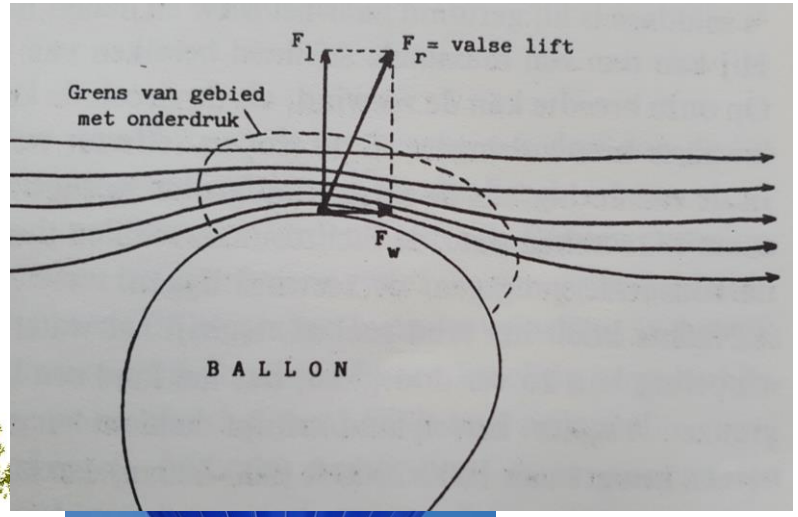
Convective storm RGB

Thunderstorms
Gustfront



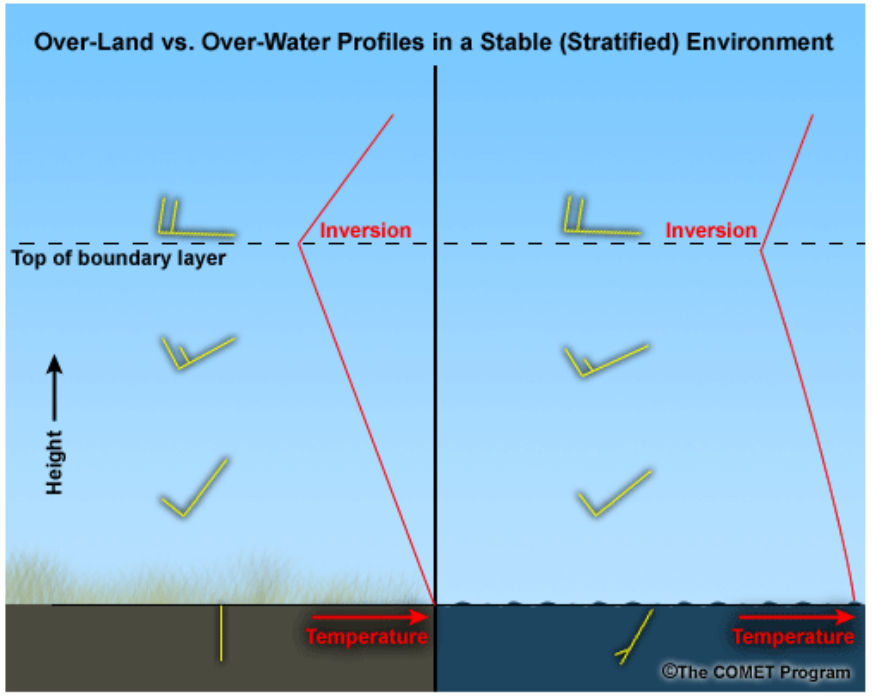
Thunderstorms Gustfront





Wind behind barriers
False Lift

Nocturnal wind maximum



Description:
Comparison of temperature and wind profile in a stable (stratified) boundary layer over land vs. over water.

