Review of Silva et al., 2019

This paper describes a surrogate canopy model based on MEGAN3 built using the LASSO regression approach. The canopy model is embedded into GEOS-Chem and compared with the default MEGANv2.1 emissions using a parameterized canopy environment (PCEEA), and a version of the full MEGAN3 model (surrogate canopy + leaf-level emission factors). In general, the surrogate canopy model reproduces leaf temperatures and PAR simulated by the full canopy model with skill. The resultant biogenic emissions are similar to those calculated using the PCEEA method. The surrogate model allows for a more complex treatment of a variety of canopy process within the GEOS-Chem. This will be an important tool for future studies of biosphere-atmosphere exchange. My comments are only minor and refer mainly to points in need of clarification:

General comments:

1. Clearly, the normalization factor is an important term in the calculation of global biogenic emissions. The method of calculating the standard conditions is difficult to follow (section 4.1). The following questions refer to that section:

- Page 28, sentence starting at line 458- What does "within 10%" mean – Temperature within 10% of 303K, ranging from 273 K to 333 K? That seems very broad. Is the parenthetical comment (e.g. Current Temperature = 298.5K, Current PAR = 1500 µmol m^{-2} s^{-1}) just an example of being within 10% of standard T and PAR? If so, stating either ranges or average values would be more helpful.

- How sensitive are 24-hr average T and PAR to the 10% criteria, and in turn, does the normalization factor vary significantly if different criteria are used? Would use of different met fields, or a narrow geographic domain, require a recalculation of 24-hr average T and PAR, and result in different normalization factors?

- Page 45 line 718- For "choice of standard conditions" to explain the large difference between $MEGAN3_{full}$ and $MEGAN3_{canopy}$, the normalization factor would have to be ~0.34 (=0.21*1.6). This is similar to WRF-Chem's factor (0.3). How does your model implementation of the canopy model differ? Is C_{CE}=0.34 within the uncertainty of your methods? How do WRF-Chem emissions compare to the values given here?

2. **Page 31, line 525.** It is unclear how "The LAI normalization in the original polynomial" differs from "direct normalization". Could you clarify the difference between the two formulations?

3. **Page 43, line 689. "**except for some updates for the contiguous US": could you be more specific or provide a reference for what these differences reflect?

Technical comments:

Page 43 line 687. "defauly" should read "default".