



THE UNIVERSITY OF  
**CHICAGO**

Department of Statistics

MASTER'S THESIS PRESENTATION

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Quantile Curve Estimation for Global Warming Time Series

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Jones 226, 5747 S. Ellis Avenue

#### ABSTRACT

Mean regression is an ubiquitous and popular measure analyzing time series data in various applications. However, in certain applications, particularly those addressing weather and climate variability, quantile regression helps to give quantile estimations and thus uncover more data insights. This paper compares the performance of three major strategies: piecewise constant, piecewise linear, and moving window in simulation data. In order to formulate a better visualization tool, we utilize Gaussian kernel smoothing and give detailed exploration of choosing block size and bandwidth. Using a real data set for further illustration, we examine global temperature time series to showcase the benefits of quantile curve estimation.

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