

# ***Interactive comment on “Regional CO<sub>2</sub> inversions with LUMIA, the Lund University Modular Inversion Algorithm, v1.0” by Guillaume Monteil and Marko Scholze***

## **Anonymous Referee #2**

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It is a good effort by the authors but I had a hard time understanding whether it is an algorithm/software oriented paper or paper completely devoted to scientific results. The authors themselves say quote:

"The inversion technique used in this study is by design not innovative (the definition of the control vector, the specification of the uncertainties, etc. replicate what has been done in previous studies (e.g. Kountouris et al. (2018)), as the aim is to have a reference setup. The scientific results are therefore at this stage limited (as it also wasn't the aim of the paper), but the analysis of the OSSEs results show that the inversions are working as expected" [So nothing new here].

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If it is not the aim of the paper then why devote half the manuscript to it !!! With respect to code the authors say quote: "

"The LUMIA code is not meant to be a "key in hand" system, it target users having or willing to acquire robust understanding of inverse modelling (it is perfectly usable as a toy model for learning). We therefore do not publish the code in a public repository, but we are very open to collaborations and distribute the code on-demand. An archive of the code in it's current shape is nonetheless included as SI of this document"

So the authors do not think that their results are innovative or new, and they are not willing to publish the full code so I do not understand what is the strength of the paper? Furthermore, it looks like there code is just for their own research. Many groups have similar code and in some cases better documented fully functional codes are also publicly available. For e.g. see <https://www.geosci-model-dev-discuss.net/gmd-2019-185/> and the code is also publicly available: [https://github.com/greenhousegaslab/geostatistical\\_inverse\\_modeling](https://github.com/greenhousegaslab/geostatistical_inverse_modeling) Another one: <https://www.esrl.noaa.gov/gmd/ccgg/carbontracker-lagrange/doc/index.html>

Please help me understand what is new in the manuscript!!

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Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2019-227>, 2019.

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