

# Supporting Information for “Enhancing climate predictions with combination of dynamical model and artificial neural network”

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## Contents of this file

1. Figure S1 - Figure S5

## Additional Supporting Information

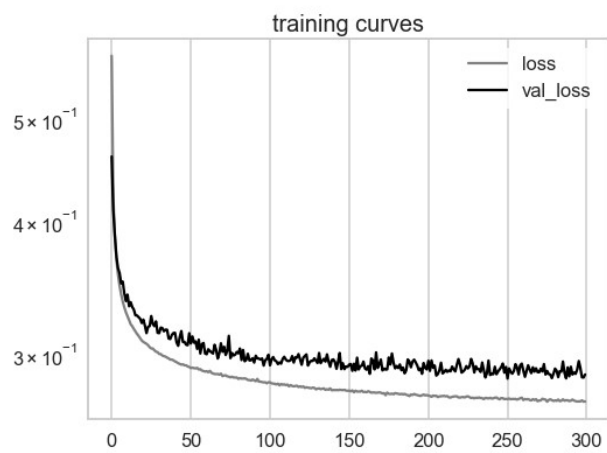
1. Movie S1: A case to show the benefit of the hybrid model of atmospheric temperature in physical space.

2. Movie S2: Same as Movie S1 but for atmospheric stream function.

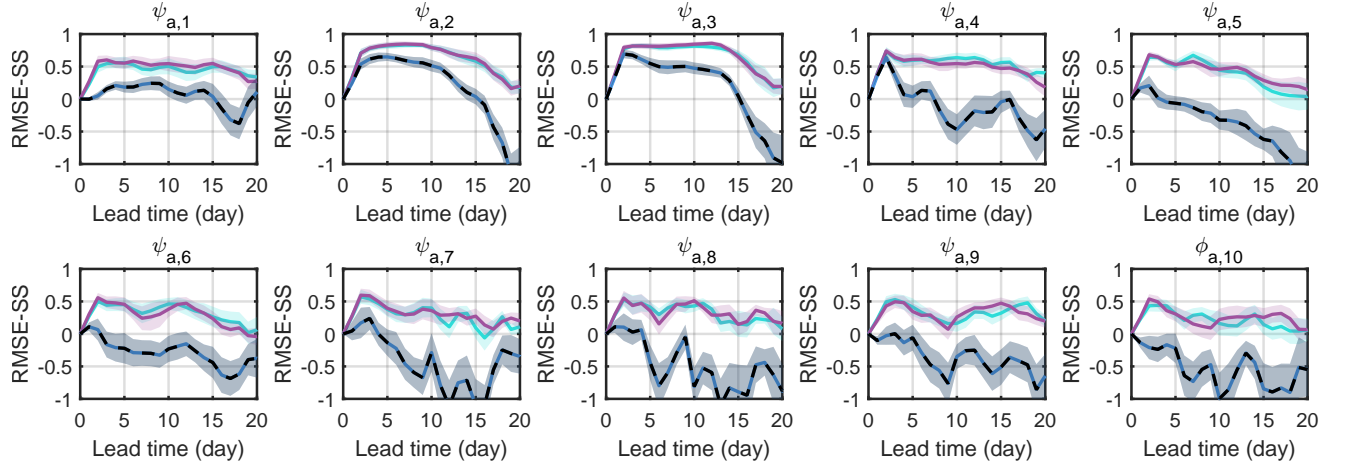
3. Movie S3: Same as Movie S1 but for oceanic temperature.

4. Movie S4: Same as Movie S1 but for oceanic stream function.

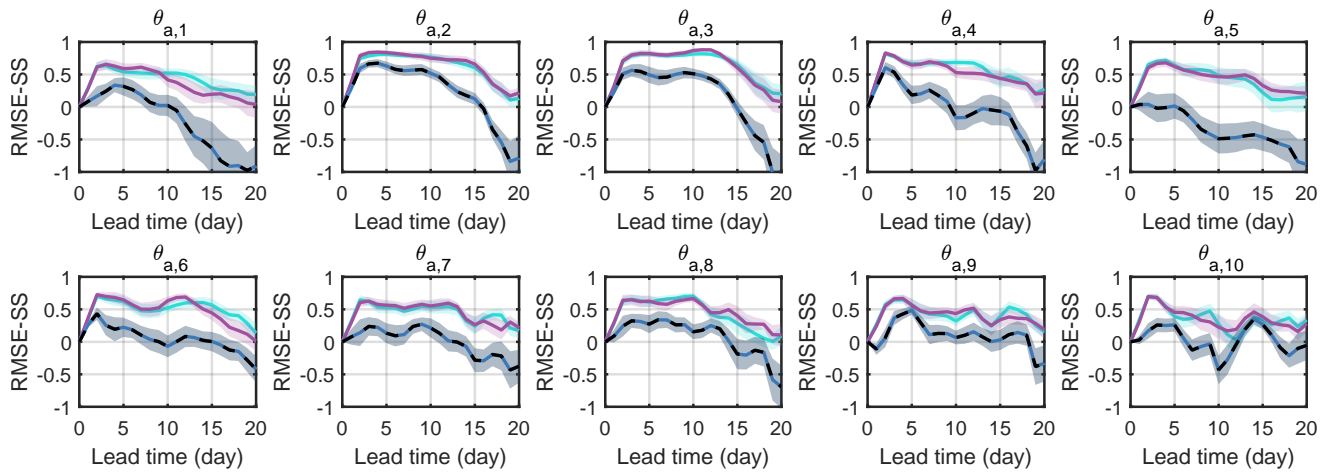
**Introduction** This supporting information file contains supporting figures for the training curves (Figure S1) and RMSE-SS of sensitive experiments for all variables (Figures S2-S5).



