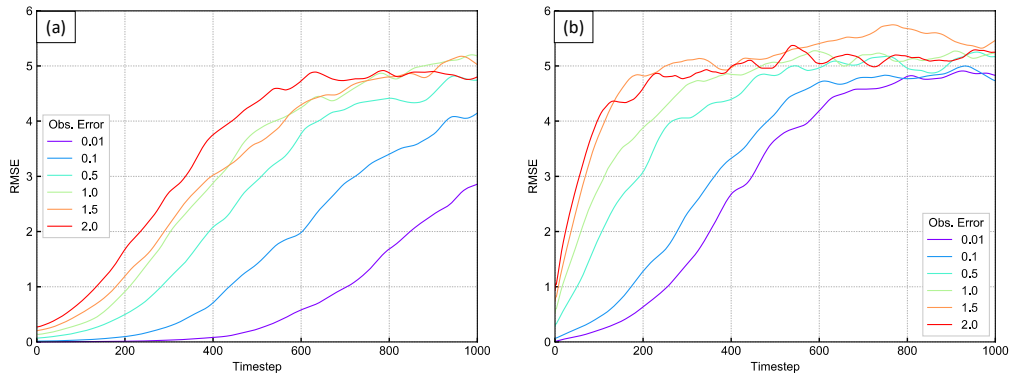
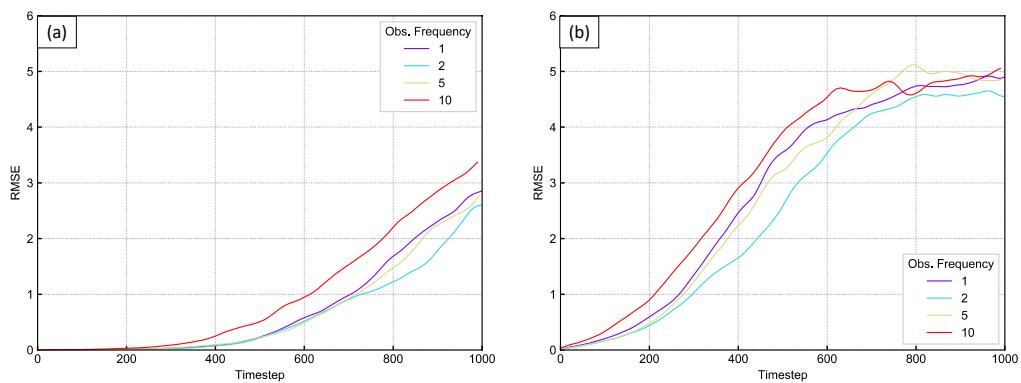


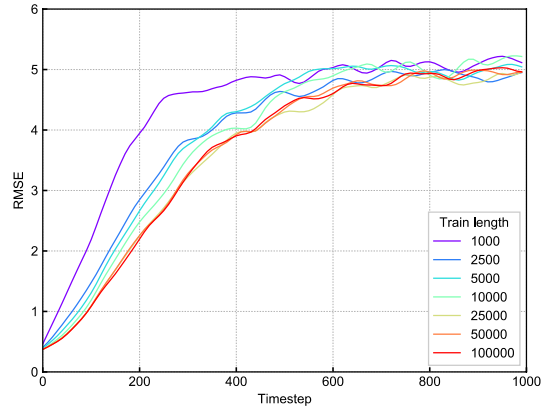
## Supplement Material



**Figure S1.** The  $mRMSE$  time series of the predictions of (a)LETKF-Ext and (b)RC-Obs noisy observation. Each color corresponds to the value of observation error parameter  $e$ .



**Figure S2.** The  $mRMSE$  time series of the predictions of (a)LETKF-Ext and (b)RC-Obs with temporary sparse observation. Each color corresponds to the value of observation frequency. (If observation frequency is set to  $n$ , then we use the observation once in  $n$  timesteps.)



**Figure S3.** The  $mRMSE$  time series of the predictions of RC-Anl with various length of training data.

Each color corresponds to the value of the size of training data.