National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

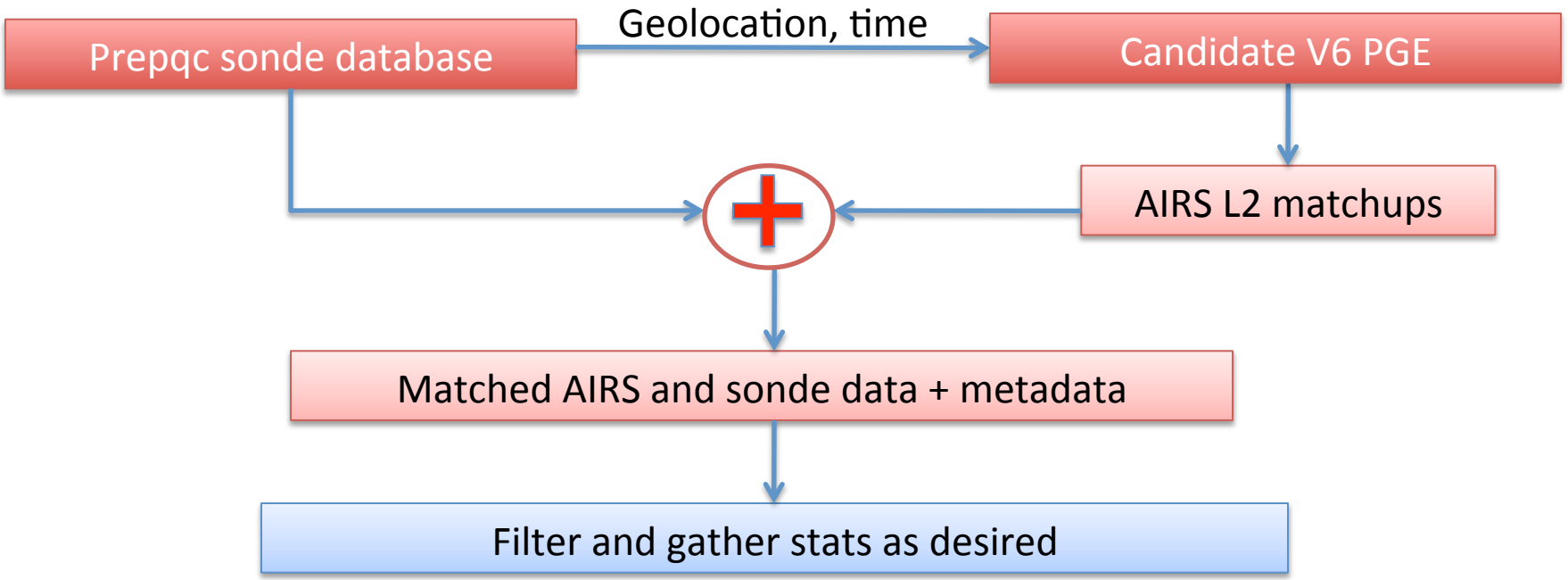
Atmospheric Infrared Sounder

Bias and Bias Trend Comparions for V5 and V6 candidates: ModisEmis, Clim, and SCCNN

Bill Irion
With thanks to Evan Manning, Eric Fetzer and Kevin Yau

AIRS Team Meeting
April 27, 2011

V6 data gathering



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V5 and three V6 algorithms compared for effect of first guess on bias and bias trend

- *ModisEmis, SCCNN (neural-net), and Clim(atology)*
- All comparisons are with RaObs.
- Trends and biases calculated from 6 days' observation per month.
  - Trend calculated 2004-2010
    - To remove seasonal bias, the trend of each calendar month is calculated, and the results are averaged. The standard deviation shown is for the average from the 12 monthly trends.
  - Bias calculated from April-May-June, 2006.
- Temperature quality flags all set to <=2 because no quality flag yet determined for Clim
- Matchups were one-to-one in comparing algorithms
  - E.g., both algorithms had to be 'successful' for the same footprint for the profiles to be counted in the averages.
- Coincidence between AIRS and sonde:
  - Miss time < 3hrs
  - Miss distance < 100 km

