

Creating Plots with Two y-Axes

This example shows how to create and customize plots with two y-axes.

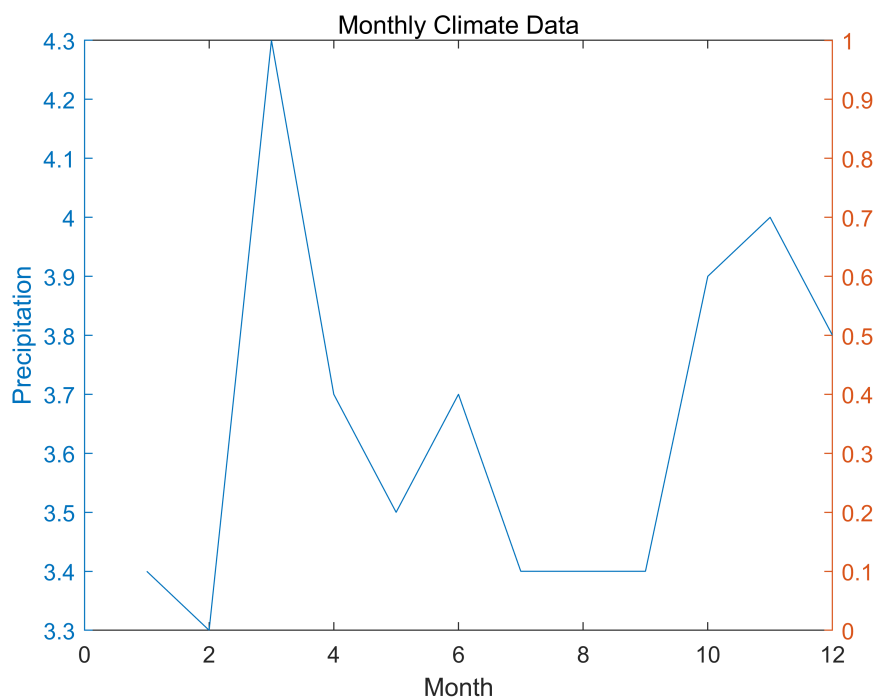
The yyaxis Function

When analyzing relationships between variables, it can be useful to create a line plot with two y-axes. For example, create vectors for precipitation and temperature for each month.

```
monthnum = 1:12;  
precip = [3.4 3.3 4.3 3.7 3.5 3.7 ...  
          3.4 3.4 3.4 3.9 4.0 3.8];  
temp = [16 25 40 48 59 70 ...  
        77 77 65 56 47 34];
```

Use the `yyaxis left` command to create an axis with a y-axis on both the left and right sides. Subsequent plotting commands use the left y-axis.

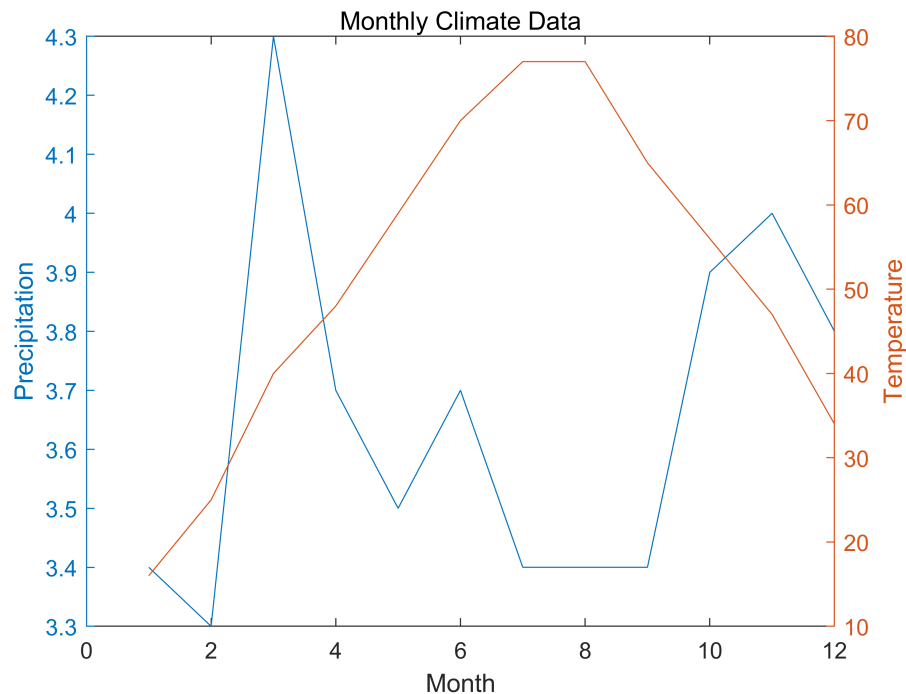
```
figure  
yyaxis left  
plot(monthnum,precip)  
xlabel('Month')  
ylabel('Precipitation')  
title('Monthly Climate Data')
```



