Overview of the ARM 90/150 GHz data at COPS

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MWRHF (90/150) data

Data available at archives from 06/22 to 12/31

Challenges associated with instrument:

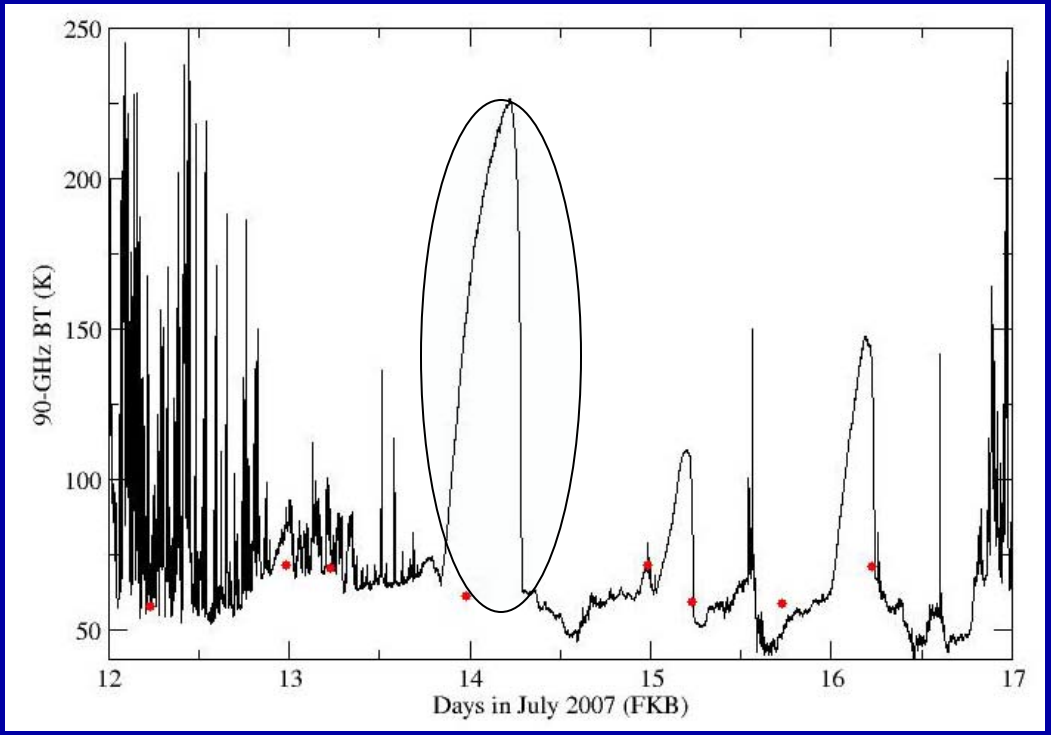
- New instrument - new technology
- We still need to learn about calibration
- Spectral region (WV continuum) still uncertain in models

- Weather conditions were not ideal for the initial testing of the instrument.
- The radiometer did not calibrate from 06/30 until 10/13
- The few calibrations in June may have been affected by dew formation
- Calibration of summer data is uncertain

