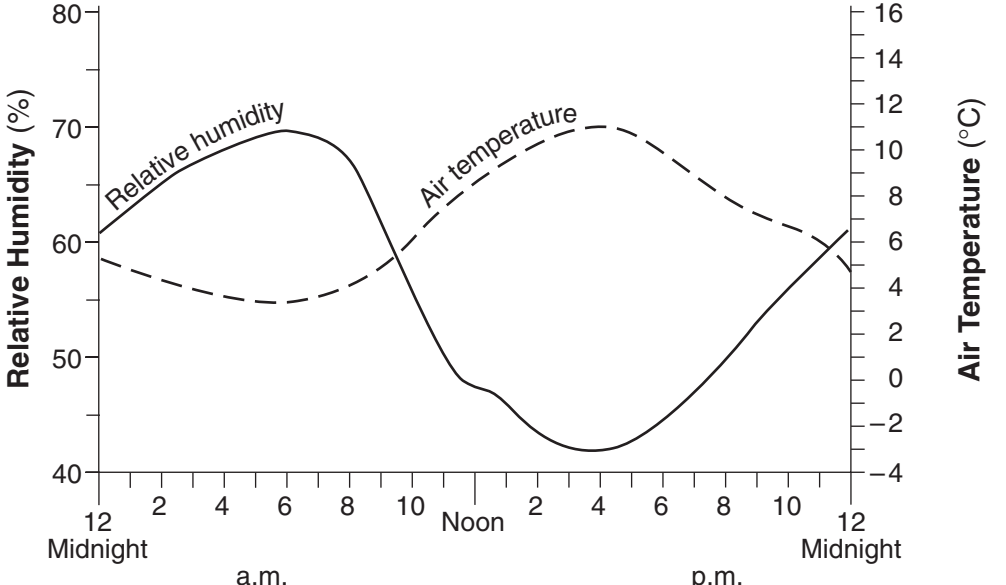
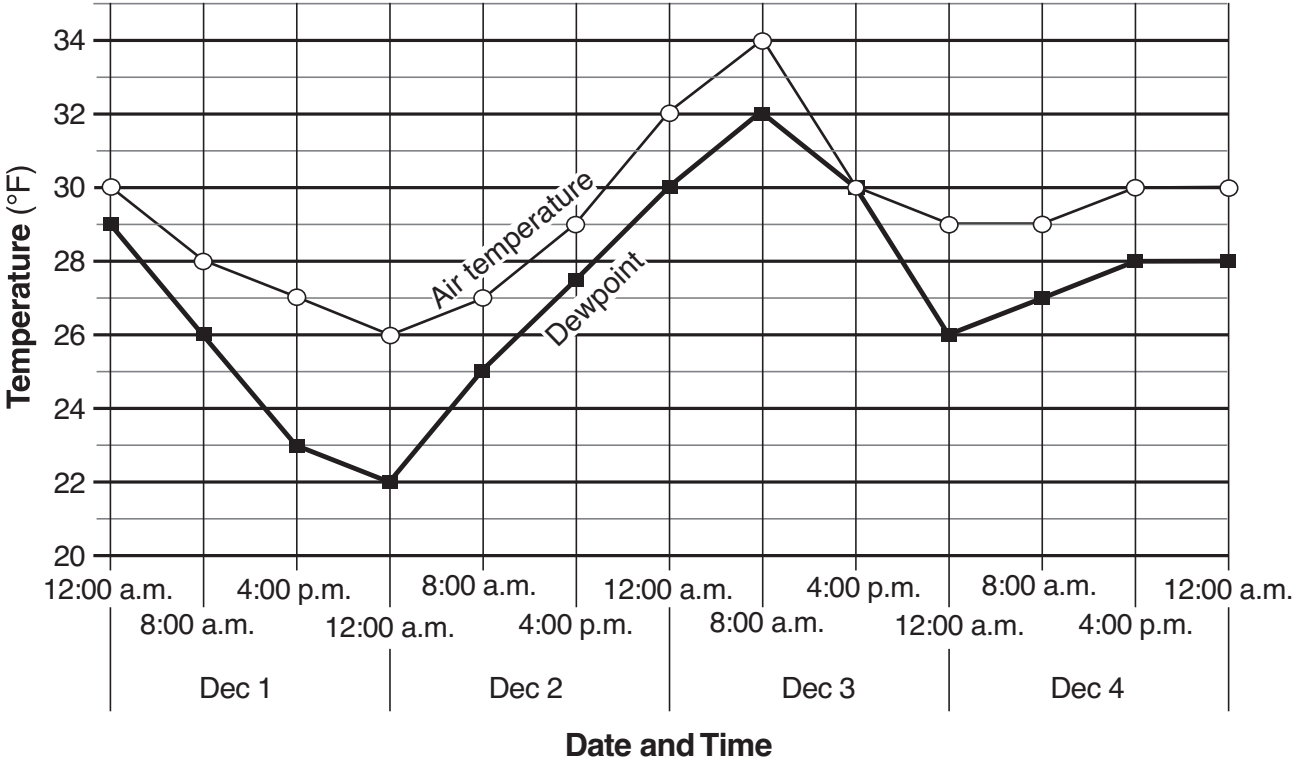
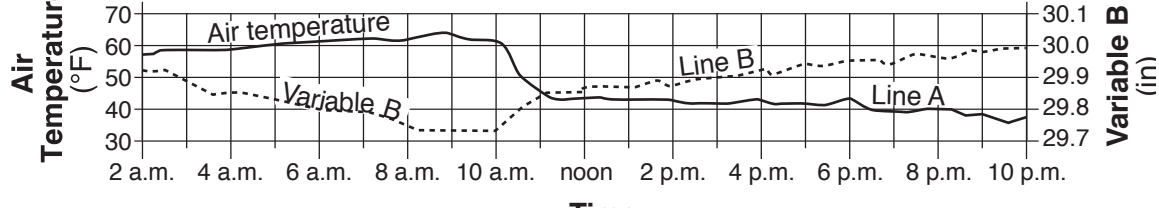
Air-Pressure Readings

Day	City A Air Pressure (mb)	City B Air Pressure (mb)
1	1004.0	1004.0
2	1000.1	1002.9
3	1000.2	1011.1
4	1010.4	1012.3


Relative Humidity (%)
80
70
60
50
40
Relative humidity
Air temperature
16
14
12
10
8
6
4
2
0
−2
−4
Air Temperature (°C)
12
Midnight
2
4
6
8
10
Noon
2
4
6
8
10
12
Midnight
a.m.
p.m.

Graph 1: Air Temperature and Dewpoint at Syracuse, New York



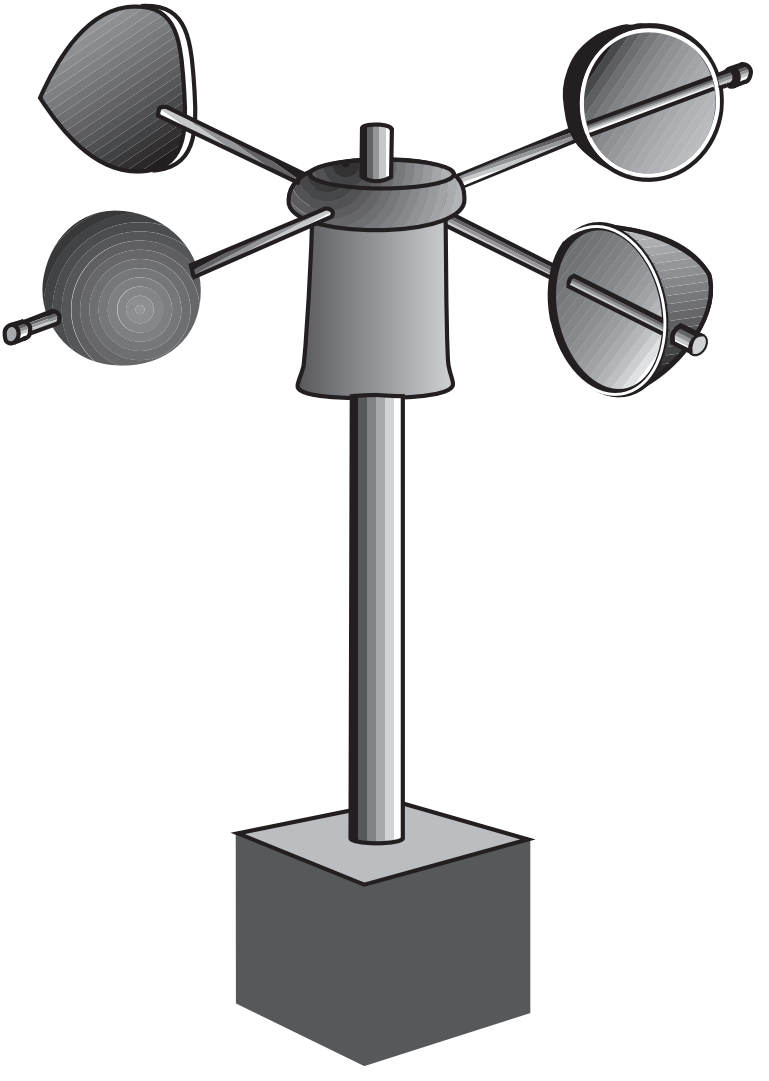

Air Temperature (°F)
70
60
50
40
30
Air temperature
Variable B
Line B
Line A
30.1
30.0
29.9
29.8
29.7
Variable B (in)
2 a.m.
4 a.m.
6 a.m.
8 a.m.
10 a.m.
noon
2 p.m.
4 p.m.
6 p.m.
8 p.m.
10 p.m.
Time

