METR 4323 Syllabus, Spring 2014

Weather Simulation with Computers

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Instructors

- Primary instructor: Professor Brian Fiedler, bfiedler@ou.edu, NWC 5636
- Teaching Assistant: To be announced!

Class time

- 10:00am-10:50 am in NWC 5720

Office hours

- before and after class
- Sunday 7-9 pm at Second Wind Coffeehouse
- Other hours to be arranged!

Topics:

Here is what was advertised, and approved by the Academic Programs Council:

- Marching prognostic equations forward in time
- Representing a fluid in Cartesian arrays of numbers
- Simulating advection and diffusion in fluids
- The “jury” problem: adjusting pressure to satisfy the velocity divergence constraint
- The Boussinesq approximation for buoyancy
- Thermal convection
- Hydrostatic and non-hydrostatic motion
- Baroclinic instability, mountain waves
- Cylindrical coordinates, tornado simulations
- The Buckingham-Pi theorem: Making a model dimensionless to increase its generality
- Overview of operational numerical weather prediction models

Assessment:

Letter graded. My inclination is to have **the entire grade based on projects**. That means no exams and no Final Exam.

Projects:

The projects and due dates are yet to be determined.