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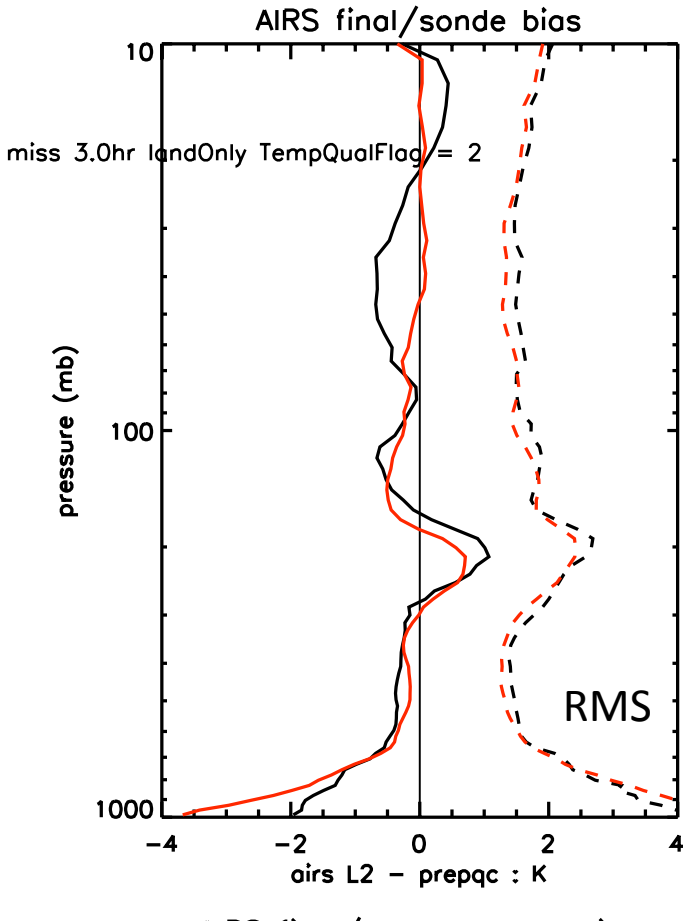
V5_0_14
V5_7_5_ModisEmis

Bias

30°N – 60°N

7119 matches

Temperature QualFlag <= 2



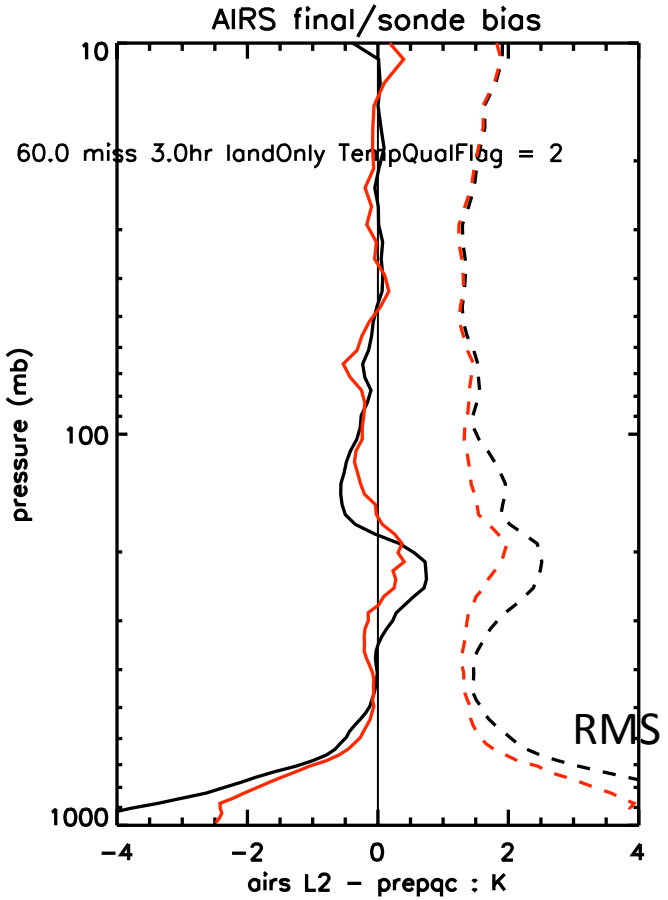
V5_7_5_ModisEmis
V5_7_5_SCCNN

Bias (con't)

