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Interactive comment on "Decoupling the effects of clear atmosphere and clouds to simplify calculations of the broadband solar irradiance at ground level" *by* A. Oumbe et al.

Anonymous Referee #1

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General comments: The manuscript deals with the simplification of model calculations of broadband solar irradiance at the ground level for overcast and cloud-free skies. Overall, the proposed methodology is smart and beneficial for the preparation of pre-calculated values in operational algorithms for the calculation of surface solar irradiance. Indeed, these algorithms do not need analytical radiative transfer model runs since the mostly use climatological values of atmospheric constituents, not so intelligent information for cloudiness and provide the broadband and not the spectral irradiance. However, the scientific information provided here is very limited. The paper could be published almost as it is but it has to be noted (in the title too) that it is not a scientific paper but a technical note. This is not a bad comment (the paper of Mayer and

Kylling, ACP, 2005 is a technical note that has received great attention by the scientific community) but I think it is the truth.

Specific comments: Page 3, line 11: the authors could consider to add or replace the papers about the cloud modification factor with two papers that provide more coherent descriptions about how this factor is being used in UV or PAR studies. These papers are from J. Calbo (Reviews of Geophysics, 2005) and den Outer et al. (Journal of Geophysical Research, 2010).

Figures 3,4 and relevant text: the authors could provide some information about the behavior of rRm of variance of Kc for solar zenith angles greater than 60 degrees. Probably, this effect is related to the reduction (70, 80 degrees) and diminishing (90 degrees) of the direct component.

Technical corrections: Page 6, line 14: replace “Oumber” with “Oumbe”

Interactive comment on Geosci. Model Dev. Discuss., 7, 2007, 2014.