

# Panel data can identify highly nonlinear weather relationships

## Objective

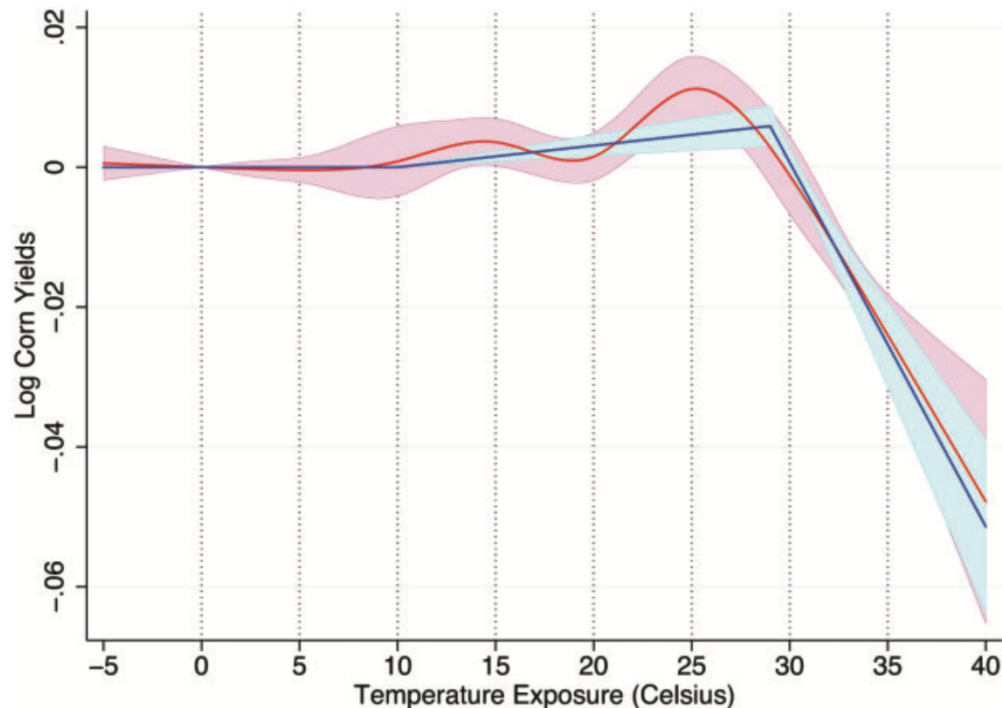
Discuss the use of panel data in agricultural impact assessments.

## Approach

- Literature review of published articles
- Presentation of latest results using flexible cubic splines

## Impact

- The literature over the last decade has seen an increase in the use of panel data studies
- Panel studies use weather anomalies (deviations from average), which are random and exogenous.
- Random weather variation is uncorrelated with other factors and hence allows the unbiased identification of a causal relationship with an outcome variable of interest
- The difference between unpredictable weather variation and predictable difference in mean outcomes is discussed.



**Blue line** shows the piecewise linear relationship between US corn yields and temperature. The 95% confidence interval is added as shaded area. **Red line** shows the flexible cubic spline as well as its confidence band. The driving force are detrimental temperature effects above 29C.