30°N – 60°N

8472 matches

Temperature QualFlag <= 2



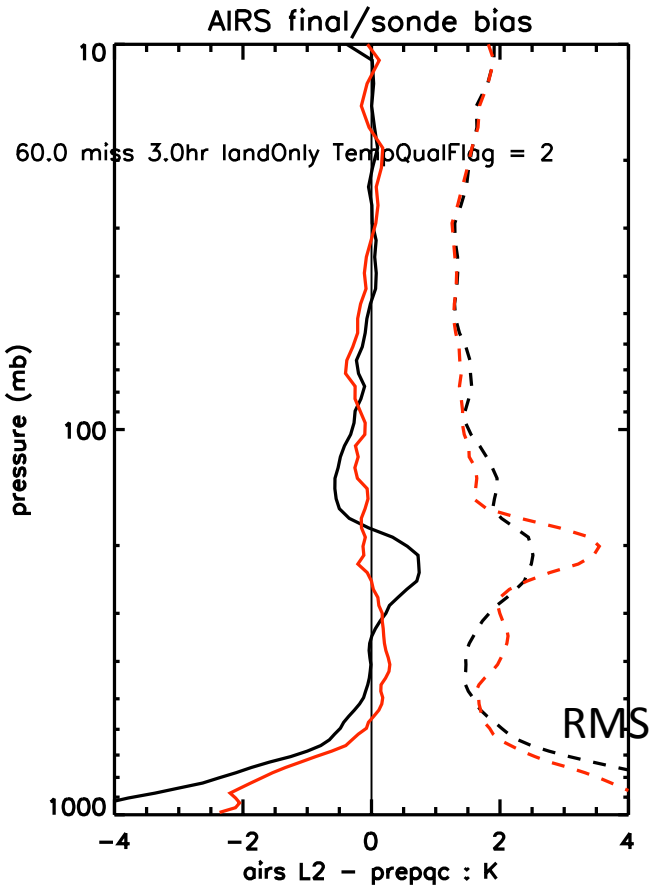
V5_7_5_ModisEmis
V5_7_5_Clim

Bias (con't)

30°N – 60°N

8464 matches

Temperature QualFlag <= 2



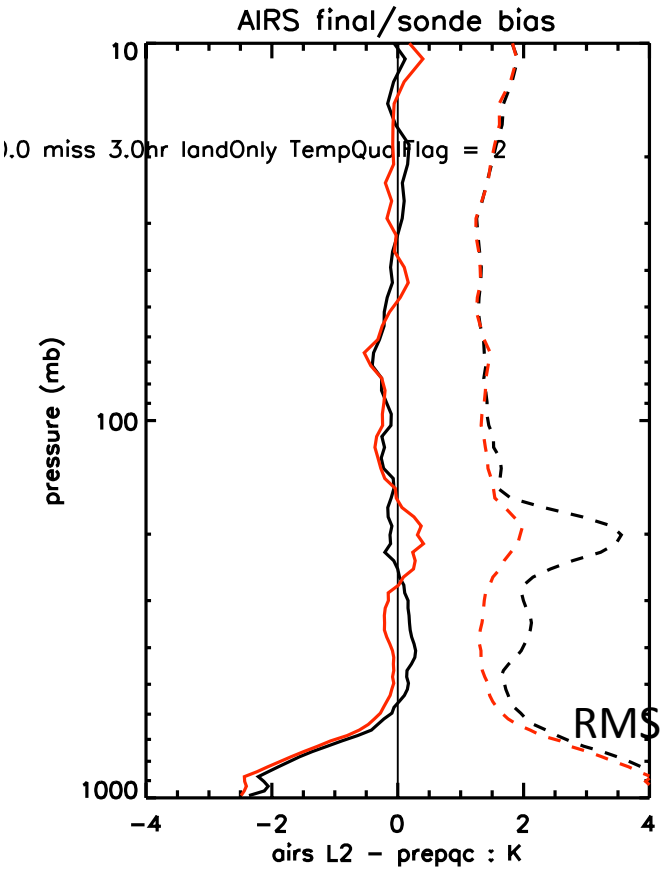
V5_7_5_Clim
V5_7_5_SCCNN

Bias (con't)

