

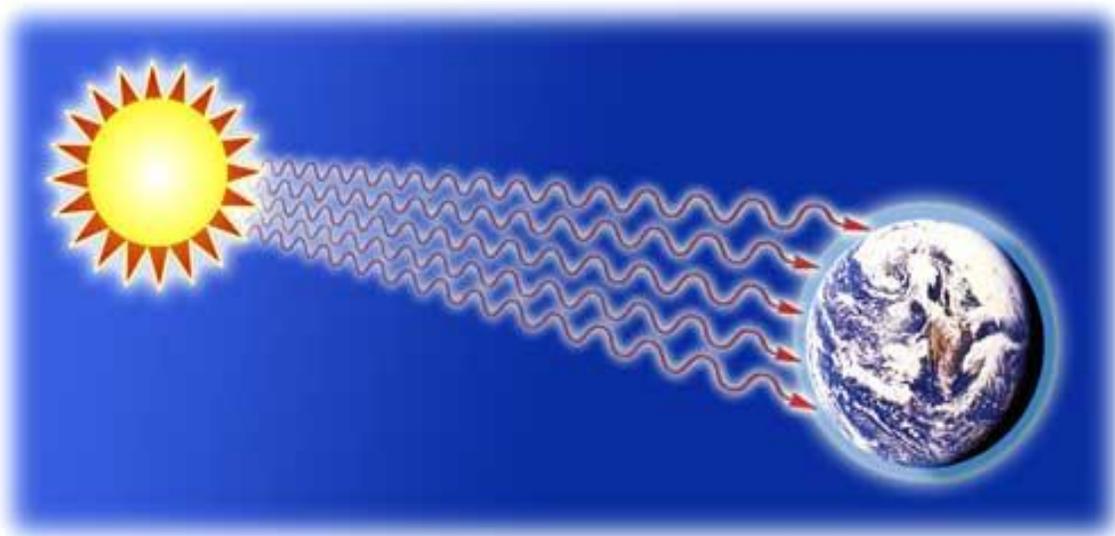
Wing Tips

Understanding Temperature & Dew Point



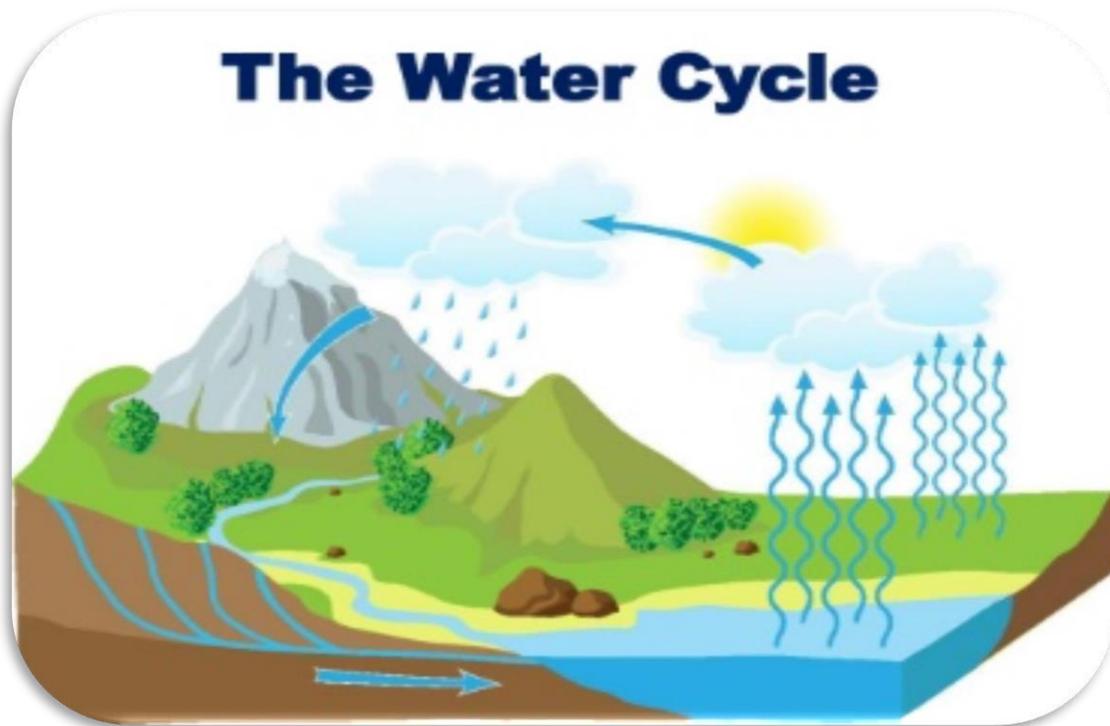
As spring begins to bloom, it is important to understand the delicate balance of Temperature, Dew Point, and its effect on our atmosphere. By furthering your understanding of this topic, you will be able to more accurately forecast airfield conditions and plan ahead for your approaches.

