

Site forecast for glider pilots

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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
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. Altopcumulus

Solar radiation [W/m²]									
High clouds									
Midlevel clouds									
Spread tendency									

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

Spread and Cumulus cover

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

Midlevel clouds									
Spread tendency									
Octas of Cumulus	3/8	6/8	4/8	5/8	6/8	6/8	6/8	6/8	6/8
Cumulus top [m MSL]									

- Weak spread
- Medium spread
- Strong spread

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Cumulus tops, flight top and mean climb

- ▶ Upper extend of Cumulus clouds in m above MSL
- ▶ Base of Cumulus or blue thermals in m above MSL
- ▶ Estimated lift in a glider in m per second

Culdas of Cumulus					
Cumulus top [m MSL]	1,500	1,700	1,900	1,800	1,700
Flight top [m MSL]	1,400	1,600	1,800	1,700	1,600
Mean climb [m/s]	1.0		0.9		0.6
PFD (Ventus 46kg/m ²) [km]	35	65	60	45	

PFD - Potential Flight Distance

- ▶ Hourly distance gain in km
- ▶ Input parameters are e.g. insolation, soil type, vegetation type, thermal strength and height
- ▶ This value is a **benchmark** only
- ▶ Computed for a 18-Meter-Class glider, e.g.
 - Ventus with 46 kg/m² (wingload)
- ▶ Windspeeds of over 40 km/h have a negative effect on the PFD

Mean climb [m/s]	1.0		0.9		0.6
PFD (Ventus 46kg/m ²) [km]	35	65	60	45	
Weather conditions	☁ ☁ ☁ ☁ ☁				

- ▶ **Open Class** add roughly 10%
- ▶ **Club Class** subtract 20%
- ▶ Novice pilots subtract 20%
- ▶ Skilled pilots add 10%

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

PFD (Ventus 46kg/m ²) [km]					
Weather conditions	☁	☁	☁	☁	☁
Total precipitation [mm/h]	0.3		2.6		0.4
Wind 5 500m MSL [km/h]	085/10	055/11	050/14	050/10	050/10

☁ 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 2.000m MSL [km/h]	270°/42	270°/38	270°/35	265°/35	265°/36	265°/38	260°/38	260°/36	260°/34	2
Wind 1.500m MSL [km/h]	245°/53	245°/52	245°/50	245°/45	245°/39	240°/35	235°/37	235°/40	235°/40	2
Wind 1.000m GND [km/h]	270°/41	270°/38	270°/34	265°/34	265°/36	265°/37	260°/37	260°/35	260°/33	2
Wind 500m GND [km/h]	250°/55	250°/54	250°/52	250°/49	250°/44	245°/39	245°/40	240°/41	240°/41	2

Dewpoint

- ▶ The dewpoint is defined as the temperature at which condensation occurs
- ▶ Spread is defined as the difference between air temperature and dewpoint at ground level
- ▶ In standard weather conditions the Cumulus base can be calculated from the spread using the following formula:
- ▶ $(\text{temperature [2m]} - \text{dewpoint [2m]}) * 125 = \text{Cumulus base in meter GND}$

Temperature [2m]	10.3°C	11.9°C	13.3°C	14.4°C	15.2°C	15.8°C	15.7°C	14.8°C	13.6°C	
Dew Point Temp. [2m]	-0.7°C	0.5°C	4.7°C	6.8°C	7.4°C	7.4°C	7.8°C	8.9°C	9.5°C	
Rel. humidity [2m]	46%	45%	56%	60%	60%	57%	59%	68%	76%	

Base of data

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