

Interactive comment on “Development of a new gas flaring emission data set 1 for southern West Africa” by Konrad Deetz and Bernhard Vogel

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In the paper a new method to model emissions from gas flaring is developed and validated on oil fields in Western Africa. The paper is a substantial contribution to the modeling science, and the approach is valid and motivating for further research.

I have some comments on the presentation and details of the method which could be considered by the Authors before it is published.

0. I would recommend changing abbreviation VNP (VIIRS Nightfire Product) to commonly used VNF (simply VIIRS Nightfire) in the manuscript.

1. Formula (1) derives gas flow rate from flare radiative heat and temperature measured from satellite. It is a basis of the proposed model. However, it is taken from

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Appendix of regulating document by the German Environmental protection agency. This is technical, not scientific source. The derivation of the formula is not provided neither in the paper under review, nor in the cited document. The cited document has no source for the formula either. It is important to derive the formula (1) or to provide a scientific reference.

2. Flare temperature used in the formula (1) is taken from instantaneous satellite measurement (VNF). It has a large variance depending on atmospheric conditions etc. I would recommend using mean flare temperature averaged over all cloud-free detections.

3. The number 283 used in the formula (1) I believe stands for ambient air temperature at night? Is it a proper climatological value for Wester Africa ?

4. Comments 1-3 may result in a wider variance of the proposed model output, and the model sensitivity analysis should be presented.

5. The Authors have made a considerable effort to take into account cloud conditions which can mask flare observations from space. Why not to use only cloud-free observation days, and to count detected/not detected flare cases to derive mean radiative heat ?

I would like to acknowledge that the Authors provide software sources and input data used in the study as the paper supplement. It is helpful for reproduction and reuse of their science and model.

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