

**ERTH 260: In-class Exercise 1**  
**The Surface Weather Map (100 points)**

Due Wednesday 31 January 2018

The term "weather map" applies to any horizontal chart drawn at a constant level (i.e, sealevel, 6000 m, etc.) upon which some aspect of "weather" is depicted. Usually, the weather map shows a synopsis of weather observations, often analyzed by a meteorologist or a computer, at a given time over certain areas.

### **Surface Weather Map**

Today the class is going to work with the surface map for 1200 UTC 22 Jan 2017, in which a major storm was affecting the California. This weather map was obtained from the Department of Earth & Climate Sciences Weather Graphics and Simulation Lab (WGSL). We'll also obtain comparable map for today, 1200 UTC 24 Jan 2018.

#### ***A. Obtaining the surface weather map for 1200 UTC 24 January 2018 from the Weather Graphics and Simulation Lab (WGSL) (40 pts)***

- Double click on the Terminal icon on the dock, as shown in class.
- In the command line, type "sfcplot 18012612", as shown in class, and press "Return" or "Enter".
- After we have discussed it briefly, place the cursor over the map and press return (that should delete the map)
- Now, in the command line type "Control p" but do not press "Return". The cursor should be just at the end of "sfcplot 18012612". Type a space and then -p and press "Return". This will print a copy of the map in black and white. **Every student should have his or her copy and turn it in with the rest of the completed materials for this Exercise.**

#### **B. Discussion of Weather Map for Major Storm from Last Season, that of 1200 UTC 22 January 2017.**

We'll discuss the surface weather map for you would have obtained had you executed sfcplot 17012212. The difference is that when you print the chart, it will appear as black print with a white background. By the way, the teaching approach of using something happening of interest currently to investigate thematic material that one would need to understand it is called "inquiry-based learning."

## Questions

1. What is the date and time of the map in Pacific Standard Time?  
\_\_\_\_\_ ( 5 pts)
2. What would you say is the distribution in space (how many miles or km apart) of the weather stations depicted? (Please answer in a complete sentence or sentences)( 5 pts)
3. Given what we discussed in class on Wednesday, why do you think only these stations are shown and why are they so far apart?(Please answer in a complete sentence or sentences)( 5 pts)
4. The information for the weather stations is plotted on the basis of what is known as the station model. We will discuss the information plotted routinely on weather maps via the station model out of sequence to our theoretical and conceptual discussions of the various variables (for example, temperature and dew point temperature, but we will skip pressure for now). After we get through that discussion, answer the following questions:
  - a. What are the coldest and warmest temperatures you see on the chart and where?( 10 pts)
  - b. What are the strongest winds you see on the map and where?( 5 pts)
  - c. Examine the information for San Francisco, CA. Provide the following information: (20 pts)
    - i. Temperature \_\_\_\_\_
    - ii. Dew Point Temperature \_\_\_\_\_
    - iii. Wind direction and speed \_\_\_\_\_
    - iv. Present Weather \_\_\_\_\_
    - v. State of the sky \_\_\_\_\_
5. A satellite image (called the visible satellite image, as explained in class) for 1700 UTC on 1/22/17 is given here. Comment on the degree to which the weather observation of cloud cover shown on the surface weather map captures the degree to which the nation was covered with clouds. (10 points)