30°N – 60°N

8478 matches

Temperature QualFlag <= 2



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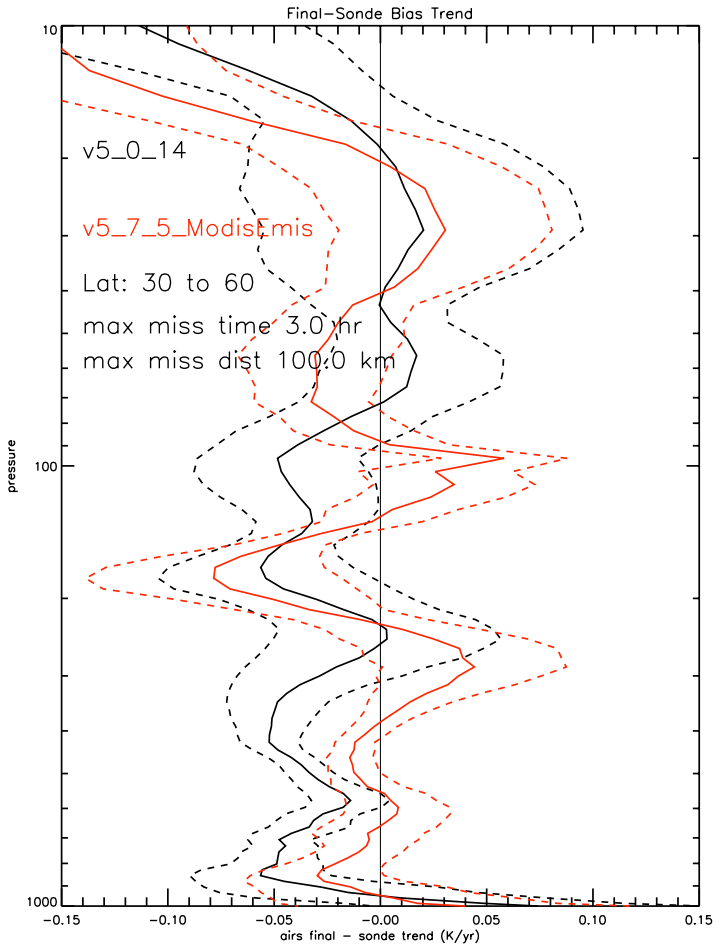
Bias Trend

30°N – 60°N

2004 – 2010

Temperature QualFlag <= 2



Dashed lines are 1σ std. dev. for average trend over each calendar month

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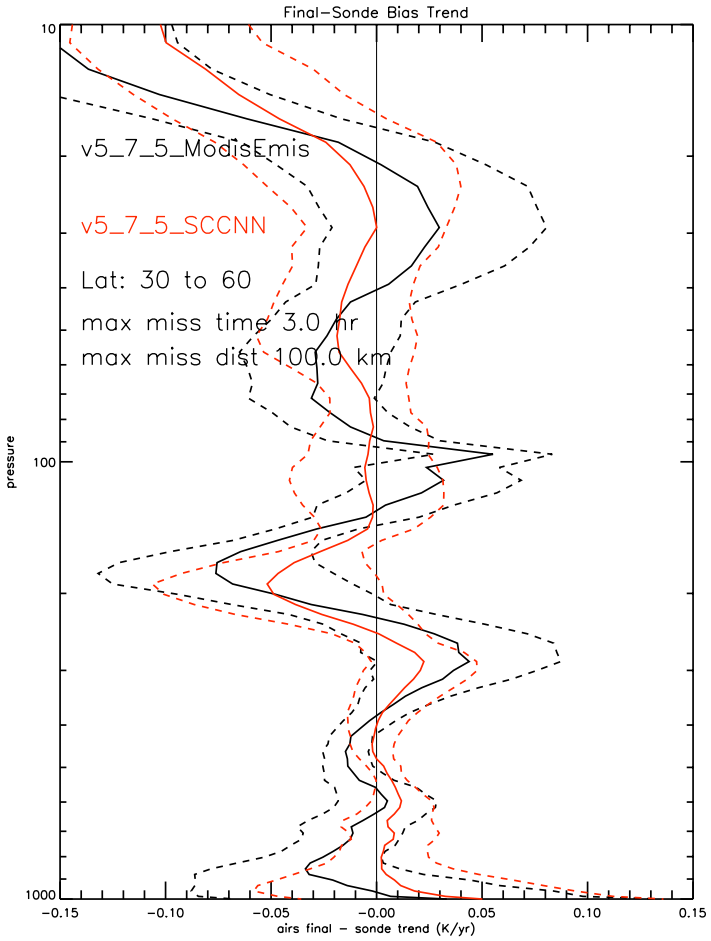

