

Interactive comment on “Technical Note: Improving the computational efficiency of sparse matrix multiplication in linear atmospheric inverse problems” by Vineet Yadav and Anna M. Michalak

Anonymous Referee #2

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This technical note by the authors is an attempt to improve efficiency of a common operation in inverse problems which is Sparse-Sparse matrix multiplication. Although the paper is well structured, it lacks significantly on the experiments performed and presentation of the results that could prove the robustness and absolute efficiency of the proposed algorithm. The authors need to have the following experiments performed in order to be assertive about the efficiency of their algorithm.

1. It is suggested to produce a plot of number of cores versus speed up for intel mkl and proposed algorithm
2. There should be a table representing processing and memory performance for various sizes of matrices and sparsity patterns for both algorithms

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3. For each of these matrix types (size, sparsity), the authors need to furnish the number of threads spawned as it provides a deeper insight into the performance of the algorithms
4. The authors should also provide the parameters that were passed to the intel mkl csrmultcsr routine such as sort=3 reorders both input matrices and the output matrix which is time consuming
5. It is also suggested to compare the proposed algorithm against other available libraries/algorithms such as SPGEMM, FLAME, BLAS, LAPACK

Interactive comment on Geosci. Model Dev. Discuss., doi:10.5194/gmd-2016-204, 2016.