Department of Earth & Climate Sciences   Name_____
San Francisco State University   February 9, 2018

ERTH 260 Quiz #1
100 pts.
(25 minutes)

A. _Definitions_. (5 points each for a total of 20 points in this section).

(a) precipitable water (or mixing ratio) Choose one to define --

(b) atmospheric river--

(c) The study of the development of and evolution of atmospheric motions and circulation systems as solutions of the fundamental equations of hydrodynamics or other systems of equations appropriate to special situations is the definition of

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(d) GOES is an abbreviation...expand it out --

B.   <u>Unit Conversion</u>. (30 pts)

The average value of atmospheric density at sealevel is approximately
1.24×10^{-3} g cm^{-3}.   Convert this to S.I. units (MKS units). Show all work
(No credit for correct answer if work is not shown).

C. Weather Charts (50 points in this section).
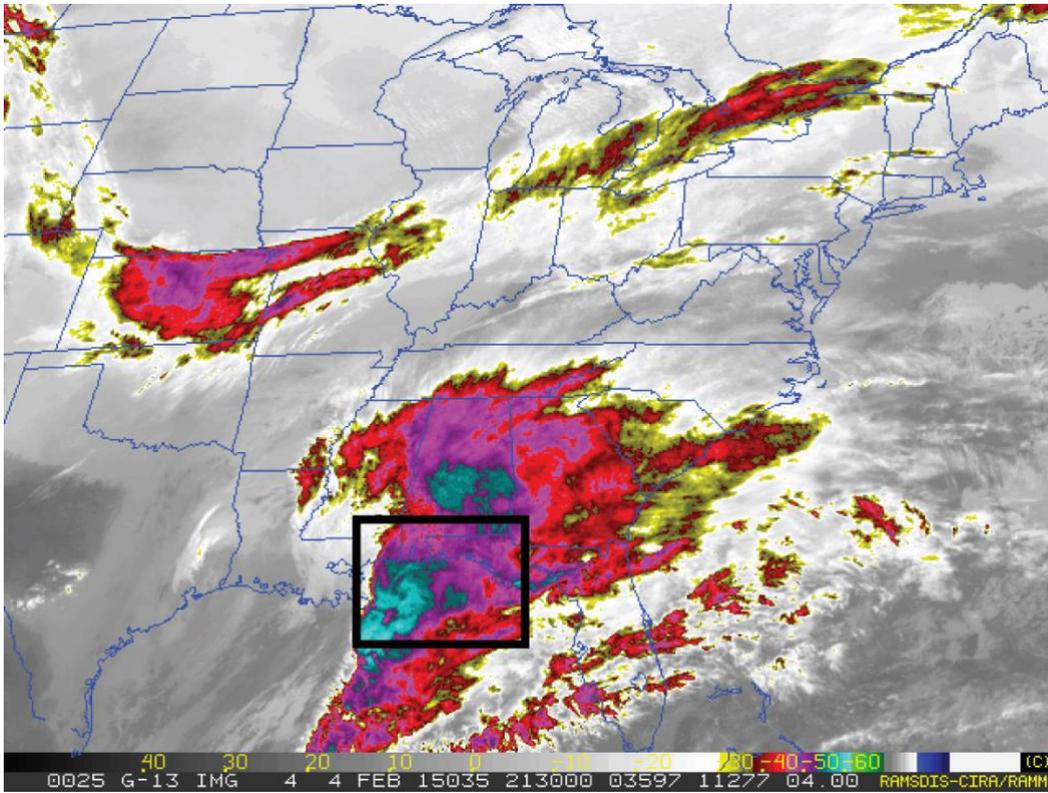

Figure 1 is the 2130 UTC 4 Feb 2015 Infrared Satellite Image
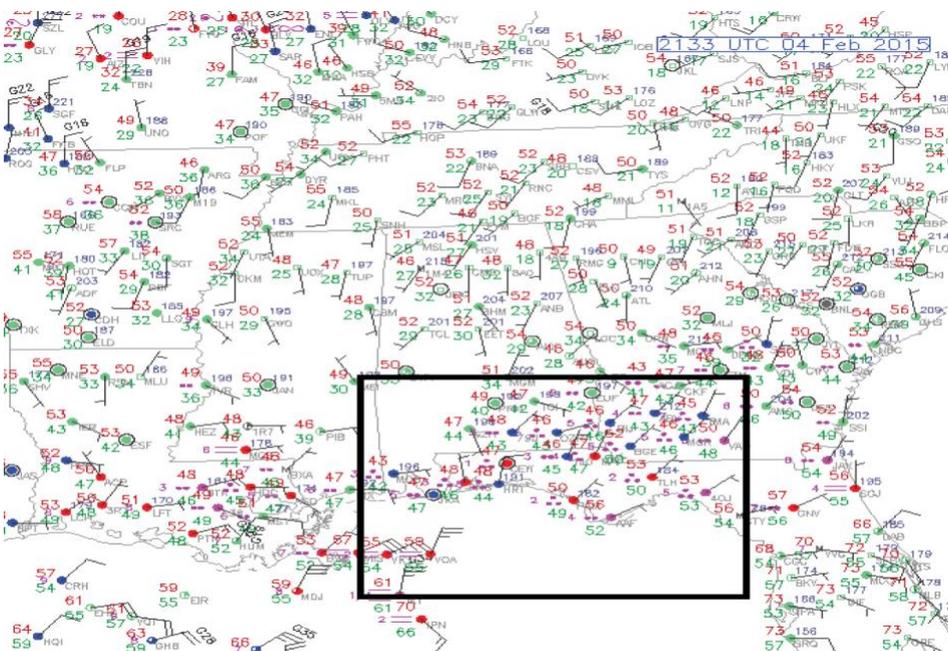

