Data documentation: GCAM USA state-glu spatial boundaries with mapping/aggregation file

Summary: These data products present a vector file which represents the intersections of state boundaries for USA with GCAM basin boundaries within USA and a mapping file that can be used to

1) map basin level data to states within the USA region (based on area)
2) map state level data to basins within the USA region (based on area)

The vector file presents metadata to the user regarding the state name, state id, glu name and glu id along with a unique key for each polygon. These spatial boundaries can be reproduced/updated by updating the inputs and making use of the methodology described below.

CONTENTS:

gcamusa_state_glu_wgs84 folder contains the following,

shape_file folder contains the following,

gcamusa_state_glu_wgs84.shp

column names in outputs:

- ***key*:** Unique identifier for feature
- ***state_id:*** Unique identifier for state (state geo id)
- ***glu_id:*** Unique identifier for basin (basin number)
- ***state_nm:*** State name
- ***glu_nm:*** Basin name

mapping_file folder contains the following,

state_glu_mapping_WGS84.csv

column names in outputs:

- ***state_id:*** Unique identifier for state (state geo id)
- ***glu_id:*** Unique identifier for basin (basin number)
- ***state_nm:*** State name
- ***glu_nm:*** Basin name
- ***state_area*:** Geometric area calculated for each state
- ***glu_area*:** Geometric area calculated for basin/glu
- ***intersection_area:*** Geometric area calculated for each basin-glu intersection
- ***state_proportion:*** Share of glu value in a state
- ***glu_proportion:*** Share of state value in a glu

input_files folder contains the following,

- *glu_boundaries_moirai_combined_3p1_0p5arcmin :* A shape file containing boundaries for the GCAM glu's. source: https://zenodo.org/record/4014308#.X6nkQ2hKhaR
- *tl_2019_us_state.shp :* A shape file containing boundaries for USA states. Source: https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-line-file.html

Methodology and reproducibility: The vector and mapping files were generated using the function located here- https://github.com/JGCRI/rgis/pull/7/commits/32ccb8cf8a30a66a84044da317b9041f492777be

In order to reproduce or update the outputs the user would have to follow the following steps:

1. Clone the rgis package from GitHub - https://github.com/JGCRI/rgis
2. Use the *get_intersection_fractions*() function. Set the *shpfile_1* parameter to the path to the latest state boundaries and set *shpfile_2* parameter to the path to the glu boundaries shape file. Set the *out_csv* parameter to the desired mapping file name and set the *out_shape_file* parameter name to the desired vector output name.