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Collocation and related uncertainties

Xavier Calbet, AEMET (xcalbeta@aemet.es)
Níobe Peinado-Galán, University of Valencia

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1. Consistency in radiance space
2. Uncertainty components
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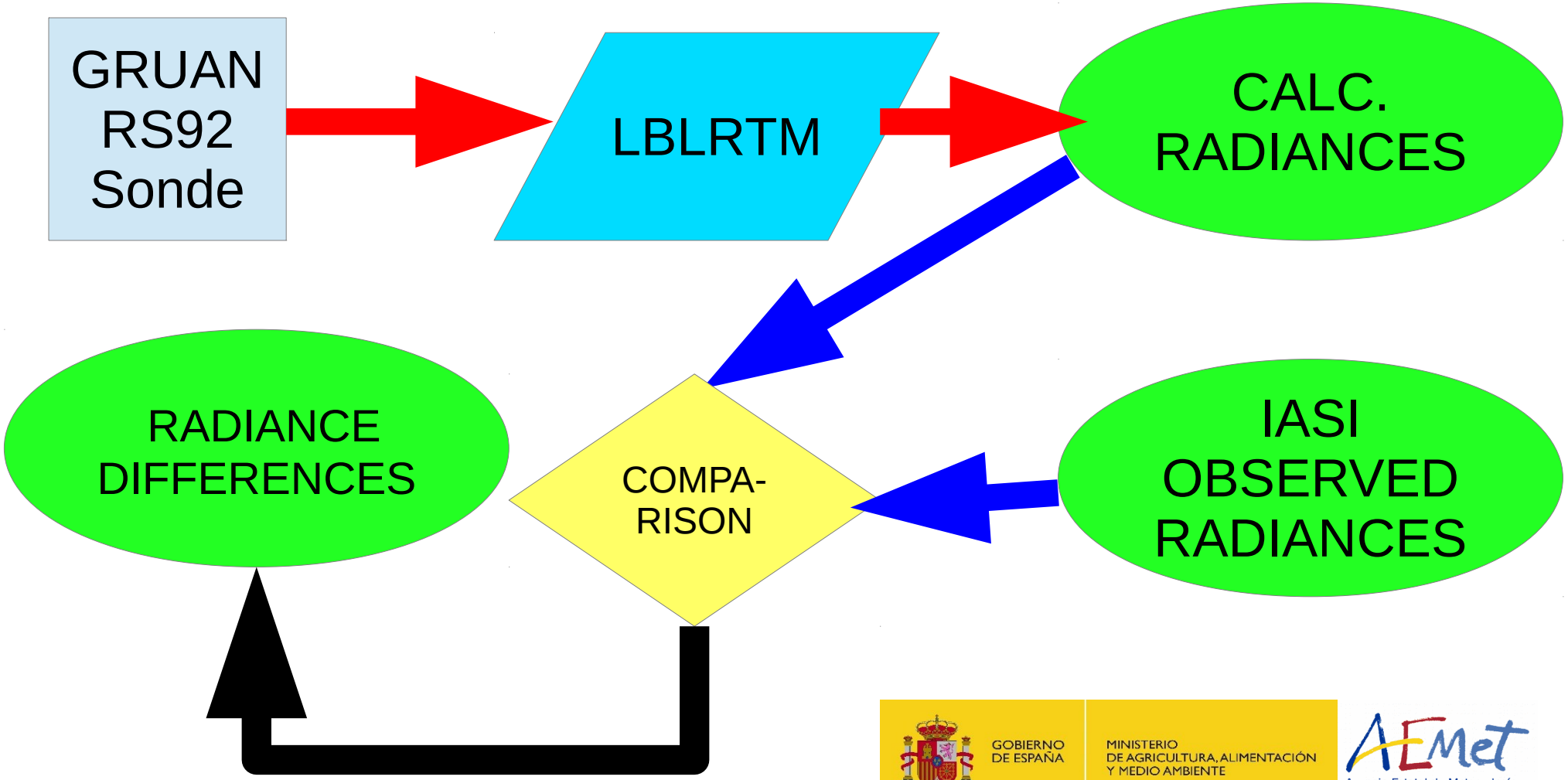
Consistency in Radiance Space



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Consistency in Radiance Space

Paper:

Calbet, X., Peinado-Galan, N., Ripodas, P., Trent, T., Dirksen, R., and Sommer, M.: Consistency between GRUAN sondes, LBLRTM and IASI, Atmos. Meas. Tech., 10, 2323-2335, https://doi.org/10.5194/amt-10-2323-2017, 2017.

