EGUsphere, referee comment RC1
https://doi.org/10.5194/egusphere-2022-2-RC1, 2022

Comment on egusphere-2022-2

Anonymous Referee #1

Referee comment on "Improving the prediction of the Madden–Julian Oscillation of the ECMWF model by post-processing" by Riccardo Silini et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-2-RC1, 2022

General Comments

This paper presents use of Multiple Linear Regression (MLR) and a Machine Learning (ML) algorithm as post-processing methods to improve MJO forecast of the European Centre for ECMWF model. It is generally well written and showcases successful results to improve MJO forecasts. Still, manuscript needs improvement in descrbing technical implementation that is somewhat short and confusing in places, such as relation between input and output neurons and lead time, as well as on MLR implementation.

Specific Comments

- Line 105: "After selecting the number of output neurons (which is even and in fact defines our lead time, $\tau = Nh/2$)" – shouldn't be Nout instead of Nh?
- Line 110: It appears to me that for each lead time L ($1<L<46$), ML takes as input the predicted ECMF trajectory RMM1,2 up to day L, and as output RMM1,2 in ERA5 observations up to day L+3 – please elaborate and clarify by confirming or correcting as necessary. Also, what is done when L=44,45 and 46?

- Section 2.5: implementation of MLR is barely described at all, please expand, scuh as do you use regularization to avoid overfitting, etc...
- Line 115: Please explain what a “walk-forward validation” is.