Additional data issues

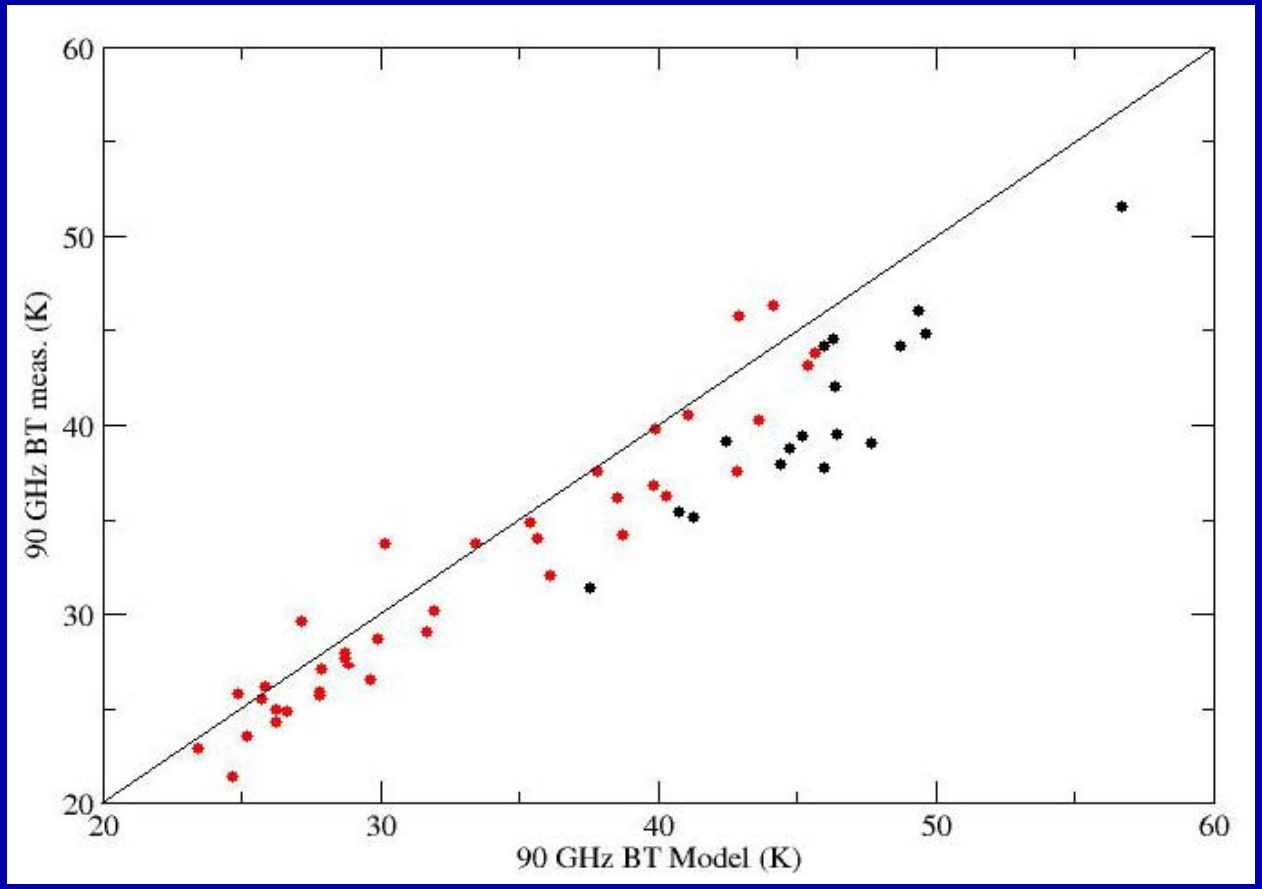
- Night data are mostly contaminated by dew

- Humidity sensor was badly calibrated from Jun. 22 to Oct. 10 (RH data will be recalibrated)



Measurement - model comparison
All clear-sky data

Meas. (K)