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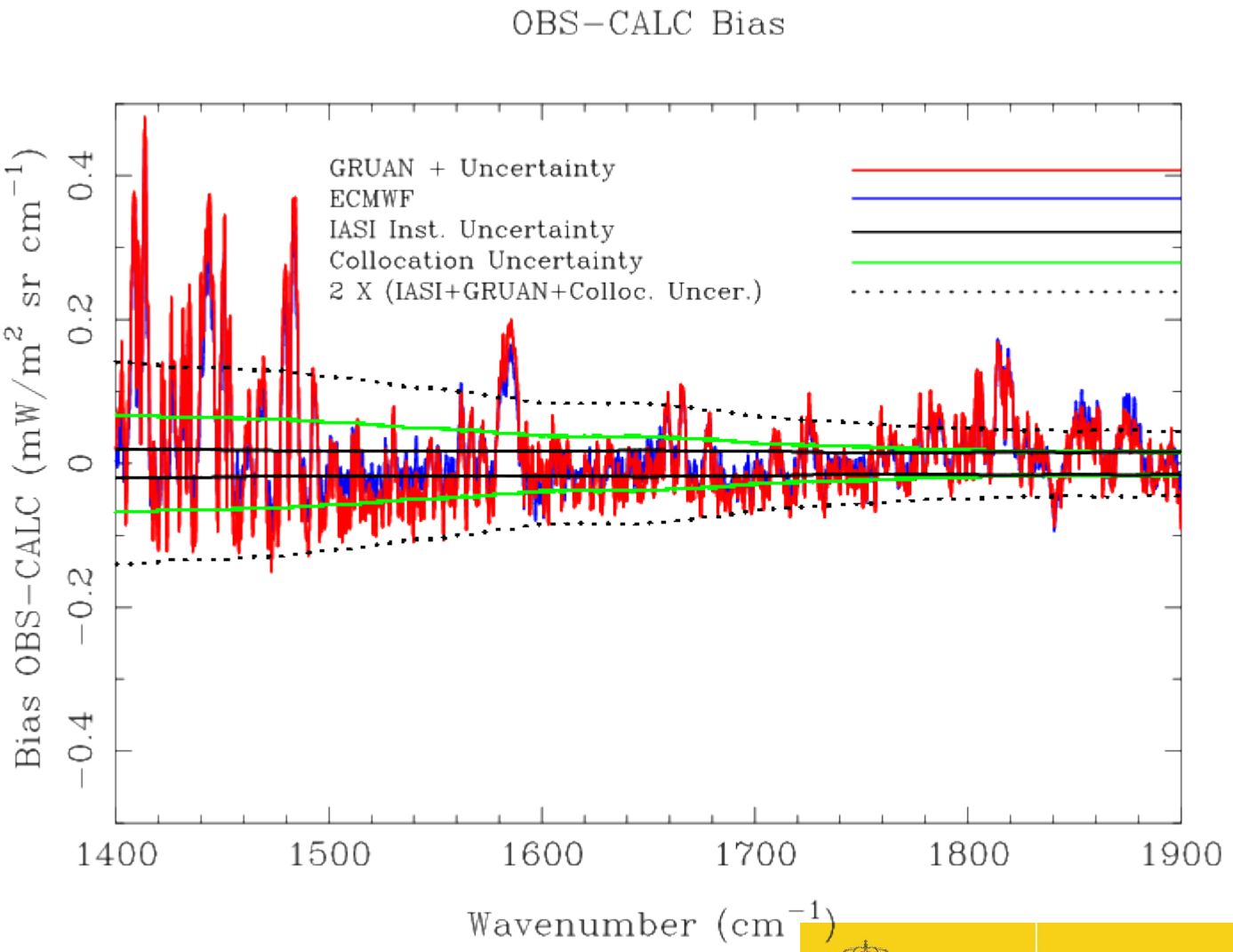
Consistency: Final Results