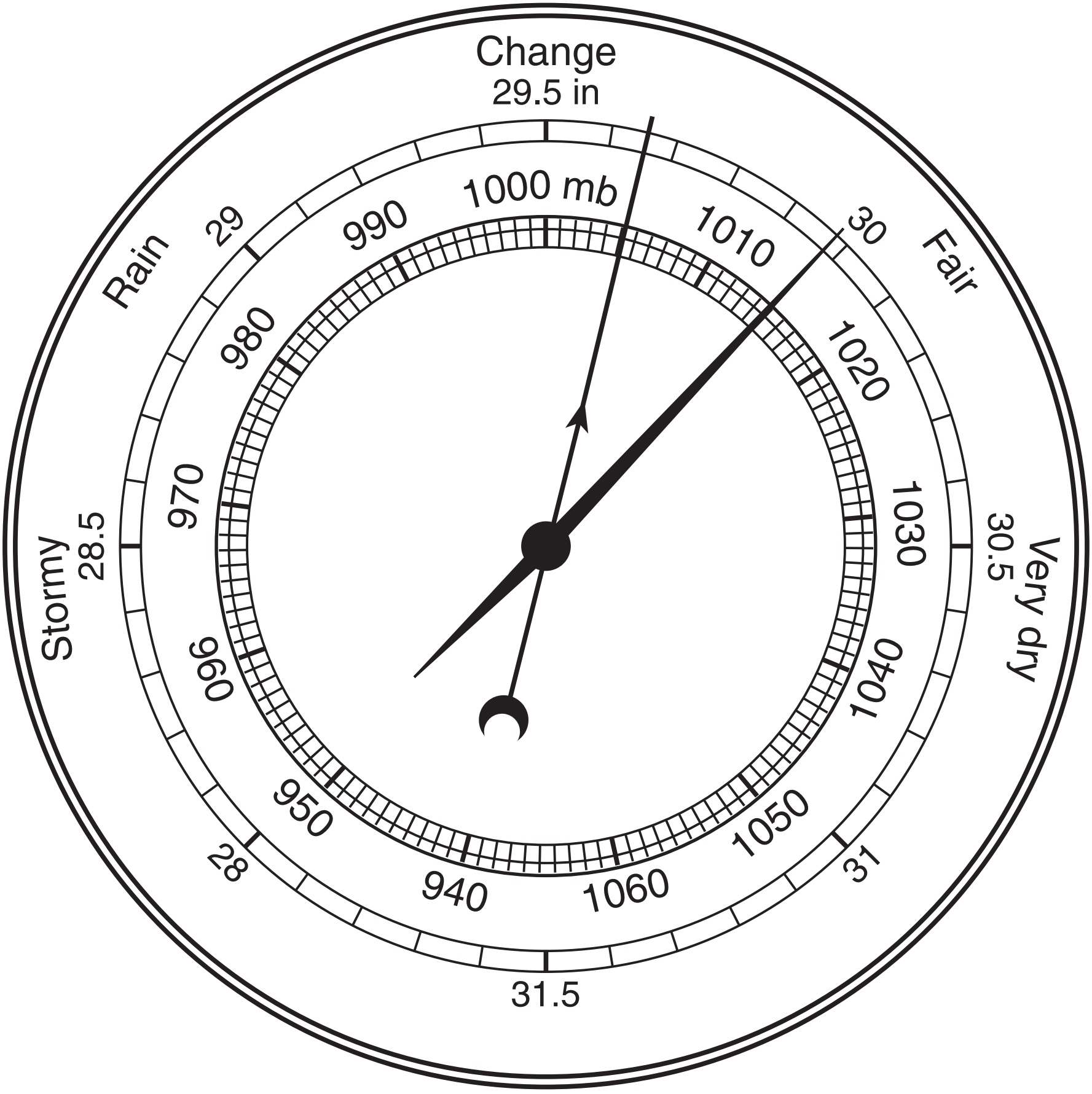
Amount of Water Vapor That Will Saturate 1 Cubic Meter of Air at Different Temperatures

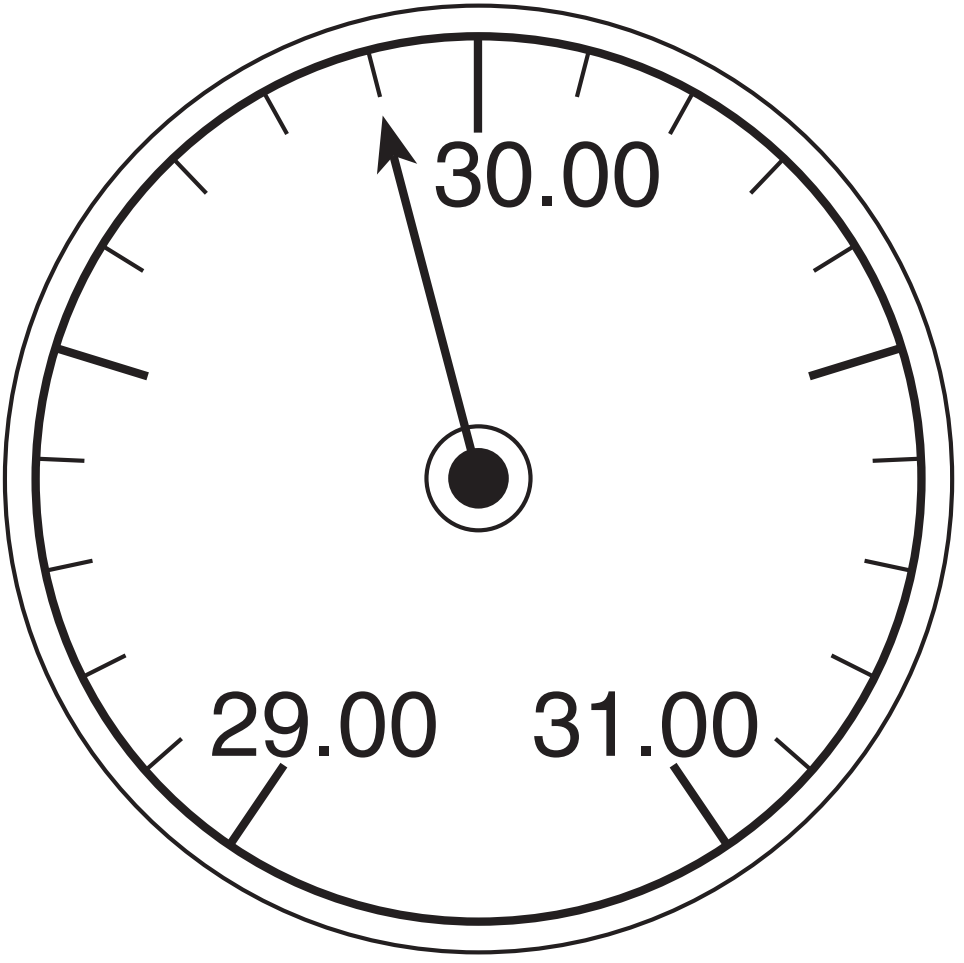
Air Temperature (°C)	**Water Vapor** (g/m^3)
–20	1
–10	2
0	5
10	9
20	17
30	29
40	50

Air temperature (dry-bulb temperature)	0°C
Relative humidity	81%
Present weather	snow

