

Aviation Weather Tools Available on the Houston Center Weather Service Unit Web Site

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<http://www.srh.noaa.gov/zhu>

1. INTRODUCTION

With the ever growing mobile Internet network, more customers will continue to utilize the Internet to obtain weather information. The Houston Center Weather Service Unit (CWSU) web site provides many valuable tools for the aviation community to access through a variety of devices. Through the use of decision aid's, runway wind calculators, vertical wind profile, and recorded aviation weather briefings, pilots are able to access the latest information to help them when making final decisions before taking to the skies.

2. Tactical Decision Aid

The National Weather Service (NWS) Terminal Aerodrome Forecast (TAF) product is widely used by the aviation community when planning and preparing for flights. The tactical decision aid takes the TAF text product and generates a Decision Aid (Avila, 2009) with a color coded table to display the current and forecast conditions. The program provides a box where the user can enter his/her desired airport identifier, click the button, and the Decision Aid is generated for any NWS TAF airport.

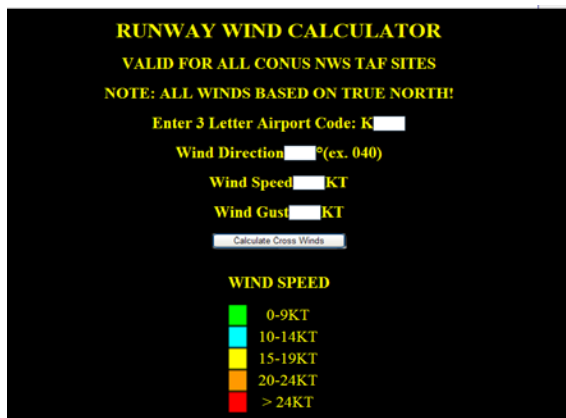
The Decision Aid separates the ceiling, visibility, precipitation, wind, and wind shear when forecast into a matrix over a twelve hour time period from the time of the current observation. By providing the information in a visual format, the user is provided with a stoplight approach. Therefore, when conditions are expected to change significantly, the expected impacts are highlighted to induce appropriate actions. The product automatically updates with the latest hourly observation and checks for any TAF amendments.

By default, the ceiling and visibility levels are set to the standard flight rule categories (VFR, MVFR, IFR, LIFR). However, the user may customize these parameters to align with his/her decision making needs; and therefore, render the Decision Aid a flexible and more useful tool for operations.

Runway wind information is calculated for the specific runways and also displayed, if selected, on the Decision Aid. The user can choose to display the crosswind and head/tail wind components through the period.

3. Runway Wind Calculator

The runway wind calculator will calculate the crosswind as well as head/tail wind components for every runway at any NWS TAF airport. The user must simply enter the three letter airport identifier, wind direction, speed, and gust if desired. After the calculate button is pressed, the calculator will derive runway specific information for the desired criteria. This tool can be very valuable to pilots, as well as air traffic control officials, when trying to determine when certain thresholds will be met or exceeded. Similar to the Decision Aid, the user is able to set the desired criteria for appropriate action thresholds; however, this is done when the application is launched.



RUNWAY WIND CALCULATOR
VALID FOR ALL CONUS NWS TAF SITES
NOTE: ALL WINDS BASED ON TRUE NORTH!
Enter 3 Letter Airport Code: K
Wind Direction ° (ex. 040)
Wind Speed KT
Wind Gust KT

WIND SPEED

<input type="checkbox"/>	0-9KT
<input type="checkbox"/>	10-14KT
<input type="checkbox"/>	15-19KT
<input type="checkbox"/>	20-24KT
<input type="checkbox"/>	> 24KT

Fig. 1 Screen shot of the runway wind calculator.

4. RUC Vertical Wind Profile

Vertical wind profiles are available for all hub/pacing airports, including many of the large airports in the Houston CWSU airspace. The

information displayed is derived from the Rapid Update Cycle (RUC) model. An interface is provided to allow the user to select a desired airport, altitude, and output style. Altitude information is available for the lowest 2,000 FT, 11,000 FT, and 20,000 FT. The output can be set to display as either text or wind barbs.

The vertical wind profile will generate a product that displays nine hours of information from the last RUC model run with the forecast wind information. This product has proven to be extremely helpful to the general aviation community in determining what kind of flight level winds they can expect and at what altitude. One important aspect that the user must understand is that this vertical wind product is purely based on a single point, and conditions could change within a close range of the selected airport.

5. Web Aviation Weather Briefings

The Houston CWSU meteorologists provide recorded weather briefings after the 12, 18, and 00Z TAF issuances. During these briefings, the forecaster goes over the overall synoptic weather pattern, current weather (often including radar or satellite imagery), upper level wind/jet stream information, AIRMET/SIGMET's, as well as a KIAH briefing.

These briefings can be accessed via a link on the Houston CWSU website. A briefing consists of forecaster narrated slideshow with a

basic text summary at the bottom of each slide.

6. Conclusion

As society continues to move into an era where everything is increasingly more mobile and easily accessible from anywhere, we must continue to develop new products to keep up with customer demands. The aviation community can now access visual information during their preflight briefings by quickly utilizing the mobile internet on a variety of mobile devices. Work is ongoing and will continue to be focused on developing new products to satisfy changing customer needs.

7. References

Avila, Eric 2009: Terminal Aerodrome Forecast-based Tactical Decision Aid. *Extended Abstracts, Aviation, Range and Aerospace Meteorology Special Symposium on Weather-Air Traffic Management Integration*, Phoenix, AZ, Amer. Meteor. Soc., P1.17. [Available online at: <http://ams.confex.com/ams/pdfpapers/147558.pdf>]