Night data

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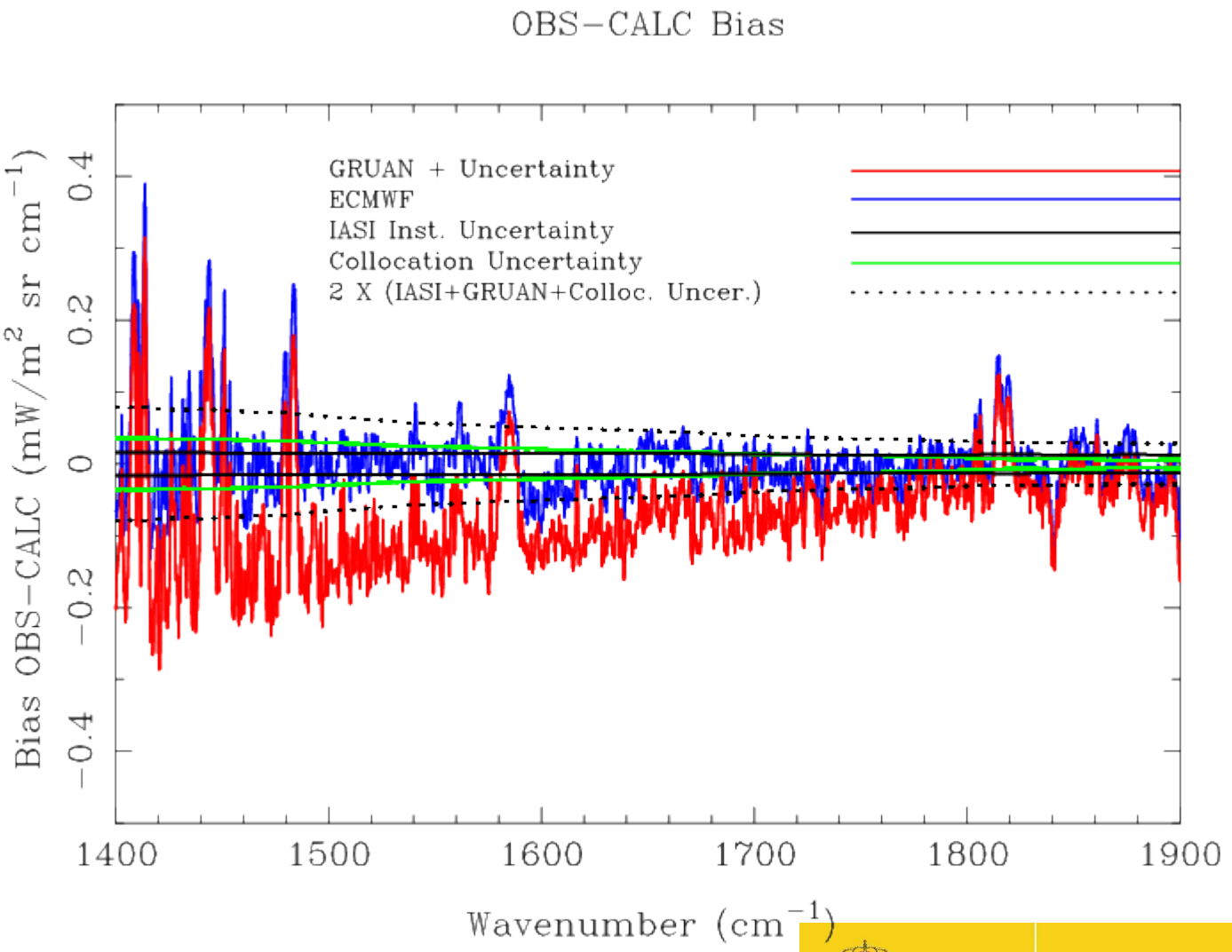
Consistency: Final Results



