## Panel data can identify highly nonlinear weather relationships

## Objective

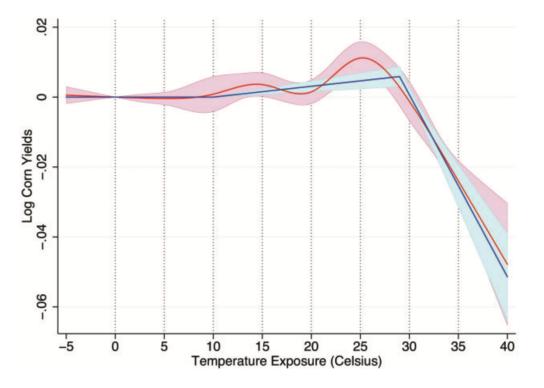
Discuss the use of panel data in agricultural impact assessments.

## 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.

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Blanc, E, and W. Schlenker. 2017. The Use of Panel Models in Assessments of Climate Impacts on Agriculture. *Review of Environmental Economics and Policy*, 11(2): 258-279: 1610-1614. DOI: 10.1093/reep/rex016