BEFORE OCT 13

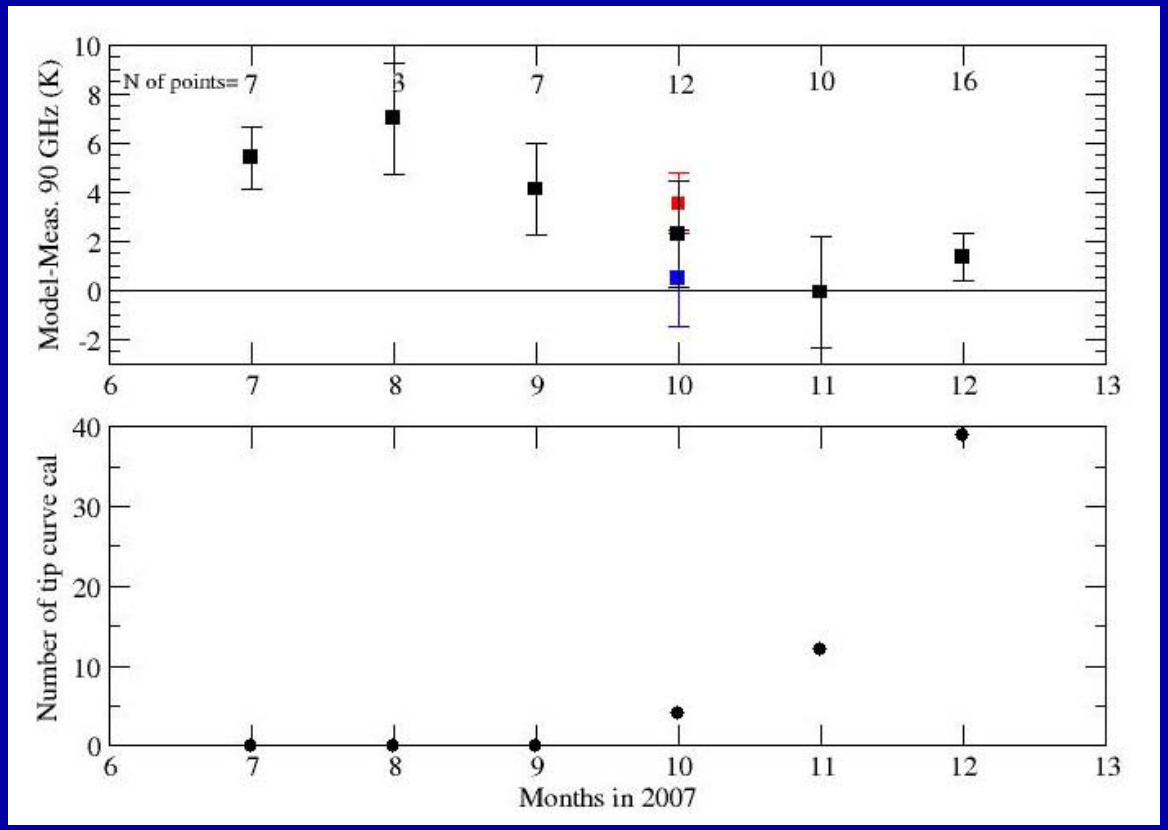
AFTER OCT 13

Model (K)

Monthly model – measurement comparison 90 GHz

Mod-meas (K)

