AMSU-B Radiance Assimilation for NOGAPS and COAMPS

**Motivation**

- NOGAPS and COAMPS are key components of the U.S. Integrated Global Observing System.
- Assimilating water vapor profiles from AMSU-B radiance observations is crucial for improving the forecast accuracy.

**Approach**

- Observations from the AMSU-B instrument on the NOAA-15 polar satellite are used.
- Data are processed to remove noise and ensure data quality.
- Observations are assimilated into NOGAPS and COAMPS to improve the forecast

**Results**

- Significant improvements in the forecast are observed, particularly in the mid- to upper-troposphere.
- The assimilation of water vapor profiles from AMSU-B observations results in a decrease in forecast error.

**Obervation Impact on NOGAPS Forecast Error**

- Formula for estimating the impact of observations on the forecast error:
  \[
  \eta_{\text{at}} = \left( y - y_{\text{b}} \right) \left( J K^{-1} \right)
  \]

- Observations assimilated at 00UTC: 24h and 30h forecast errors for June and December 2002.

**References**