Week 15 Assignment

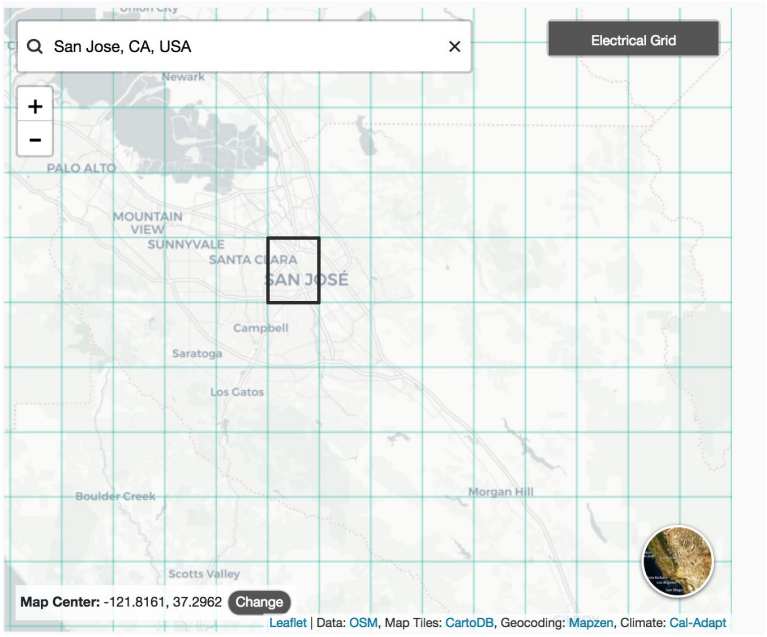
30 points

Directions: Go to the website http://cal-adapt.org/ . Feel free to play around with the website. At the top of the website click on the "TOOLS" link. Please complete the following for the 4 different sections below that you see on the website: (10 points each)

1) Annual Averages:

a. Scroll down and you will find the map tool. Use the map tool to change your location to

San Jose, CA. Zoom in and double click on the grid box for downtown San Jose. Make sure you press 'update map'.

