**The sources of covariate layers**

There are several kinds of environmental, socioeconomic, and demographic data used in the present study. The sources are given in Figure 7-source data 1.

### Figure 7-source data 1. Covariate layers used in the present study and data sourcesa

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data type** | **Source** | **Data period** | **Temporal resolution** | **Spatial resolution** |
| NDVIi | MODIS/Terrab | 2000-2018 | 16 days | 1 km |
| LST j | MODIS/Terrab | 2000-2018 | 8 days | 1 km |
| Land cover | MODIS/Terrab | 2001-2018 | Yearly | 1 km |
| Annual precipitation | WorldClimc | 1960-1990 | - | 1 km |
| Elevation | SRTMd | 2000 | - | 1 km |
| Water bodies | SWBDe | 2000 | - | 30 m |
| Travel time to the nearest big city | MAPf | 2015 | - | 1 km |
| HIIk | SEDACg | 1995-2004 | - | 1 km |
| Population data | SEDACg | 2015 | - | 5 km |
| Population growth ratel | UNh | - | - | Country-level |

aData asccessed in Janurary 2019

bModerate Resolution Imageing Spectroradiometer (MODIS) /Terra, available at: <https://lpdaac.usgs.gov/>.

cAvailable at: <http://www.worldclim.org/current>/.

dShuttle Radar Topography Mission (SRTM), available at: <https://www2.jpl.nasa.gov/srtm/>.

eShuttle Radar Topography Mission Water Body Data (SWBD), available at: <http://gis.ess.washington.edu/data/vector/worldshore/index.html>/.

fD.J. Weiss, A. Nelson, et al. A global map of travel time to cities to assess inequalities in accessibility in 2015. Nature (2018). doi:10.1038/nature25181, available at: <https://map.ox.ac.uk/research-project/accessibility_to_cities/>.

gSocioeconomic Data and Applications Center, available at: <http://sedac.ciesin.org/>.

hUnited Nations, available at: <https://population.un.org/wpp/Download/Standard/Population/>.

iNormalized difference vegetation index.

jLand surface temperature in the daytime and at night.

kHuman influence index.

lThis rate was used to project the gridded population of 2015 to 2018 specified by each country with formula $P\_{2018}=P\_{2015}\*e^{T\*rate}$.