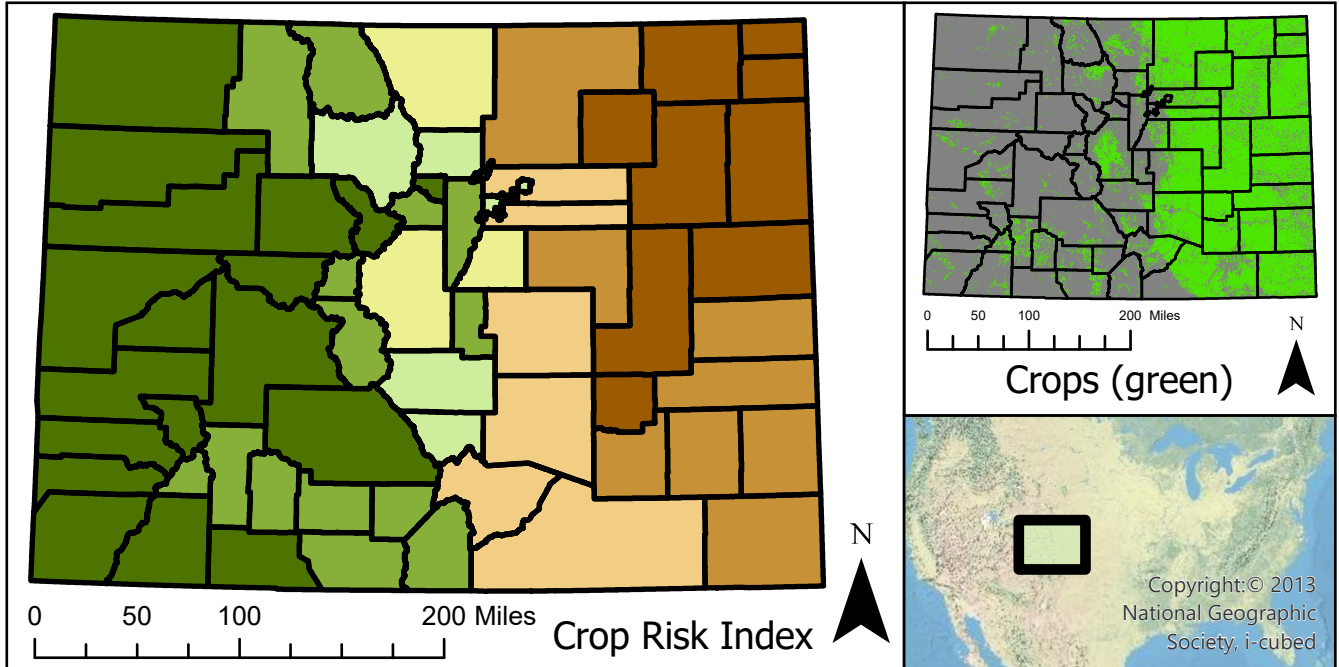


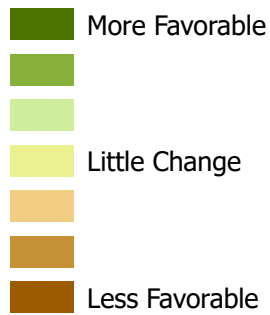
Climate Model Predicted Crop Risk in Colorado



USDA NASS Cropland Data Layer: USDA. George Mason University
 Annual Precipitation, Max Annual Temperature: WorldClim
 2024 Census TIGER County Lines: US Census Bureau

Created by John David Goode in ArcGIS Pro on 09/30/2025. Updated 12/09/2025.
 Email: johndavidgoode48@gmail.com
 Projected to NAD 1983 UTM 13N.

Crop Risk Index

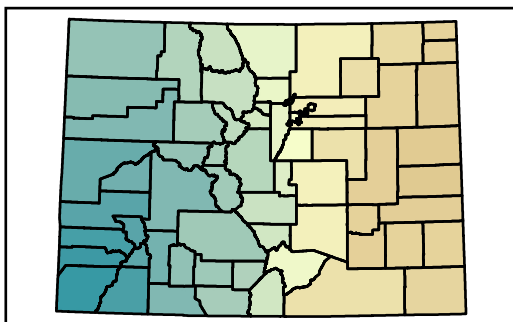


Crop data from USDA and George Mason University along with climate data from WorldClim were used to create a helpful index to explore the predicted long-term changes in crop environments and the potential risks associated with those changes in the context of crop growth in Colorado. While the entire study area's maximum annual temperature warmed by 4 to 6 degrees Celsius, the precipitation actually increased over the western half of the state by up to 13% annually, while the eastern side saw decreases of around 5% annually. Since a major limiting factor in western Colorado's agriculture is water supply, these changes could potentially result in a net positive for western crops but a net negative for eastern crops if these climate projections are realized.

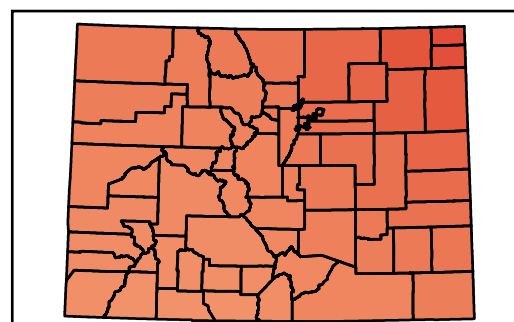
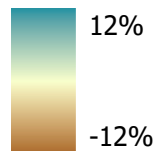
Crop types were manually filtered from the USDA NASS Cropland Data Layer to include land cover types that would produce a crop (from apples to sunflowers to alfalfa) while excluding land cover types that would not be harvested for a food crop (such as fallow fields, forests, or grasslands).



The climate differences were calculated from the 1970-2000 observations and the 2041-2060 predictions based on the SSP 585 scenario. Annual Total Precipitation and Annual Maximum Temperature for each period were used to build the risk index.



Change in Annual Precip



Change in Annual Max Temp

