



The University of Chicago
Department of Statistics

Master's Seminar

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“Pricing Weather Derivatives”

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ABSTRACT

Weather derivatives are new financial instruments of which payoffs depend on weather indices such as temperature, precipitation and wind. The Black-Scholes model is commonly used to price call and put options but there is no widely accepted pricing model in the weather derivative market due to the illiquidity and mean reverting of the underlying assets. In this paper, we build weather forecasting models and the Monte Carlo simulation based on the models is used to price weather derivatives. Since accumulated heating degree days (HDD) and cooling degree days (CDD) determine the payoffs of weather derivatives, we mainly focus on estimating accumulated HDDs and CDDs. This work provides market participants with an appropriate starting point when buyer and seller negotiate the prices of weather derivatives.