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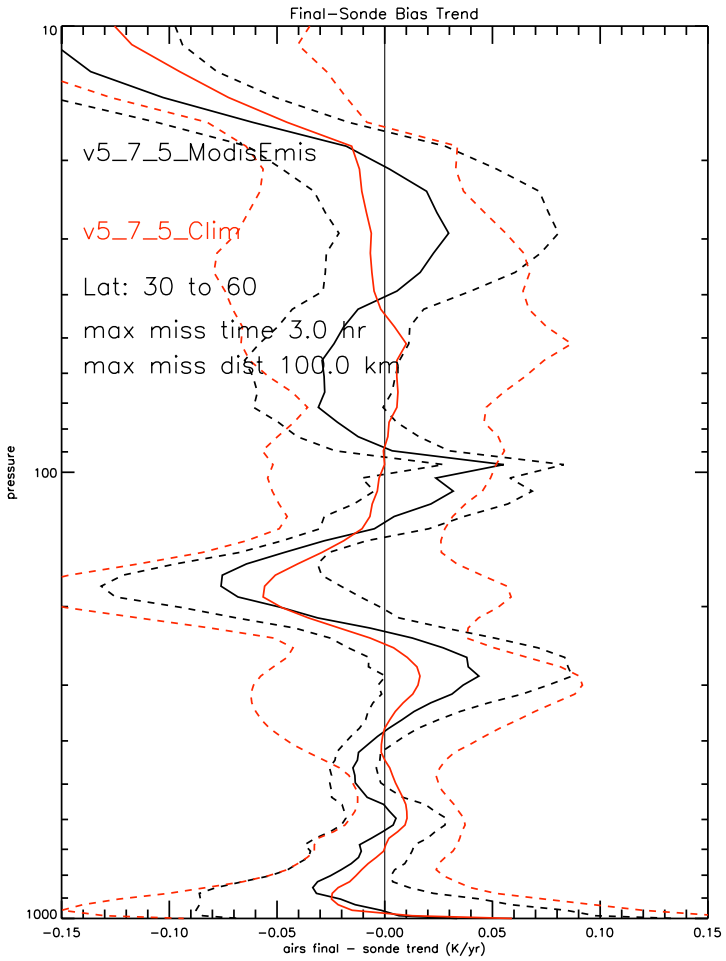

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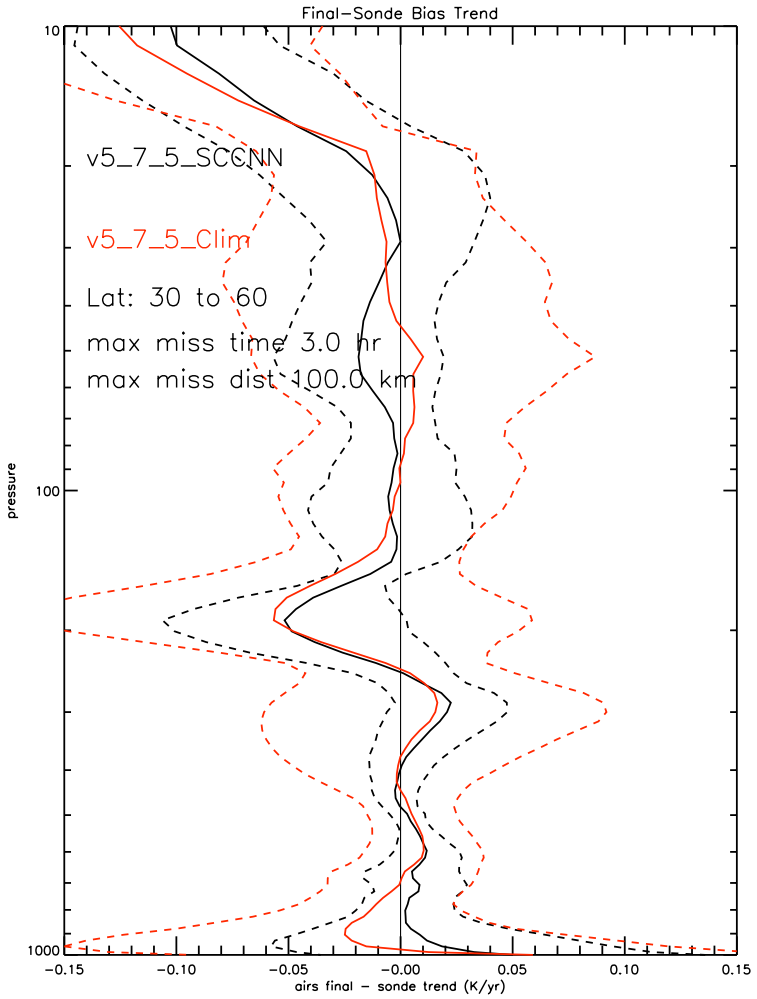