Credits:
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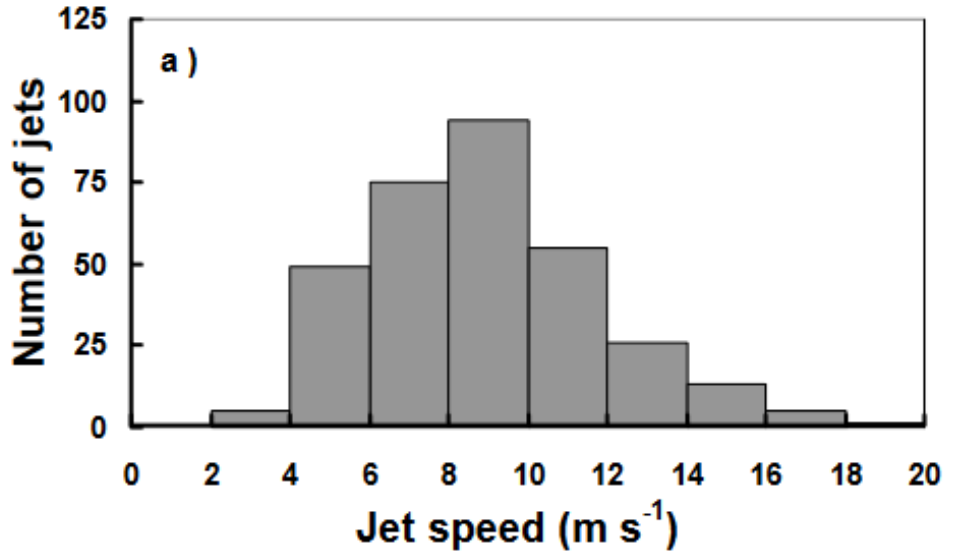
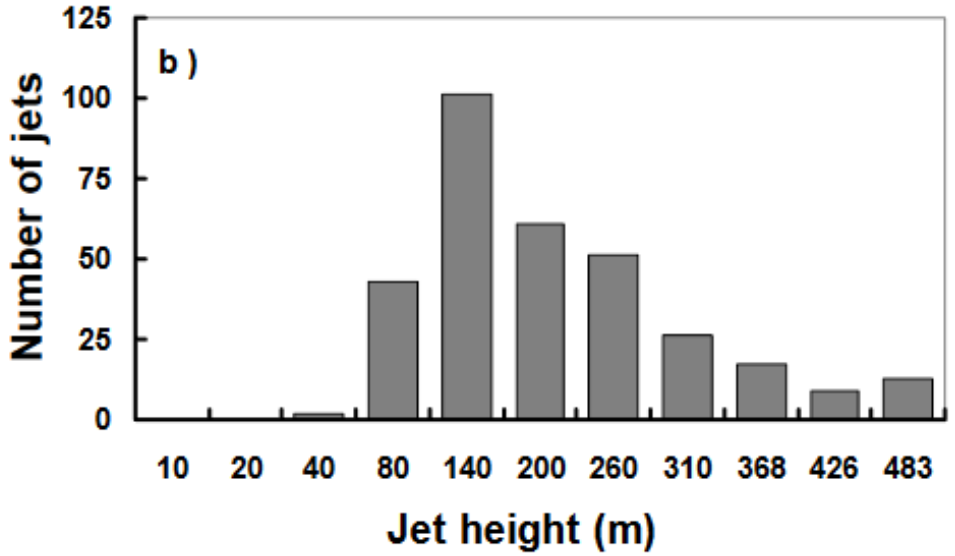