Day data

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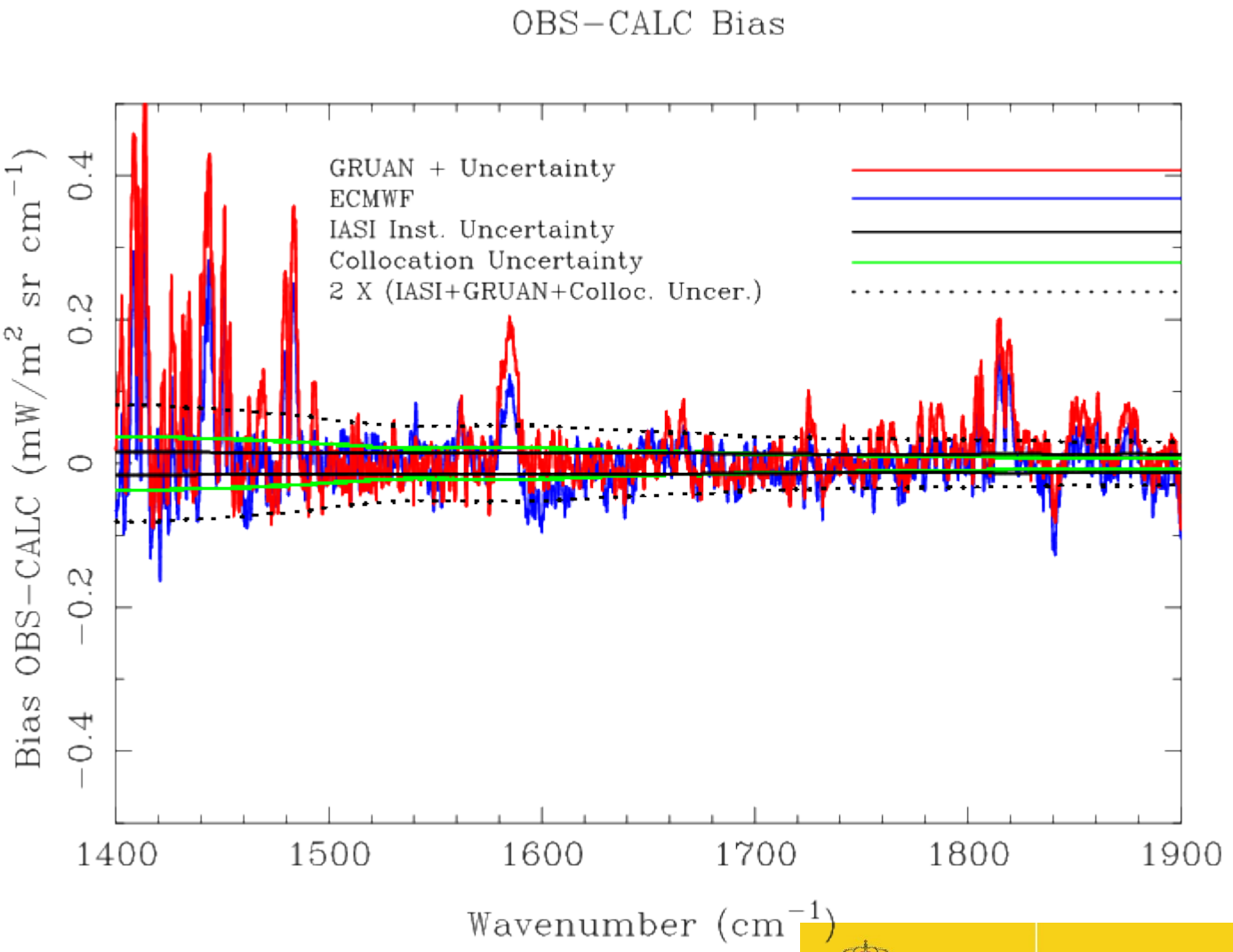
Consistency: Final Results



