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Interactive comment on "The Zugspitze radiative closure experiment for quantifying water vapor absorption over the terrestrial and solar infrared. Part II: Accurate calibration of high spectral resolution infrared measurements of surface solar radiation" *by* Andreas Reichert et al.

Anonymous Referee #2

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General Comments

The paper by Reichert et al. is well written and describes an interesting and useful approach to the problem of establishing some level of radiometric calibration for solar transmission spectra in the NIR. The quantification of the water vapour continuum is an important area of ongoing research.

Specific Comments

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Discussion paper

Page 5: Reference is made to the use of the Kurucz exo atmospheric spectrum but is followed by the statement “Furthermore, we use the ESS proposed by Thuillier et al. (2003)...” This is confusing. I think perhaps the authors mean that the the Thuillier ESS is used in addition to the Kurucz version? Is it used only for its uncertainty values or does it also contribute otherwise? A statement indicating that, resolution aside, the two are broadly equivalent (assuming they are), would be useful.

Page 6: First paragraph. The discussion of the blackbody thermostat accounting for variations in dome temperature is worrying. The blackbody radiance varies with temperature and should be decoupled from dome temperature, especially as dome temperature could well vary significantly throughout an extended measurement period. The variation in radiance at these wavelengths may be small, but the impact should be briefly discussed.

Page 6, line 20: The spectra from the Langley calculations and the blackbody radiance curves are recorded on different days. Should have a statement verifying that the local water vapour concentrations for the two days were equivalent. If they weren’t, a brief explanation of why that is not significant, specifically with the blackbody spectra, is in order.

Page 7, line 9: Referring back to the earlier comment, if the Thuillier ESS uncertainty is to be used, the Thuillier ESS must first be shown to be some manner to be equivalent to the Kurucz.

Figure 7a): Does this represent the ratio between a pair of sample spectra, or is it the mean of all ratioed spectra, or something else?

Technical/typographical corrections:

Page 3, line 23: ... that incides ... would be better written as “that is incident at a 90 degree angle on”...

Page 8, line 21: ... enables to detect ... should be ...enables us to detect...

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