Number of tip cal



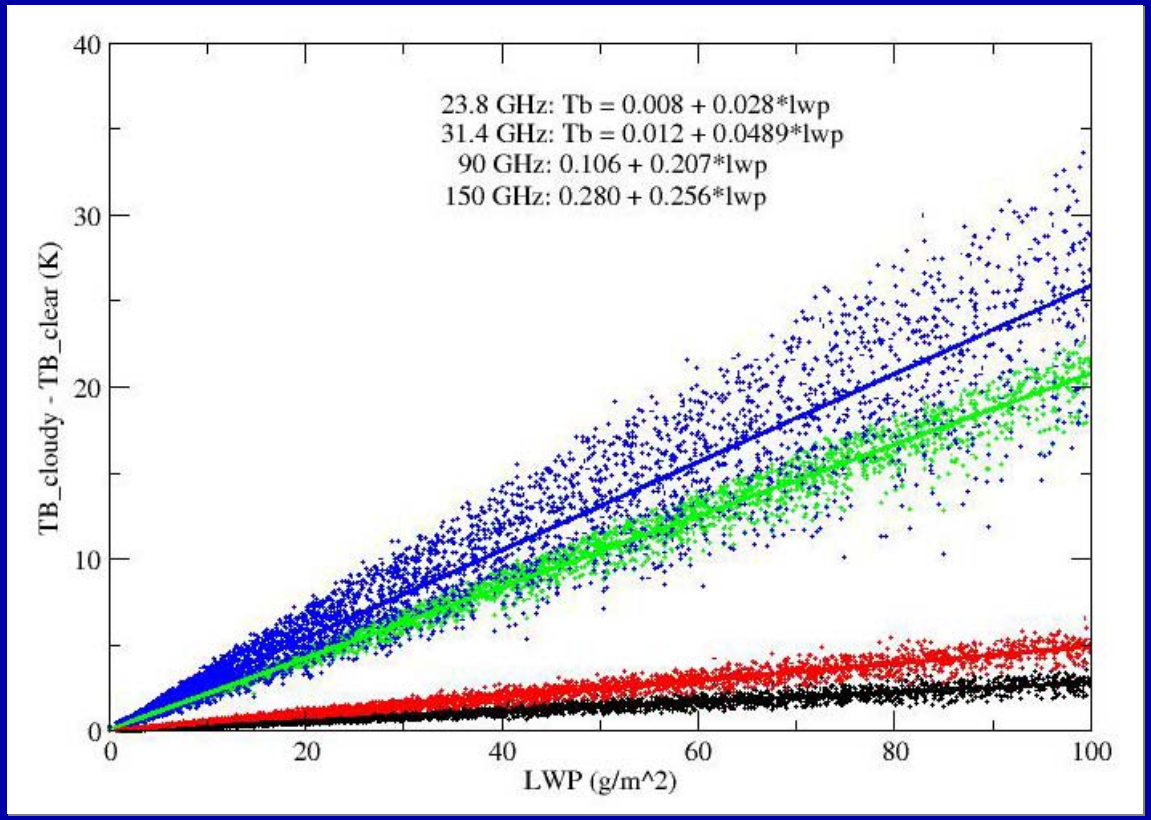
Months in 2007

What level of measurement uncertainty can we afford?

TB(cloudy) – TB(clear), K

90 GHz:
DTb = 1K
DLWP ~ 5 g/m^2

150 GHz:
DTb = 1K
DLWP ~ 4 g/m^2



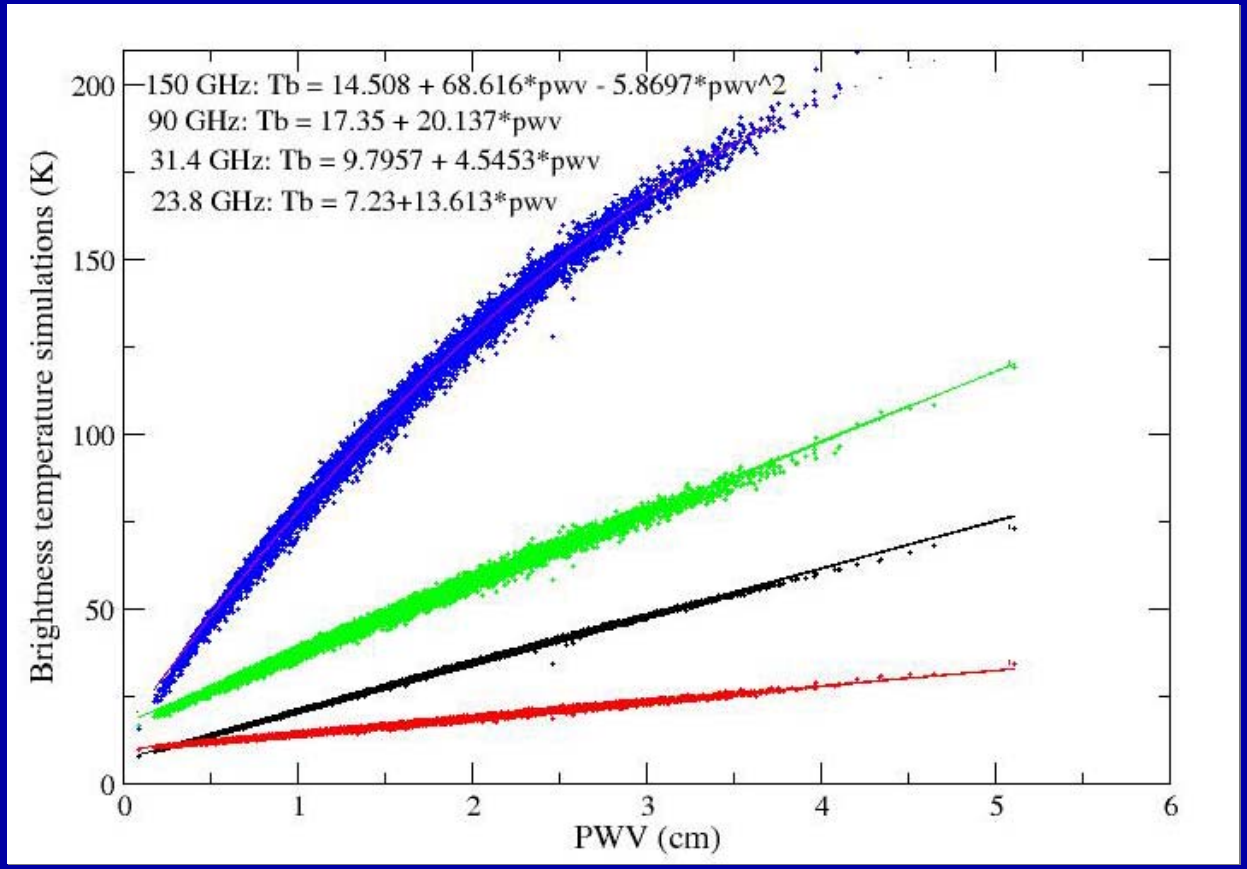
LWP (g/m^2)

