Motivation
Inconsistencies noted between the dropsonde, SFMR, and flight-level surface wind speed estimates, especially in major hurricanes.

SFMR Algorithm
\[ \text{SFMR Measured } T_B \xrightarrow{\text{Minimize Error in Fit Across Frequencies}} \text{Wind Speed and Rain Rate} \]
\[ \text{Compute Modeled } T_B \xrightarrow{\text{Wind Speed and Rain Rate Guess}} \]

SFMR at time of dropsonde launch is compared to dropsonde WL150 surface adjusted wind speed.

Rain Impacts
Previous algorithm development included all data above 60 m/s for wind-induced emissivity curve. New colocation dataset shows rain dependence exists at high wind speeds as well when 0 mm/hr is used as input into calculation of modeled \( T_B \) (left).
SFMR rain rate used as input removes this dependency (right).
Ongoing work is using independent rain rate estimates to produce new wind-induced emissivity curve.

Conclusions and Future Work
Need to determine how to correct TDR reflectivity data to obtain reliable rain rate estimates.
Investigate differences in wind speed peaks between IWRAP and SFMR that could be linked to changes in raindrop-size distribution making scattering non-negligible in the eyewall.

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