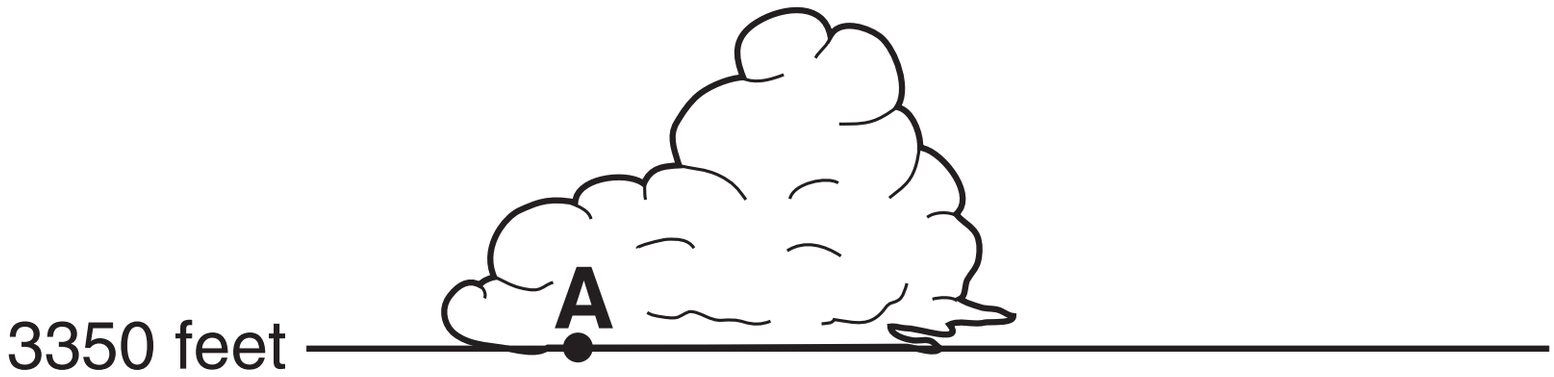
Altitude Above Sea Level (m)	**Air Temperature** (°C)	**Air Pressure** (mb)
300	16.0	973
600	16.5	937
900	15.5	904
1,200	13.0	871
1,500	12.0	842
1,800	10.0	809
2,100	7.5	778
2,400	5.0	750
2,700	2.5	721

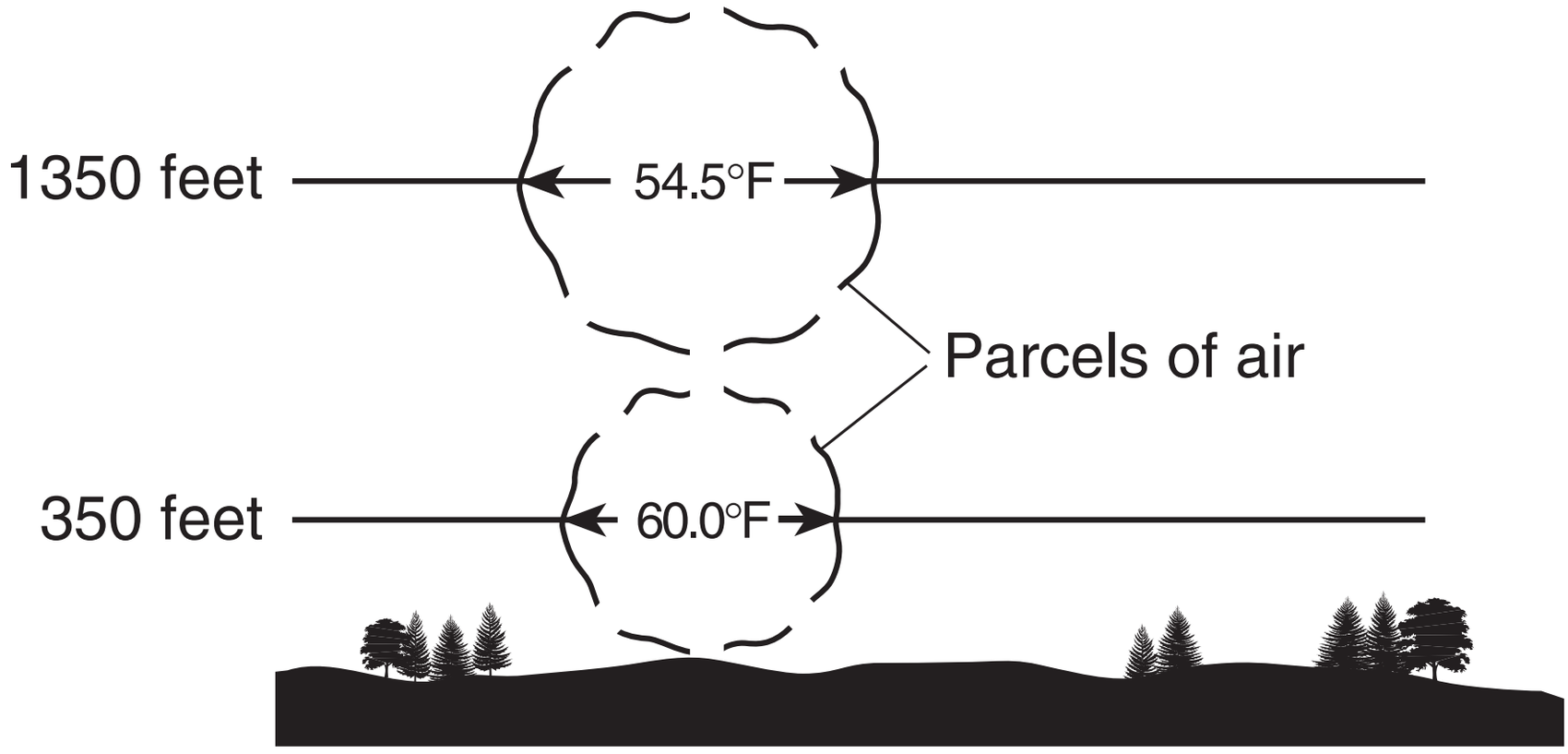


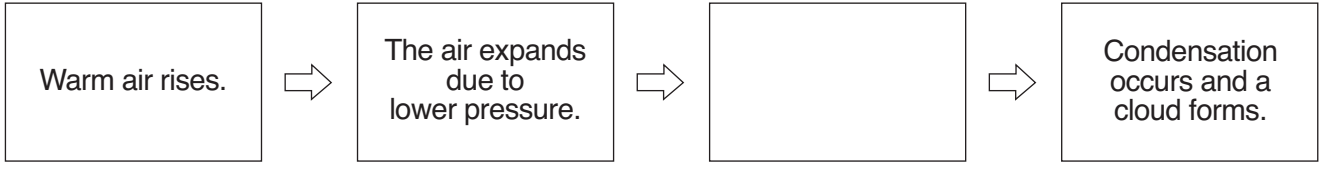

Change
29.5 in
1000 mb
990
1010
980
1020
970
1030
960
1040
950
1050
940
1060
Rain
29
30
Fair
Stormy
28.5
30.5
Very dry
28
31
31.5

