Temperature, Rainfall, and Biome Distribution Lab

Welcome to your climatogram lab. In this lab you will investigate the relationship between the amount of rainfall and the variance of temperature and the effect on the distribution of biomes globally.

Purpose:

This exercise provides practice in associating climate (as expressed in monthly averages of precipitation and temperature) with biomes. You will also make predictions about the distribution of a biome via altitude and latitude.

Large ecosystems or biomes can be described in terms of their climate, or long-term weather patterns. The climate of a biome is the result of the interaction of several abiotic factors. These factors include temperature, precipitation, and radiant energy from the sun, evaporation, wind and humidity. These abiotic factors serve to limit the diversity of plants and animals found within an ecosystem. The two most important of these limiting abiotic factors are temperature and precipitation. A climatogram is a graph with a double-Y axis that plots the average monthly temperature & precipitation in a biome.

Climatograms of a large ecosystem (or biome) show variation in only two factors- temperature and precipitation. Although there are other factors that affect the climate, a climatogram does give a rough idea of the climate in a particular biome.

Procedure:

Part I: Building a library of examples

Graph the climate figures for precipitation and temperature for the four locales in Group 1 onto your blank climatogram sheets (found at the end of the packet). Be sure that you label each location and it's biome name. Also be extremely careful as to how you record the information. All temperature readings are measured on the right side of the climatogram! All precipitation measurements are on the left side of the climatogram! Be sure to draw a line graph for temperature data and a bar graph for precipitation data. Calculate the average temperature and average precipitation for each data set. Record these values on your climatogram.

Group 1

Cuiaba, Brazil: Tropical Deciduous Forest

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	24.9	21.1	21.1	10.2	5.3	0.8	0.5	2.8	5.1	11.4	15	20.6
Temperature (in C°):	27.2	27.2	27.2	26.6	25.6	23.9	24.4	25.6	27.8	27.8	27.8	27.2

Average Rainfall in cm: _____

Average Temperature in Celsius: _____

Santa Monica, California: Chaparral

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	8.9	7.6	7.4	1.3	1.3	0	0	0	0.3	1.5	3.5	5.8
Temperature (in C°):	11.7	11.7	12.8	14.4	15.6	17.2	18.9	18.3	18.3	16.7	14.4	12.8

Average Rainfall in cm: _____

Average Temperature in Celsius: _____

Moshi,Tanganyika: Tropical Grassland

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	3.6	6.1	9.2	40.1	30.2	5.1	5.1	2.5	2	3	8.1	6.4
Temperature (in C°):	23.3	23.2	22.2	21.1	19.8	18.4	17.9	18.4	19.8	21.4	22	22.4

Average Rainfall in cm: _____

Average Temperature in Celsius: _____

Aden, Aden: Tropical Desert

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	0.8	0.5	1.3	0.45	0.3	0.3	0	0.3	0.3	0.3	0.3	0.3
Temperature (in C°):	24.6	25.1	26.4	28.5	30.6	31.9	31.1	30.3	31.1	28.8	26.5	25.1

Average Rainfall in cm: _____
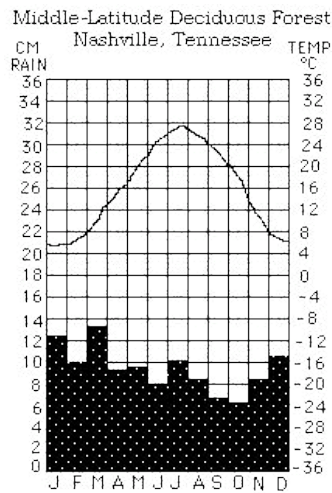
Average Temperature in Celsius: _____

Chart 1 (top-left)

Location: Biome Type:

PRECIPITATION cm (scale): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

TEMPERATURE °C (scale): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

Months (x-axis): J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C (round to the tenth 0.1)

Total Annual Precipitation: _____ cm (round to the tenth 0.1)

Chart 2 (top-right)

Location: Biome Type:

