



# EASTERN CORN BELT (ECB)



## Location and Climate

The Eastern Corn Belt represents the Ohio River Basin and the Great Lakes Region. It stretches from west of the Appalachians to eastern Illinois. Located within the Midwest Climate Hub, the climate of the ECB is considered cool humid.

## Historic Temperature

Historic average annual temperature in Wood County, OH (1920-2019) is 49.9°F. Mean maximum temperature is greatest in July (83.7°F) and mean minimum temperature is least in January (15.9°F).

## Historic Precipitation

Long-term average (1920—2010) annual precipitation is 48.4 inches in Wood County, OH. Lowest rainfall occurs in February with a monthly historic mean of 2.0 inches and the greatest rainfall is typically in May with a monthly mean of 4.0 inches.

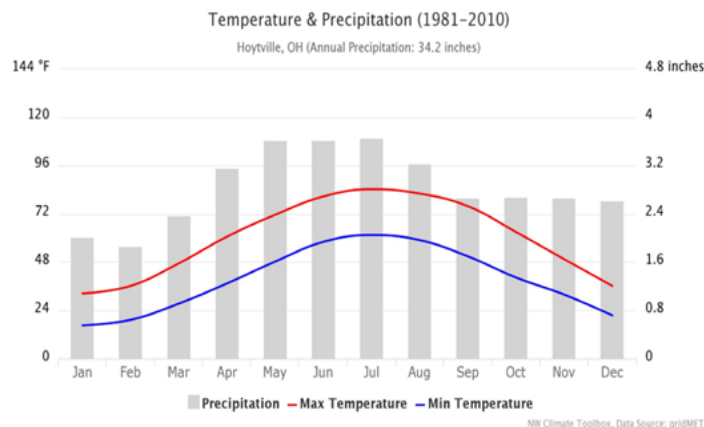
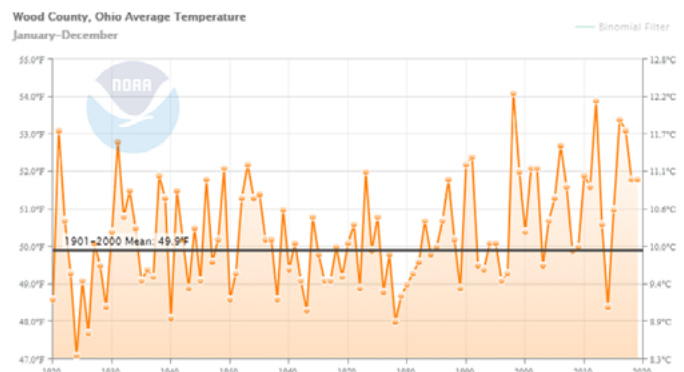
## Growing Season

The effective growing season, when both precipitation and temperature are favorable, is normally April through October.

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LTAR Network and [USDA Climate Hubs](#) are working to develop knowledge and technology for sound resource management **via research with partners**. The goal is to ensure **sustained crop and livestock production and ecosystem services** from agroecosystems, and to forecast and verify the effects of environmental changes, public policies, and emerging technologies.

Average temperature for Oct-Sept season as compared to mean temperature 1920-2020 (credit: NOAA).



Max and Min temperature and mean precipitation 1981-2010 (credit: [Climate Toolbox](#).) data source: gridMET.

## Measuring Weather and Climate

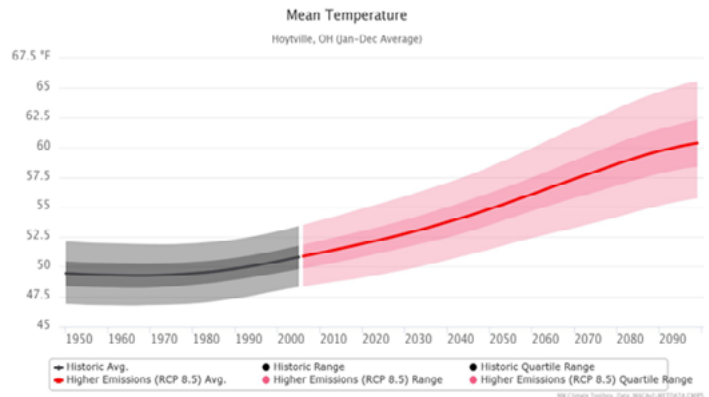
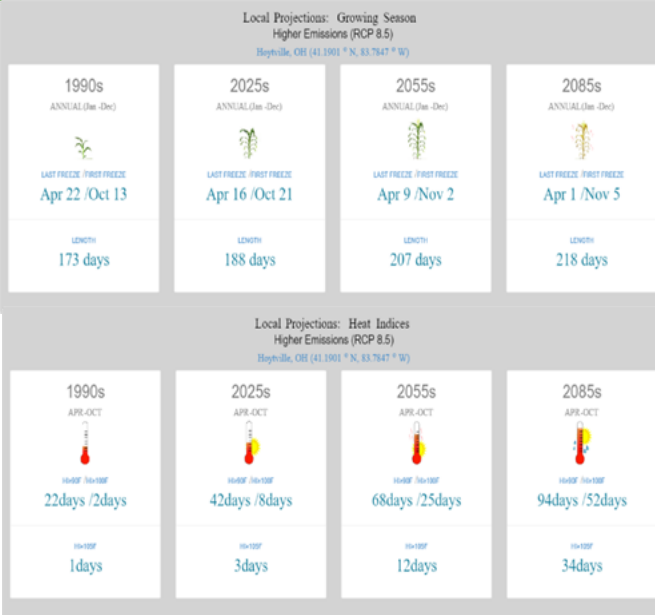
The ECB is characteristically warm and humid during the summer months. Rainfall is greatest in the spring and dips from September to February in the non growing season. Annual rainfall across the ECB can vary from 32.8in to 44.7in (Pease et al., 2018). During the winter months, arctic air masses move southward into the region resulting in cloudy skies, windy conditions, and frequent low intensity storm systems.