To start, let us review what causes Weather in the first place. At its core, weather is created and directed by the uneven heating of earth's surface by the Sun. In other words, the earth will heat up differently, depending on location. Think about it...Texas will generally be warmer than Maine on any given day, all other things equal.



Okay, still with me?

Good. Now, let's take a look at a particular area. As the sun heats the surface, something called "Convection" occurs. Convection is merely the action of hot air rising. Since we understand that heat rises, it only makes sense that this warm surface would radiate the heat skyward. Any moisture would be evaporated up into the atmosphere and form as clouds. Once the moisture cools down and gets too "heavy" in the cloud, it falls as rain. This is nothing too complicated, just the water cycle that we all learned about in school.



Real Quick! Remember that warm air will always hold more moisture than cooler air. More on that in another series.

Now, introduce "Dew Point". Dew Point is merely the temperature at which the atmosphere will saturate. In other words, the temperature at which the gas form of water (Water Vapor) would begin to condense into water droplets. As a Pilot, we can see both the Temperature and Dew Point in a METAR. The difference between the Temperature and Dew Point is known as the Temperature/Dew Point "Spread".

Here is an example of what it would look like in a METAR.

Data at: 0237 UTC 27 Mar 2017

KLGA 270151Z 06012KT 3SM -DZ BR BKN004 OVC009 05/03 A3035 RMK AO2 SLP275 P0000 T00500028

↑ ↑
TEMP/DEW POINT

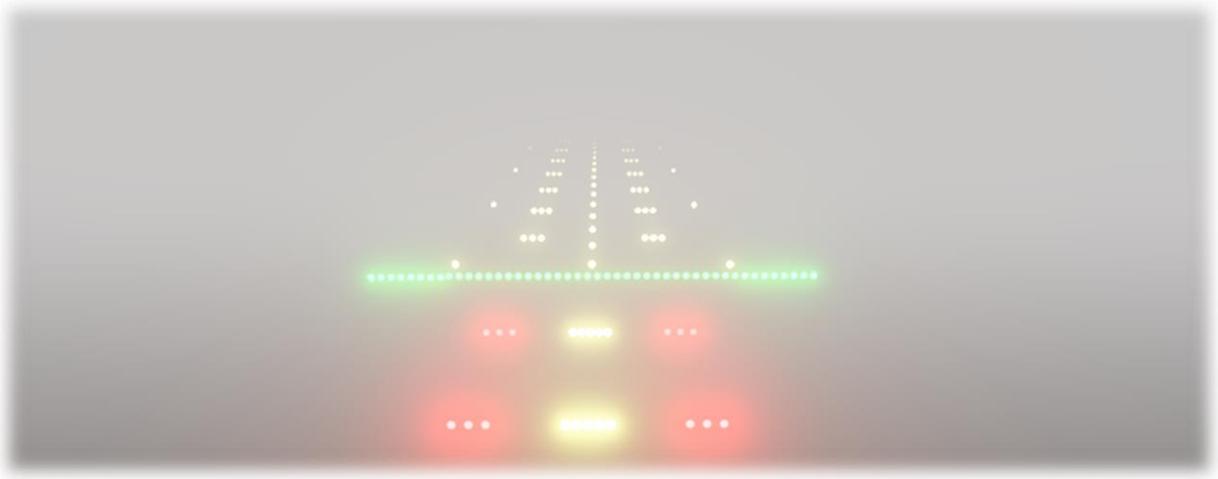
*Displayed in Celsius.

Okay great...so what?

Well, think of this...if we know the temperature at which the water will condense into water droplets (Dew Point), and we know the outside air temperature, we can deduce what will likely happen. Recall that warm air can HOLD more moisture than cooler air. So, as the temperature gets closer to the Dew Point, the atmosphere will saturate. This action produces rain, mist, fog...you know...IMC conditions. Poor visibility. These conditions can actually be seen in the METAR above. The METAR is reporting 3 Statute Mile Visibility, Light Drizzle, and Mist.

Scenario...

You are approaching an airport and you pull up the ATIS. You soon find that the Temperature/Dew Point Spread is only one or two degrees. That is, the temperature is only one or two degrees from the atmosphere becoming saturated. With this knowledge, you could deduce that by the time you arrive, there is a high likelihood of encountering poor visibility caused by fog, mist, rain, or all three.



Now, this isn't a big deal if you are on an IFR Flight Plan and are fully prepared to execute an Instrument Approach. If you aren't, then it would be wise to plan ahead and have a Plan B.

So as you can see, understanding Temperature/Dew Point provides an excellent way to plan ahead and know what to expect upon arrival. This can help avoid inadvertent IMC situations and being placed in the middle of the "soup".

We hope that this Wing Tips topic has helped in some way to further your understanding of the Weather around you. Should you have any questions or comments, please head over to the J7 Forums and let us know in the "Wing Tips" Category.

Cheers,

The VVA Team