

# Weather forecast

The weather plays an important role for astronomical observations at our latitude. Therefore, it is very important to practice the monitoring of different weather conditions and the forecast of their development. Here we present some tools for this purpose.

## Weather links

Website	Comment
<a href="https://sat24.com">Sat24.com</a>	Up to date satellite images showing cloud movement
<a href="https://meteoblue.com">meteoblue.com</a>	Weather forecast for Golm (7 days)
<a href="https://meteoblue.com">meteoblue.com</a>	Astro weather for Golm
<a href="https://wetterzentrale.de">Wetterzentrale.de</a>	Weather site with a cloud forecast (GFS model) of up to 1 week <a href="#">Animation panel</a>
<a href="https://wetterzentrale.de">Wetterzentrale.de</a>	Weather site with a high-resolution cloud forecast (WRF model) of up to 3 days <a href="#">Animation panel</a>
<a href="https://windy.com">windy.com</a>	A new very sophisticated service that is also based on the data used by the "Wetterzentrale" (Potsdam and the total cloud map are preselected)

## Current weather forecast

## Wetterzentrale

The "[Wetterzentrale](https://wetterzentrale.de)" offers an up to 7 day forecast for the cloud coverage (and several further quantities) based on the GFS and the WRF model of the [NOAA](https://www.noaa.gov/). Consequently, it doesn't show the current or past weather conditions, but instead is a prediction. Four times a day, a new forecast is calculated that is published at about 0, 6, 12, and 18 o'clock, respectively. The spacial resolution of the maps for Central Europe is 0.5 degrees, corresponding to about 50km, while the time resolution is 1 and 3 hours in the WRF and GFS model, respectively. Nowadays also further models as well as new ways of visualization are available on the website of the "Wetterzentrale". Feel free to try them out.

## Forecast diagrams

- [WRF predictions for Golm](#)
- [GFS predictions for Golm](#)

## How reliable are these forecasts?

Since God apparently does play dice with the weather, one should not put too much trust in long-term predictions. However, the "Wetterzentrale" has been found reliable in terms of predictions for the next day. The real strength of the "Wetterzentrale" is the predictions for the same evening. The data from 6 o'clock and even better from 12 o'clock offer usually a reliable forecast to check weather a

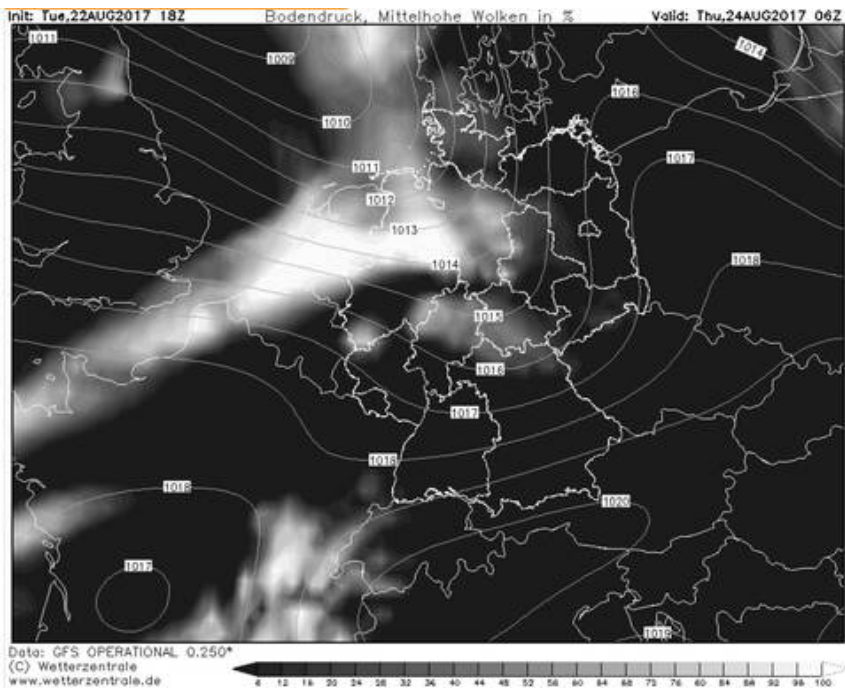
nightly observation is possible or not.

**Please note:** The GFS model still is a numerical model, so it could be wrong.

Which information can be found on the weather maps?