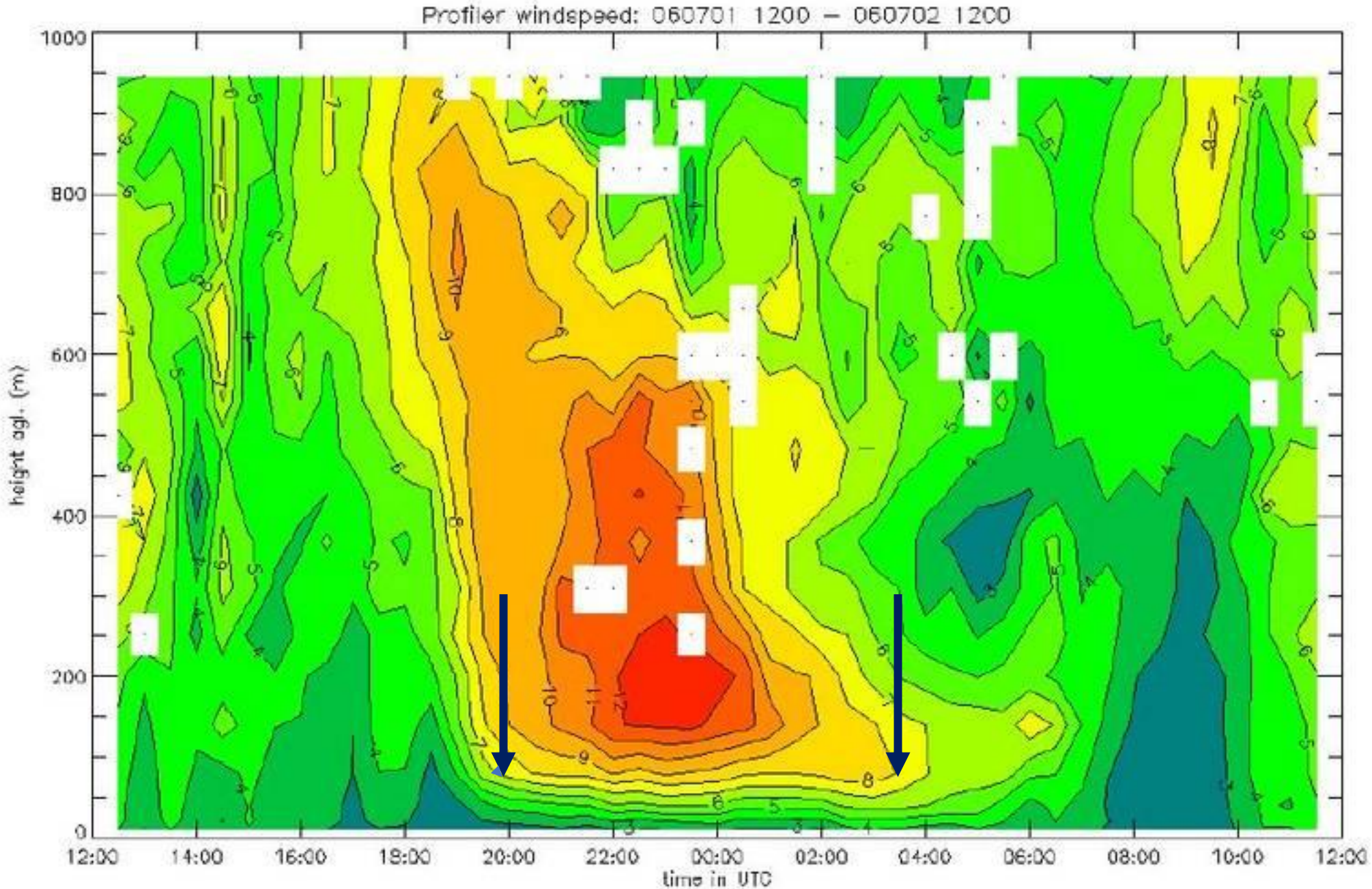
