

Pricing Weather Derivatives for Extreme Events

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Abstract

We consider pricing weather derivatives for use as protection against weather extremes. The method described utilizes results from spatial statistics and extreme value theory to first model extremes in the weather as max-stable processes, and then uses these models to simulate payments for a general collection of weather derivatives. These simulations capture the spatial dependence of payments. Incorporating results from catastrophe ratemaking, we show how this method can be used to compute risk loads and premiums for weather derivatives which are renewal-additive.