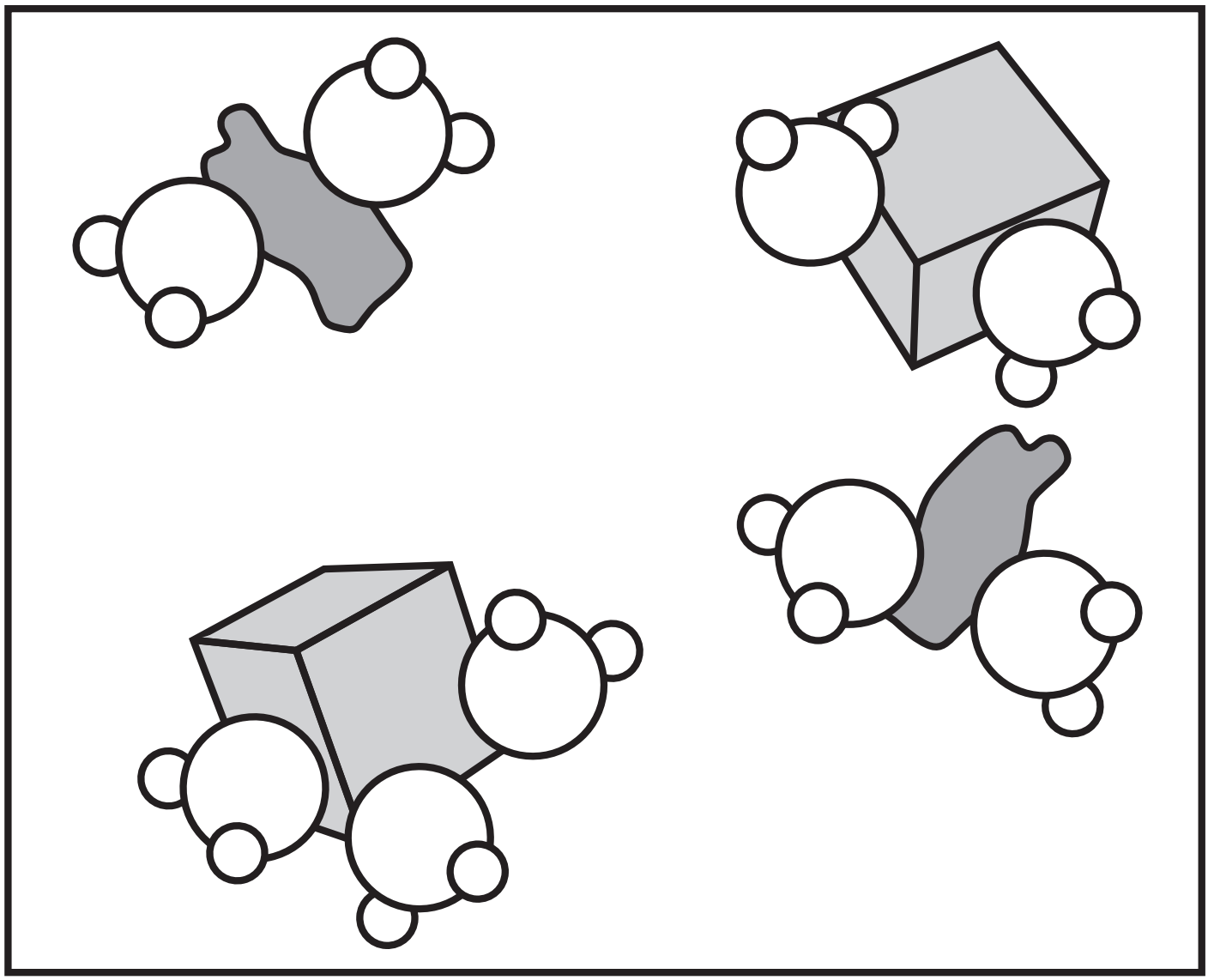

30.00
29.00
31.00

Cloud Formation






Warm air rises.
The air expands due to lower pressure.
Condensation occurs and a cloud forms.



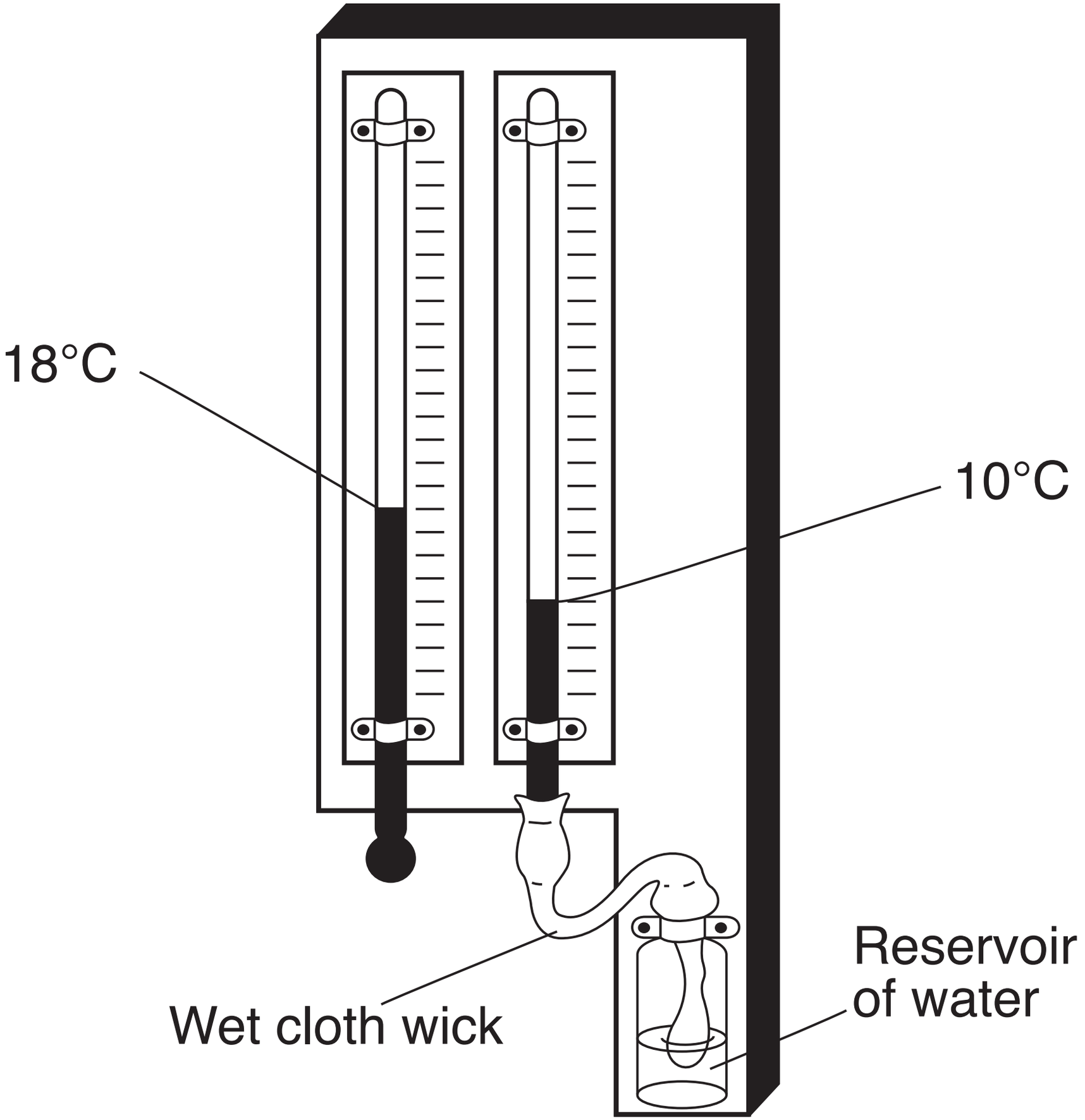
(Not drawn to scale)