Add Right y-Axis

Create a line plot for the temperature of each month using the y-axis on the right. The `yyaxis right` command activates the right y-axis.

```
yyaxis right
plot(monthnum,temp)
ylabel('Temperature')
```

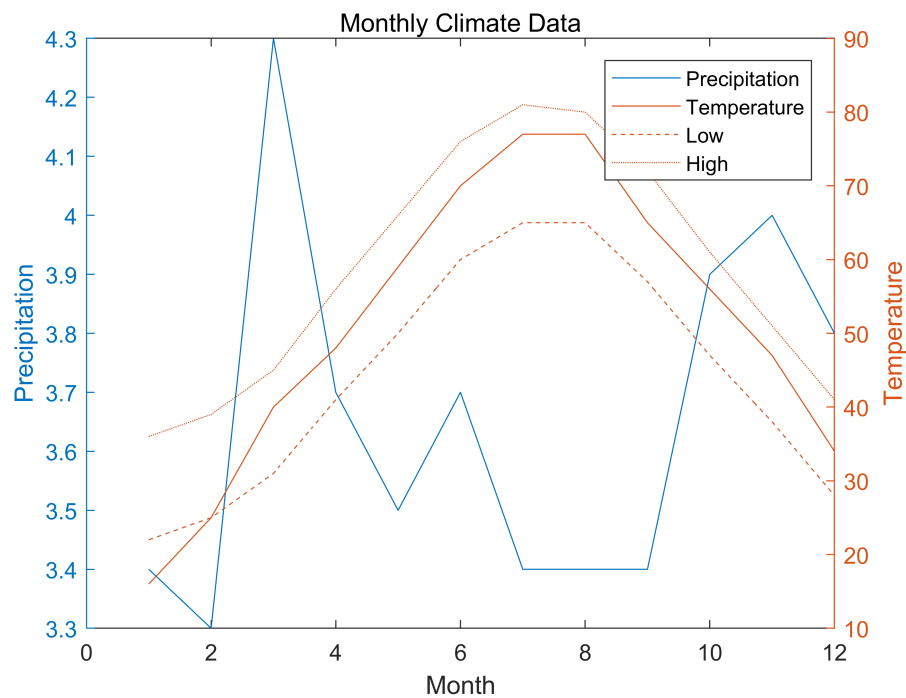


Add Multiple Lines to Plot With Two y-Axes

To add multiple lines to the plot, use the `hold on` command followed by additional plot commands. The additional lines use the same color as the right y-axis and cycle through the line style order.

```
low = [22 25 31 41 50 60 ...
      65 65 57 47 38 28];
high = [36 39 45 56 66 76 ...
      81 80 72 61 51 41];

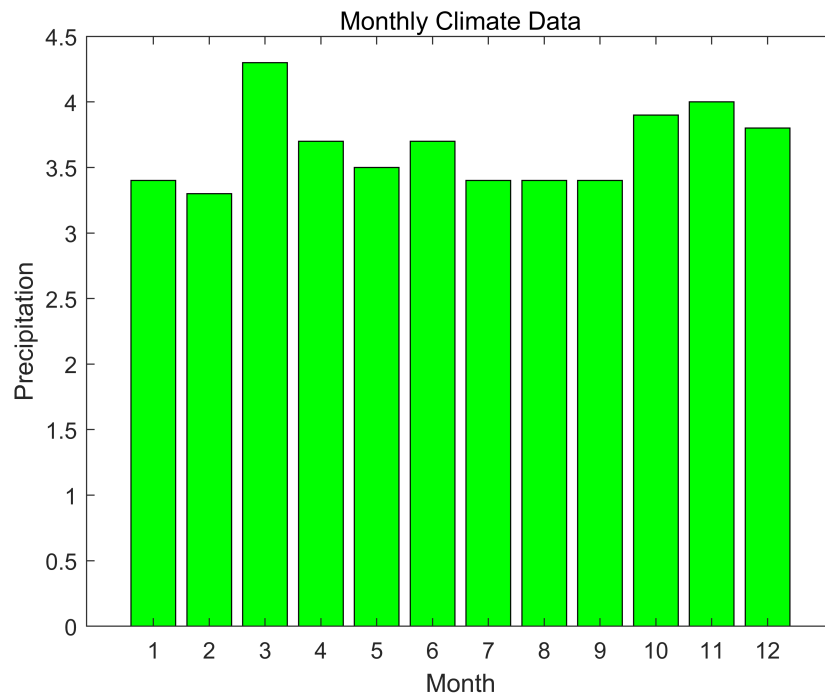
hold on
plot(monthnum,low)
plot(monthnum,high)
ylabel('Temperature')
legend('Precipitation','Temperature','Low','High')
