

| Order to run | Figure | Description | Output dataset | Legend |
|--------------------|--|---|--|----------------------|
| Figure 1 | | | | |
| 1 | Createinputdata_syn_L96_CS1.m | data for training and for assimilation run for CS1 | traininputdata_syn_L96_CS1.mat, evaldata_syn_L96_CS1.mat | PM = proposed method |
| 2 | Create_traindata_CS1_PM | Execute PM to estimate model error for CS1 | alldata_train_CS1_PM.mat, trainresults_CS1_PM_forR.mat | B1 = method B1 |
| 3 | Test15_syn_L96_bw.R | bandwidth estimation for CS1, PM | bwresults_CS1_PM.mat | B2 = method B2 |
| CS1 = case study 1 | | | | |
| CS2 = case study 2 | | | | |
| Figure 2 | | | | |
| 1 | Createinputdata_syn_L96_CS2.m | data for training and for assimilation run for CS2 | traininputdata_syn_L96_CS2.mat, evaldata_syn_L96_CS2.mat | |
| 2 | Create_traindata_CS2_PM | Execute PM to estimate model error for CS2 | alldata_train_CS2_PM.mat, trainresults_CS2_PM_forR.mat | |
| 3 | bwtest_CS2_PM.R | bandwidth estimation, CS2 PM | bwresults_CS2_PM.mat | |
| Figure 3 | | | | |
| 1 | Create_traindata_CS1_B1 | Execute B1 to estimate model error for CS1 | trainresults_CS1_B1_lambda=1.45.mat | |
| 2 | Create_traindata_CS1_B2 | Execute B2 to estimate model error for CS1 | alldata_train_CS1_B2.mat, trainresults_CS1_B2_forR.mat | |
| 3 | bwtest_CS1_B2.R | bandwidth estimation, CS1 B2 | bwresults_CS1_B2.mat | |
| 4 | Create_traindata_CS2_B1 | Execute B1 to estimate model error for CS2 | trainresults_CS2_B1_lambda=2.mat | |
| 5 | Create_traindata_CS2_B2 | Execute B2 to estimate model error for CS2 | alldata_train_CS2_B2.mat, trainresults_CS2_B2_forR.mat | |
| 6 | bwtest_CS2_B2.R | bandwidth estimation, CS2 B2 | bwresults_CS2_B2.mat | |
| Figure 4 | | | | |
| 1 | Create_ACFdata_CS1_B1.m | create necessary data to compute ACF for CS1, B1 | ACFdata_CS1_B1.mat | |
| 2 | Create_ACFdata_CS1_PM.m | create necessary data to compute ACF for CS1, PM | ACFdata_CS1_PM.mat | |
| 3 | Create_ACFdata_CS1_B2.m | create necessary data to compute ACF for CS1, B2 | ACFdata_CS1_PM.mat | |
| 4 | ACF_compute_CS1.m | compute ACF case study 1 | ACFdata_CS1.mat | |
| 5 | Create_ACFdata_CS2_PM.m | create necessary data to compute ACF for CS2, PM | ACFdata_CS2_PM.mat | |
| 6 | Create_ACFdata_CS2_B1.m | create necessary data to compute ACF for CS2, B1 | ACFdata_CS2_B1.mat | |
| 7 | Create_ACFdata_CS2_B2.m | create necessary data to compute ACF for CS2, B2 | ACFdata_CS2_B2.mat | |
| 8 | Test19_ACF_Compile | compute ACF case study 2 | ACFdata_CS2.mat | |
| Figure 5 | | | | |
| | all should have been run if done in order of figures | | | |
| Figure 6 | | | | |
| 1 | Createinputdata_obserr_syn_L96_CS1.m | data for training for CS1 with increased observation error | traininputdata_obserr_syn_L96_CS1.mat | |
| 2 | Create_traindata_obserr_CS1_PM.m | Execute PM to estimate model error for CS1 with increased obs error | alldata_train_obserr_CS1_PM.mat, trainresults_obserr_CS1_PM_forR.mat | |
| 3 | Create_traindata_obserr_CS1_B2.m | Execute B2 to estimate model error for CS1 with increased obs error | alldata_train_obserr_CS1_B2.mat, trainresults_obserr_CS1_B2_forR.mat | |
| Figure 7 | | | | |
| 1 | Assimilate_syn_L96_CS1_PM.m | Assimilation CS1, PM | assimilateresults_CS1_PM.mat | |
| 2 | Assimilate_syn_L96_CS1_B2.m | Assimilation CS1, B2 | assimilateresults_CS1_B2.mat | |
| 3 | Assimilate_syn_L96_CS1_B1.m | Assimilation CS1, B1 | assimilateresults_CS1_B1.mat | |
| Figure 8 | | | | |
| 1 | Assimilate_syn_L96_CS2_PM.m | Assimilation CS2, PM | assimilateresults_CS2_PM.mat | |
| 2 | Assimilate_syn_L96_CS2_B2.m | Assimilation CS2, B2 | assimilateresults_CS2_B2.mat | |
| 3 | Assimilate_syn_L96_CS2_B1.m | Assimilation CS2, B1 | assimilateresults_CS2_B1_alpha=0.8.mat | |
| Figure 9 | | | | |
| | all should have been run if done in order of figures | | | |
| Figure 10 | | | | |
| 1 | Forecast_syn_L96_CS1_PM.m | Forecast long lead time, CS1, PM | forecastresults_CS1_PM.mat | |
| 2 | Forecast_syn_L96_CS1_B1.m | Forecast long lead time, CS1, B1 | forecastresults_CS1_B1_alpha=0.8.mat | |
| 3 | Forecast_syn_L96_CS1_B2.m | Forecast long lead time, CS1, B2 | forecastresults_CS1_B2.mat | |
| 4 | Forecast_syn_L96_CS2_PM.m | Forecast long lead time, CS2, PM | forecastresults_CS2_PM.mat | |
| 5 | Forecast_syn_L96_CS2_B2.m | Forecast long lead time, CS2, B2 | forecastresults_CS2_B2.mat | |
| 6 | Forecast_syn_L96_CS2_B1.m | Forecast long lead time, CS2, B1 | forecastresults_CS2_B1_alpha=0.8.mat | |
| Figure 11 +12 | | | | |
| | all should have been run if done in order of figures | | | |