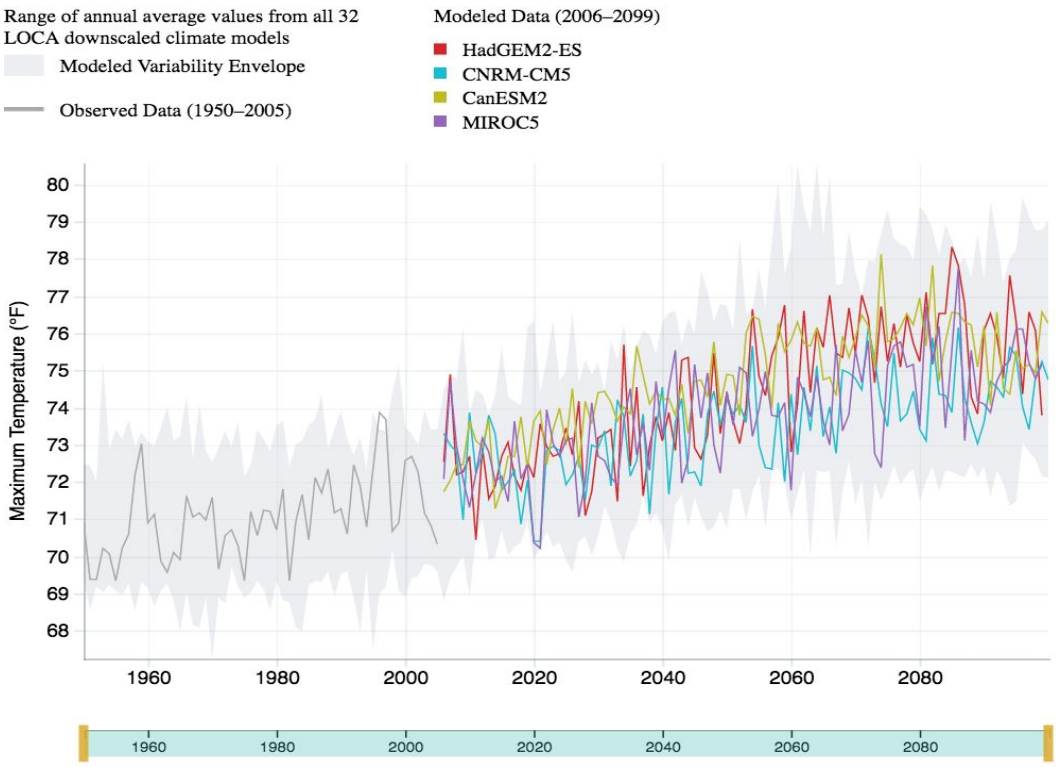


b. The emissions scenarios from the textbook are slightly outdated, and the future emissions scenarios are now called RCPs (Representative Concentration Pathways). Read more here https://www.skepticalscience.com/rcp.php?t=1 . RCP 4.5 is an emissions scenario that refers to holding the total radiative forcing of anthropogenic greenhouse gas emissions to peaking at 4.5 W/m2 by 2100 with a peak of emissions around 2040, and then stabilizing after that. RCP 8.5 is an emissions scenario that peaks at 8.5 W/m2 near 2050, then leveling off by 2100 before seeing a decrease. RCP 4.5 is the best case scenario, and RCP 8.5 is usually considered a "business as usual" scenario. Climate future projection computer models needs climate 'scenarios' in order to figure out how much warming might occur under each scenario because we can't predict exactly what will happen with politics, regulation, and human nature, etc.

Maximum Temperature

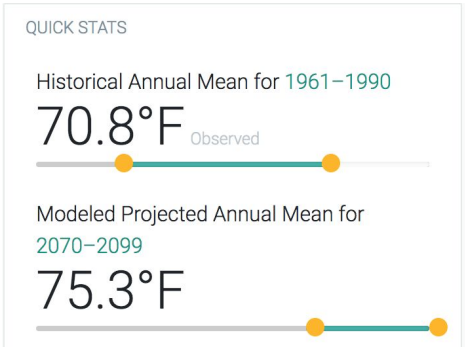
GRID CELL (37.34375, -121.90625)

Emissions peak around 2040, then decline (RCP 4.5)



c. The annual average maximum temperature plot shows the output of the annual average maximum temperature from many different climate model outputs from using the RCP 4.5 emissions scenario. Compared to the 1961-1990 annual average max temp. for San Jose, how much will San Jose's average max temperature warm to by the 2070-2099 climate normal?

Ans :

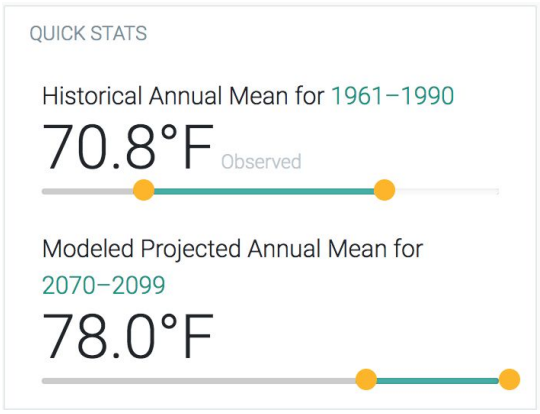


75.3 F - 70.8F = 4.5 F

San Jose's average max temperature will be warm by 4.5 degree F

d. Same as C, but for RCP 8.5?

Ans :

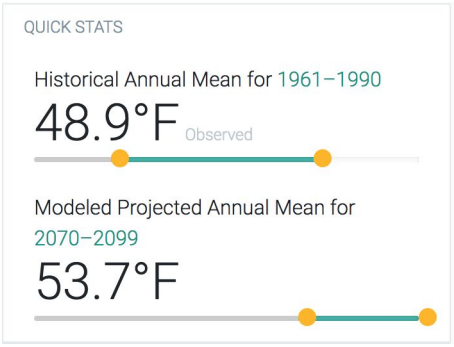


78 F - 70.8F = 7.2

San Jose's average max temperature will be warm by 7.2 degree F

e. What about the annual average minimum temperature for both RCP 4.5 and RCP 8.5?