Day data
+2.5% RH

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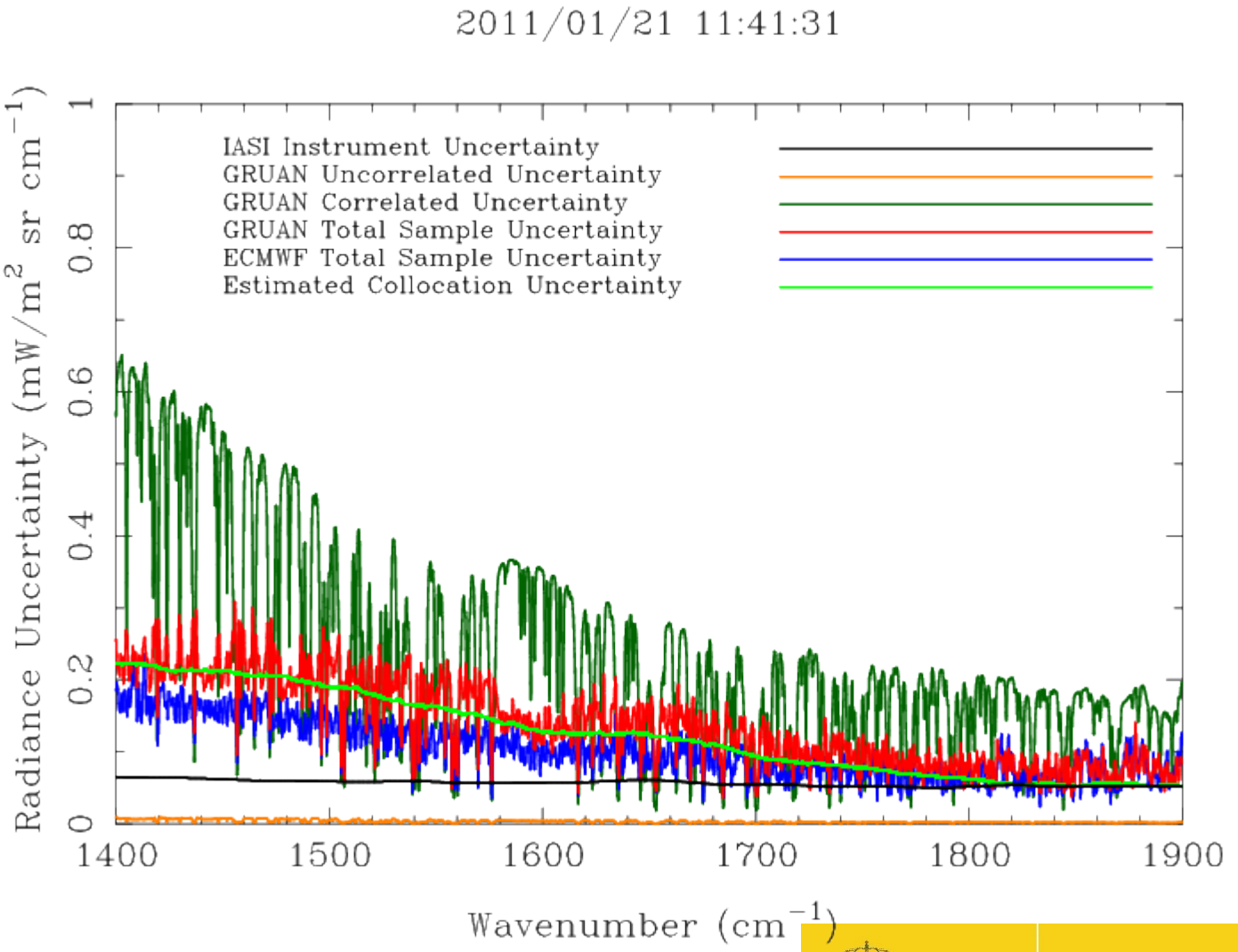
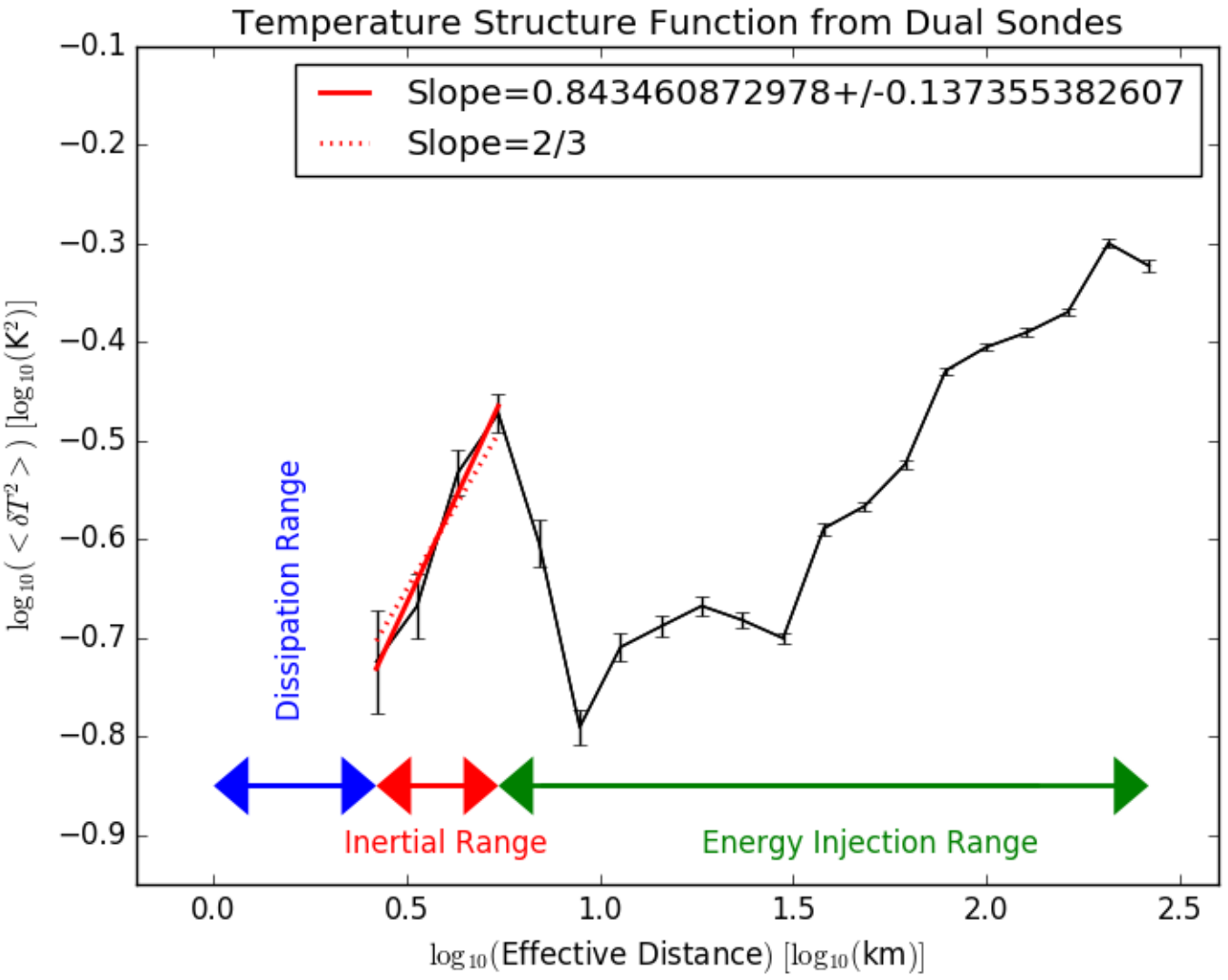
Consistency: Uncertainties