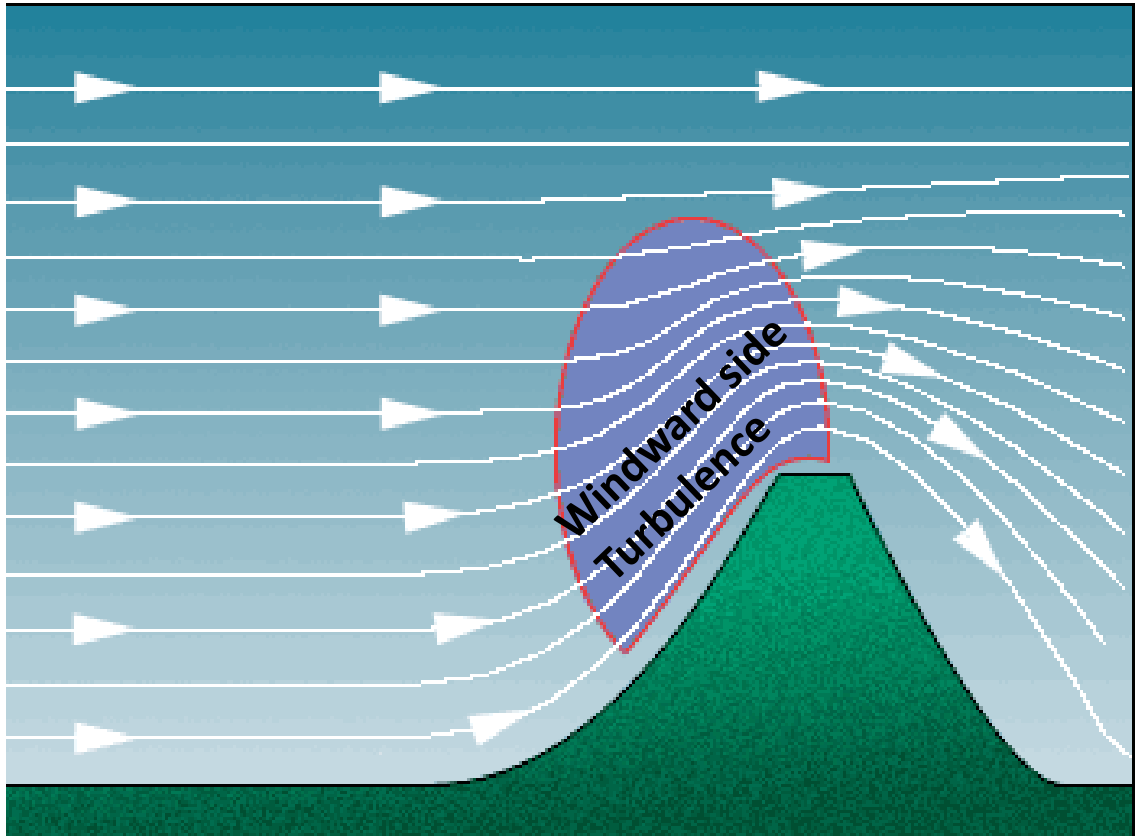
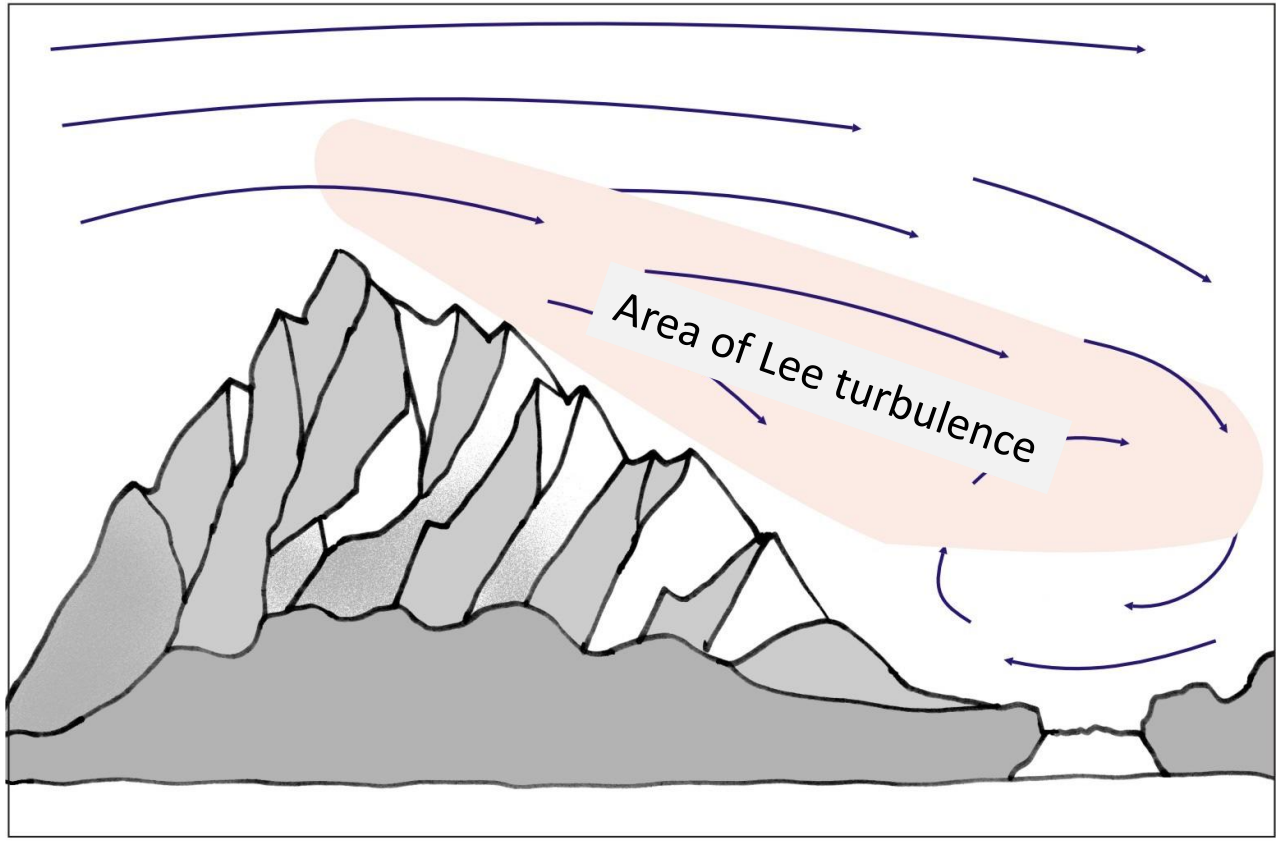





