Interactive comment on "The Vulcan Version 3.0 High-Resolution Fossil Fuel CO$_2$ Emissions for the United States" *by* Kevin R. Gurney et al.

Anonymous Referee #1

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The manuscript publishes the 3rd version of Vulcan dataset. The dataset is very meaningful for climate change research, the method is sound.

1. What is the advantage of your dataset compared with other datasets? Please explain it in the introduction. 2. What is the improvement and update to the previous versions? On page 3, line 15-16, you only said: "we report here on improvements in methodology, resolution, uncertainty estimation, . . .". Please explain the improvements in more detail. A table summarizing the improvements and comparing different versions of the project may help readers to understand your project better. 3. You use data from numerous public dataset (page 3, line 32). Is there any inconsistent of these datasets in terms of statistical scopes and methods? Will these inconsistencies affect the uncertainty of your accounting? 4. How you calculate the uncertainty? What is the

method? 5. It seems not necessary to show territorial emissions per capita. There is a debate in the literature that territorial emission should be normalized per GDP, while consumption-based emissions that related to final consumption should be normalized per capita.

Interactive comment on Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2019-154, 2019.