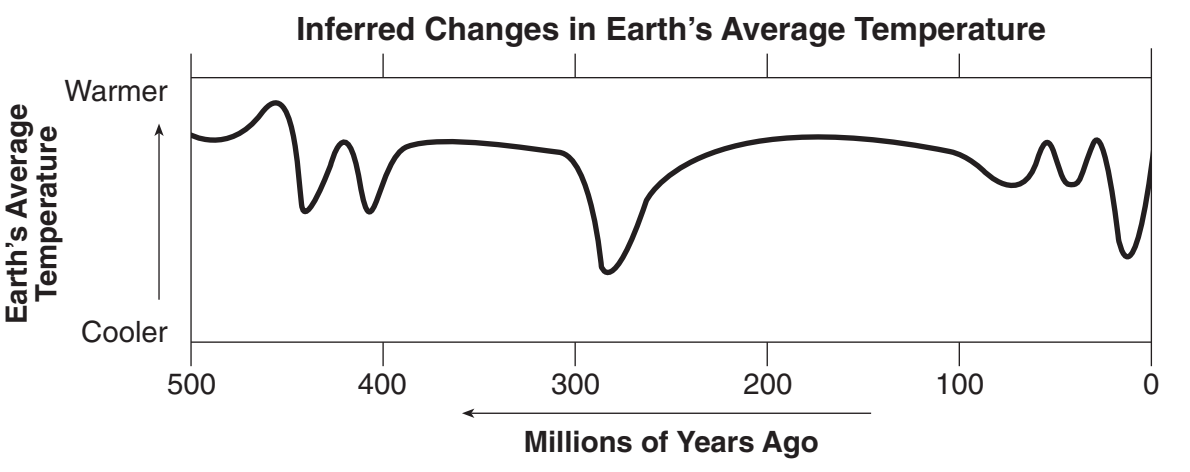
Key

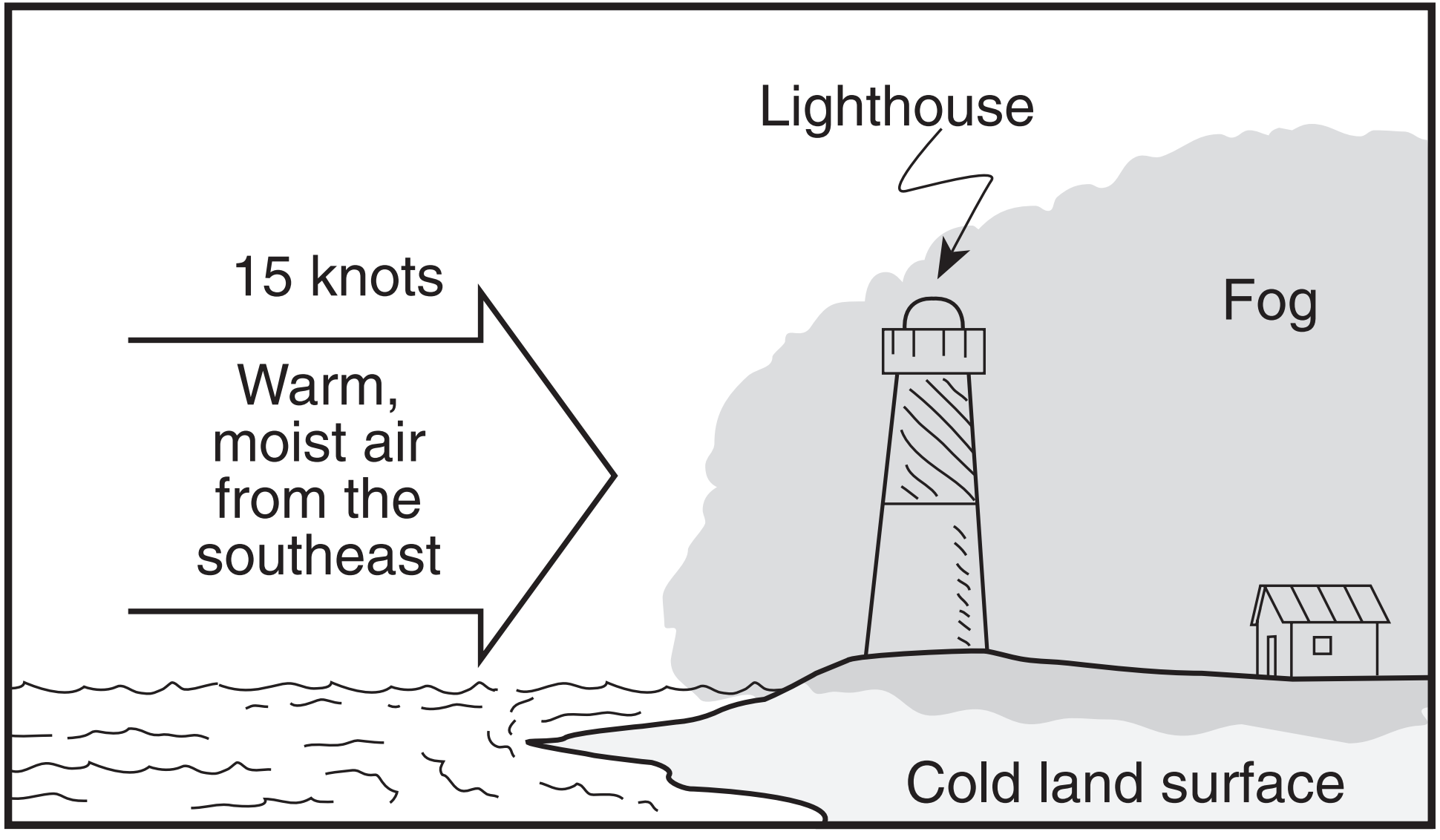
Water molecule

Salt

Dust


18°C
10°C
Wet cloth wick
Reservoir
of water

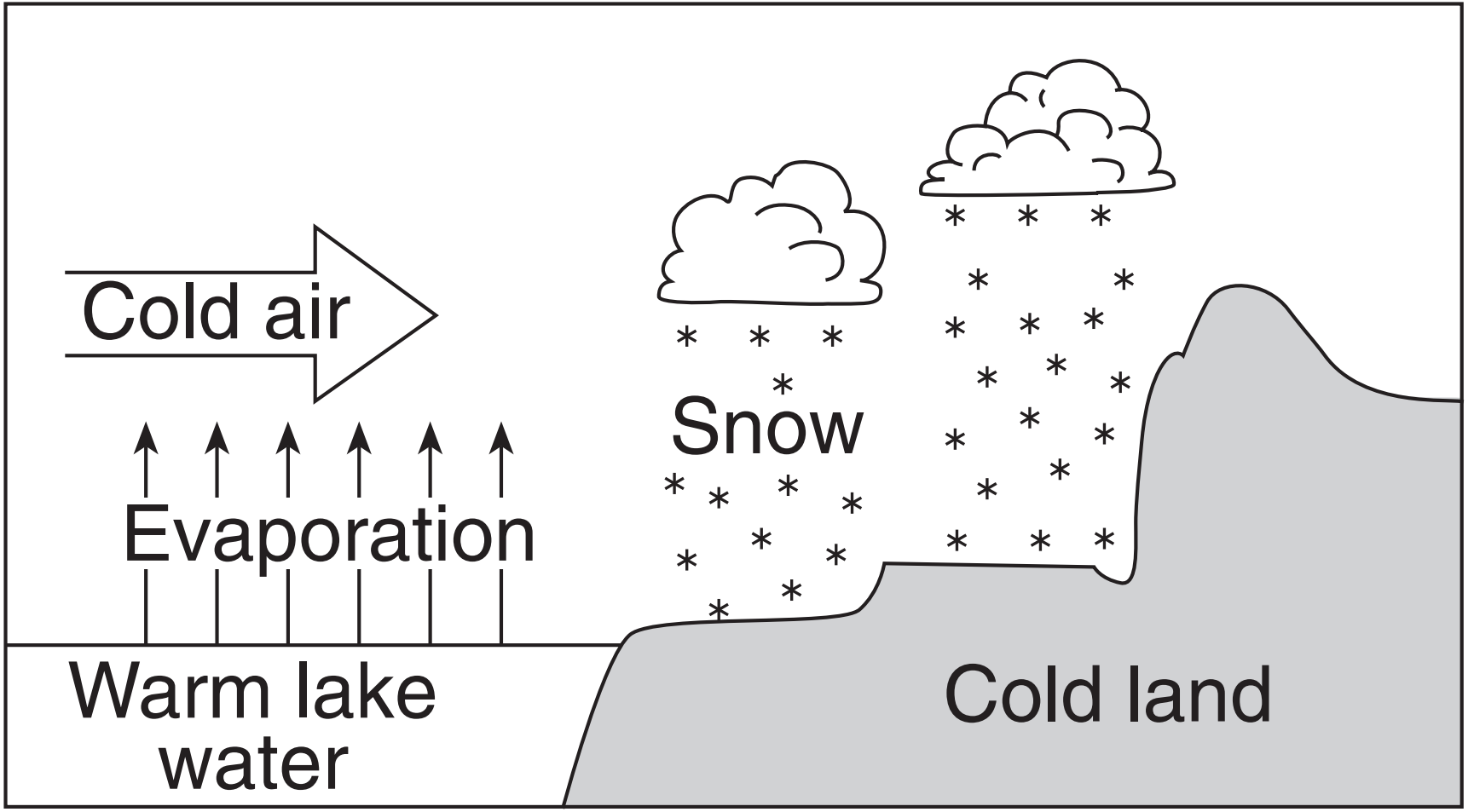

Inferred Changes in Earth's Average Temperature
Warmer
Cooler
Earth's Average Temperature
500
400
300
200
100
0
Millions of Years Ago

