Downscaling walkthrough (brief)

1. Run ‘Build training dataset’ script:

Using the birth/death data raster file, administrative boundary shapefile and the predictor variable raster files (hdi, scaled world pop data, and either fertility or life expectancy data) – create a training dataset. Also adds the income bands that each admin boundary is in to the training data.

1. Pass training dataset to script ‘ LM\_fit\_apply’ to fit LMs:

Fits a separate LM for each income band classification and saves both the LM model and the residuals from the model application.

1. Use the LMs to predict Births/deaths at the small scale (2nd half of ‘LM\_fit\_apply’):

This will save a raster stack of predictions for each year labelled ‘init’ (initial guess).

1. Apply ATPK functions by running ‘LM\_apply\_ATPK’ script:

Use the init raster stack, and the residuals from the application of the LMs at the admin scale. Due to a reworking of the st\_intersects function in R – this may now take too long. This might be worth re-writing the script to work using a raster input for the admin boundaries.

This script will output a raster stack of corrections to be applied to the init predictions.

1. Run ‘Apply\_norm\_beta’:

This takes the init predictions and the ATPK as inputs, then normalises them based on the extracted births/deaths from each admin boundary (as an input I’ve attached).

The output is the ATPK corrected, normalised downscaled results.