

# ***Interactive comment on “Performance evaluation of throughput-aware framework for ensemble data assimilation: The case of NICAM-LETKF” by H. Yashiro et al.***

## **Anonymous Referee #2**

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I agree with Anonymous Referee #1 that the paper treats an important subject and provides a valuable contribution to the community. The presentation is reasonably clear and comprehensive. Some specific comments:

1/ It seems from Figure 4 that the biggest gain going from the old to the new setup is for StoO. Could this gain not have been accomplished by integrating the StoO code into the model (perhaps with a coupler)? Both model and StoO are independent between different ensemble members.

2/ The timings presented are without any user output what so ever as far as I can see. In a operational scenario you would assume that at least the final analysis need to be output in a form that is suitable for producing maps, verification and to provide initial

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states for an ensemble forecast. This would entail moving the data from local storage to global and "gluing" together the parts of the globe. The time this takes and its scaling behaviour would also need to be taken into account.

3/ Related to 2/ above is the issue of resilience of the cycling system. If one of the nodes on which this assimilation system is cycling crashes and its data is lost we need somewhere to have a backup from which the data can be restored on a different node.

4/ One thing that is not clear in the presentation is the amount of observations used and if this is representative of today's operational data assimilation schemes (typically of the order of 10.000.000 observations/6 hour period). It is possible, if this number is much lower in the experiments presented, the issue of load-balancing, acknowledged by the authors, might become a much more important factor. The statement that the observation coverage will become homogeneous with the introduction of more satellite platform is dubious. This may be true in a time averaged sense, say over a day, but may not be true if the observation window is reduced to let say 3 hours in order to produce more frequent forecasts.

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