

# **Bias Corrected Regional Climate Change Projections for Agricultural Decision Making: Developing an Online Visualization Tool**

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Reliable climate projections assist policymakers and businesses in making informed decisions about the impact of climate change on society and business practices, enabling effective resource allocation for the future. By quantifying and visualizing future climate data, we can inform about future regional climate trends, fostering informed decisions and productive changes. This study employs bias-corrected climate change projection data derived from the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP) based on Coupled Model Intercomparison Project phase 6 (CMIP6) models. Five models namely GFDL-ESM4, IPSL-CM6A-LR, MPI-ESM1-2-HR, MRI-ESM2-0, and UKESM1-0-LL were used in conjunction with 3 future warming scenarios—SSP585, SSP370, and SSP126. The regions of interest are South Asia, South America, and Thailand-Vietnam, and variables of interest are minimum temperature, maximum temperature, mean temperature, solar radiation, and precipitation. The projected changes between different future periods and the historical simulation (1981-2014) are calculated to show climate change in these specific regions. In particular, the goal was to build an interactive visualization tool that illustrates change in these five variables based on a user's selection of a specific future time, warming scenario, model, and region. This climate change information is included in a tool to provide climate forecasts on sub-seasonal (Weekly and Bi-Weekly) and seasonal (3-month out to a year) time scales. In short, it functions as an integrated tool, offering recent climate information and projections extending to the end of the century, all in one comprehensive platform.