Notes 2025-03-24

Carrie Hashimoto

Table of contents

Goals for this week

- Finish interpolating the target data
- Update the tiles in RAPID
- Continue troubleshooting the starter UNet model and evaluate its performance
- Write a script to reformat raw NLDAS data for the WRF-Hydro - Preprocessing System regridding
- Run WRF-Hydro with the test case using my own routing stack and meteorological data instead of the tutorial inputs
- Research real.exe, alternative way to create land surface initial conditions, which I'll need to use to specify soil moisture

SMAP-HB Unet

[x] Finish interpolating the target data [x] Store tiles in RAPID [x] Continue troubleshooting starter UNet

SMAP-HB Unet

- Modified data loader so you can specify the time slice you want to take
- For training / testing split, does it make more sense to split by time, by tile, or shuffle so it's a combination?

WRF-Hydro

[ ] Write a script to reformat raw NLDAS data for the WRF-Hydro - Preprocessing System regridding

- Looks like grib files are no longer being updated for NLDAS2. See if nc files exist for the period of interest (our study period and 2006, from the example)
- Dataset they use: NLDAS_FORA0125_H.002

Model inputs and preprocessing doc

WRF-Hydro - ESMF regridding software

- An alternative for regridding that takes raw NLDAS grib files, I think
- Needs NCAR command language, which doesn't have a Windows version
- Try using WSL? or Docker
- Downloaded the ESMF NLDAS regridding software from the website; seems like it comes with some default data – check to see if these are the ones used for the test case – no: the test case uses Hurricane Irene, "The simulation begins with a restart from a spinup period of 2010-08-01 to 2011-08-26"
- First test regridding the files that came in the ESMF software, which are for 2017-01-01

ncl 'interp_opt="bilinear"' 'srcGridName="input_data/NLDAS_FORA0125_H.A20170101.0000.002.grb"' 'dstGrid-Name="geo_em.d01.nc"' NLDAS2WRFHydro_generate_weights.ncl

- ncl only works on Linux or Mac, so try using it in Docker

docker exec -it wps_debug bash

- Need to change permissions so I can install software in the Container

docker exec -it –user root wps_debug bash

- Easy fix, just need to use root user

This week

- Train unet with 24 time steps, 15 days apart, and test on the next year with same time spacing
- Give stats for time and accuracy for different model runs
- Find NLDAS nc files instead of grib
- Figure out how to regrid, either using ESMF or WRF-Hydro tutorial tools
- Figure out how to replace the precipitation with nexrad (4 km, whereas NLDAS2 is 12 km) – for now, if you figure out met data regridding, try running with NLDAS
- Check what NLDAS uses
- Check units on all met data