

# Site forecast for balloonists

## Explanations - page 1



### Frequently used abbreviations

- UTC Universal Time Coordinated
- MSL Height above sea level *[Mean Sea Level]*
- GND Height above ground *[Ground]*
- FL Flight level - height above a pressure level of 1013,25 hPa in standard atmosphere *[Flight Level]*  
Example: FL100 corresponds to 10.000 ft above the pressure level of 1013,25 hPa
- VFR Visual Flight Rules
- m Meter *[100 m correspond to 328 ft]*
- ft Feet *[100 ft correspond to 30,48 m]*

### Title

- ▶ Location of forecast
- ▶ Starting day of forecast
- ▶ Reference height
- ▶ Sunrise and sunset in UTC

Los Castillejos — Th, 09.12.10 — 0 - 500 m, reference 0 m — 07:20 ☀ 17:07										
UTC	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
Solar radiation [W/m²]	210	370	470	510	500	420	290	90		

### Insolation

- ▶ Solar radiation in Watt per m²
- ▶ On a typical middle European summer day midday values are around 1000 W/m²
- ▶ A grey November day shows values around 100 W/m²

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### Clouds

- ▶ Information about the optical thickness (vertical extend) of layer clouds
- ▶ High clouds
  - Ice clouds (normally above 7000 m MSL)
  - Cirrus
- ▶ Midlevel clouds
  - e.g. Altocumulus

Solar radiation [W/m²] 270 10										
UTC	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
High clouds										
Midlevel clouds										
Rel. humidity [3.000m]	75%	100%	100%	100%	95%	95%	95%	95%	95%	95%

- ▶ Vertical extend in four categories:
  - ☐ Non-existing or very weak
  - ☐ Weak
  - ☐ Medium
  - ☐ Strong

### Relative humidity in FL100

- ▶ Relative humidity is a benchmark for midlevel clouds around FL100

Midlevel clouds										
UTC	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
Rel. humidity [FL100]	100%	95%	85%	65%	35%	45%	75%	75%	85%	
Spread tendency										

- ... 70% Probably no midlevel clouds  
VFR-ride in FL100 possible
- 70% ... 90% Midlevel clouds likely
- 90% ... 100% Midlevel clouds present

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### Spread and Cumulus cover

- ▶ Tendency of the Cumulus to spread in the upper level due to an inversion
- ▶ Cumulus cover in octas

Rel. humidity [3.000m]	75%	75%	85%	85%	95%	90%	90%	85%	90%
Spread tendency									
Okta's of Cumulus	3/8	4/8	5/8	5/8				5/8	
Cumulus top [m MSL]									

- Weak spread
- Medium spread
- Strong spread

### Cumulus tops, Cumulus base and thermal strength

- ▶ Upper extend of Cumulus clouds in m above MSL
- ▶ Base of Cumulus or blue thermals in m above MSL
- ▶ Estimated thermal strength in m per second

Okta's of Cumulus	3/8	4/8	5/8	5/8			5/8
Cumulus top [m MSL]			3.800			1.300	1.300
Cumulus base [m MSL]		500	600	600	800	900	1.000
Thermal strength [m/s]			0.3	0.2	0.7	0.5	0.3

### Critical ceiling

- ▶ Lower base of layer clouds in feet above ground

Thermal strength [m/s]									
Crit. ceiling [ft]	<1000	<2000	<2000	<1000	<2000	<2000	<1000	<500	<500
Crit. visibility	BR	BR	BR	BR	BR	BR	BR	FG	FG

- Complete cover of layer clouds below 2000 ft
- .. below 1000 ft
- .. below 500 ft

### Critical visibility

- ▶ Critical visibility at ground level
- ▶ The ICAO shortcuts are both in English [FG, HZ] and French [BR]

Crit. ceiling [ft]	<500	<500	<500	<500	<500	<500	<500	<500	<500
Crit. visibility	FG	FG	HZ	HZ	HZ	HZ	HZ	HZ	BR
Surface inversion									

- [BRUME] Visibility under 5000 m, haze possible
- [HAZE] Visibility under 2000 m, haze possible
- [FOG] Visibility under 1000 m, fog possible

### Surface inversion

- ▶ Symbolic expression of the temperature gradient for the lowermost 50 m
- ▶ Information about turbulent conditions whilst take-off and landing
- ▶ With pronounced inversions in the early morning just above the boundary layer a high wind speed can be expected

Crit. visibility									
Surface inversion									
Weather conditions									

- Marked inversion → no turbulence
- Weak inversion → turbulence weakens (evening)  
turbulence starts (morning)
- Indifferent stratification → turbulence present
- No inversion → turbulence fully developed

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### Weather conditions and precipitation

- ▶ Significant weather conditions displayed by standard symbols
- ▶ A Cumulus symbol on days without frontal activity indicates thermal activity with Cumulus clouds
- ▶ Precipitation in mm per hour

Surface inversion											
Weather conditions	''	''	☁	☁	☔	☔	☔	☔	☔	☔	☔
Total precipitation [mm/h]					0,3	2,6	0,4	4,1			
Wind 5.500m MSL [kt]	0*/46	355*/45	355*/44	355*/41	350*/41	350*/43	345*/45	355*/45	0*/47		

- ☔ Light showers
- ☔ Moderate showers
- ☔ Heavy showers
- ☔ Showers of rain and snow
- ☔ Heavy sh. of rain and snow
- ☔ Snow shower
- ☔ Heavy snow showers
- '' Drizzle
- Light rain
- Moderate rain
- Heavy rain
- Sleet
- Heavy sleet
- \* \* Light snowfall
- \* \* Moderate snowfall
- \* \* Heavy snowfall
- 🌀 Freezing rain
- 🌀 Heavy freezing rain
- ☁ Cumulus humilis
- ☁ Cumulus congestus
- ☁ Cumulonimbus calvus
- ☁ Cumulonimbus
- ☁ Light thunderstorms
- ☁ Moderate thunderstorms
- ☁ Heavy thunderstorms

### Wind

- ▶ Reference height is either
  - MSL
  - GND
- ▶ In mountain regions no values are displayed if the forecast height is less than the reference height

Wind 50m GND [kt]	285*/9	280*/9	285*/10	290*/11	285*/11	280*/12	285*/13	295*/14	295*/14	3
Wind 10m GND [kt]	280*/7	280*/7	285*/8	285*/8	280*/8	280*/9	285*/10	295*/11	295*/11	3
Gusts 10m	18 kt	17 kt	18 kt	20 kt	19 kt	21 kt	21 kt	21 kt	23 kt	
Temperature [2.600m MSL]	-5°C	-4°C	-4°C	-3°C	-3°C	-2°C	-2°C	-2°C	-1°C	

### Base of data

- ▶ Regional numerical weather simulation model, processed at our weather computing centre
- ▶ Hourly forecasts
- ▶ High update frequency - four model runs per day