On the weather maps one can find the following informations:

Init: time of the calculation	shown/calculated parameter	Valid: time for which the forecast is valid
map		
	scale	

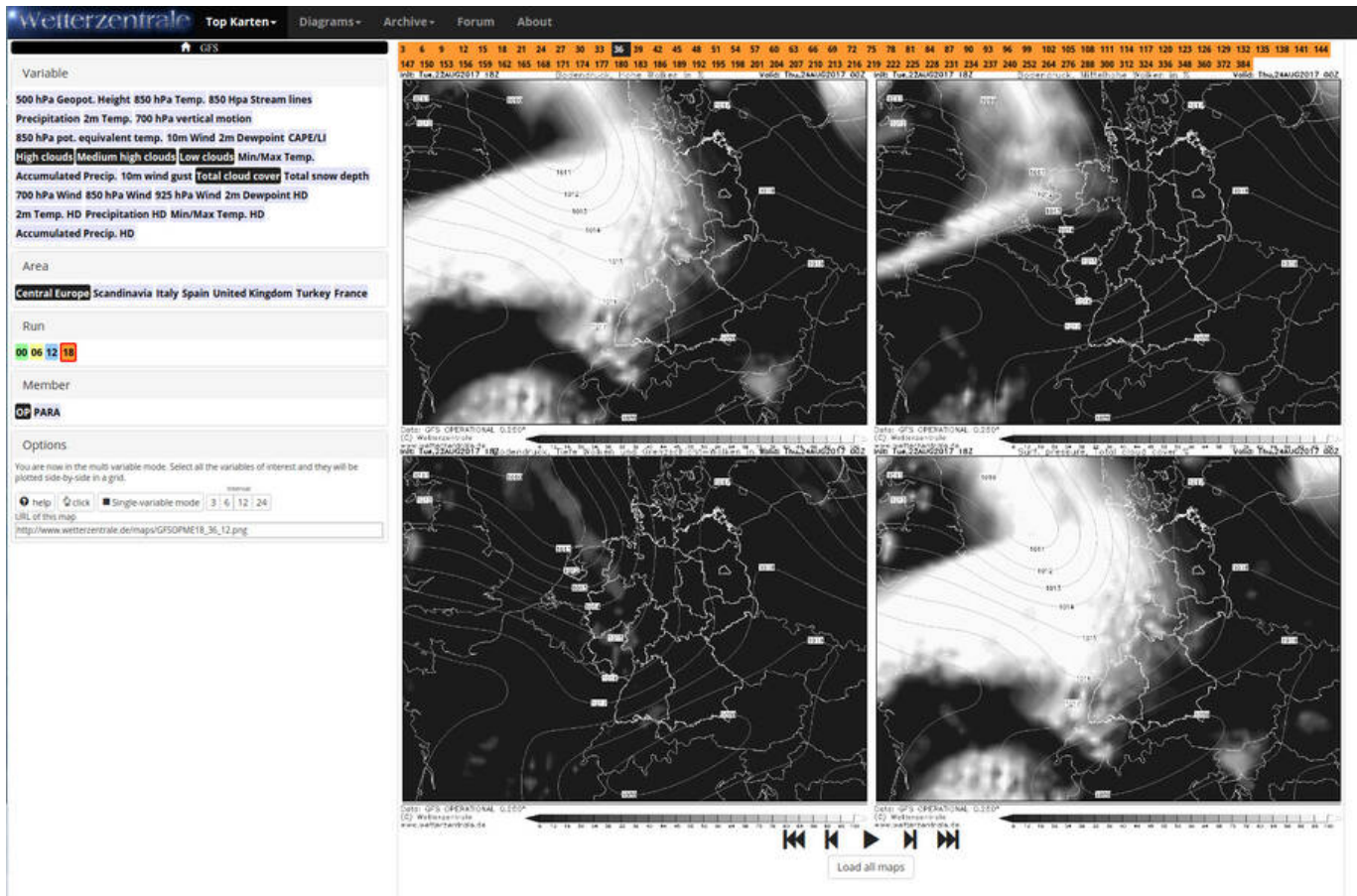


In the upper left corner you can find the time when the calculation was performed (Init), while the time for which the forecast is valid (Valid) can be found in the upper right corner. In between you can find the requested quantity (in German). Below the map a scale is plotted, that helps interpreting what is shown on the map.

In the example image the pressure at the surface and the clouds at a medium hight are shown. The calculation was performed at 18 o'clock on 22th August 2017. The presented cloud coverage is valid for 6 o'clock on 24th August 2017. With the help of the scale one can determine to which percent the sky is covered by the clouds at an intermediate hight. The more intense the white is, the higher is the cloud coverage.

The animation panels

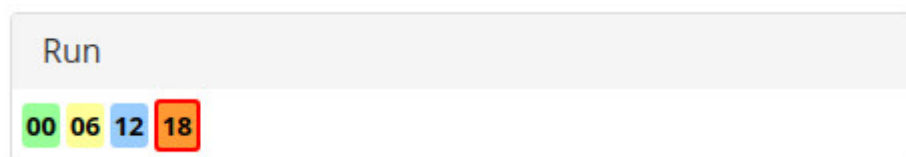
With the help of the [animation panel](#) all available maps are loaded and can be displayed as an animation. A useful setup for this animation panel is already preconfigured and can be accessed by a [click on Animation panel](#) in the table on the top of this page. The following web page should appear:



Preselected are the following four parameters that have to be proven very useful:

- “High clouds” + surface pressure
- “Medium high clouds” + surface pressure
- “Low clouds” + surface pressure
- “Total cloud cover” + surface pressure

Other parameters can be selected via the left upper menu. The panel on top of the maps allows to display the maps for different time steps. For this purpose, just hover over the corresponding links to animate the maps. The maps will change automatically. The color of the upper panel refers to the time when the corresponding calculation run was performed. The run can be selected from the left menu (see below).



Unfortunately, it is not possible to create a link which always points to the latest run. Therefore, you have to select the latest run by you self after clicking on the “Animation panel” link above. To do so, you have to click on the run that is highlighted by the red box.

The maps can also be animated as a video with the help the buttons below the maps. The time interval between the individual maps can be adjusted in the Options section of the left menu.

# How can I record the weather conditions during the observations?

You can describe the weather conditions on the [observational protocol](#), which you then can use in the analysis of your observations.

Especially helpful are websites that are specialized on the weather parameters that are important for astronomy. A nice example is [meteoblue.com](https://meteoblue.com).

## Weather requirements for the observations

The weather requirements for the individual observations are listed below. The stated values are based on experience. Should there be any doubt whether an observation can be performed or not just ask one of the supervisors!

### Bachelor observations

#### 01: Astronomy like Kepler

- General requirements: a clear night
- Moon: no special requirements
- Clouds: small (cumulus) clouds are OK as long as they do not cover a large part of the sky

#### 02: Binary star sequence

- General requirements: a clear night
- Moon: no special requirements
- Clouds: small (cumulus) clouds are OK as long as they do not cover a large part of the sky, cirrostratus clouds are in principle also fine but they have a negative effect on the results

#### 03: Lunar craters (Ocular)

- General requirements: a clear night
- Moon: should be visible! Half moon offers usually the best observation conditions
- Clouds: small (cumulus) clouds and slight cirrostratus clouds are in principle not a problem

#### 04: Jupiter and its moons

- General requirements: a clear night
- Moon: no special requirements

- Clouds: small (cumulus) clouds are OK as long as they do not cover a large part of the sky, no cirrostratus clouds

### **C1: Deep Sky Imaging**

- General requirements: **a photometric night**
- Moon: should not be visible, a few days before or after new moon are usually the best
- Clouds: no clouds, no cirrostratus clouds

### **C2: Limb darkening of the Sun**

- General requirements: a blue sky
- Moon: no requirements
- Clouds: slight cirrostratus clouds and small clouds are OK

### **C3: Lunar craters (CCD camera)**

- General requirements: a clear night
- Moon: should be visible! Half moon offers usually the best observation conditions
- Clouds: small (cumulus) clouds and slight cirrostratus clouds are in principle not a problem

### **C4: Orbit of the moons of Jupiter or Saturn**

- General requirements: a clear night
- Moon: no special requirements
- Clouds: small (cumulus) clouds are OK as long as they do not cover a large part of the sky, no cirrostratus clouds

### **C5: Lunar mountains**

- General requirements: a clear night
- Moon: The terminator should be clearly visible!
- Clouds: small (cumulus) clouds and slight cirrostratus clouds are in principle not a problem

### **C6: Classification of galaxies**

- General requirements: **a photometric night**
- Moon: should not be visible, a few days before or after new moon are usually the best
- Clouds: no clouds at all

### **C7: Light curve of an eclipsing binary star**

- General requirements: a clear night
- Moon: should not be close to the target, a few days before or after new moon are usually the

best but in principle the observation can also be performed during full moon

- Clouds: no clouds, slight cirrostratus clouds are OK

## Master observations

### N1 - Stellar spectra of different spectral types

- General requirements: a clear night
- Moon: should not be close to the targets
- Clouds: a few clouds (cumulus) are OK, slight cirrostratus clouds are usually also fine as long as the targets are bright enough

### N2 - Photometry of open clusters

- General requirements: **a photometric night**
- Moon: no Moon!
- Clouds: no clouds!

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