Profiler windspeed: 060701 1200 – 060702 1200
height agl. (m)
1000
800
600
400
200
0
12:00
14:00
16:00
18:00
20:00
22:00
00:00
02:00
04:00
06:00
08:00
10:00
12:00
time in UTC

Ballooning in mountainous ares



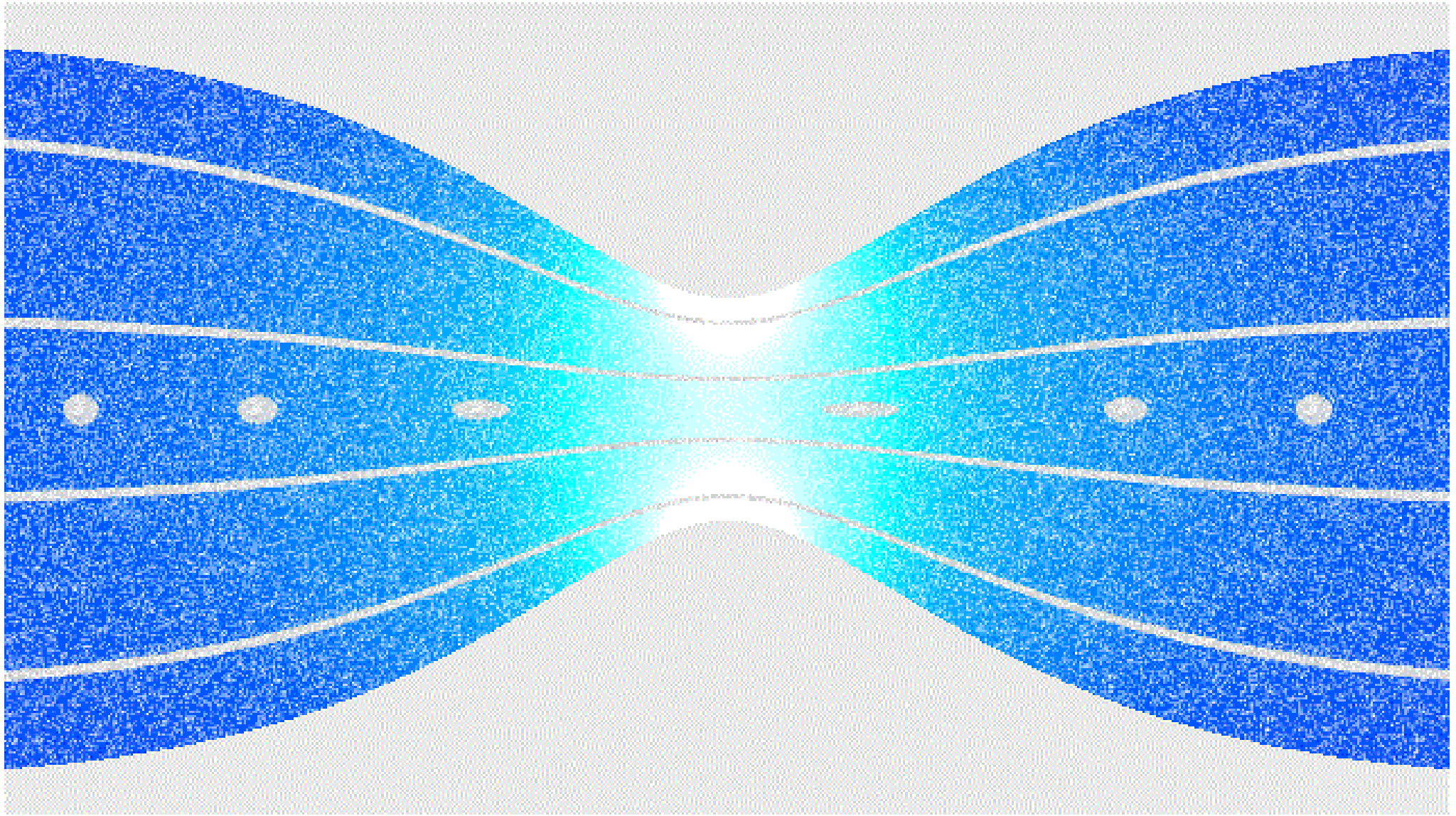


Turbulence near mountain tops (only > 20 kts)

