

Interactive comment on “Quantitative analysis of the radiation error for aerial coiled fiber–optic Distributed Temperature Sensing deployments using reinforcing fabric as support structure” by Armin Sigmund et al.

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Dear Nicolaas van de Giesen,

Thank you very much for your comment. The remarks are all helpful to improve the paper. Here, I want to respond to some of the remarks and questions.

I agree that a more frequent use of commas, especially after introductory clauses, will improve readability.

p4 l5: Type and manufacturer of the reinforcing fabric were the following and will be included in the manuscript: maxit Armierungsgewebe PS, maxit Baustoffwerke GmbH,

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Krölpa, TH, Germany.

p4 l13: The used fiber–optic cable was composed of a 50 μm glass core, a 75 μm thick glass cladding, Kevlar fibers for tensile strength, and a polyvinyl chloride (PVC) coating with 900 μm outer diameter. This cable was tightly buffered and bend-insensitive. Since the used energy balance model was based on the assumption of a homogeneous cable, the material properties of the cable were roughly estimated using the arithmetic mean for the three components PVC, Kevlar fiber and glass (Table 2).

p5 l32: The accuracy of ± 2 m along the fiber refers to the transformation of the measurement positions from length along the fiber into height above surface, i.e. the measurement used for a certain height could have been separated by 2 m fiber length from the actual measurement at that height. This accuracy was indicated by cross–checking the obtained heights against the counted fiber coils. For the lower part of the temperature profiles, ± 2 m along the fiber corresponded to ± 2 cm in height. The accuracy was not meant to be the accuracy of the positions in length along the fiber. The length along the fiber was provided by the Oryx and based on the speed of light. I realize that the sentence in the manuscript can be misunderstood and needs to be written more clearly.

p8 l19: I agree that Eq. 7 contains a mistake. 10 should be 19.

p9 l3: The wind speed measured at 2.13 m height above the lake was also used for 2.0 m height at the meadow–column because wind speed was only measured at 17 m height at the meadow site.

p10 l10: Do you mean that the parameterization of the convection heat transfer coefficient (Eq. 8) might not always be applicable because free convection could happen only along the sunny side of the support structure which would not be captured by a single, nearby sonic anemometer? This might be true but this case can be assumed to happen seldom.

p13 l2: We, the authors, consider making the dataset available via a data depository. Would you prefer raw DTS data or final corrected DTS data?

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