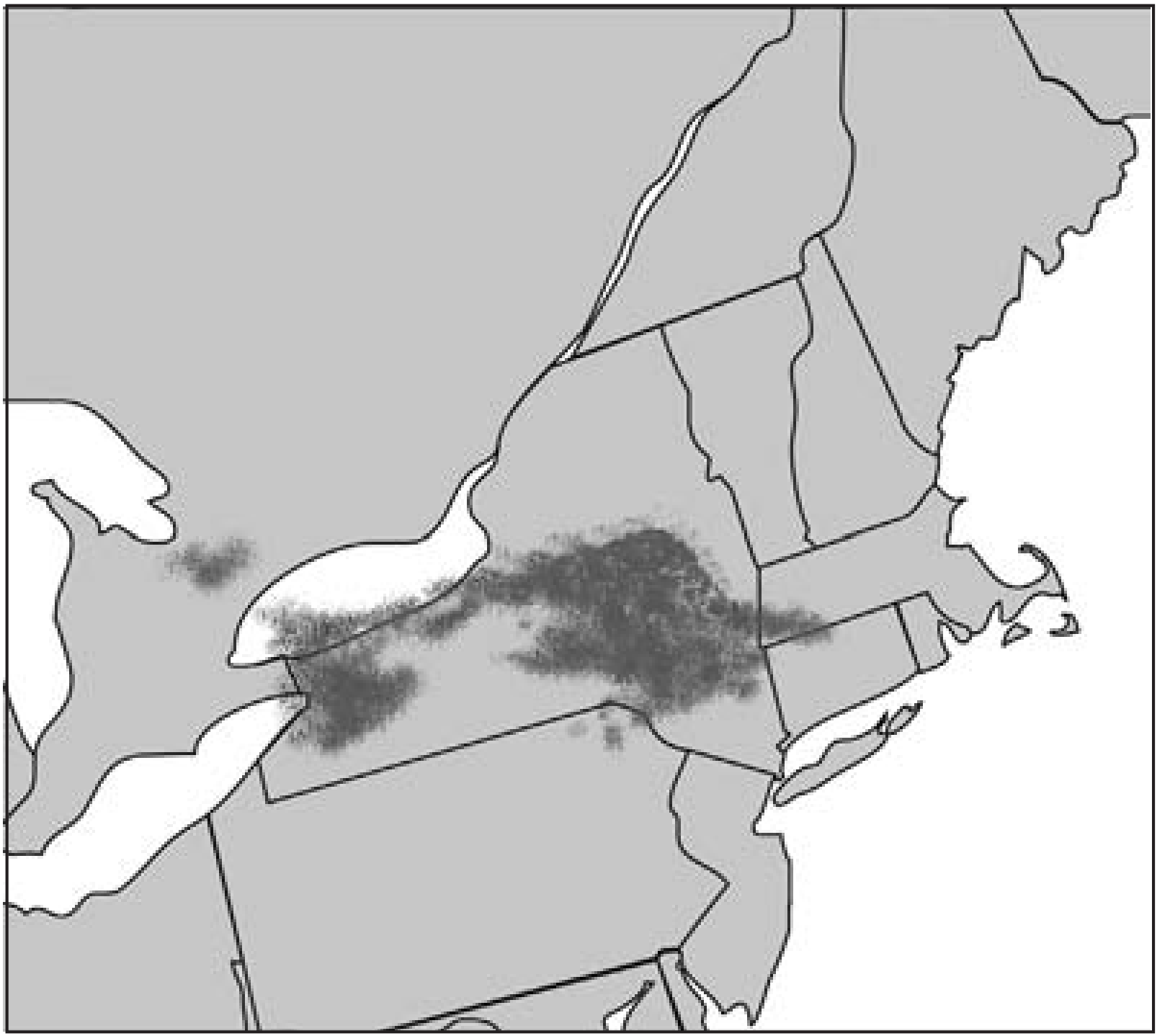

Lighthouse
15 knots
Warm,
moist air
from the
southeast
Fog
Cold land surface

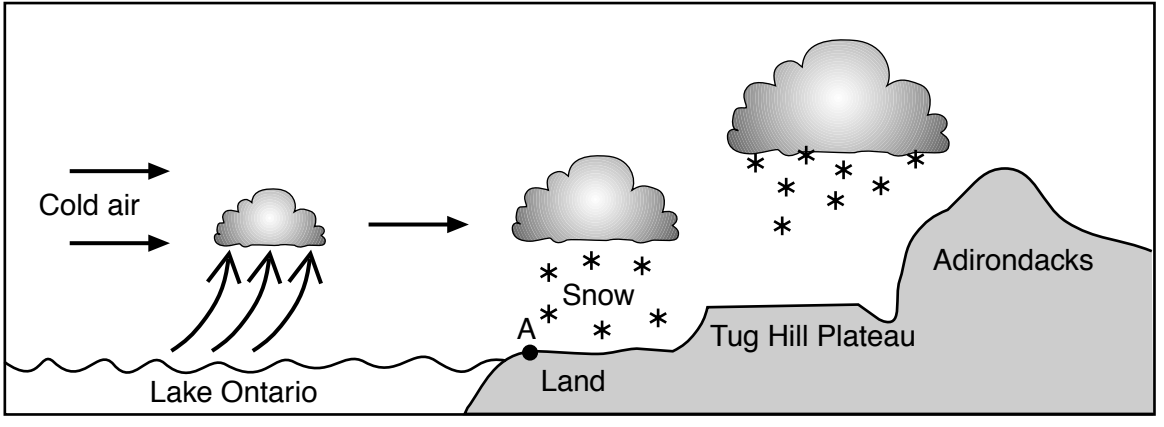
F-Scale Number	Wind Speed (mph)	Type of Damage Done
F–0	40–72	some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards
F–1	73–112	peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed
F–2	113–157	considerable damage; roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated
F–3	158–206	roof and some walls torn off well-constructed homes; trains overturned; most trees in forest uprooted
F–4	207–260	well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated
F–5	261–318	strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile-sized missiles fly through the air in excess of 100 meters; trees debarked; steel-reinforced concrete structures badly damaged

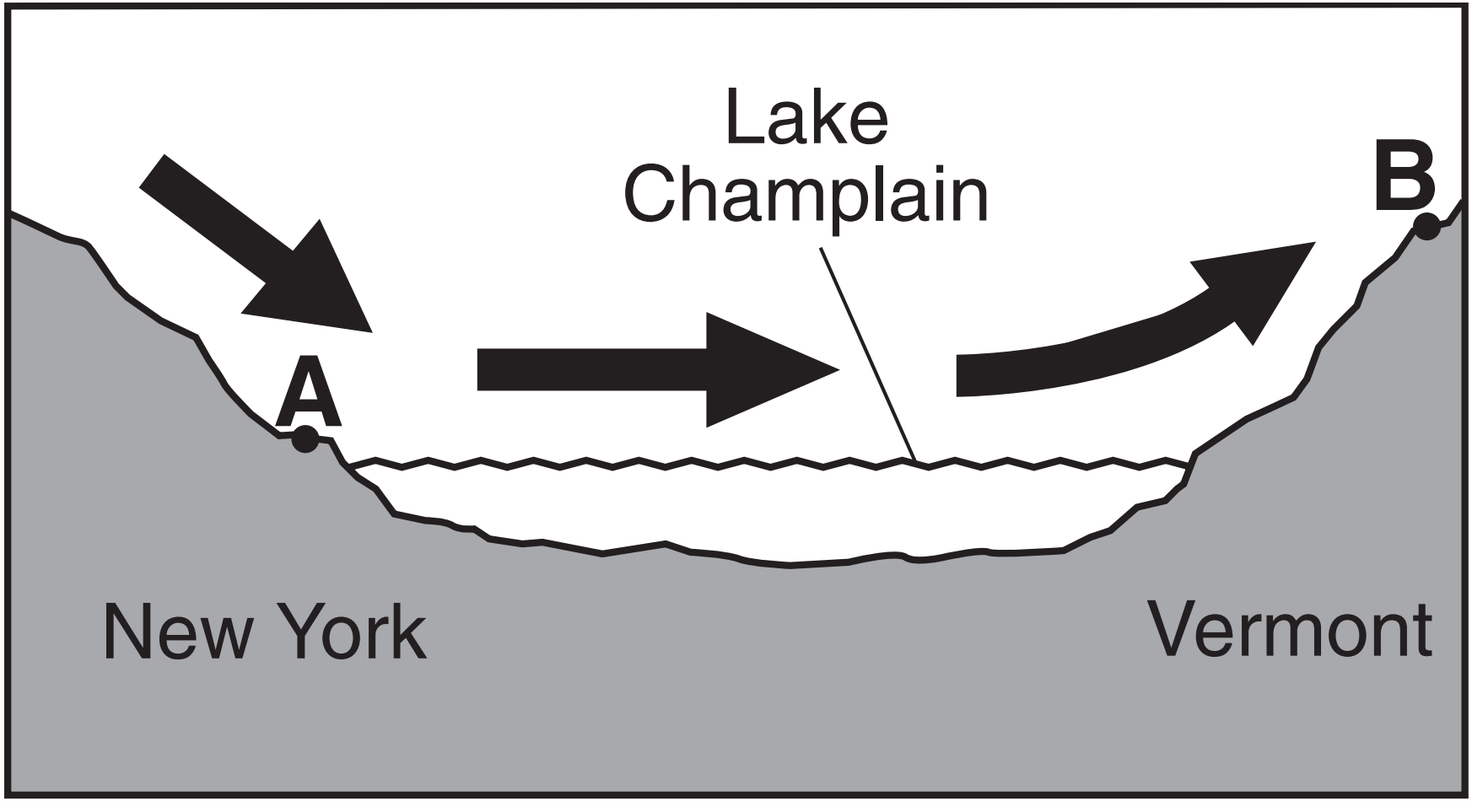
Data Table I

Latitude (°N)	**Longitude** (°W)	**Date**	**Wind Velocity** (knots)	**Air Pressure** (millibars)	**Storm Strength**
14	37	Aug. 24	30	1006	Tropical depression
16	44	Aug. 25	70	987	Category-1 hurricane
19	52	Aug. 26	90	970	Category-2 hurricane
21	59	Aug. 27	80	997	Category-1 hurricane
23	65	Aug. 28	80	988	Category-1 hurricane
25	70	Aug. 29	80	988	Category-1 hurricane
27	73	Aug. 30	65	988	Category-1 hurricane
30	74	Aug. 31	85	976	Category-2 hurricane
32	72	Sept. 01	85	968	Category-2 hurricane
37	64	Sept. 02	70	975	Category-1 hurricane
44	53	Sept. 03	65	955	Category-1 hurricane