PRECIPITATION cm (scale): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

TEMPERATURE °C (scale): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

Months (x-axis): J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C (round to the tenth 0.1)

Total Annual Precipitation: _____ cm (round to the tenth 0.1)

Chart 3 (bottom-left)

Location: Biome Type:

PRECIPITATION cm (scale): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

TEMPERATURE °C (scale): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

Months (x-axis): J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C (round to the tenth 0.1)

Total Annual Precipitation: _____ cm (round to the tenth 0.1)

Chart 4 (bottom-right)

Location: Biome Type:

PRECIPITATION cm (scale): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

TEMPERATURE °C (scale): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

Months (x-axis): J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C (round to the tenth 0.1)

Total Annual Precipitation: _____ cm (round to the tenth 0.1)

Combined with the six climatograms given below as examples (see below), you now have ten climatograms representing ten different biomes found worldwide.


TUNDRA
Barrow, Alaska

Taiga
Anchorage, Alaska

Middle-Latitude Deciduous Forest
Nashville, Tennessee

Tropical Rain Forest
Manokwari, New Guinea

Middle-Latitude Grassland
Lawrence, Kansas

Middle-Latitude Desert
Reno, Nevada
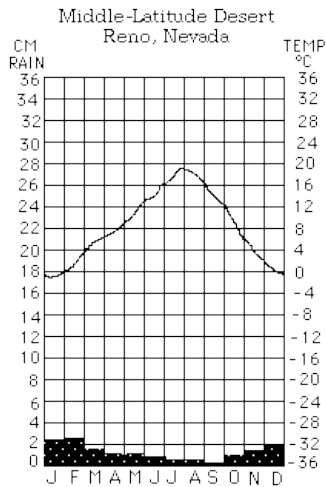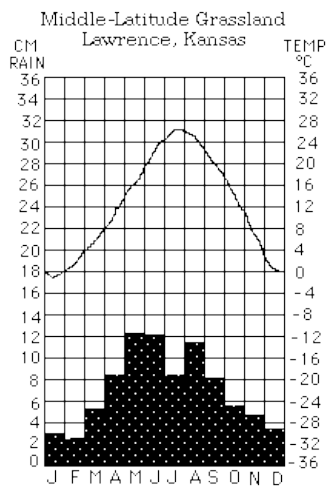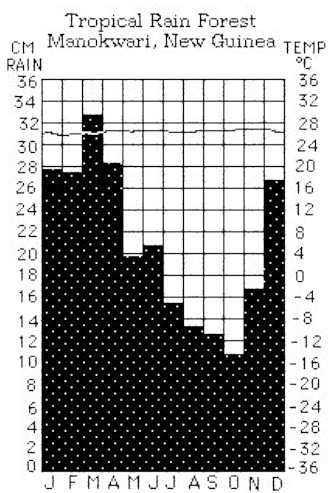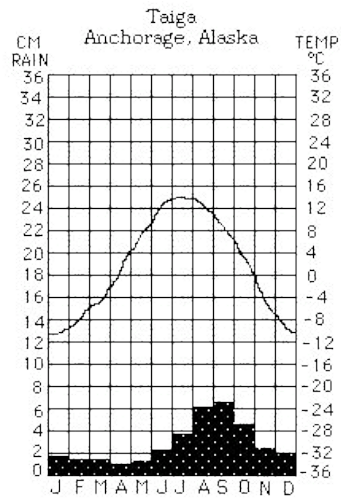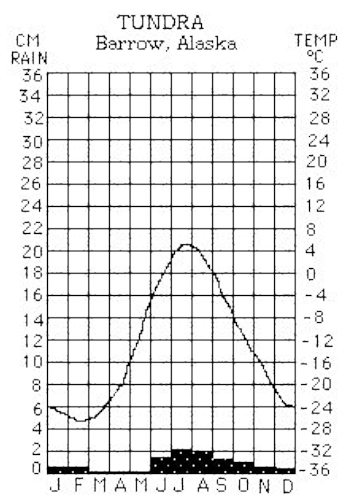
Part II: San Francisco

Now graph the information for San Francisco.

