**Preparatory questions on climate model data | Applied GIScience: Environment & Health**

1. Download this data: <https://box.hu-berlin.de/d/66086d5a0eab436fb794/>
2. Look into the data documentation and explain what the different raster files represent (general structure, not every file)

**Key variables:**

*T2M\_daily\_mean\_max* – average daily maximum temperature

*T2M\_nightover20* – annual number of nights Tmin > 25 degrees Celsius

*WBGT\_dayover28 –* annual number of days where wet bulb globe temperatures (WBGT) > 28 degrees Celsius

Raster files were prepared for the present (2011-2020) and the future in decadal climate ensemble projections (e.g., 2021-2030, 2031-2040). Furthermore, these projections are delineate projections under certain IPCC pathways (e.g., current policy, gradual strengthening of current policy).

1. Use a software environment of your choice (e.g. QGIS, R, Python, …) to plot the temporal evolution of the mean value of all files starting with “WBGT”. Paste the plot here and very briefly describe it.

A graph with black dots

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A time series of the selected files indicates an increase in the average number of days where wet bulb globe temperatures (WBGT) over 28 degrees Celsius before the next century, 2011-2100 .

1. Visually inspect the 3 files that start with “T2M\_daily\_mean\_max\_topography…”

– how do they differ?

“-2011\_2020\_present\_” represents current average difference in daily maximum temperatures between each urban pixel and rural pixel. “2091\_2100\_CurPol\_enspctl05\_30” and “2091\_2100\_CurPol\_enspctl95\_30” are both future projects. However, these files have a differing uncertainty levels.

A screenshot of a computer screen

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1. Look at the files that have “nightover20” in their names. What has the strongest influence on the values: time, scenario, or ensemble percentile? What did you expect?

I expected the climate scenario, current policy or gradual strengthening of current policy, to have the strongest influence of on the annual number of nights in which the minimum temperature does not drop below 28 °C. This expectation was affirmed following scatterplots for each variable (time, scenario, and ensemble percentile.