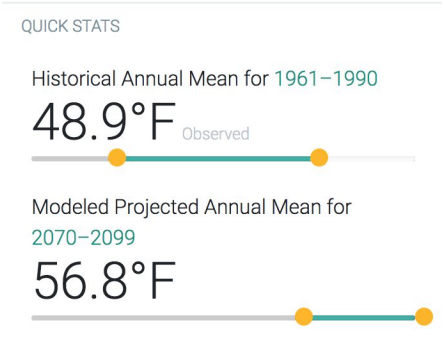
Ans : For RCP 4.5



53.7 - 48.9 = 4.8 F

San Jose's average min temperature will be warm by 4.8 degree F

For RCP 8.5

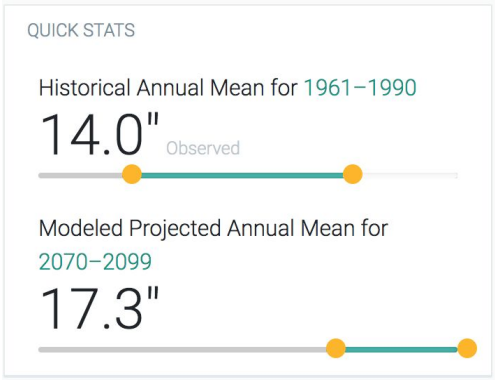


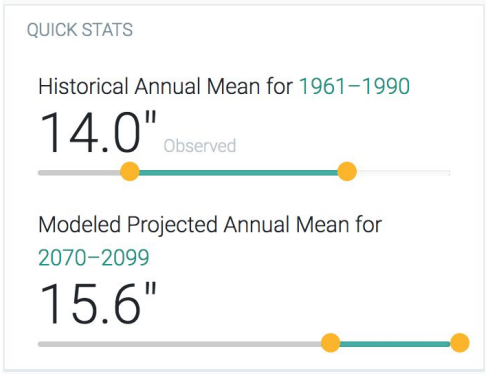
56.8 - 48.9 = 7.9

San Jose's average min temperature will be warm by 7.9 degree F

f. Describe how the annual average precipitation might change for San Jose from both scenarios? More flooding? More drought? What do you notice from the chart?

Ans: **RCP 8.5** **RCP 4.5**



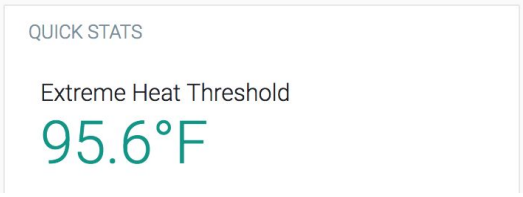


Data shows that There would be more precipitation in future. Therefore it can be possibility of flooding.

2) Extreme Heat

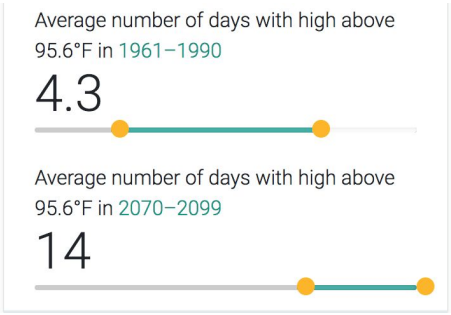
a. Go back to the original website (cal-adapt.org/tools/) and click on the Extreme Heat block. Make sure that you are focused on San Jose again.

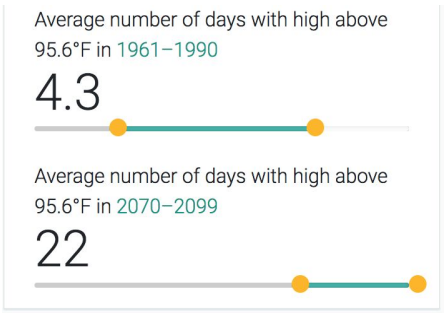
b. What is the extreme heat threshold for San Jose?



c. How do the average number of extreme heat days change between RCP 4.5 and RCP 8.5?