## Impacts to Agriculture

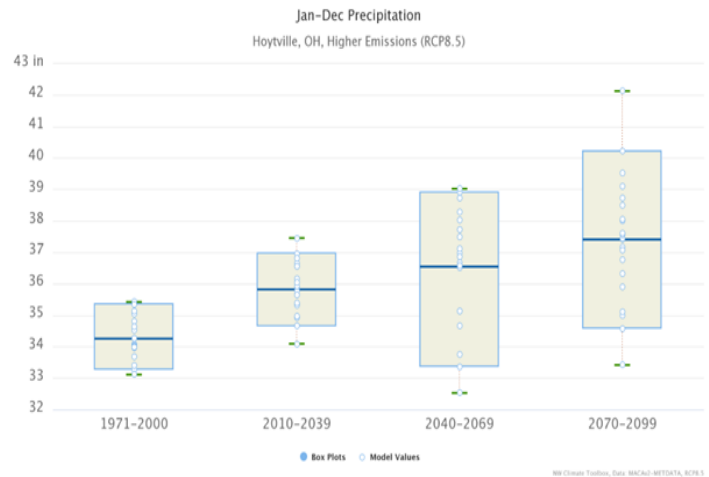
The ECB is one of the most agriculturally productive regions in the U.S. but also has one of the most fragile ecosystems. Potential changes to water quantity and quality, soil erosion, and crop productivity resulting from climate change present immediate and future economic risks to producers. Nitrogen and Phosphorus losses and availability from agricultural systems are expected to be impacted under future climate scenarios (Robertson et al. 2013, Jarvie et al. 2013).

## Climate and Climate Change

Average temperatures are projected to increase in Hoytville, OH and across the ECB. Annual precipitation is projected to become more variable, with an increase in mean precipitation by 2070-2099. Increased amounts of precipitation volume and intensity as well as an extended growing period will result in increased agricultural intensification and inputs of agrichemicals, potentially creating additional water quantity and quality challenges/opportunities.



Mean temperature projections at Hoytville, OH (credit: [Climate Toolbox](#).)



Projection of annual precipitation at Hoytville, OH (credit: [Climate Toolbox](#).)

To manage land sustainably, consider weather and climate.

### Subsurface Drainage

- Between 18 and 28 million ha of cropland in the Midwestern U.S. benefits from subsurface tile drainage (Zucker and Brown, 1998).
- Artificial drainage often accelerates nutrient enrichment, a primary water quality concern in the ECB.
- Agricultural drainage is and will remain necessary to achieve current levels of agricultural productivity in the ECB.
- Controlled drainage practices can retain more water in the soil and management systems can capture store and reuse water for irrigation.

This can potentially sustain future crop yields when projected growing season drought conditions increase in frequency.

### Extreme Events

- General predictions for the ECB and Midwest U.S. indicate that there will be warmer and wetter winter and spring months, a greater frequency of intense storms throughout the year, and more severe and longer droughts in the summer (Tackle and Hofstrand, 2008; U.S. Global Change Research Program, 2009).
- Decreased precipitation in the summer suggests agricultural watersheds will be subjected to increased water withdrawals for irrigation purposes (Wuebbles and Hayhoe, 2004).

### Water Resources

- Changing patterns in rainfall amount and intensity will likely continue to pose a significant challenge to conservation efforts in agricultural landscapes aiming to decrease nitrogen and phosphorus delivery to surface waters.