

My Review

This manuscript presents a new metric that the authors argue accounts for carbon sequestration better than established metrics such as absolute global warming potential. Considering the implications this metric could have on policy it is extremely relevant. However as presently written Sierra et al. is unclear and falls short of meeting its objectives. Overall this is an interesting paper that would greatly benefit from revisions.

The following should be addressed

1. Throughout the manuscript the authors suggest that CBS could be used in place or complimentary to GWP because GWP fails to take into account carbon sequestration and how it varies between ecosystems. On a “gut” level this makes sense, however the authors fail to provide concrete numerical evidence that CS and CBS varies between ecosystems, and/or that these differences matter at the global scale.
2. It is unclear if the CS/CBS results presented in the manuscript are calculated on a global scale or as an aggregate of different ecosystems. For example in section two the authors present equation 29, “X is a vector of ecosystem carbon pools” but fail to discuss how many ecosystems are modeled, which ones, and where the parameterizations come from.
3. In section 3.2 the use of increase (decrease) and decrease (increase) relating to different carbon management policies is confusing starting in lines 302. Is this notation saying that the carbon storage is either increasing or decreasing? Or are they referring to the rate of change of the decreasing carbon inputs?

Other specific comments

L 45: are the authors suggesting that daily carbon sequestration can impact atmospheric CO2?

L 236: please provide some more information about TECO, not all readers will be that familiar with it, is it a global model or regional model? How many ecosystems does it represent?

L 300: Does management include the global anthropogenic increase in CO2 concentrations? Or is it only concerned with ecosystem inputs?