

## MEA444: Mesoscale Analysis and Forecasting

Pre-lab 5

due: start of class on Thursday, 12 March, 2009

COMET Convective Storm Matrix, available at <http://meted.ucar.edu/convectn/csmatrix/>

**Pre-lab assignment:** Once you have clicked to start the module, you will be presented with four choices: “Module Introduction”, “Cloud Modeling”, “Background Concepts”, and “The Convective Storm Matrix”. You will do “The Convective Storm Matrix” together as a lab in-class on Thursday March 12. **Before doing the in-class lab together, you should work through the following sections and make sure that you understand them.**

A. Read through the “Module Introduction”. There is no other work/assessment for this part of the module.

B. Read through the “Cloud Modeling” section. In our in-class lab we will be assessing the output from idealized numerical simulations. Make sure you understand the basic principles of the exercise and answer the following:

1. How does the environment in the model differ from the real world?
2. What initiates the first round of storms in the model?
3. What are some advantages of using the idealized model framework?

C. Read through the “Background Concepts” section.

### Conceptual Models:

1. Write a sentence or two about how you will recognize ordinary cells in the model output in our lab (we will be looking at reflectivity, wind, and cold pool data, plus the cloud outline).
2. Write a sentence or two about how you will recognize multicells in the model output in our lab (we will be looking at reflectivity, wind, and cold pool data, plus the cloud outline).
3. Write a sentence or two about how you will recognize supercells in the model output in our lab (we will be looking at reflectivity, wind, and cold pool data, plus the cloud outline).
4. How will hodograph curvature effect the evolution of convection in supercell cases?

### Physical Processes:

1. Briefly summarize the environmental parameters that you expect to govern buoyancy processes.
2. Briefly summarize the environmental parameters that you expect to govern cold pool/shear processes.
3. Briefly summarize the environmental parameters that you expect to govern updraft/shear processes.