

Page 7 must be rewritten as follows (eq.3 is obviously wrong! It must include s, not s prime and be in the form of JM19's Eq.5).

Lines 143-147:

.... We follow the approximations in Williamson et al. (2018) and JM19 in assuming no change in deep ocean temperature, and assuming the upper ocean to be in equilibrium. These assumptions are reasonable for timescales larger than a decade, but smaller than a century (JM19). As a result (see JM19) we have:

$\Delta T_0 = 0$ ,  $\Delta T(\lambda + \varepsilon\gamma) = F$  and  $TSR(\lambda + \varepsilon\gamma) = F_{2x}$ . Consequently,

$$TSR = F_{2x}/(\lambda + \varepsilon\gamma) = s\Delta T. \quad (3)$$

Here s is a forcing parameter, defined as  $s = F_{2x}/F$ . The choice of .....

Lines 155-156:

.... (Rugenstein et al., 2019). Using (2) and assuming both upper and deep ocean to be in equilibrium we have  $\Delta T_0 = \Delta T$  and  $ECS = F_{2x}/\lambda$ . Expressing  $\lambda$  using (3) one can relate TCR and ECS via: .....

Line 159:

Where  $s' = F/F_{2x}$  and....