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Atmospheric Measurement Techniques Discussions

Interactive comment on "Skin temperature from the Thermal Infrared Sounder IASI" *by* S. Safieddine et al.

Anonymous Referee #2

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The manuscript attempts at developing a novel algorithm to derive skin temperature from the IASI sounder via a neural network techniques. Two trainings are chosen to this scope and the results are compared against each other and a third independent in situ source.

My major comment on this manuscript is abouot the conclusion remarks where it is stated that this technique provides a simple method to derive skin temperature from the full IASI constellation. This is true as long as the radiance measurement series is calibrated uniformly and consistently with the training radiance data set. At this stage this uniformly reprocessed radiance data set is missing. Perhaps the authors should aim at developing a set of coefficients for each intermediate time series, especially considering that instrument dis-homogeneities will always be present. More emphasis

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should be put to actually explain what is the advantage of this method over the existing EUMETSAT L2 Tskin method.

A concern is the fact that the NN technique seems to strongly depend on the training ensemble. What's the author's take on the impact that this aspect might have on future applications of their data record?

Finally, the author should provide more information about the in situ measurement station. Is this part of an operational network? What type of skin temperature measurement does it exactly perform? Comparing against one single station is reductive in terms of a final assessment of the proposed algorithm. Could more stations be added to the assessment?

On a final note, few additional comments. 1. Few references are missing. The AIRS v6 algorithm employs a NN algorithm to regress skin temperature, along with temperature and water vapor profiles for the AIRS sounder. 2. Besides Ventress and Dudhia, Gambacorta and Barnet 2013, Methodology and information content of the NOAA/NESDIS operational channel selection for infrared hyper spectral sounders, IEEE Geoscience and Remote Sensing Letters, also address the the cross-interference of unwanted species using an initial climatology and updating this with actual retrieval error estimates in a sequential retrieval method. 3. What cloud filtering technique was used to select IASI clear sky radiances in the training?

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