Geosci. Instrum. Method. Data Syst. Discuss.,
https://doi.org/10.5194/gi-2017-52-RC2, 2018

Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "Total Global Solar Radiation Estimation with Relative Humidity and Air Temperature Extremes in Ireland and Holland" *by* Can Ekici and Ismail Teke

Anonymous Referee #2

Received and published: 14 February 2018

General comments:

The manuscript reports on a study focusing on the performance of five different parameterized models to estimate daily global solar radiation. Solar radiation is a major driver for atmospheric processes and life on the Earth. It may be pointwise measured in situ on the Earth's surface. However, the coverage of the measurement networks is limited, and the spatial resolution of the observations may not be good enough. Modelled estimates on global solar radiation, based on meteorological data more frequently available, are therefore highly welcome.

The manuscript reads well and is well-organized. However, it could benefit from lan-

guage checking.

Specific comments:

Page 1 Line 24: Introduction. The need for model estimates is well justified on the basis of the limited number of the ground-based instruments measuring in situ global solar radiation. How about satellite data: Are there any space-born data that could be used to give estimates on global solar radiation on a better spatial resolution globally? In which sense use of the estimates given by the parameterized models could be more convenient? The reader would appreciate if you could briefly discuss on that.

Page 3 Line 90: Please give the name of the quantity H. In SI system I think it is "radiant exposure". Sometimes it is called "dose" and the term "daily dose" is frequently used within, e.g., photobiology. In your study, you focus on the daily doses (total energy accumulated over the day). Could you please justify the choice? Why not an hourly value or a weekly or a monthly value?

Page 5 Line 98: I presume the temperature is in Kelvins. Please mention this to the reader.

Page 5 Line 100: What is "a self-calibrating model"? Please briefly explain the term.

Page 6 Line 118: Please explain the symbols used in the equation, even if they were exactly the same as in the previous equation.

Page 7 Line 156: Table 1. Longtitude -> Longitude.

Tables 2,4,6,8,10: You could consider presenting the data as a scatter plot. It is challenging for the reader to get a general view on the performance of the model just by looking at the numbers in the tables.

Page 10 Line 198: Winter months seem to be more difficult for the model. Any idea what could be the reason? Could you please discuss on the potential reasons?

Page 20 Line 250: What is "the models' daily trend"? Please specify.

Page 20 Fig. 1. Why is the Ekici model exluded? What are the Models 1-4? Any idea on the factors causing the fluctuation in the curve? The reader would appreciate a brief discussion on the potential factors. Perhaps you could look at least into the days with min and max deviation and try to trace how these days differ from the other days as regards their conditions.

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., https://doi.org/10.5194/gi-2017-52, 2017.