

ATM111L - Lab Exercises #4
25 pts

COMET mesoscale weather modules:

1. Proceed to the COMET modules on topics related to Mesoscale Meteorology Primer. The URL is:

<http://www.meted.ucar.edu/mesoprim/>

You will see a variety of links listed there under 'Mesoscale Phenomena'. Over the remaining weeks we shall look at several modules.

Over the next two weeks, you are to complete:

(5pts) Mesoscale banded precipitation (3-4)

PLUS (5 pts): Choose 1 from: i) Low Level Coastal Jets, ii) Gap Winds, iii) Mountain Waves & Downslope Winds, iii) Landfalling Fronts and Cyclones, iv) Cold air damming, v) forecasting dust storms, and vi) Coastal Trapped Wind Reversals. (1.5-3 each)

A. Each module above has a quiz or exam. When you take the exam, you must complete it at one sitting. (Each takes 10-20 minutes.) You must enter your full name and Dr. Grotjahn's email address (grotjahn@ucdavis.edu) when prompted.

B. For these two modules, answer the indicated questions:

Thermally-Forced Circulation I: Sea Breezes (1.5)

Thermally-Forced Circulation II: Mountain/Valley Breezes (.5)

- i) (3 pts) Describe three different factors that affect low level convergence of the wind on land during an afternoon sea breeze.
- ii) (1pt) How does model resolution affect the sea breeze wind speed? (over Florida, say, where topography can be neglected). Give a brief explanation why.
- iii) (2 pts) Describe how mountain-valley breezes interact with a sea breeze during the afternoon for mountains and valleys intersecting the California coast. Note that there is often a strong low level inversion.
- iv) (1 pt) Between what local standard times does the wind reverse from southerly to northerly in Utah's Tooele Valley?
- v) (1 pt) How does wind speed related to valley depth and inversion height in a down-valley wind?

C. Answer the following questions.

i. (1 pt) How much time did you need to complete each module (including the final exam)?

ii. (6 pts) Indicate which modules you worked through and for each module:

- 1) Describe something you learned from each module
- 2) What did you like most of each module you tried?
- 3) Was there anything you did not like about a module? If so, please elaborate.

Due ____ 22 February 2011 _____