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	4.5	2.8	2.6	1.5	0.3	0.1	0	0.1	0.2	1.1	2.5	3.5
Temperature (in C°):	13.0	15.0	16.0	17.0	17.0	19.0	18.0	18.0	21.0	20.0	17.0	14.0

Average Rainfall in cm: _____

Average Temperature in Celsius: _____
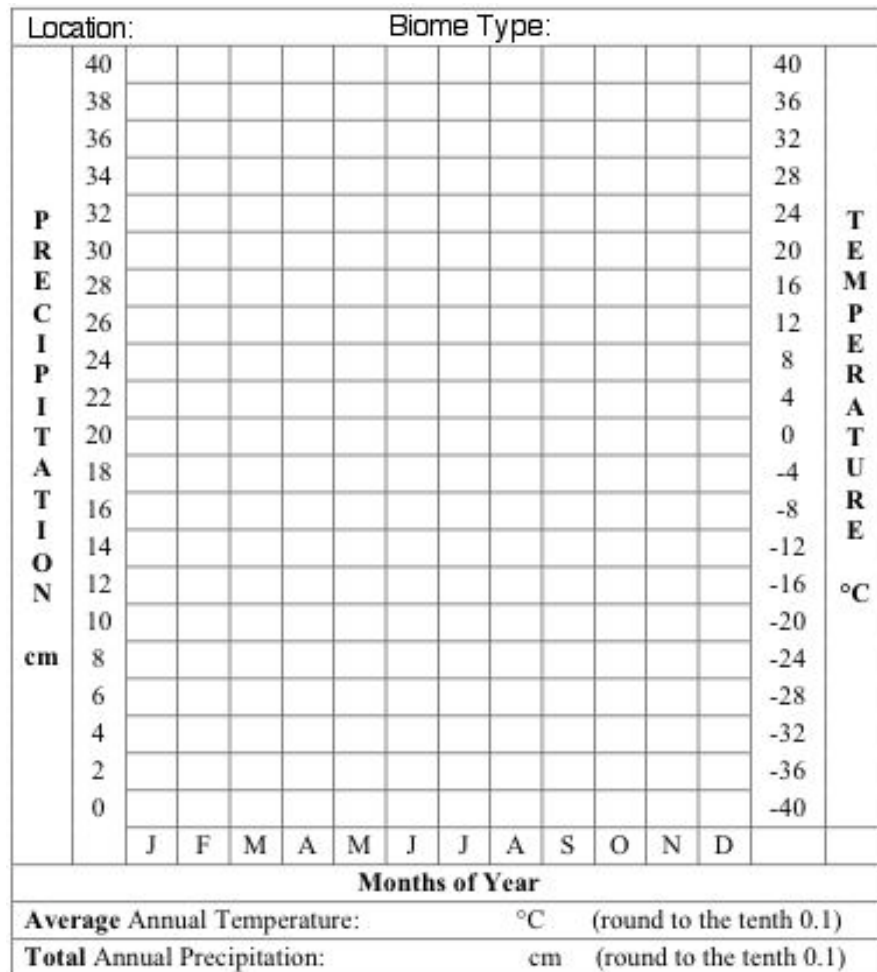
Compare the climatogram for San Francisco with the ten known Biomes from Part I.

Answer the following questions about San Francisco

1) What biome is San Francisco found in? Consult your textbook.

2) Which of the known biome climatograms closely resembles San Francisco?

       a. In what ways were they similar?

       b. In what ways were they different?

       c. Would you consider them to truly be the same biome? Explain?

       d. During the thirty-year period used for the figures in the San Francisco climatogram there were four drought periods. How would this effect the appearance of the climatogram?