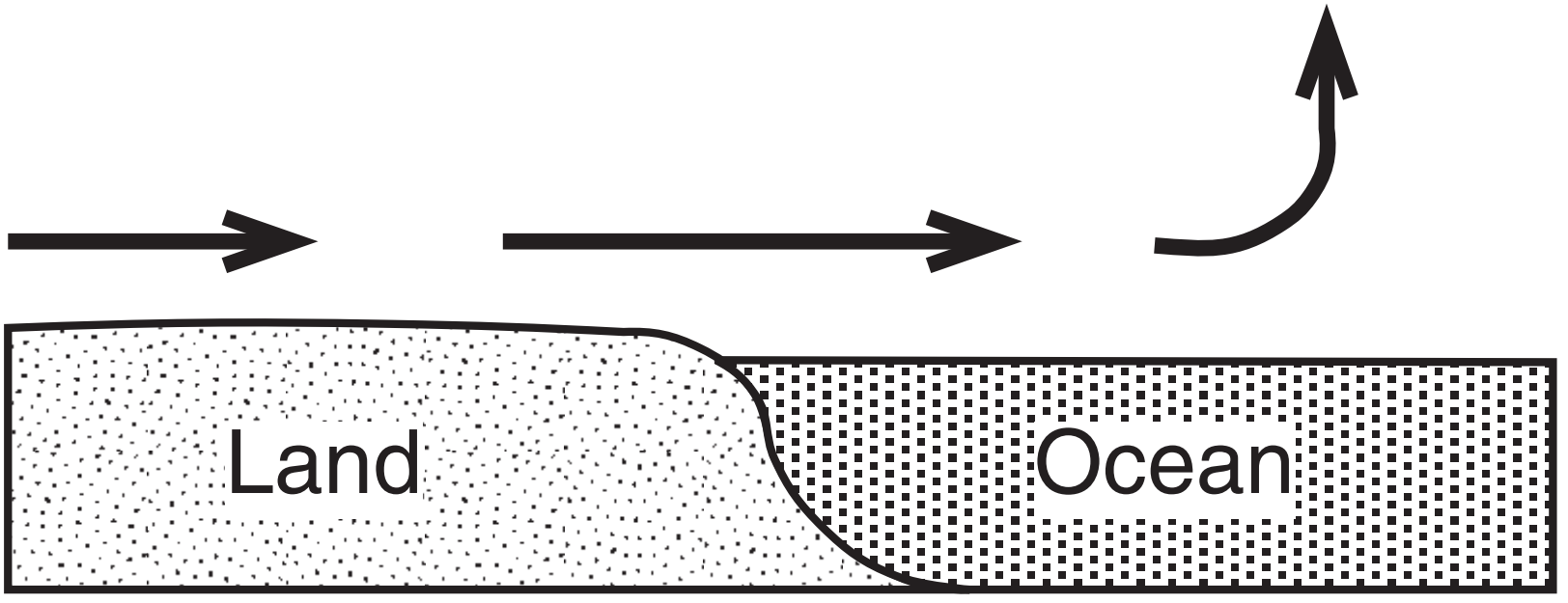

Cold air
Evaporation
Warm lake water
Snow
Cold land

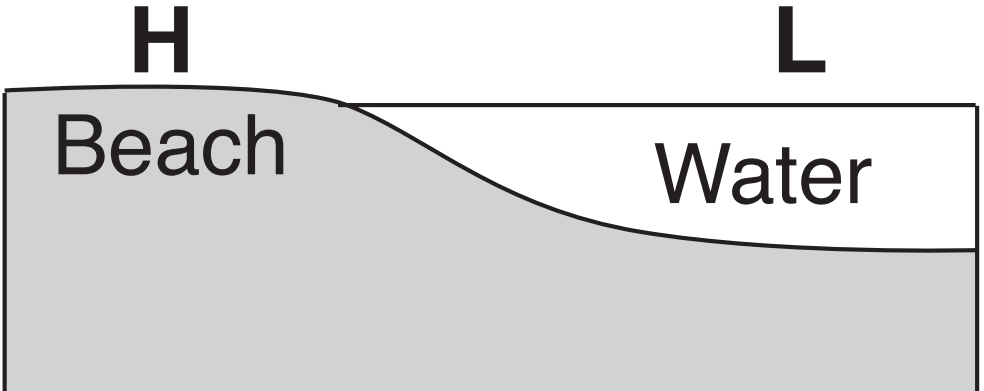


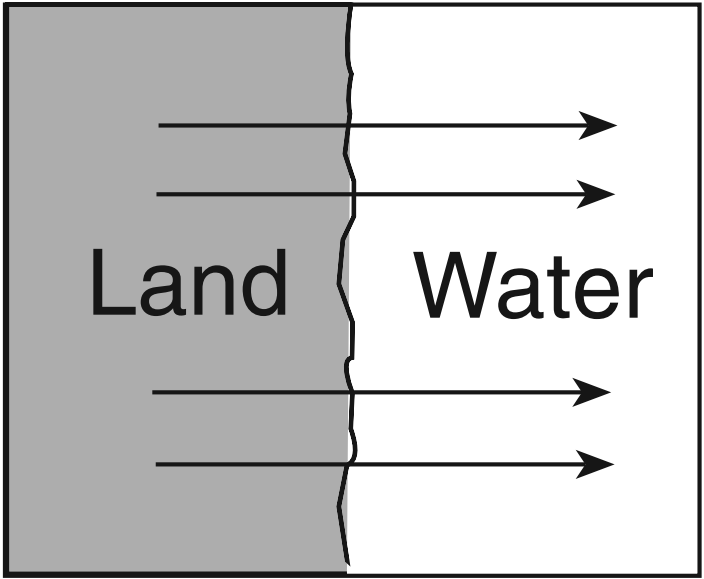

Cold air
Snow
A
Lake Ontario
Land
Tug Hill Plateau
Adirondacks



(Not drawn to scale)