Dashed lines are 1σ std. dev. for average trend over each calendar month

Conclusions

- Biases and trends compared between SCCNN and Clim are mostly a wash, but SCCNN tends to have a lower RMS for bias, and lower standard deviation in the trend average.
- No big improvement in the boundary layer (albeit with qual flags <= 2)
- Bias trend near 20 mb is a question mark. Need GPS to better nail this down?

Thank you.

backups

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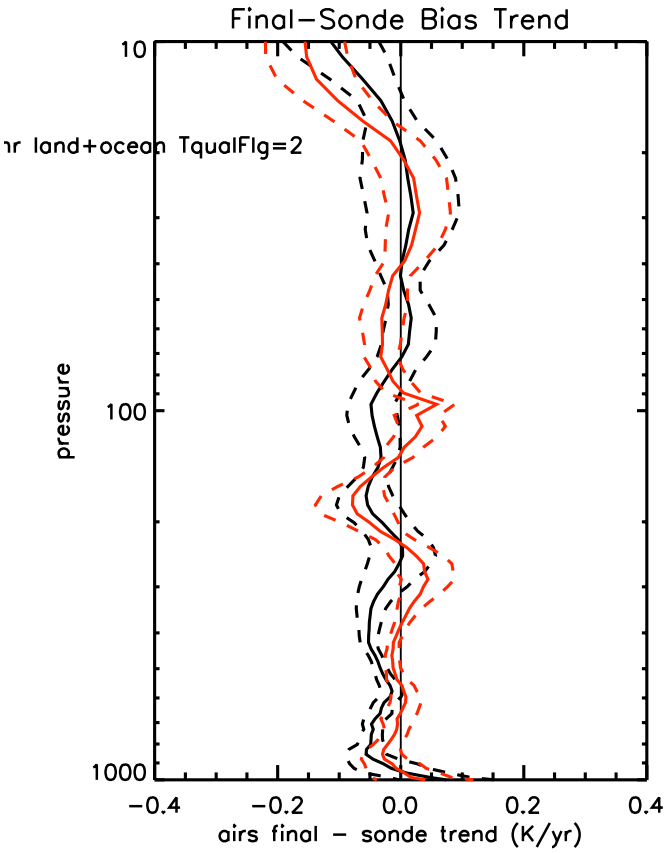

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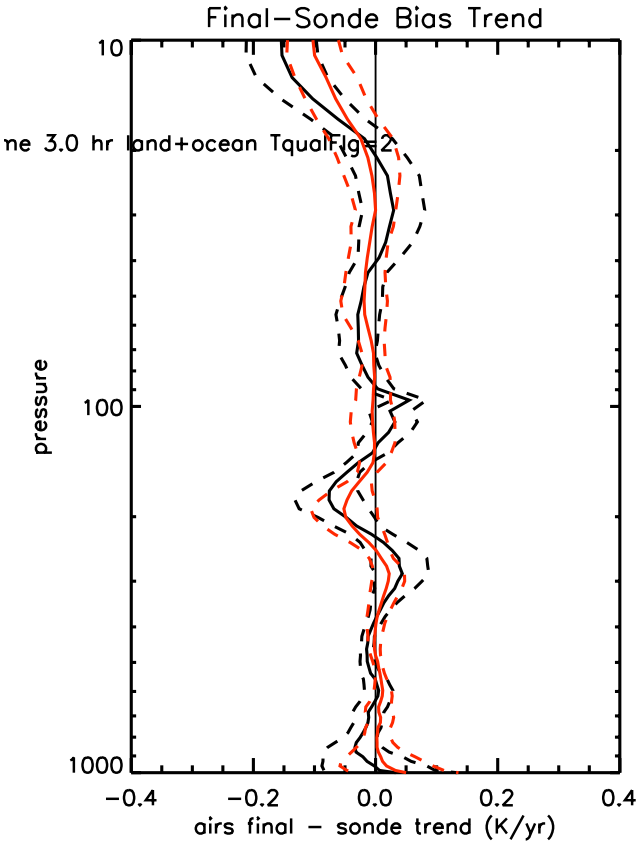

