***Model pseudocode***

*1: initialize ( ) # initialize model hyperparameters*

*2:* ***while*** *no converge* ***do***

*3: hs zeros ( ) # initialize hidden parameters*

*4: loss 0.0 # initialize loss*

*5: sspinup* *sample\_batch (X, p, Y) # select samples from dataset randomly*

*6:* ***for*** *t {1,…,T}* ***do***

*7: hs* *ANN, RF, LGBM (hs, s, loss) # update hidden parameters*

*8: p* *ANN, RF, LGBM (X) # get key parameters rs/ra*

*9: et* *Physics (X, p) run phys.model # run phys.model, get target variable et*

*10: collect (p, et) # collect target variables*

*11:* ***if*** *t spinup* ***then***

*12: loss loss + MSE () # add loss to previous loss*

*13:* ***end if***

*14: hs* *update(loss) # update hidden parameters*

*15:* ***end for***

*16:* ***end while***