

Readme for replicating The Distributional Impacts of Climatic Variability on Welfare in Thailand

Tiwari, Skoufias, and Kshirsagar(2025)

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Replication

Introduction

The reproducibility package described here replicates the analysis in *The Distributional Impacts of Climatic Variability on Welfare in Thailand* by Tiwari, Skoufias, and Kshirsagar(2025). The document can be found at: [Thailand Welfare Weather](#)

Computational specifications

The replication requires Excel, Stata and R.

The code was run on Stata 16.1 on a machine with 64 GB of RAM and an Intel(R) Core(TM) i9-11900K CPU @ 3.50GHz processor. It takes about 30 minutes to complete the main do file and less than 1 minute to run the R code to generate the 2 figures.

Detailed Instructions

In order to replicate the tables and figures in the paper:

1. Copy the folder “**Thailand_Welfare_Weather**” with all the files and folders intact to where you want to run it from

2. Open the folder “**Thailand_Welfare_Weather**” and open the do file *Code/Master/Stata*

Line 14: local main_directory_name C:/to path

Change line 14 to indicate where the **Thailand_Welfare_Weather** folder is located.

3. Run the Do File, after 20-100 minutes the results will appear in the Results folder

4. Open the R Script Maps_THA which is located in Code/R/

Line 14: local main_directory_name C:/to path

5. Run the R script, after 1-2 minutes the maps will appear in the Graphs folder

Data statement

The research draws on Thailand SES data which is made available to the World Bank team under a data-use agreement that was signed for the Thailand Climate Change and Development Report. As such while the raw data can be made available to the World Bank reproducibility team, they are not available for public use.

Statement about Rights

We certify that the authors of the manuscript have legitimate access to and permission to use the data used in this manuscript.

Data Sources

A. The NDVI and Weather Data details are below:

Hazard measure	NDVI	RAINFALL	TEMPERATURE
	Vegetation – greenness	Precipitation	Temperature
Full Name	Normalized Difference Vegetation Index		ERA5-Land monthly averaged data from 1950 to present
Description	The Terra Moderate Resolution Imaging Spectroradiometer (MODIS) Vegetation Indices Monthly (MOD13C2) Version 6.1 product provides a Vegetation Index (VI) value at a per pixel basis. The Normalized Difference Vegetation Index (NDVI) which is referred to as the continuity index to the existing National Oceanic and Atmospheric Administration-Advanced Very High Resolution Radiometer (NOAA-AVHRR) derived NDVI.	ERA5 is the fifth generation atmospheric reanalysis of the global climate by the European Centre for Medium-Range Weather Forecasts (ECMWF). 2m temperature is calculated by interpolating between the lowest model level and the Earth's surface, taking account of the atmospheric conditions	
Temporal coverage	2000 – 2021	1950-Present	1950-Present
Spatial Coverage	Global	Global	Global
Resolution	0.05° (~5.5km)	0.1° (~11km)	0.1° (~11km)
Output information	Vegetation density, monthly	Accumulated liquid and frozen water, including rain and snow, that falls to the Earth's surface. It is the sum of large-scale precipitation (that precipitation which is generated by large-scale weather patterns, such as troughs and cold fronts) and convective precipitation (generated by convection which occurs when air at lower levels in the atmosphere is warmer and less dense than the air above, so it rises). Precipitation variables do not include fog, dew or the precipitation that evaporates in the atmosphere before it lands at the surface of the Earth. The units of precipitation are depth in metres. It is the depth the water would have if it were spread	Temperature of air at 2 meters (2m) above the surface of land, sea or inland waters. Temperature measured in kelvin can be converted to degrees Celsius (°C) by subtracting 273.15.

		evenly over the grid box.	
Dataset source	https://lpdaac.usgs.gov/products/mod13c2v061/	https://cds.climate.copernicus.eu/cdsapp#!/dataset/reanalysis-era5-land-monthly-means?tab=form	
Dataset reference/citation	Didan, K. (2021). <i>MODIS/Terra Vegetation Indices Monthly L3 Global 0.05Deg CMG V061</i> [Data set]. NASA EOSDIS Land Processes DAAC. Accessed 2021-06-24 from https://doi.org/10.5067/MODIS/MOD13C2.061	Muñoz Sabater, J. (2019): ERA5-Land monthly averaged data from 1950 to present. Copernicus Climate Change Service (C3S) Climate Data Store (CDS). DOI: 10.24381/cds.68d2bb30	

- B. The Household Survey Data is stored in the folder called Data/SES_Surveys
This data is **not publicly available** and is not included in the external package. Sailesh Tiwari (stiwari@worldbank.org) can be contacted for details.

Intermediate Output

In addition to the 2 final output folders (".Results" and ".Graphs") the Stata do files creates and populates the following intermediate output folders

".Processed_Data" ".Processed_Data/ERA5_rf" ".Processed_Data/Rainfall"
".Processed_Data/ERA5_rf/ERA5_rf_daily/" ".Processed_Data/ERA5_tmp"
".Processed_Data/ERA5_tmp/ERA5_tmp_daily/" ".Results"
".Data/SES_Surveys_Processed"

Final Output

There is a separate Output folder that collects previous output but is not altered by the code

All 7 tables are generated by the do files RegRIF_FinalTables which is in Code/Stata/

Both figures (i.e. maps) are generated by the R Script Maps_THA in Code/R/