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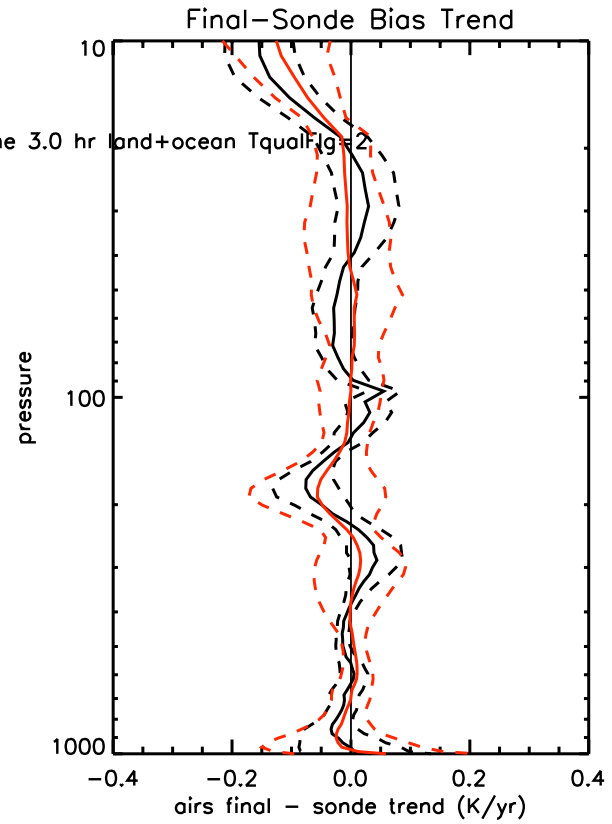

Dashed lines are 1σ std. dev. for average trend over each calendar month

Bias Trend (con't)

30°N – 60°N

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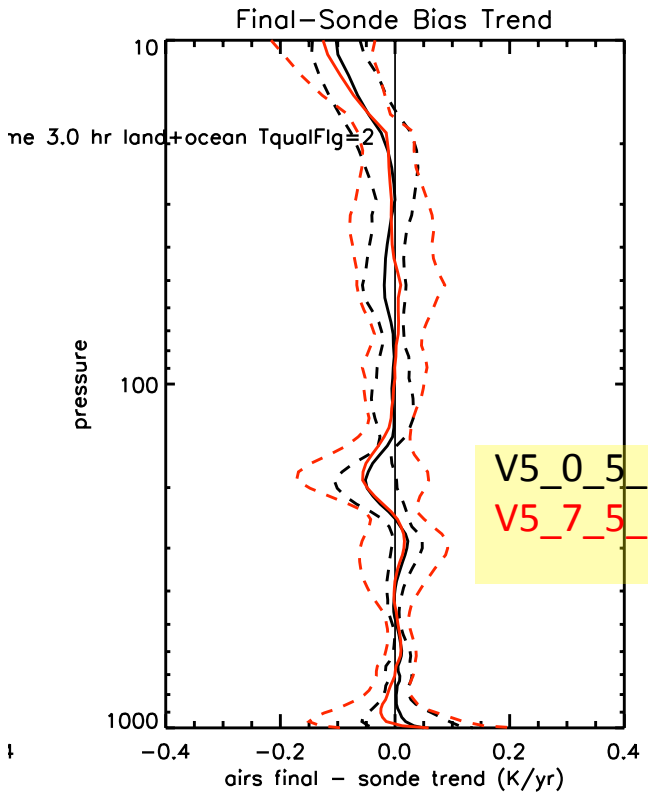

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