hold off
```



Combining Visualization Types With Two y-Axes

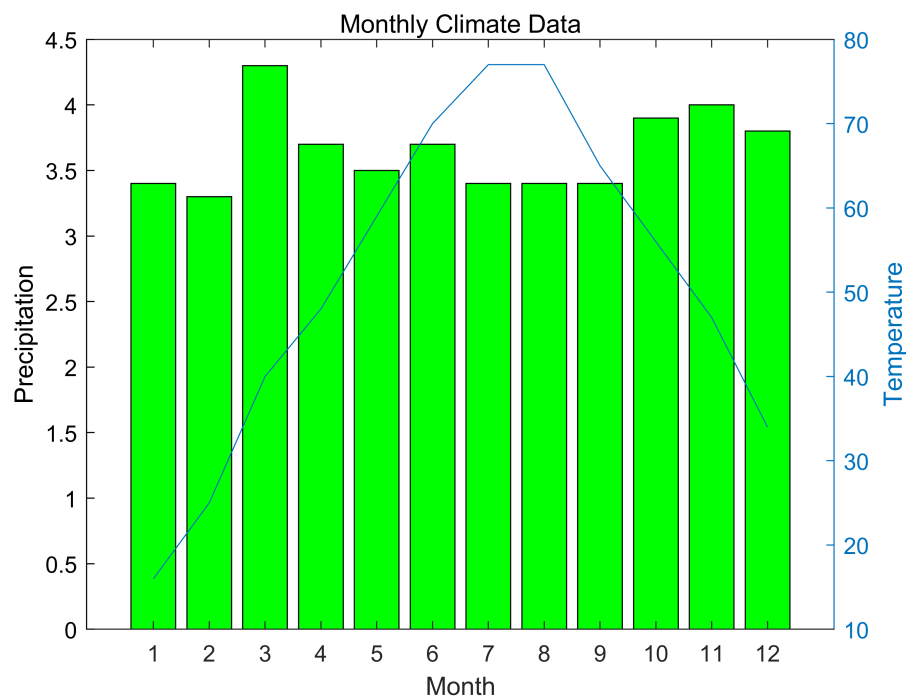
With `yyaxis`, you can use a different plot type on each y-axis. For example, create a bar chart of precipitation by month.

```
clf
bar(monthnum,precip,'FaceColor','g')
xlabel('Month')
ylabel('Precipitation')
title('Monthly Climate Data')
```



You can add a right y-axis to an existing chart with the `yyaxis right` command. The right y-axis uses the next color in the color order for the axes.

```
yyaxis right
plot(monthnum,temp)
ylabel('Temperature')
```



To adjust the limits of the left y-axis, use the `yyaxis left` command to activate the left side and then set the limits.

```
yyaxis left  
ylim([0 5])  
xlim([0 13])
```