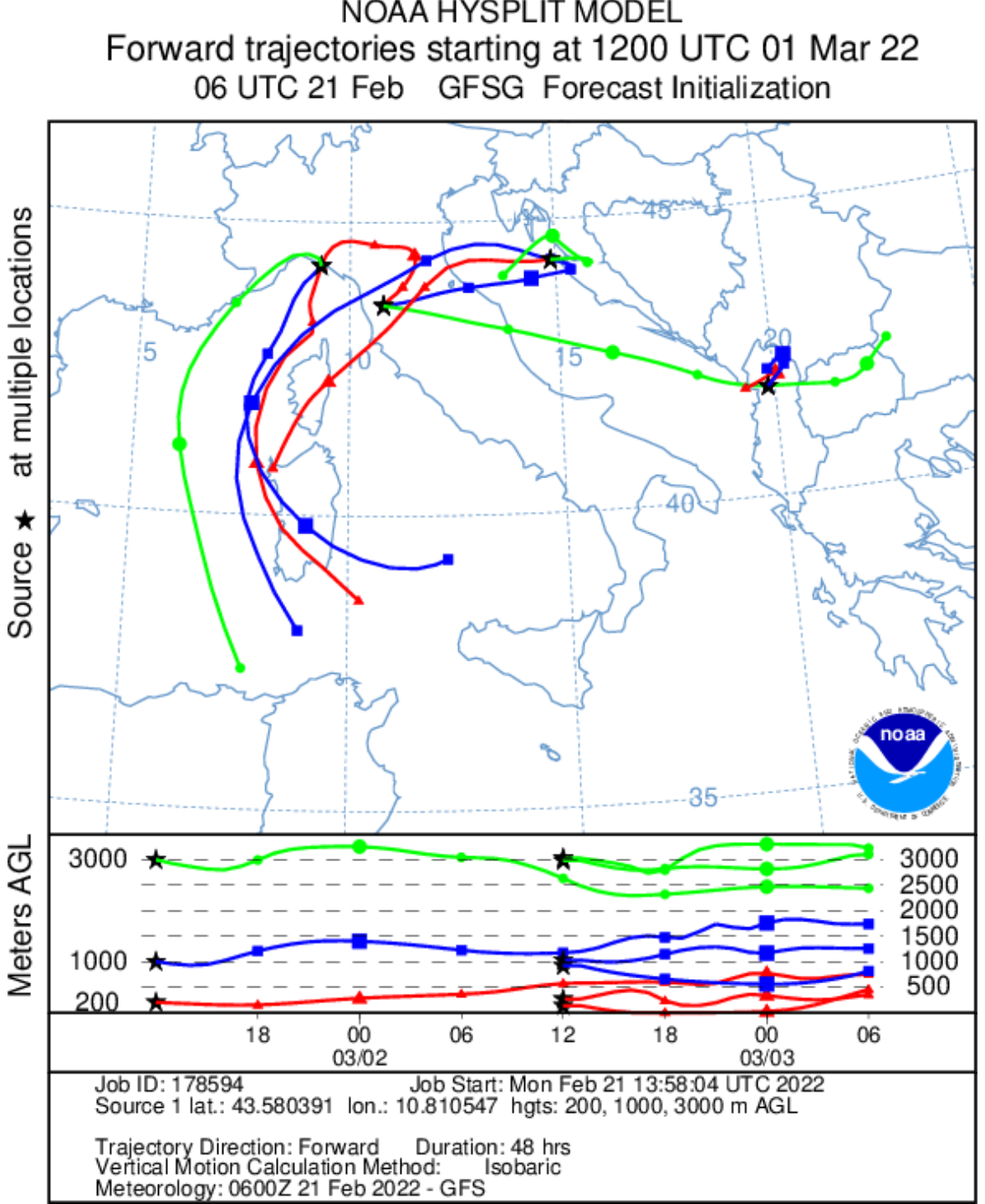
Rule of thumb: Keep 100 ft separation from summit per knot
Example: 50 kt = 5000 feet above summit

