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Atmospheric Measurement Techniques Discussions

Interactive comment on "Atmospheric correction of thermal-infrared imagery of the 3-D urban environment acquired in oblique viewing geometry" *by* F. Meier et al.

Anonymous Referee #2

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General Comments

Meier et al. present a procedure to correct for atmospheric effects of thermal infrared remote sensing measurement of surface temperatures in urban environments. Spatially distributed line-of-sight geometry parameters and atmospheric radiative transfer are taken into account properly. Specific measurements obtained by a TIR camera mounted on a high-rising building in Berlin are discussed in detail. A comparison with in-situ measurements is also shown.

I found the paper interesting to read since it presents novel ideas and data. The presen-

tation is very clear and substantial conclusions are reached. The authors give proper credit to related work. The paper addresses relevant scientific questions within the scope of AMT and should be published subject to a few minor comments and technical corrections listed below.

Specific Comments

p 5675, Eq. (1): You should consistently write "tau(theta_j, z_cam, z)", i.e. not neglect "z_cam" in the first and second term on the equation right hand side. It would be good to add an index "surf" to epsilon, to avoid confusion with atmospheric emissivity.

p. 5676, l. 8-11: Clearly, it would cause significant complications in the analysis if scattered background radiance from the environment should be taken into account. On the other hand, a surface emissivity of unity is probably not really realistic. At least a simple attempt should be made to estimate the errors caused by this assumption. This could be done, e.g., based on downward radiance fluxes obtained from climatological atmospheric profiles. I was also wondering if scattered solar radiation needs to be taken into account?

p. 5677, l. 3-4: It would be helpful to mention the spectral range covered by the TIR camera at this point.

p. 5678, l. 21-22: Is there a reference for the EXCUSE research program?

p. 5687, sec. 4.4: This section might be improved a bit by reorganizing the contents. I suggest to discuss the dip in in-situ brightness temperatures at 9am in a single paragraph. It was not completely clear to me if the "micro-scale temperature patterns" are indeed the cause of this dip? Also, it would be good to point out in numbers the bias between the KT15 device and the TIR camera.

p. 5694, Fig. 1: On my print-out the black and gray colors look almost the same. Please select colors which allow to better discriminate between wall A and wall B.

p. 5697, Fig. 4: I think this Figure is too busy and does not really help to better

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understand the correction procedure, which is clearly explained in the text. I suggest to eliminate it from the paper.

Technical Corrections

p. 5679, l. 9-13: The wording of this sentence is not really clear.

p. 5695, caption: "of TIR camera" -> "of the TIR camera"

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 5671, 2010.