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ATS 780

Due: 10/16/23
HW2 Checkpoint

Goal: Given a sea surface temperature (SST) pattern, predict the error in the Green's function (GF) precipitation response to the MPI Grand Ensemble (MPI GE) precipitation output using a convolutional neural network.

Github link: https://github.com/mja244/ats780/tree/main (HW2)

Tasks completed so far:

- Compiled data
    - The only predictor is the SST pattern.
        - We used annual-mean SST patterns from the Max Planck Institute Grand Ensemble historical (1850-2014) and RCP8.5 (2014-2100) simulations. The ensemble has 100 members, so total SST patterns is 25,000 (100 members x 250 years).
    - The predictand is the error in precipitation over the southwestern United States (SWUS) between what the GF predicts and what the MPI GE outputs.
        - We already calculated the GF precipitation response using the MPI GE SST pattern. We then subtract this (area weighted for the SWUS) from the MPI GE precipitation for the same region to get the error.
    - Use 25 ensemble members for testing, 15 for validation, and 60 for training.

Issues I'm having with the model:

- Most of my time has been spent trying to install TensorFlow into my Python environment, which is an issue I was not planning for (though thankfully this issue is now fixed).
- I was working with all the data on Levante (German supercomputer) but had to bring these over to my local machine to run the model.
- I haven't started the main model code yet, but I will get to it this week!