

METR 4803/5803: Applications of Weather and Climate to Commodity and Equity Markets

Fall 2008

Instructor	Stephen Strum Email: sstrum@frontierweather.com Daytime Phone: 918-252-7791 Cell Phone: 918-630-8860 Office Hours: Immediate before and after class when in Norman Email is recommended for most communication.
Time/Place	Tues/Thurs, 1:00-2:15PM; Room 5820. Note: I will be physically present every third or fourth class, with the remainder of the classes done by video conference.
Class Web Site	http://www.frontierweather.com/OU4803
Suggested Reading	No text books are required for the course, but students will be required to read a number of printed and online articles/papers during the course of the semester. Other suggested reading includes: <i>Banks, E., 2002: Weather Risk Management: Markets, products and applications.</i> Palgrave, xxpp. <i>Dischel, R., 2002: Climate Risk and the Weather Market: Financial Risk Management with Weather Hedges.</i> Risk Books, 300pp. <i>Errera, S. and S. Brown, 2002: Fundamentals of Trading Energy Futures and Options, 2nd Edition,</i> Pennwell Books, 247pp. <i>Eydeland, A and K. Wolyniec, 2002: Energy and Power Risk Management: New Developments in Modeling, Pricing and Hedging.</i> Wiley, 504pp. <i>London, J., 2006: Modeling Derivatives Applications in Matlab, C++, and Excel.</i> FT Press, 600pp. <i>Jewson, S. and A. Brix, 2005: Weather Derivative Valuation: The Meteorological, Statistical, Financial and Mathematical Foundations.</i> Cambridge University Press, 390pp.
Content	This course will provide an overview of weather's impacts on commodity and equity markets, with a focus on the energy markets. Topics to be covered will include: understanding how commodities are traded, learning symbols and contract months, understanding how weather impacts

supply, demand, and transportation of commodities, building simple natural gas storage and demand models, understanding how weather forecasts impact market prices, a look at weather derivatives, historical weather data cleaning techniques, other non-weather energy supply/demand drivers, and an introductory look at technical market analysis. Additionally, students will practice forecasting on a variety of time scales throughout the semester.

Most classes will include time for discussion of how current and forecast weather is impacting the markets.

Grading

Homework Problems/Projects: 40%

Forecast/Trading exercises: 20%

Exams (one mid-term and one final): 40% (20% each)

Note that the exact date of the mid-term exams will be dependent on my schedule and ability to be present in Norman and will be determined at a later date. But, the expectation is for the first exam to take place approximately one half to two-thirds of the way through the semester. The final exam will be comprehensive, but will be weighted towards material covered during the last third to half of the semester.

Several homework sets and projects will be given throughout the semester, the goal of each being to help the students develop knowledge and material that will be useful in their career should the students decide to pursue a career in the energy markets. In many cases, homework and forecasting exercises will overlap.

Homework/project assignments are due by 5 pm on the date announced unless stated otherwise. There will be a 20% penalty per day for late assignments.

Several forecasting exercises will be conducted during the semester. One unit will consist of students preparing daily temperature forecasts for specific cities out to 10 days, a second unit will focus on period forecasts (2-5 day, 6-10 day, 11-15 day), a third unit on seasonal forecasts (30 and 90 day forecasts) and a fourth unit on hourly forecasts. Students will be required to submit forecast reasoning, and provide some detail on the methodology behind their forecasts. Grading will be determined by both forecast accuracy as well as forecast reasoning and methodology write ups. The seasonal forecast segment will require students to submit a fully detailed seasonal forecast write-up including data, supporting graphics and reasoning.

Trading exercises will involve students making paper trades in the natural gas market each week for a period of time during the semester in order to better understand the impacts weather fluctuations, especially weather forecast fluctuations have on market prices

Academic Integrity

Academic misconduct or dishonesty including cheating or plagiarism will result in a failing grade on the assignment or exam in question and possibly the entire course. It is the student's responsibility to follow the University of Oklahoma Student Code. Violations will not be tolerated.