EPSS M71 Midterm, 11-19-20

Miranda Chang

In [2]:

```
import numpy as np
import matplotlib.pyplot as plt
```

Reading Data

In [8]:

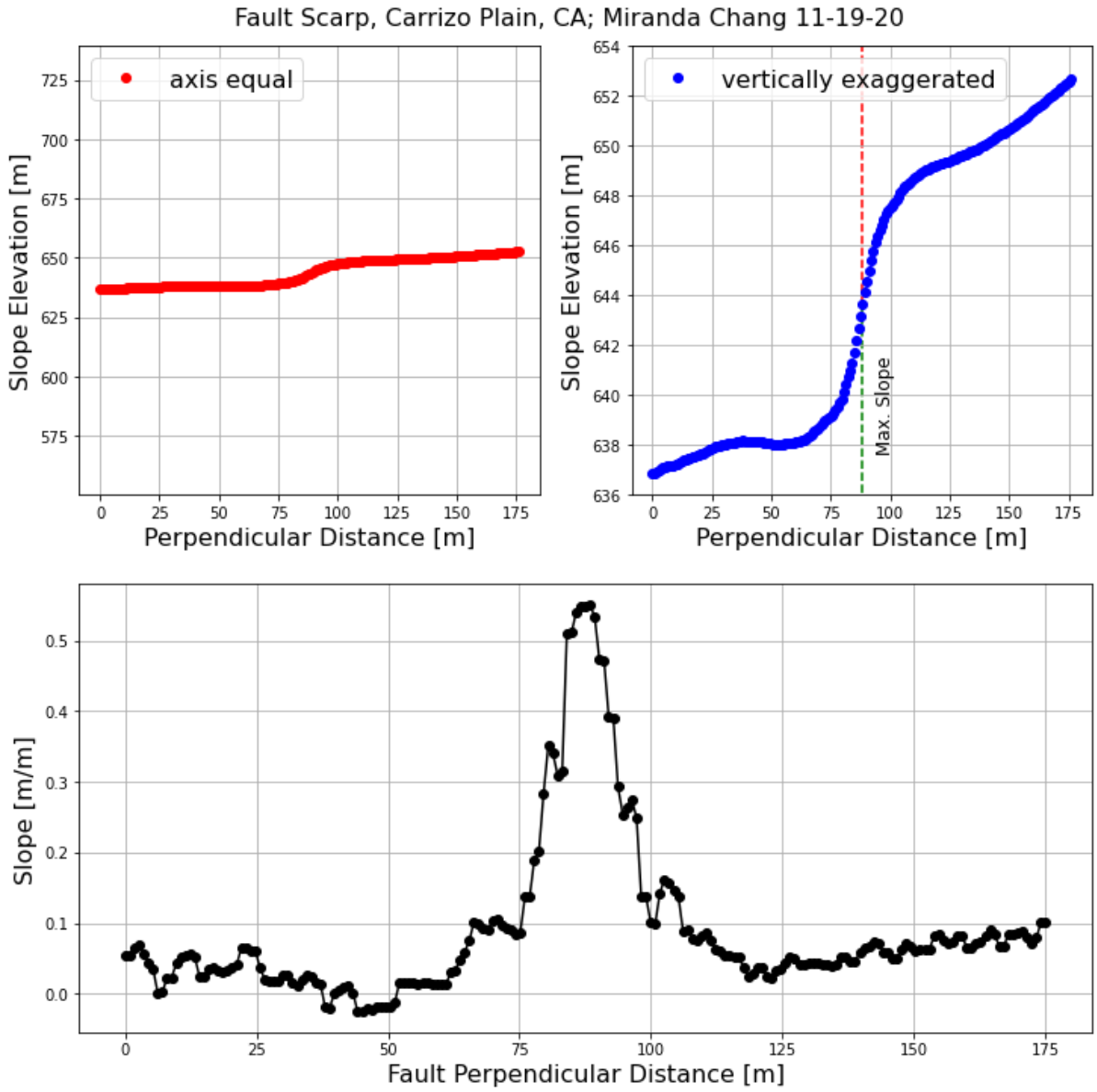
```
dist, el = np.loadtxt("Midterm-M71F20/CarrizoFault.txt", unpack = True) #loading in data

#checking length
print(len(dist))
print(len(el))
```

```
200
200
```

Making Subplots

In [179]:

```
f1 = plt.figure(figsize=(12,12))

#Upper left plot
ax1 = f1.add_subplot(221)
ax1.plot(dist,el,"ro",label="axis equal") #graphing, making the data red with circles
ax1.axis("equal") #setting the axes to be of equal ratio

#labels, legend, and grid
ax1.set_xlabel("Perpendicular Distance [m]",fontsize=16)
ax1.set_ylabel("Slope Elevation [m]",fontsize=16)
ax1.grid()
ax1.legend(fontsize=16, loc="upper left")

#Lower plot
ddist = np.diff(dist)
d_el = np.diff(el)
s = d_el / ddist #calculating slope, change in elevation
ax2 = f1.add_subplot(212)
ax2.plot(dist[0:len(dist)-1],s,"o-",color="black") #plotting slope vs distance with black
 circles and line

#labels
ax2.set_xlabel("Fault Perpendicular Distance [m]", fontsize=16)
ax2.set_ylabel("Slope [m/m]", fontsize=16)
ax2.grid()

#Upper right plot
ax3 = f1.add_subplot(2,2,2)
ax3.plot(dist,el,"bo", label = "vertically exaggerated") #plotting distance vs elevation
ax3.set_xlabel("Perpendicular Distance [m]",fontsize=16)
ax3.set_ylabel("Slope Elevation [m]",fontsize=16)
ax3.grid(zorder=-2) #putting grid behind everything
ax3.legend(fontsize=16)
ax3.set_ylim(636,654) #settling limits for y-axis

#Slicing out data where slope is greatest
max_slope_BA = (s == np.max(s))
max_slope = el[0:len(el)-1][max_slope_BA] #where slope is greatest in the elevation
max_slope_dist = dist[0:len(dist)-1][max_slope_BA] #where slope is greatest in the distanc
e


ax3.vlines(x=max_slope_dist,ymin=max_slope,ymax=654, color="red",ls="--",zorder=-1) #above
slope max for elevation
ax3.vlines(x=max_slope_dist,ymin=0,ymax=max_slope,color="green",ls="--",zorder=-1) #below
 slope max for elevation
ax3.text(.53,.1,"Max. Slope", fontsize=12,rotation = "90", transform = ax3.transAxes)#labe
l for that line

plt.suptitle("Fault Scarp, Carrizo Plain, CA; Miranda Chang 11-19-20", y =0.91, fontsize=1
6)
plt.savefig("Chang_MdtrmF20.png", bbox_inches="tight", dpi=150)
```


Fault Scarp, Carrizo Plain, CA; Miranda Chang 11-19-20
axis equal
Slope Elevation [m]
Perpendicular Distance [m]
vertically exaggerated
Max. Slope
Slope Elevation [m]
Perpendicular Distance [m]
Slope [m/m]
Fault Perpendicular Distance [m]

I got not outside help - Miranda Chang

In [ ]: