# ~ Guide to the Meteograms ~

[**Forecast meteograms**](http://wxmaps.org/meteograms.php) are based on the grid point nearest the location in question. The models cannot directly discern features of the terrain or atmosphere that are smaller than the grid resolution, although certain small-scale phenomena are represented indirectly by using parameterizations. Thus these models may not do a good job of forecasting very localized weather such as might be associated with mountainous terrain or sea breezes. A description of the meteorological variables in the meteograms is given below.

**Tropospheric Time-Height Cross Section**

Winds, temperature, and relative humidity in the lower troposphere (up to ~500 millibars) are shown in profile. The model data we receive is interpolated down to 1000 millibars, but over high terrain only data that is near or above ground level is displayed. Data below ground level has no physical meaning and is omitted.

The wind barbs indcate the direction and speed of the wind, rounded to the nearest 5 (mph or m/s). A full barb = 10, and a short barb = 5, and a pennant = 50. The speed can be found by tallying the barbs. The barbs project into the wind -- they point to the direction the wind is coming *from*. A stem pointing left with one full barb and one half barb indicates a wind from the west at 15.

The colored contour lines indicate the profile of temperature, in °F or °C. The contour interval is 10°F or 5°C. The freezing level is indicated by the double black line labeled **FR**.

The graduated green shading indicates relative humidity.

**1000-500 mb Thickness**

Thickness is the vertical distance between two pressure levels. In general it is true that the distance will be a function of the density of the air between the two pressure levels, which is itself directly related to the temperature of the air. Thus, thickness is a good indicator of the mean temperature in the layer of atmosphere between the two levels -- greater thickness = warmer air.

The cyan line shows the thickness of the 1000-500 millibar layer of the atmosphere. This is approximately the bottom half of the atmosphere (except over high terrain). The units are dekameters (10s of meters, 10 meters is about 33 feet). One rule of thumb is that if the thickness of this layer is less than 540 dm, that any precipitation will be in the form of snow.

**Sea Level Pressure**

Sea level pressure (SLP) is the surface pressure interpolated down to sea level from the altitude of the grid box of the model. This corresponds to the barometric pressure one hears reported on local radio or TV weather reports. The dark blue line indicates SLP in millibars. Valleys in SLP often indicate frontal passages, and will often coincide with pronounced changes in wind direction, temperatures, and humidity. In subtropical regions (the deserts of the Southwest, and much of the Sunbelt during summer) the SLP often oscillates daily, with a peak in the early morning and a trough during mid-afternoon.

**Stability Indices**

The stability indices are measures of the potential for strong or severe weather. The indices shown here are the Lifted Index (LI) and the Convective Available Potential Energy (CAPE). The lifted index, indicated by the red line, is a measure of the thunderstorm potential which accounts for low level moisture availability. LI values greater than 0 mean thunderstorms are unlikely. LI values between 0 and -2 mean thunderstorms are possible with good trigger. LI values between -3 and -5 mean thunderstorms are probable. LI values less than -5 mean a strong potential for severe thunderstorms.

The purple bars indicate the CAPE value at the surface in units of J/kg. CAPE is a measure of the buoyancy of a layer. The larger the CAPE, the greater the potential for severe weather. Any value greater than 0 J/kg indicates instability and the possibility of thunderstorms. The base line for the bar graph of CAPE is 0.

**10-Meter Winds**

10-Meter Winds (about 33 feet above the ground) correspond to measured winds at weather stations. The orange line indcates the wind speed (in mph or m/s). The wind barbs are as in the time-height cross-section.

**2-meter Temperatures**

Air temperature and dew point temperature are given at the 2-meter level (6½ feet above ground). The dew point temperature is the temperature that a sample of air would have if it was cooled (at constant pressure) until it reached saturation. The dew point temperature is an alternative way to describe the amount of moisture or humidity in the air. If the dew-point temperature is close to the air temperature, the relative humidity is high, and if the dew point is well below the air temperature, the relative humidity is low. One technique for forecasting overnight low temperature is to look at the daytime dew point: if no fronts are expected to come through, tonight's low temperature will not get much below today's dew point.

Air temperature is indicated by the solid brown line (with color shading below the line to aid interpretation). The dew point temperature is indicated by the dashed brown line. The freezing level is drawn with a dot-dashed black line. The vertical bars indicate the range of temperatures over the previous 3, 6, or 12-hour interval.

**2-Meter Reletive Humidity**

The green line and graduated green shading indicates the relative humidity.

**Cloud Cover**

This panel has a blue background to show the cloud-free areas. The panel is divided into three horizontal layers for the display of low, middle, and high cloud cover, which are drawn as white bars. If the white bar covers the full height of its layer, that is 100% cloudiness. The white bars have no gap between them to better simulate the appearance of cloudiness in the panel.

**Precipitation**

The bar graph at the bottom of the figure indicates predicted precipitation types and amounts. The color of the bar inidicates the type of precipitation: rain, sleet, snow, or ice pellets. Narrow red bars within the wide bars indicates the portion of precipitation likely to come from convection (showers and thunderstorms)

The precipitation amounts are in inches or millimeters. Values are accumulated precipitation over the previous forecast period, so no precip values are given at hour 00. The amounts are *liquid water equivalents*. For example, 1" of snow means one inch of water in the melted snow. It could mean anywhere from 3-12" of actual snow, depending on how "wet" the snowfall is. Depths of sleet and ice will more closely match their liquid water equivalents.

**〜气象图指南〜**

[**预测气象图**](http://wxmaps.org/meteograms.php)基于最接近所讨论位置的网格点。尽管某些小规模现象是通过使用参数化间接表示的，但这些模型无法直接识别出小于栅格分辨率的地形或大气特征。因此，这些模型可能无法很好地预测非常局部的天气，例如可能与山区地形或海风有关的天气。气象图中的气象变量的说明如下。

**对流层时间高度剖面**

图中显示了对流层下部的风，温度和相对湿度（最高约500毫巴）。我们收到的模型数据将内插至1000毫巴，但在高地形上，只会显示接近或高于地面的数据。低于地面的数据没有物理意义，因此被省略。

倒钩指示风的方向和速度，四舍五入到最接近的5（mph或m / s）。完整的倒刺= 10，短的倒刺= 5，三角旗=50。可以通过对倒刺进行计数来找到速度。倒钩突入风-他们指出，风来的方向*从*。向左指尖的茎有一个完整的倒钩和一半的倒钩表示从西侧15点的风。

彩色轮廓线指示温度曲线，以°F或°C为单位。轮廓间隔为10°F或5°C。冷冻水平由标记为**FR**的双黑线指示。

渐变的绿色阴影表示相对湿度。

**1000-500 mb厚度**

厚度是两个压力水平之间的垂直距离。通常，该距离是两个压力水平之间空气密度的函数，这本身直接与空气温度相关。因此，厚度是两个层次之间大气层平均温度的良好指标-更大的厚度=更暖的空气。

青色线表示大气层1000-500毫巴的厚度。这大约是大气的下半部分（高海拔地区除外）。单位为千卡（10米，10米约33英尺）。一条经验法则是，如果该层的厚度小于540 dm，则任何降水都会以雪的形式出现。

**海平面压力**

海平面压力（SLP）是从模型的网格框的高度向下插到海平面的表面压力。这对应于当地广播或电视天气预报中听到的气压。深蓝色线表示以毫巴为单位的SLP。SLP中的山谷通常表示正面通道，并且通常与风向，温度和湿度的明显变化相吻合。在亚热带地区（西南部的沙漠和夏季的大部分阳光带），SLP经常每天振荡，在清晨达到高峰，在午后达到低谷。

**稳定性指标**

稳定性指数是衡量强天气或强天气的潜力的度量。此处显示的指数是提升指数（LI）和对流可用势能（CAPE）。红线表示的提升指数是雷暴潜力的一种度量标准，它说明了低水平的水分供应。LI值大于0表示不太可能有雷暴。LI值在0到-2之间意味着有良好的触发条件，可能会产生雷暴。LI值介于-3和-5之间表示可能有雷暴。LI值小于-5表示强烈雷暴的可能性很大。

紫色条表示表面的CAPE值，单位为J / kg。CAPE是对一层浮力的度量。CAPE越大，发生恶劣天气的可能性越大。任何大于0 J / kg的值都表示不稳定和雷暴的可能性。CAPE条形图的基线为0。

**10米风**

10米风（离地面约33英尺）对应于气象站的实测风。橙色线表示风速（以mph或m / s为单位）。倒钩与时间高度横截面相同。

**2米温度**

空气温度和露点温度在2米高度（离地面6½英尺）处给出。露点温度是空气样品（在恒定压力下）冷却至饱和之前所具有的温度。露点温度是描述空气中水分或湿度的一种替代方法。如果露点温度接近空气温度，则相对湿度高；如果露点远低于空气温度，则相对湿度低。预测夜间低温的一种技术是查看白天的露点：如果预计没有前沿穿过，那么今晚的低温将不会大大低于今天的露点。

空气温度由棕色实线表示（该线下方有阴影以帮助解释）。露点温度由虚线虚线指示。用黑点划线绘制冻结水平。竖线表示过去3、6或12小时间隔内的温度范围。

**2米相对湿度**

绿线和绿色渐变阴影表示相对湿度。

**云盖**

该面板具有蓝色背景，以显示无云区域。面板分为三个水平层，用于显示低，中和高云层，并绘制为白色条形。如果白色条覆盖其层的整个高度，则为100％混浊。白条之间没有间隙，可以更好地模拟面板中浑浊的外观。

**沉淀**

图底部的条形图表示预测的降水类型和数量。酒吧的颜色代表着降水的类型：雨，雨夹雪，雪或冰块。宽条中的红色窄条表示可能来自对流的降雨部分（淋浴和雷暴）

降水量以英寸或毫米为单位。该值是前一预测期的累计降水量，因此在00小时没有给出任何降水量值。该量是*液态水当量*。例如，1英寸的积雪意味着融化的积雪中有1英寸的水。根据降雪的“湿润程度”，这可能意味着3-12英寸的实际积雪。雨夹雪和冰的深度将更接近其液态水当量。