Figure 2: Surface plot of weather data 2133 UTC 4 Feb 2015

Figure 1 is the 2130 UTC Infrared Satellite Image and Figure 2 the 2133 UTC surface plot for 4 February 2015.

The following questions relate to these charts. Answer in complete sentences.

1. What is the significance of the colors shown inside the box drawn on Figure 1? Here I would like you to explain what the colors particularly signify and what the implication is meteorologically.(15 pts)

2. The box drawn on Figure 2, the surface data plot, generally corresponds to that shown on Figure 1. Generally describe how the weather station data plotted in portions of the box drawn on Figure 2 can be used to verify your answer in (1) just above. (10 pts)
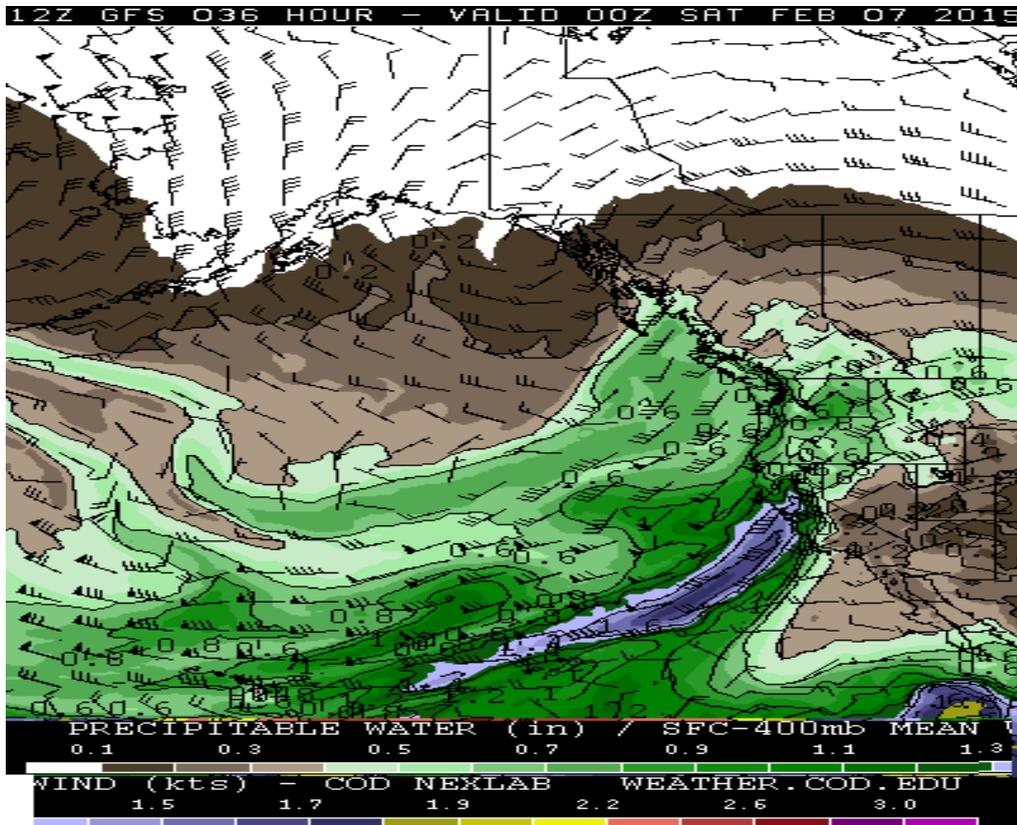
Figure 3 : Precipitable Water valid 0000 UTC 7 February 2015

Figure 3 is a forecast for the precipitable water field from the GFS valid 0000 UTC 7 February 2015.

1. Decode the date and time to Pacific Standard Time. (5 pts)

2. Describe how Figure 3 illustrates an Atmospheric River as you defined it in Section A of the quiz. (2-3 sentences) (20 pts)