

# Ongoing Notes

Carrie Hashimoto



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; overland flow has finer grid than LSM

# Technical description:

## Technical Description

### Required files

- ▶ domain file, from GIS pre-processing toolkit
- ▶ route link with channel reach parameters, from GIS pre-processing toolkit - if using reach based routing
- ▶ groundwater basins, from GIS pre-processing toolkit - if using baseflow bucket model and not user defined mapping
- ▶ groundwater bucket parameters, from GIS pre-processing toolkit - if using baseflow bucket model

### Required files

- ▶ lake parameter table, from GIS pre-processing toolkit - if using lake/reservoir routing
- ▶ parameter table for lateral flow, table version and spatially distributed version - table from template and nc from R script (uses USGS land cover types / soil categories)

# Plan

- ▶ Get ArcGIS WRF-Hydro Pre-processing toolkit
- ▶ Create script to convert ICLUS land cover types to USGS types
- ▶ Decisions about what model components to use:
  - ▶ Baseflow bucket conceptual model
  - ▶ Lake and reservoir routing
  - ▶ Gridded channel routing

# Data

- ▶ Need to revisit mrms data structure; when I crop it, it changes from an dataarray to a dataset, probably related to using `rio.clip` to crop – need to ascertain if this is a problem
- ▶ For combined static data, when I plot DEM or ICLUS, NAs are properly dealt with, but when I plot POLARIS, they stay -9999 – probably due to missing metadata
- ▶ When I combined the data, I just used “`combined_dataset = combined_dataset.fillna(-9999)`” but maybe this doesn't deal with all NAs – check more thoroughly
- ▶ Upload data to work