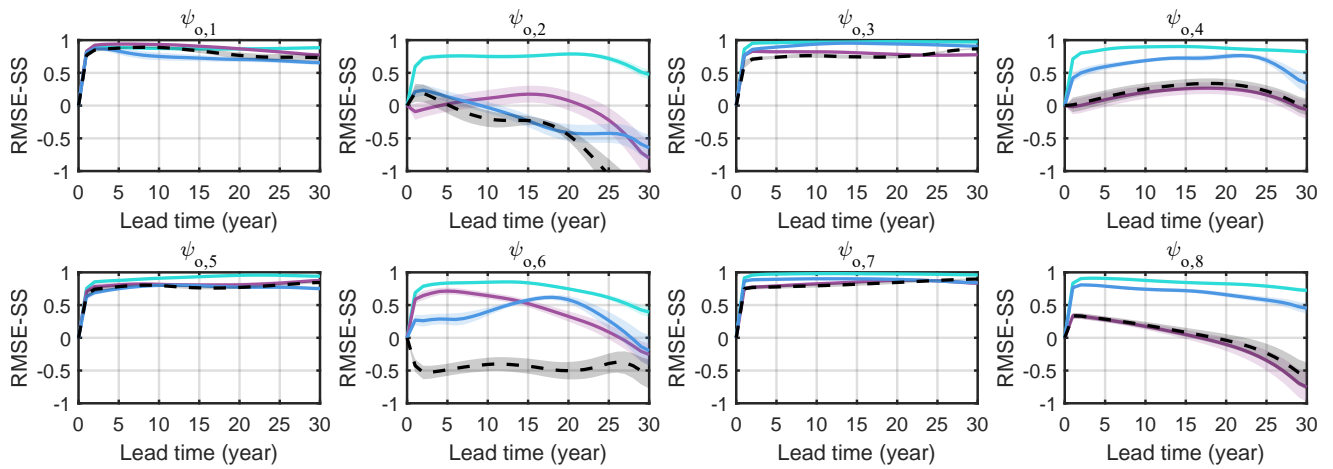
**Figure S1.** Training curves



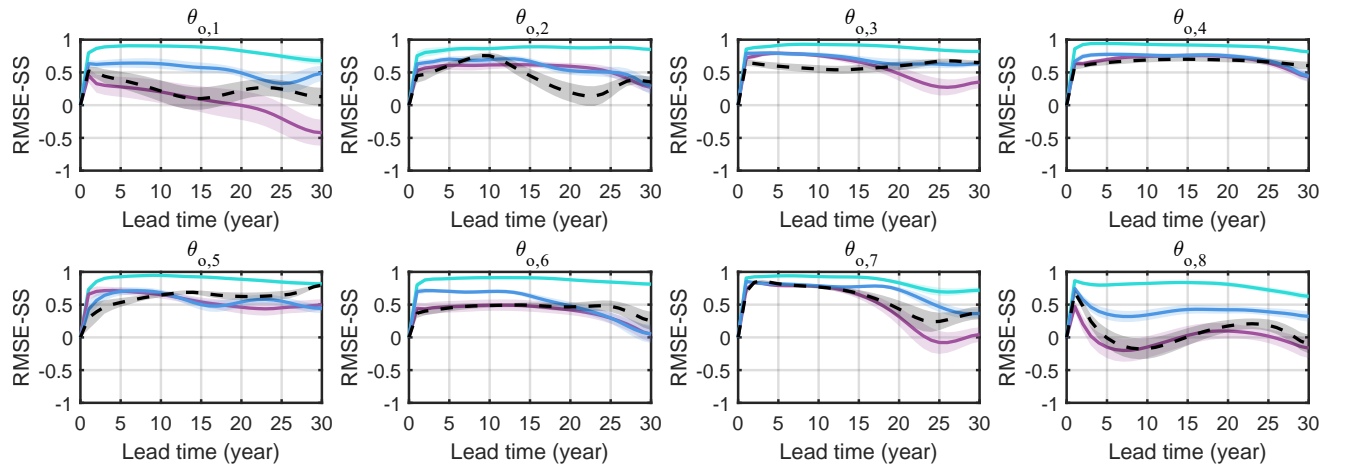
**Figure S2.** RMSE-SS for all atmosphere streamfunctions as a function of lead time. The cyan line represents the RMSE-SS of the hybrid model that corrects both atmospheric and oceanic model errors. The purple line corresponds to the RMSE-SS of the hybrid model that corrects only atmospheric model errors, while the blue line represents the RMSE-SS of the hybrid model that corrects only oceanic model errors. The dashed black line represents the RMSE-SS of the dynamical model. The shading represents one standard deviation calculated using the bootstrap method. The shaded area provides an estimate of the uncertainty associated with the RMSE-SS values.



**Figure S3.** Same as Figure S2 but for atmosphere temperature.



**Figure S4.** Same as Figure S2 but for oceanic streamfunction.



**Figure S5.** Same as Figure S2 but for oceanic temperature.