Part III   Now graph the data for the Unknown biomes in Group 2

UNKNOWN A

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	8.1	7.6	8.9	8.4	9.2	9.9	11.2	10.2	7.9	7.9	6.4	7.9
Temperature (in C°):	1.1	1.7	6.1	12.2	17.8	22.2	25	23.3	20	13.9	7.8	2.2

UNKNOWN B

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	9.1	8.9	8.6	6.6	5.1	2	0.5	0.5	3.6	8.4	10.9	10.4
Temperature (in C°):	10.6	11.1	12.2	14.4	15.6	19.4	21.1	21.7	20	16.7	13.9	11.1

UNKNOWN C

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	25.8	24.9	31	16.5	25.4	18.8	16.8	11.7	22.1	18.3	21.3	29.2
Temperature (in C°):	25.6	25.6	24.4	25	24.4	23.3	23.3	24.4	24.4	25	25.6	25.6

UNKNOWN D

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	1	1.3	1	0.3	0	0	0.3	1.3	0.5	0.5	0.8	1
Temperature (in C°):	12.8	15	18.3	21.1	25	29.4	32.8	32.2	28.9	22.2	16.1	13.3

UNKNOWN E

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	2.3	1.8	2.8	2.8	3.2	5.8	5.3	3	3.6	2.8	4.1	3.3
Temperature (in C°):	-3.9	-2.2	1.7	8.9	15	20	22.8	21.7	16.7	11.1	5	-0.6

UNKNOWN F

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	0	0	1.5	0.5	8.9	14.7	12.2	8.1	2	1	0.3	0.8
Temperature (in C°):	19.4	18.9	18.3	16.1	15	13.3	12.8	13.3	14.4	15	16.7	17.8

UNKNOWN G

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	1	1.3	1.8	1.5	1.5	1.3	2.3	2.8	2.8	2.8	2.8	1.3
Temperature (in C°):	-22.2	-22.8	-21.1	-14.4	-0.39	1.7	5	5	1.1	-3.9	-10	-17.2

UNKNOWN H

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	3.6	4.1	4.6	6.9	8.1	6.9	6.4	6.6	8.9	5.1	5.6	4.6
Temperature (in C°):	11.7	12.8	17.2	20.6	23.9	27.2	28.3	28.3	26.1	21.1	16.1	12.2

UNKNOWN I

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	5.1	5.6	6.6	5.6	2.8	0.9	2.5	4.1	5.8	5.8	5.1	5.3
Temperature (in C°):	23.3	22.2	19.4	15.6	11.7	8.3	8.3	9.4	12.2	15.1	18.9	21.7

UNKNOWN J

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	0.3	0.5	1.5	3.6	8.6	9.2	9.4	11.4	10.9	5.3	0.8	0.3
Temperature (in C°):	17.2	18.9	21.1	22.8	23.3	22.2	21.1	21.1	20.6	19.4	18.9	17.2

UNKNOWN K

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	3.3	2.3	2.8	2.5	4.6	5.6	6.1	8.4	7.4	4.6	2.8	2.8
Temperature (in C°):	-20	-18.9	-12.2	-2.2	5.6	12.2	16.1	15	10.6	3.9	-5.6	-15

UNKNOWN L

	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (in cm):	1.5	1.3	1.3	1	1.5	0.8	0.3	0.5	0.8	1	0.8	1.5
Temperature (in C°):	-0.6	2.2	5	10	13.3	18.3	23.3	22.2	16.1	10.6	4.4	0

Once graphed, try to distinguish what biome each is. Be sure to include in the heading of each climatogram the unknown letter and your choice of biome, matched from above.

Questions for the Examination of the known biomes:

1. How are the Tundra and Desert similar? Different?

       a. Similar-
       b. Different-

2. How are the Tropical Rain and Tropical Deciduous Forests similar? Different?

       a. Similar-
       b. Different-

3. Lawrence, Kansas and Nashville, Tennessee occupy similar latitudes. Why is one found in grassland and the other in a forest biome?

4. Considering that the information in your climatograms is presented on a monthly basis. How would you determine which biomes are located in the southern hemisphere?