Sensitivity to PWV from simulations

BT (K)

90 GHz:
DTb = 1K
DLWP = 0.5 mm

150 GHz:
DTb = 1K
DLWP = 0.1 mm

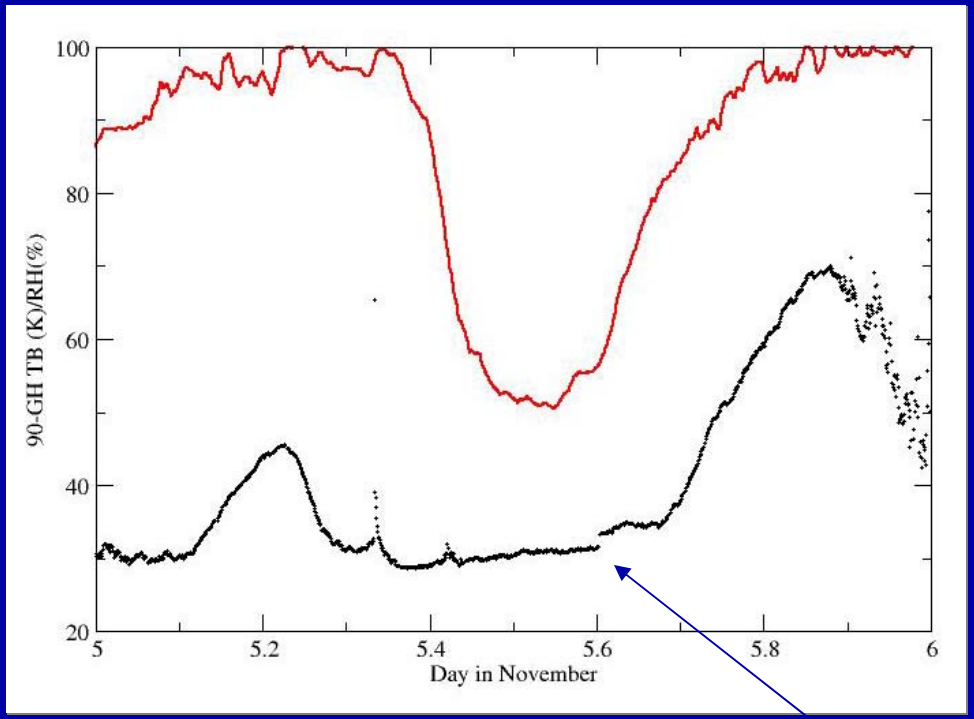


PWV (cm)

Source of uncertainty for MWRHF measurements

Clear sky instrument noise ~ 0.5 K
Calibration uncertainty ~ 1.5 K
Total measurement uncertainty >~ 1.5 K

RH (%)
90-GH TB (K)



Days in November

Summary

- Reduction of measurement uncertainty will be possible with new software (being implemented)
- Data from Oct 13 to Dec 31 are usable
- Prior data will need some sort of recalibration (under discussion right now)
- Expected uncertainty in this dataset is >~ 1.5 K