Notes 2024-11-11

SMAP-HB / WRF-Hydro Project

Table of contents

HEC-RAS

- True recommends trying to make a dummy land cover layer and using land cover and soils to make an infiltration layer
- He says he may have tried this before and will see if he has any examples
- I'll meet with him this week if we want to try it
- MRMS rainfall: crop it and import to RAS to check if it looks right

ICLUS land cover

- Looking at 2020 datasets, there are SSP2 and SSP5 scenarios
  - HadGEM2-ES or GISS-E2-R models are used, I started by downloading SSP2 HadGEM2-ES
- Loaded it and it seems fine, stuck on clipping because it's so large

Meeting notes

- Going to use RAPID
- Can request a quota – otherwise your account could be pre-empted
  - $60 / GPU / month
  - Might put a 48 hour limit on jobs in the future – for training, will have to save the state…
  - Not charging for usage time right now (whereas NOTS is?)
  - Still have a queue, but if you have a quota, they can't drop your job
- Setting - up: both Noemi and Avi as sponsors
  - Not paying per user, just per GPU
  - New cluster, so lack of documentation
  - Avi will forward a dropbox link with slides
- Maybe go to CRC office hours for a walkthrough on how to use the cluster

Model alternatives

- VFlow - kinematic wave model; less computationally expensive than HEC-RAS, but all parameters can be spatially varied
- WRF-Hydro
  - Have some test cases with input files that Avi will look into
  - I can try plugging the input files into the WRF-Hydro tutorial
  - Hydro - just land
    - Noah-MP is underlying, except they have a better routing scheme and inundation
    - The national water model is based on this
  - Static atmospheric forcing
- Could consider HydroBlocks model in future because it has new routing and inundation… Adnan is going to explore accuracy

Aside: Sphinx

- WRF-Hydro has a simplified routing scheme, not full physics – not considering acceleration or advection terms

  - But faster, so better for our soil moisture work where we're mostly interested in infiltration and not non-linear dynamics
- Sphinx is more complicated and takes longer to run
  - Also, we're not at the coast, so less consideration of compound flooding

To do

- Set up account with Avi
- Clip ICLUS
- Look into NaNs – use -9999 for all datasets
  - Or just assign them as NaN after you load it
  - If you save the data, NaN will be saved as a large value
    - So before you save, set NaN as -9999 and set the metadata so that -9999 is NaN (can do this with xarrays)