MAE 5010 | DATA ASSIMILATION

HOMEWORK ASSIGNMENT 5

(Due: March 12th class time)

Feel free to use any computer language you like and you can use available packages (i.e., you do not have to write standard tools from scratch, you can use built-in packages).

Please report your findings clearly and concisely, and return via hard copy (you can embed code snaps into your report if you wish, or preferably you can provide GitHub links for your codes if it is easier for you).

Consider a Lagrangian forecast air temperature model (in dimensionless form)

where is air temperature, is the see surface temperature, and is turbulent mixing coefficients.

Generate true solution using

Starting from an erroneous solution

Find the true state using FSM method.

* Use Euler time stepping with
* Generate observations at 6 observations
  + Experiment using the standard deviation of .
* Repeat the problem using 3 observations at
  + Experiment using the standard deviation of .
* Please compare assimilated results with the true (expected) solutions.