T-Skew: An overlooked insight

In general, we want to avoid clouds. They can foster deadly icing in winter, thunderstorms in summer and general bumpiness the rest of the time. Everyone can tell you the cloud base (Ceilings), and some tops are printed in some cases on Radar maps like ForeFlight. But save for the occasional Pireps, how do you find out the tops? There is a way, and the answer is T-Skew charts. They plot the temperature and dew point at various altitudes, which is a fairly good predictor of clouds when that spread approaches zero.

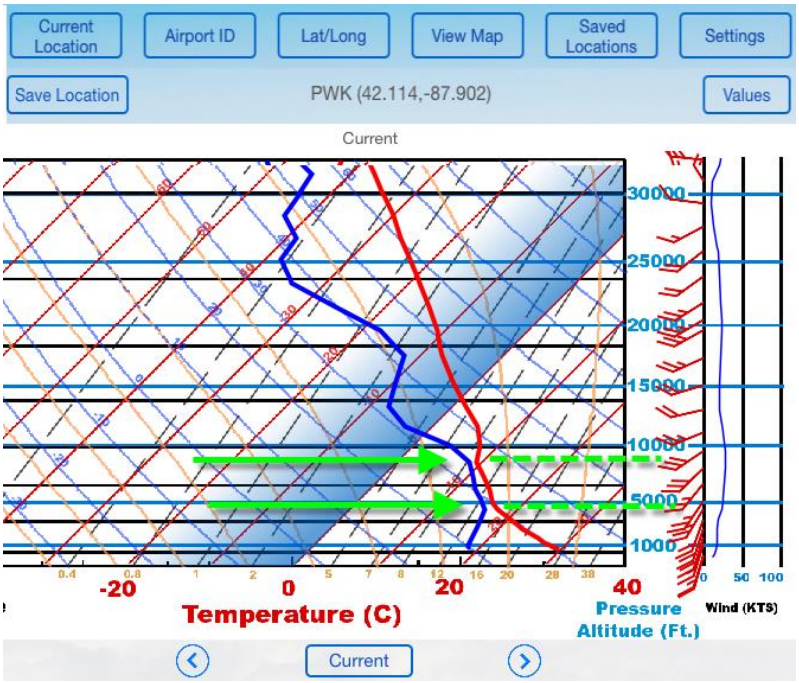
T-Skew stands for Temperature on a Skewed (slanted) chart of Pressure against a vertical axis of altitude, almost invariably with Temperature and Dew Point superimposed. It will tell you where the freezing level is, because while flying in clouds isn't all that fun it is downright dangerous in freezing conditions. The December ABS article on Icing by BPPP and FSS specialist Wm Wobbe provides access to a much more direct website to find icing (http://www.aviationweather.gov/Icing/FIP), but since you can still be in clouds without being in icing, the T-Skew data provides information about cloud tops that are not part of the /Icing websites.

In this article we highlight the information from an iPhone/iPad app called SkewTLogPro, available for $9.99. They pack so darn much stuff on this diagram it is easy to be overwhelmed. In fact, even using my modestly-sophisticated graphic editing software I was unable to remove all the irrelevant (for current purposes) lines because there were so many. So you need to engage your mind and focus on only 4 things:

- The vertical scale on the right, which is Altitude (Cyan)
- The Red line, wich is the Temparature.
- The Blue line, which is the Dew Point.
- The shaded blue area which is the freezing range (about 10C around freezing)

Here's a snapshot from the app taken from my iPad last September for Chicago Executive (KPWK) airport. Yes, it is cluttered and overwhelming. But ignore all but the above 4 lines and you will see that the essence of this diagram is:

- Ceilings just under 5,000
  - Probably thin/broken
  - Tops probably only a few hundred feet higher
  - But possibly clouds between 5-9,000 feet
- Second layer around 9,000
  - Clear above 9,000
- The freezing level is well above any cloud tops.



The diagram also shows wind speed as a function of altitude along the right side. You can also see the predicted and past value using the "<" and ">" buttons along the bottom.

A new feature of this app is 'Route Planning'. Tell it you want to go from KWPK to KBNA (Nashville) and it will automatically gather as many relevant charts as it can gather along a direct route. You select the distance between displayed chart locations, the start and end time, and use the Prev/Next buttons to 'walk' your way through the charts along those points in time and space, much like an animated weather map. Very handy.

We should also bear in mind that these predictions are even less reliable than conventional weather reports, like cloud ceilings. Remember that almost everyone can report the cloud ceilings (relatively simple device that points straight up

and detects reflection off of cloud/water droplets), but T-Skew requires launching a series of weather balloons across the country and measuring these values (Temp, Dew Point, etc.) as they ascend and drift – far from an exact, detailed map of every square mile in the United States. But in my experience, they've been a pretty good indicator of cloud layers and often amazingly accurate around major airport areas in near time frames.