5. Which biome has the:

       a. Most rainfall-

       b. Least rainfall-

       c. The highest average temperature-

       d. The lowest average temperature-

       e. Most consistent year round temperature-

       f. Most variable year round temperature-

Top Left

Location: Biome Type:

PRECIPITATION cm (left axis): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

TEMPERATURE °C (right axis): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

Months: J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C   (round to the tenth 0.1)

Total Annual Precipitation: _____ cm   (round to the tenth 0.1)

Top Right

Location: Biome Type:

PRECIPITATION cm (left axis): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

TEMPERATURE °C (right axis): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

Months: J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C   (round to the tenth 0.1)

Total Annual Precipitation: _____ cm   (round to the tenth 0.1)

Bottom Left

Location: Biome Type:

PRECIPITATION cm (left axis): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

TEMPERATURE °C (right axis): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

Months: J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C   (round to the tenth 0.1)

Total Annual Precipitation: _____ cm   (round to the tenth 0.1)

Bottom Right

Location: Biome Type:

PRECIPITATION cm (left axis): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

TEMPERATURE °C (right axis): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

Months: J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C   (round to the tenth 0.1)

Total Annual Precipitation: _____ cm   (round to the tenth 0.1)

Top Left

Location: Biome Type:

P R E C I P I T A T I O N   cm (left axis): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

T E M P E R A T U R E   °C (right axis): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Top Right

Location: Biome Type:

P R E C I P I T A T I O N   cm (left axis): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

T E M P E R A T U R E   °C (right axis): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Bottom Left

Location: Biome Type:

P R E C I P I T A T I O N   cm (left axis): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

T E M P E R A T U R E   °C (right axis): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Bottom Right

Location: Biome Type:

P R E C I P I T A T I O N   cm (left axis): 40, 38, 36, 34, 32, 30, 28, 26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0

T E M P E R A T U R E   °C (right axis): 40, 36, 32, 28, 24, 20, 16, 12, 8, 4, 0, -4, -8, -12, -16, -20, -24, -28, -32, -36, -40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Chart 1 (top left)

Location: Biome Type:

PRECIPITATION cm		TEMPERATURE °C
40		40
38		36
36		32
34		28
32		24
30		20
28		16
26		12
24		8
22		4
20		0
18		-4
16		-8
14		-12
12		-16
10		-20
8		-24
6		-28
4		-32
2		-36
0		-40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Chart 2 (top right)

Location: Biome Type:

PRECIPITATION cm		TEMPERATURE °C
40		40
38		36
36		32
34		28
32		24
30		20
28		16
26		12
24		8
22		4
20		0
18		-4
16		-8
14		-12
12		-16
10		-20
8		-24
6		-28
4		-32
2		-36
0		-40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Chart 3 (bottom left)

Location: Biome Type:

PRECIPITATION cm		TEMPERATURE °C
40		40
38		36
36		32
34		28
32		24
30		20
28		16
26		12
24		8
22		4
20		0
18		-4
16		-8
14		-12
12		-16
10		-20
8		-24
6		-28
4		-32
2		-36
0		-40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Chart 4 (bottom right)

Location: Biome Type:

PRECIPITATION cm		TEMPERATURE °C
40		40
38		36
36		32
34		28
32		24
30		20
28		16
26		12
24		8
22		4
20		0
18		-4
16		-8
14		-12
12		-16
10		-20
8		-24
6		-28
4		-32
2		-36
0		-40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Graph 1 (top left)

Location: Biome Type:

PRECIPITATION cm

| 40 |
| 38 |
| 36 |
| 34 |
| 32 |
| 30 |
| 28 |
| 26 |
| 24 |
| 22 |
| 20 |
| 18 |
| 16 |
| 14 |
| 12 |
| 10 |
| 8 |
| 6 |
| 4 |
| 2 |
| 0 |

TEMPERATURE °C

| 40 |
| 36 |
| 32 |
| 28 |
| 24 |
| 20 |
| 16 |
| 12 |
| 8 |
| 4 |
| 0 |
| -4 |
| -8 |
| -12 |
| -16 |
| -20 |
| -24 |
| -28 |
| -32 |
| -36 |
| -40 |