Ans: **RCP 4.5** **RCP 8.5**



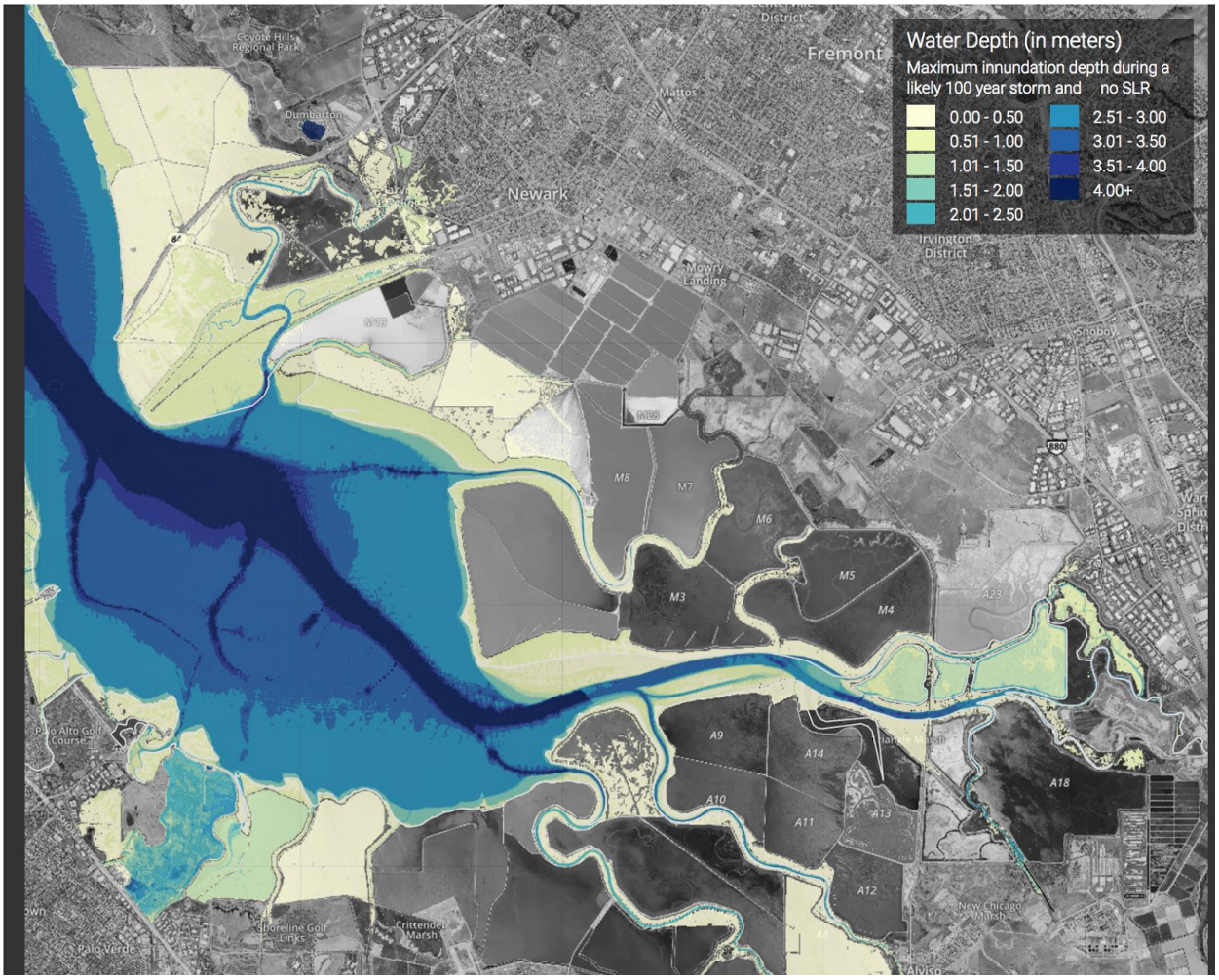


3) Sea Level Rise

a. Go back to (cal-adapt.org/tools/) and click on the Sea Level Rise block.

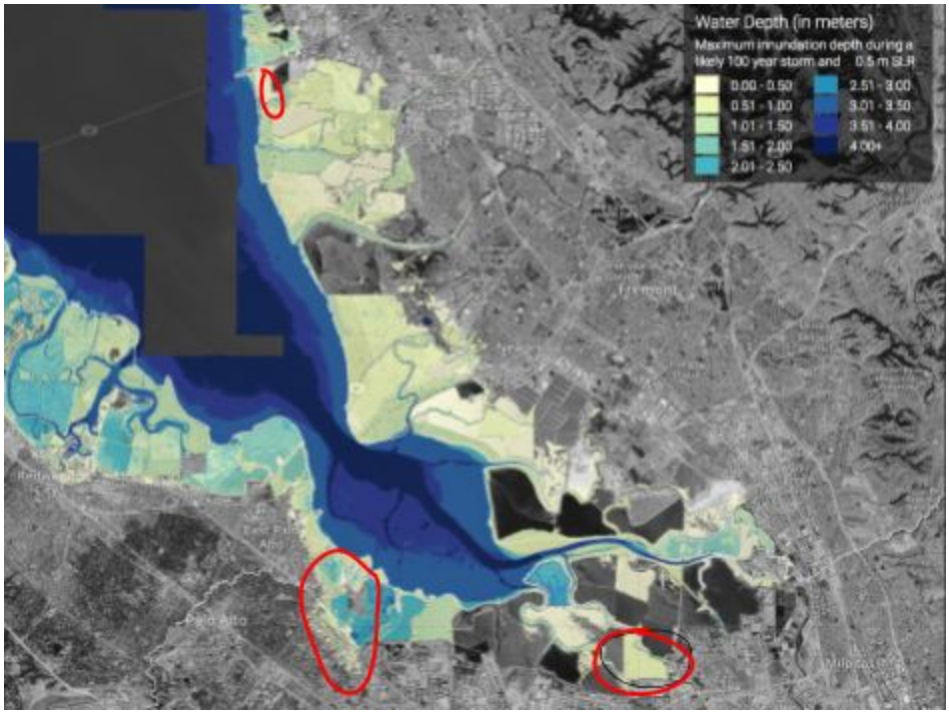
b. Describe interesting things you see in the SF Bay area from different rising sea level amounts.

Ans:



This figure shows current status of water level.

Below figure shows if sea level rise 0.5 meter then water will come in east Palo alto, Union city by 0.99-0.50 meter. Specially residential area in palo alto would be infected



Above figure

If water rise 1.5 meter then it will out huge impact on residential area for example some area of alameda(my city) would under water. Approximate 0.51 to 1.00 meter water would rise in alameda and some area of oakland.

This picture show how much water would rise in south in bay area. Water level would rise more than 2 meter near union city, foster city, san carlos. Water level would be rise around 1.5 meter in palo alto, newark. San francisco city and San francisco international airport would be also under 1 meter water from edges