Notes 2024-11-18

SMAP-HB / WRF-Hydro Project

Table of contents

Data wrangling

- Cropped and reprojected it to match SMAP and modified script for combining static datasets to include it
- Modified SMAP organizing scripts to make sure that CRS is set
- Checked what NAs are saved as
  - ICLUS: used .fillna(-9999), but there don't seem to be any NaNs
  - Went back to check IMERG, redownloaded with a buffer to make sure the whole area is captured
    - For now, keeping at lower resolution
    - Filled NaNs with -9999
- Redownloaded IMERG to have a 0.1-degree buffer, fill NAs with -9999, and set projection

RAPID

- Installed VPN and Globus client (allows you to upload files from your computer to RAPID workspace)
- Submitted account request; need to switch from having NOTS with my DSCI capstone to RAPID with Dr. Gori (can't have both at once?)
- Need to run an example

Meeting notes

- Flood models
  - VFlo - don't have a license
    - Probably not worth buying the software
    - Phil used to have many licenses, but not on his current computers
- To do: read some documentation on WRF-Hydro
  - Same land physics as Noah-MP / Hydroblocks
  - and hydro physics for national water model
  - Look for videos of past training – standalone test case (not coupled since not using atmos part)
  - Training and materials
    - Check event page
    - Look at presentations from past presentations
  - Next week, try to run the test cases with test data
    - Slowly work up to using our data
  - Meteorological input data - 6-7
    - For future runs, need all 7 variables for future – we'll have them, but might need to consider down-scaling
  - Temperature: important for SM, not for flood modeling
    - Need to downscale precip
- Need to go back and verify that MRMS data look OK
- ML work
  - Try running and then training the test case on RAPID
  - Transfer datasets to "work" in RAPID
  - Might want to use Noemi's account because that way we should be able to share data
    - Ask Brian whether he can make Noemi my sponsor and CC Noemi and Avi
- Next week: Meet with Avi to discuss WRF-Hydro
  - Mainly try to read and understand how the model works
- Ask Dr. McGuffey about

Notes for 2024-11-25

WRF-Hydro

Model background - Column land surface model: outputs are ET, SM, snowpack/melt, runoff, radiation exchange, energy fluxes, plant water stress - Terrain routing modules: outputs are stream inflow, surface water depth, GW depth, and SM - Channel and reservoir routing: outputs are streamflow, river stage, flow velocity, and reservoir storage/discharge - Multiscale

Links

Technical description: https://ral.ucar.edu/sites/default/files/public/projects/wrf-hydro/technical-description-user-guide/wrf-hydrov5.2technicaldescription.pdf