

## ***Interactive comment on “Gas flaring activity and black carbon emissions in 2017 derived from Sentinel-3A SLSTR” by Alexandre Caseiro et al.***

**Anonymous Referee #2**

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The paper on gas flaring activity and black carbon emissions in 2017 based on Sentinel by Caserio et al presents an important dataset that is useful and relevant for the scientific community. However, at this stage, the paper has several shortcomings in the methodology and description and needs further revision. In addition to comments from reviewer 1, I point out a few instances where the paper needs to be further improved:

1. The methodology section is too brief and the reader needs to go through many other publications to gain even an overview of the current one. This is inconvenient for the general readers. E.g. in line 12 of page 3, instead of directly pointing to Caserio et al. (2018), just very briefly give an overview of the salient features of the algorithm. Similarly, for line 19 of page 3, explain why analyzing the cluster of contiguous hot pixels advantageous than the spatial maxima method. Additionally, what could be the

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disadvantages of this method and how are they taken care of. .e.g. What are the possibilities that pixels representing different intensities taken as an average may lead to an overall over or underestimation for a grid or lead to a mixing of two very different signals.

2. Section 2.2.2 : state the background, advantages and disadvantages for using the Equations 1 and 2.

3. Section 2.3: The BC estimation formula seems too oversimplified. E.g. equation 4 does not take into account the different flares leading to different amounts of BC emissions over the year. This may be a reason leading to underestimation w.r.t. other inventories. . .I believe authors should instead try something like a weighted average or a more representative method to arrive at a better estimate.

4. The diagrams need to be more complete by themselves e.g. y label missing in fig 11, 12 (only writing it within caption is not sufficient), cbar label missing in fig 10

Minor comments:

Page 2 Line 11: Contributions to what e.g. CO2 equivalent?

Page 2 Line 14: Replace 'emitted' by 'from'

Page 3 Line 4: Replace 'chapter' by 'section'

Page 21 line 9: what is Upstram?

Page 24 Line 4: Replace 'allow' by 'allows'

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Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2019-99>, 2019.

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