

# Combining physical and social data

**Example exercise:** What is the relationship between % GDP in forestry sector of countries and forest gain since 2000?

Resource Watch: only peer-reviewed datasets with metadata.

We have data for forest gain for 2000 – 2017 (UMD). We have data on forestry as a % of GDP for 2011 (FAO). We'll restrict our analysis to Eastern Europe.

Post-socialist period, significant forest cutting, and significant growth on abandoned agricultural lands.

1. Does forest gain in a country correlate with % of GDP from forestry? Positively or negatively?
2. Does forest loss in a country correlate with % of GDP from forestry? Positively or negatively?

We'll answer question #1 in the Eastern Europe context.

1. Use Resource Watch (ResourceWatch.org) to find and download datasets on:
  - a. % GDP in forestry sector (we'll use only as an Excel table) – what years do the data represent?
  - b. Forest gain (data from Matt Hansen at UMD – what years do the data represent?) (only download 4 squares covering East Europe)
  - c. Download countries shapefile  
([https://hub.arcgis.com/datasets/a21fdb46d23e4ef896f31475217cbb08\\_1](https://hub.arcgis.com/datasets/a21fdb46d23e4ef896f31475217cbb08_1))
2. Mosaic 4 forest gain datasets to new raster. Use tool: Mosaic to New Raster
3. Calculate the total forest gain pixels per Eastern European country
  - In the interest of time, we missed some forest gain data at edges of East Europe
  - Discussion questions:
    - Should we normalize forest gain data?
    - If so, what is best to use for the denominator?
  - Zonal statistics as table – use country as vector dataset, and forest gain as raster dataset: choose sum. Discussion question: why did we choose sum?
4. In new table with zonal statistics, right-click on new field – use Field Calculator - sum and count is also given – calculate: sum/count
5. Save % GDP as a text file, then open in ArcGIS
6. Join % GDP table with forest gain table, keeping only matching records
7. Open results table in ArcGIS, export as .dbf file
8. Open Excel, import the results .dbf file
9. Run a Pearson's rank correlation. What did you find?
10. Join final table to countries layer to map results.