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### **Seminar**

**Speaker:** Brenda Lopez Cabrera, School of Business and Economics, Humboldt-Universität zu Berlin

**Title:** Pricing of Asian temperature risk

**Date:** Wednesday December 9, 2009

**Time:** 3:20 PM

**Place:** 552 Hill Center

### **Abstract**

A continuous autoregressive models (CAR) with seasonal variation is applied to model the temperature in Asia in order to get the explicit nature of non-arbitrage prices for temperature derivatives. Asian Temperatures (Tokyo, Osaka, Beijing) are normal in the sense that the driving stochastics are closer to a Wiener Process. The regression residuals of the temperature show a clear seasonal variation and the volatility term structure of CAT temperature futures presents a modified Samuelson effect. The seasonal variation is calibrated with a combination of a fourier truncated series with a GARCH model and with a local linear regression. By using the implied market price of risk (MPR) from Cumulative total of 24-hour average temperature futures (C24AT) for Japanese Cities or by knowing the formal dependence of MPR on seasonal variation, we price derivatives for Kaohsiung, where weather derivative market does not exist. The findings support theoretical theoretical results of reverse relation between MPR and seasonal variation of temperature process.