MAE 5010 | DATA ASSIMILATION

HOMEWORK ASSIGNMENT 6

(Due: March 26th 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).

Please study the materials provided in Module 7.1, Module 7.2 and Module 7.3.

Lecture notes can be found at Canvas.

Question 1, 2, 3: Perform the exercises (1, 2, 3) described in Module 7.1 (slide number 17 and slide number 18 in Module 7.1).

Question 4: Perform the exercise number 3 described in Module 7.3. Compare the analysis computed using 3DVAR and the on obtained by the iterative method described in Module 7.1 (see slide number 18 in Module 7.3).

Module-7.1 Initialization Classical Method (74 min)

<https://www.youtube.com/watch?v=jjYPOS4HvCc>

Module-7.2 Optimal interpolation (59 min)

<https://www.youtube.com/watch?v=klgJ9O04lm0>

Module-7.3 3D VAR A Bayesian Formulation (54 min)

<https://www.youtube.com/watch?v=zNJGULxNlHI>