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C (round to the tenth 0.1)
Total Annual Precipitation: _____ cm (round to the tenth 0.1)

Graph 2 (top right)

Location: Biome Type:

PRECIPITATION cm

| 40 |
| 38 |
| 36 |
| 34 |
| 32 |
| 30 |
| 28 |
| 26 |
| 24 |
| 22 |
| 20 |
| 18 |
| 16 |
| 14 |
| 12 |
| 10 |
| 8 |
| 6 |
| 4 |
| 2 |
| 0 |

TEMPERATURE °C

| 40 |
| 36 |
| 32 |
| 28 |
| 24 |
| 20 |
| 16 |
| 12 |
| 8 |
| 4 |
| 0 |
| -4 |
| -8 |
| -12 |
| -16 |
| -20 |
| -24 |
| -28 |
| -32 |
| -36 |
| -40 |

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C (round to the tenth 0.1)
Total Annual Precipitation: _____ cm (round to the tenth 0.1)

Graph 3 (bottom left)

Location: Biome Type:

PRECIPITATION cm

| 40 |
| 38 |
| 36 |
| 34 |
| 32 |
| 30 |
| 28 |
| 26 |
| 24 |
| 22 |
| 20 |
| 18 |
| 16 |
| 14 |
| 12 |
| 10 |
| 8 |
| 6 |
| 4 |
| 2 |
| 0 |

TEMPERATURE °C

| 40 |
| 36 |
| 32 |
| 28 |
| 24 |
| 20 |
| 16 |
| 12 |
| 8 |
| 4 |
| 0 |
| -4 |
| -8 |
| -12 |
| -16 |
| -20 |
| -24 |
| -28 |
| -32 |
| -36 |
| -40 |

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C (round to the tenth 0.1)
Total Annual Precipitation: _____ cm (round to the tenth 0.1)

Graph 4 (bottom right)

Location: Biome Type:

PRECIPITATION cm

| 40 |
| 38 |
| 36 |
| 34 |
| 32 |
| 30 |
| 28 |
| 26 |
| 24 |
| 22 |
| 20 |
| 18 |
| 16 |
| 14 |
| 12 |
| 10 |
| 8 |
| 6 |
| 4 |
| 2 |
| 0 |

TEMPERATURE °C

| 40 |
| 36 |
| 32 |
| 28 |
| 24 |
| 20 |
| 16 |
| 12 |
| 8 |
| 4 |
| 0 |
| -4 |
| -8 |
| -12 |
| -16 |
| -20 |
| -24 |
| -28 |
| -32 |
| -36 |
| -40 |

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: _____ °C (round to the tenth 0.1)
Total Annual Precipitation: _____ cm (round to the tenth 0.1)

Top Left Graph

Location: Biome Type:

PRECIPITATION cm

40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0

TEMPERATURE °C

40 36 32 28 24 20 16 12 8 4 0 -4 -8 -12 -16 -20 -24 -28 -32 -36 -40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Top Right Graph

Location: Biome Type:

PRECIPITATION cm

40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0

TEMPERATURE °C

40 36 32 28 24 20 16 12 8 4 0 -4 -8 -12 -16 -20 -24 -28 -32 -36 -40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Bottom Left Graph

Location: Biome Type:

PRECIPITATION cm

40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0

TEMPERATURE °C

40 36 32 28 24 20 16 12 8 4 0 -4 -8 -12 -16 -20 -24 -28 -32 -36 -40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)

Bottom Right Graph

Location: Biome Type:

PRECIPITATION cm

40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0

TEMPERATURE °C

40 36 32 28 24 20 16 12 8 4 0 -4 -8 -12 -16 -20 -24 -28 -32 -36 -40

J F M A M J J A S O N D

Months of Year

Average Annual Temperature: °C   (round to the tenth 0.1)

Total Annual Precipitation: cm   (round to the tenth 0.1)