

## NATS101 (30). Introduction to Weather & Climate

### Science Project 2. The Pseudoadiabatic Chart

Due date: Hand in during class on or before February 28, 2008.

You may discuss the project with other students but you **must** write up your own work alone.

Hand in three pages only – this one and the two adiabatic charts showing your working.

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Use the accompanying pseudoadiabatic charts to answer the following questions.

1. Consider an air parcel in Tucson (950 mb). Imagine that it is a warm (35°C), but fairly dry summer day (dew point = 0°C).
  - a. What is the lifting condensation level (LCL)?  
LCL = \_\_\_\_\_ mb
  - b. What is the temperature of the air parcel after rising to 500 mb?  
 $T_{500 \text{ mb}} =$  \_\_\_\_\_ °C
  - c. What would be the temperature of the air parcel if it were now brought back down to Tucson?  
 $T_{950 \text{ mb}} =$  \_\_\_\_\_ °C
  - d. What would be the dew point temperature of the air parcel after completing the round trip?  
Dew point (at 950 mb) = \_\_\_\_\_ °C
2. Plot the following imaginary San Diego sounding and determine the stability (stable, unstable, neutral) of the layers AB, BC, CD, DE, EF, FG.

|   | Pressure level<br>(mb) | Temperature<br>(°C) |
|---|------------------------|---------------------|
| A | 1000                   | 30                  |
| B | 970                    | 25                  |
| C | 900                    | 19                  |
| D | 850                    | 17                  |
| E | 800                    | 20                  |
| F | 700                    | 11                  |
| G | 500                    | -13                 |

  - a. Layer AB is \_\_\_\_\_.
  - b. Layer BC is \_\_\_\_\_.
  - c. Layer CD is \_\_\_\_\_.
  - d. Layer DE is \_\_\_\_\_.
  - e. Layer EF is \_\_\_\_\_.
  - f. Layer FG is \_\_\_\_\_.