Ballooning in mountainous areas

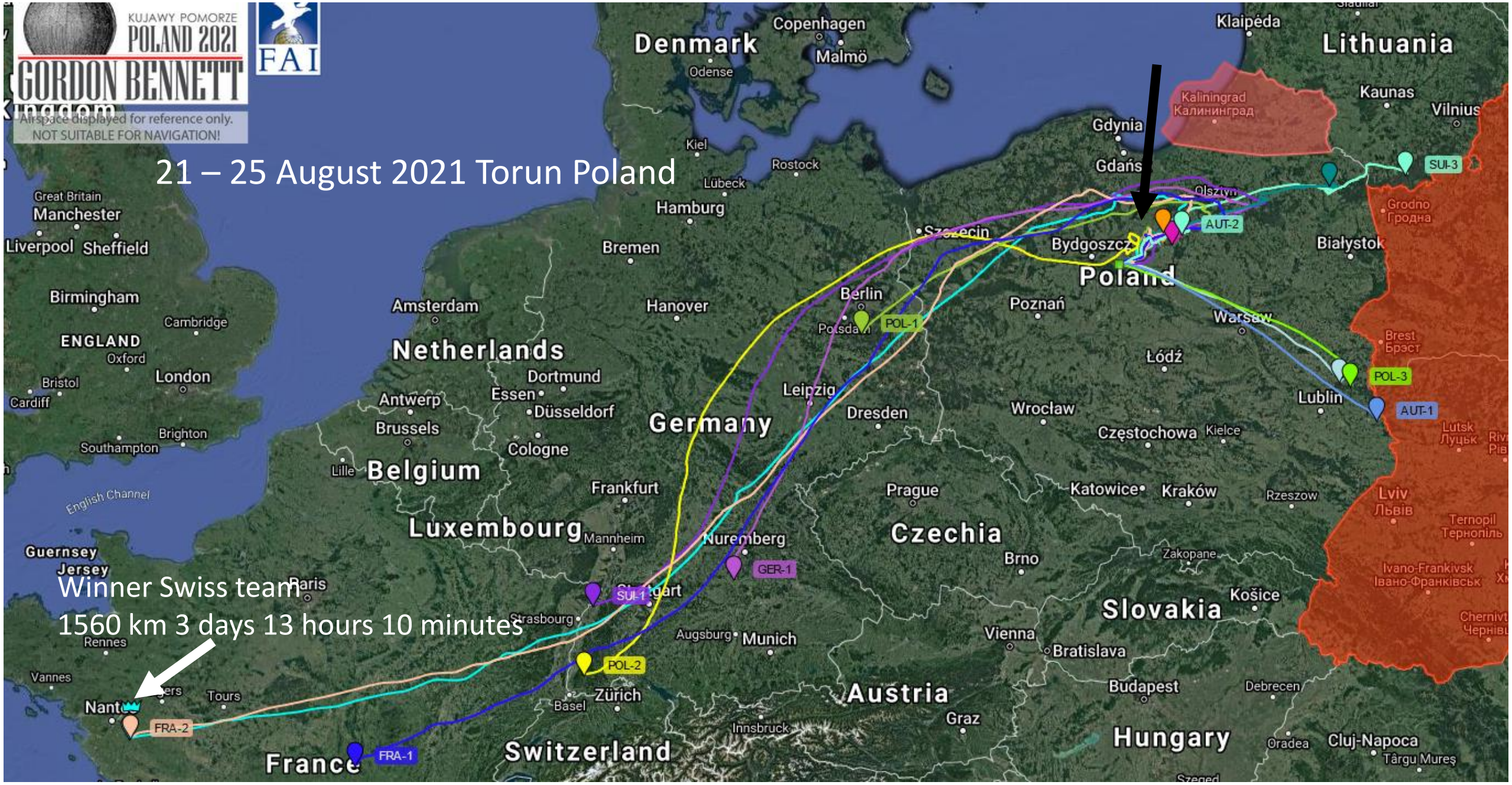
Wind forced between two mountains/hills: Venturi effect



Forward trajectories



Gordon Bennett Gasballoon race


KUJAWY POMORZE
POLAND 2021
GORDON BENNETT
FAI
Airspace displayed for reference only.
NOT SUITABLE FOR NAVIGATION!
21 – 25 August 2021 Torun Poland
Winner Swiss team
1560 km 3 days 13 hours 10 minutes
Denmark
Copenhagen
Malmö
Odense
Lithuania
Klaipėda
Kaunas
Vilnius
Kaliningrad
Калининград
Gdynia
Gdańsk
Olsztyn
Kiel
Rostock
Lübeck
Hamburg
Bremen
Great Britain
Manchester
Liverpool
Sheffield
Birmingham
Cambridge
ENGLAND
Oxford
London
Bristol
Cardiff
Brighton
Southampton
Amsterdam
Hanover
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Чернівці
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AUT-2
POL-1
POL-3
AUT-1
GER-1
SUI-1
POL-2
FRA-2
FRA-1

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