INDEPENDENT VERIFICATION OF PHASE I AND II METHODS FOR PEAK AND 5-MINUTE AVERAGE WIND SPEED

The Phase I and II methods were compared to climatology and 0000 UTC Mesonam forecast winds. Two sets of Mesonam winds were used in the comparison:

- Strongest 24-hour wind speed at each model level (in black).
- Least squares simple linear regression equations, in which the predictor was the model's strongest 24-hour wind speed and the predictand was tower-observed peak or 5-minute average speed.

CONCLUSIONS

- For daily peak and 5-minute average wind speed, Mesonam winds performed the best in the verification.
- For timing of the peak wind, none of the forecast methods performed better than climatology.
- Linear regression equations were developed: predictor was the model's 24-hour peak speed and the predictand was precipitation.
- The observations were used to determine the daily average wind speed at 30-60 ft.
- Weathervind observations from the Shuttle Landing Facility (identifier TTS). The TTS forecasts by selecting "Print Display" button.
- Mesonam forecasts were compared for Mean Absolute Error (MAE).
- The Mesonam forecasts were for the grid point closest to CCAFS. The Mesonam data included hourly forecasts from 0 to 84 hours. Mesonam forecasts from model level 1 (≥ 250 msl) to model level 18 (≥ 3100 ft) were evaluated, along with the strongest winds in the lowest 1000-, 2000-, and 3000-ft.
- Linear regression equations were developed: predictor was the model’s 24-hour peak speed and predictand was the observed 5-minute average speed. The model level with the most accurate regression equation (least Mean Absolute Error, MAE), was selected. Separate equations were developed for precipitation/non-precipitation days.
- For predicting daily average wind speed, Mesonam winds' average speed at each model level 2 was averaged over the 24-hour period. Linear regression equations were developed, in which the predictor was Mesonam 24-hour average wind speed and the predictand was the observed 24-hour average wind speed at 30 ft and 80 ft.
- The tool's forecast of peak speed wind speed is used to calculate the probability the peak wind will be ≥ 25 kt, 35 kt, and 50 kt. The calculation is based on the error bars of the linear regression equation.
- The term used in the tool is the threshold value (25, 35, or 50 kt), it is the predicted peak speed and it is the predicted sigma (estimated error of the linear regression equation).

MIDDS GUI for Peak Wind Tool

1. The forecaster opens the GUI from the MIDS Weather Menu. The tool reads in Mesonam and Global Forecast System (GFS) model data from the latest 0000 and 1200 UTC runs.
2. The forecaster selects a model name (GFS or NAM) and model run (00Z or 12Z).
3. The tool calculates and displays the forecasts. Mesonam forecasts go from Day-1 to Day-7, while GFS forecasts go from Day-1 to Day-3.
4. The forecaster can print the displayed forecasts by selecting "Print Display" button.