

## ***Interactive comment on “Imprints of evaporation and vegetation type in diurnal temperature variations” by Annu Panwar et al.***

**Anonymous Referee #2**

Received and published: 11 May 2020

This paper investigates the response of the diurnal warming rate of the surface and air temperature to evaporative conditions and vegetation cover type, which could be useful, as the authors point out, when estimating air temperatures from remote sensing of surface temperatures. They develop a simple model for the warming rate based on the surface energy balance which captures its observed response to  $g_a$  and  $f_e$  reasonably well.

Overall, the idea is good and the study is thorough, so I recommend publication after revision of some issues. Some of these issues have already been addressed by my fellow referee.

My main difficulty is to see why, when deriving equation (4), both the evaporative fraction and the aerodynamic conductance can be considered constant with  $R_s$ . This

C1

needs some justification. Later in the paper it is mentioned (L241-242) that evaporative fraction is stable during daylight hours, which should probably be mentioned before presenting Eq. (4). Why can the diurnal variation of  $g_a$  be ignored?

The paper would in general benefit from a language revision.

Some minor comments:

- Plots using green and red are going to be difficult to read for colorblind people.
- The dashed lines in Fig. 1 are not very easy to see
- In Fig. 5, may it be more useful to express the  $g_a'$  in the inset plot in relative terms (e.g. as a percentage of the mean aerodynamic conductance for each vegetation type)?
- L369 - Figure 6a
- L406 - Figure 6 (a or b?)
- L445 - Where does this 74% come from?

Some language and typos:

- L73 "... the warming rate, (comma) that eliminates..."
- L225 "Vegetation are classified into three types that is based on...". Rather "Vegetation IS classified into three types, based on..."?
- L251 - The year in bracketed citations shouldn't be between brackets itself (see, e.g., Verma, 1989)
- L427 - ".. contribution of the contribution..."
- L487 - depend/depends
- L533 - ambiguity? (uncertainty?)

