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Comment on acp-2022-518

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Community comment on "Toward a versatile spaceborne architecture for immediate monitoring of the global methane pledge" by Yuchen Wang et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-518-CC1>, 2023

Title: **A versatile spaceborne architecture for immediate monitoring of the global methane pledge**

The article shows a very interesting approach to investigate the different methane emissions using available satellites (TROPOMI and PRIMA) and suggesting that a multi-tiered constellation could be implemented.

Some comments on the article of possible improvements:

- Line 60 you introduce the term "super-emitters" for first time, the term should be defined better (how big/small, released methane, how spread, etc.) in contrast with hot spots and area sources. This should be tailored for the satellite swath and resolution.
- Between lines 80 to 92 a review of existing and capable of detecting methane satellites is shown. However, the swath, passes, resolution, etc. is not given for all satellites. I would suggest to add a table with such information. This would help to better understand/propose a future multi-tiered constellation which could act globally.
- A conclusions section with a better explanation of what number of satellites (which ones in the pipeline / resolution), and aircrafts needed to have a proper coverage would be needed. Also, would it be night monitoring important, which method or missions could be used? Atmospheric Lidars? Would the retrieval of structured atmospheric column help the analysis?

Cosmetics:

- Spacing between text and references. In Line 57, 59, 136, 223, 225, 244, 312, 343, 360.
- Reference in line 117, is this correct format for the current article? In contract to the one in line 145. Is it need to have same info twice?