1. IASI uncertainty 
2. GRUAN uncertainty  but still needs clarification on uncertainty correlation between vertical levels
3. LBLRTM uncertainty 
4. Collocation uncertainty 

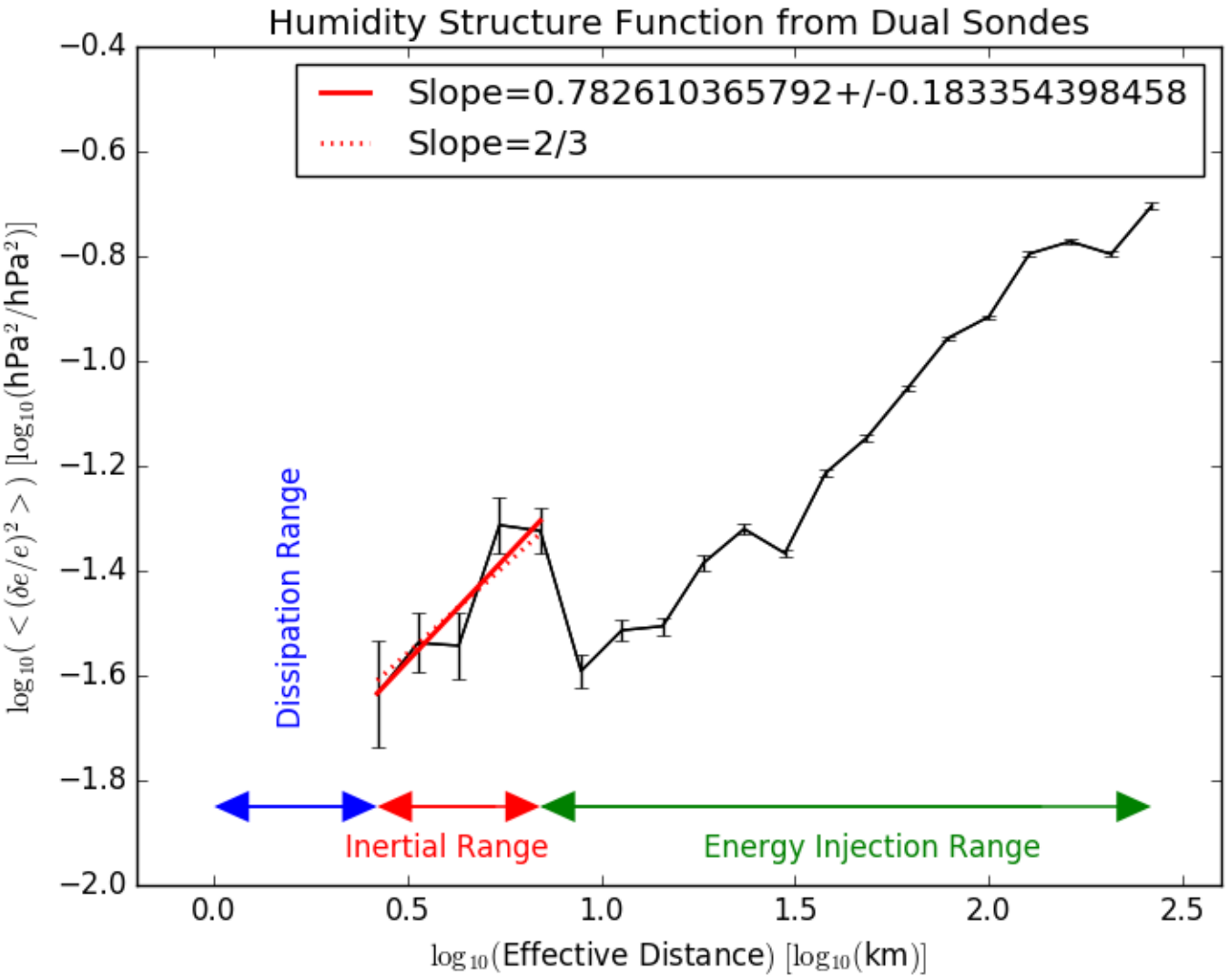
Consistency: Uncertainties



Turbulence from dual sondes



Turbulence from dual sondes



Conclusions

- GRUAN and IASI are consistent!! at night time (day time bias of 2.5% in RH)
- Some uncertainty components not known:
  - GRUAN uncertainty correlations in the vertical
  - LBLRTM uncertainties
  - Collocation uncertainties
- Working on estimating collocation uncertainties from turbulence parameters
- Turbulence certainly seems to be a key component in collocation uncertainty, and perhaps also for other fields (assimilation, etc.)

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