General comments

In the 3^{rd} revised version of the manuscript the authors have applied a regression method to calculate the scaling coefficients. This newly introduced method, in some cases, lead to large differences compared to the former method, where theses coefficients have been chosen "by eye". The introduction of a mathematical formalism to calculate the scaling coefficients is a consequent step forward towards a fully documented method. Although, when comparing to the former set of coefficients, the method seems to be rather robust regarding the choice of scaling coefficients.

Some clarifications need to be introduced to the manuscript before publication (see specific comments below).

Specific comments

Page 9, lines 16–23:
In E6 and other regions of E5c results the addition introduced by the inclusion of the parameterizations to the absolute values maximally reaches 0.06 K day^{-1} for E6 and 0.21 K day^{-1} for E5c around 46 km. However, this addition should not be considered as the additional overestimation of already overestimated results of E5c an E6 compared to libRadtran, because the difference between libRadtran and E5c or E6 in case of solar minimum is larger than in case of solar maximum, since in case of solar maximum the result of E5c or E6 is also influenced by the lack of solar variability representation.

The whole paragraph should be rewritten. It is hard to follow your argumentation. Split it up into more separate sentences and clarify your statements. You should consult a native speaker to polish your argumentation.

A possible rewrite could be:

Both radiation schemes, E6 and E5c, overestimate the total heating rate in certain regions in absolute values compared to libRadtran, which is a feature of the original schemes. This overestimation is larger during solar minimum conditions, since E5c and E6 underestimate the additional heating through spectral irradiance variability over the 11–year solar cycle. By the inclusion of the additional parameterizations the extra heating rate maximally reaches 0.06 K day^{-1} for E6 and 0.21 K day^{-1} for E5c around 46 km during solar maximum, and therefore decrease the discrepancy of

E5c+ and E6+ to libRadtran, which is now constant in time.

Page 9, lines 16–23:
In a temporal modelling such difference will be always equal to the difference during the "grand minimum".

What exactly do you mean with *"temporal modelling"*? Is it a transient simulation with daily varying spectrally resolved irradiances?

Is it possible to apply your method to a simulation with daily varying spectrally resolved irradiances with only one set of scaling coefficients, or do these scaling coefficients also have to vary from day to day?