Land
Ocean

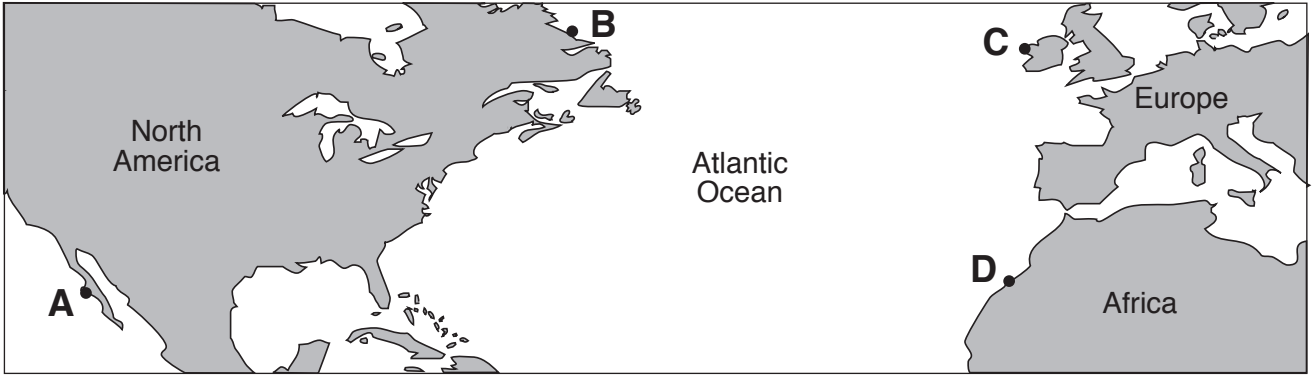

H
L
Beach
Water

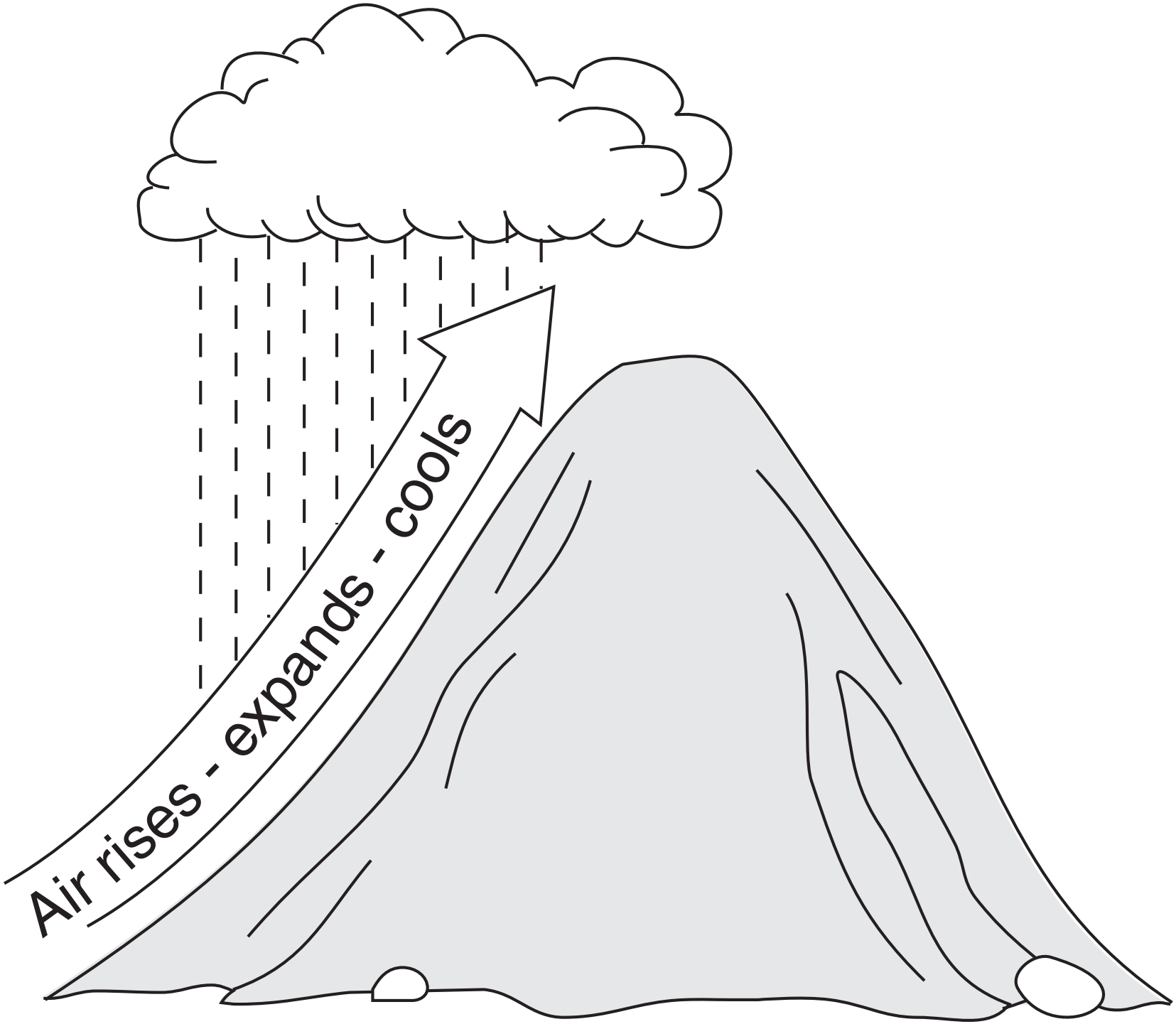

Land
Water

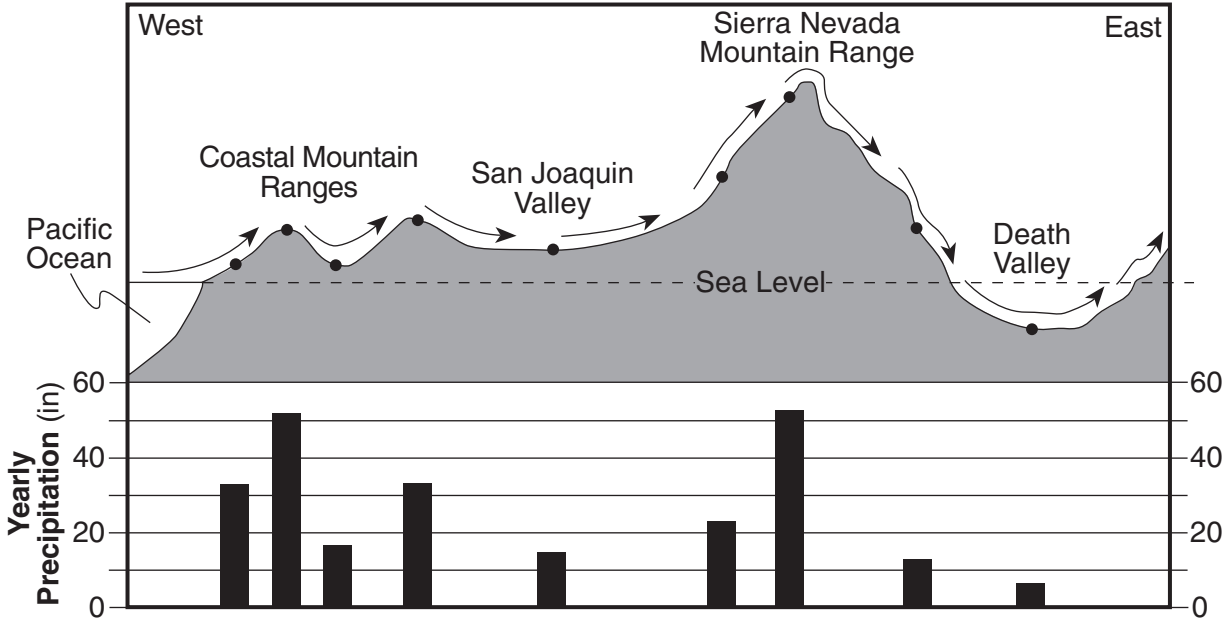
City	Singapore	Calcutta	Washington, D.C.	Moscow
Latitude	1° N	23° N	39° N	56° N
Average Yearly Temperature	81°F	79°F	57°F	39°F

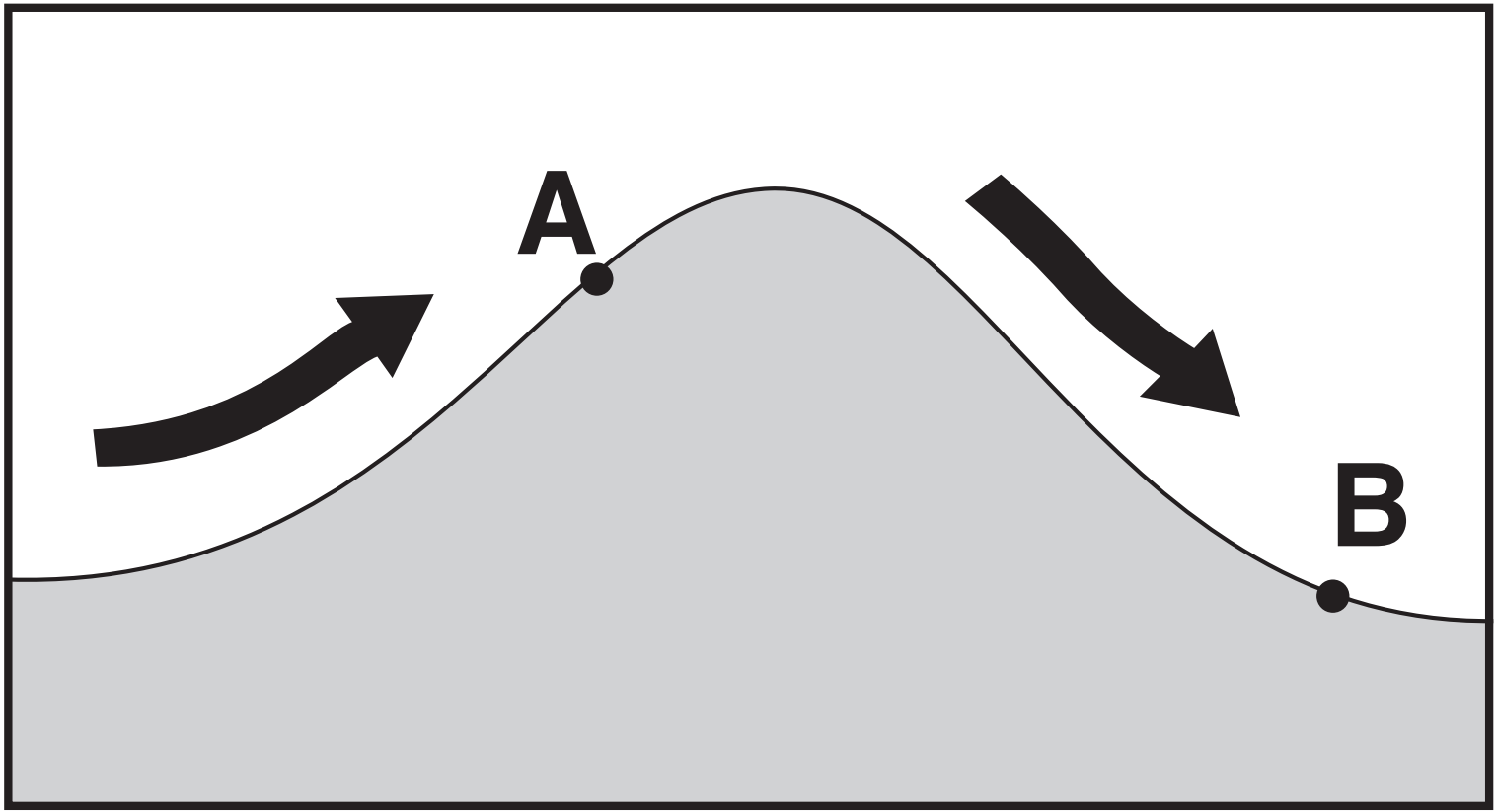
Data Table

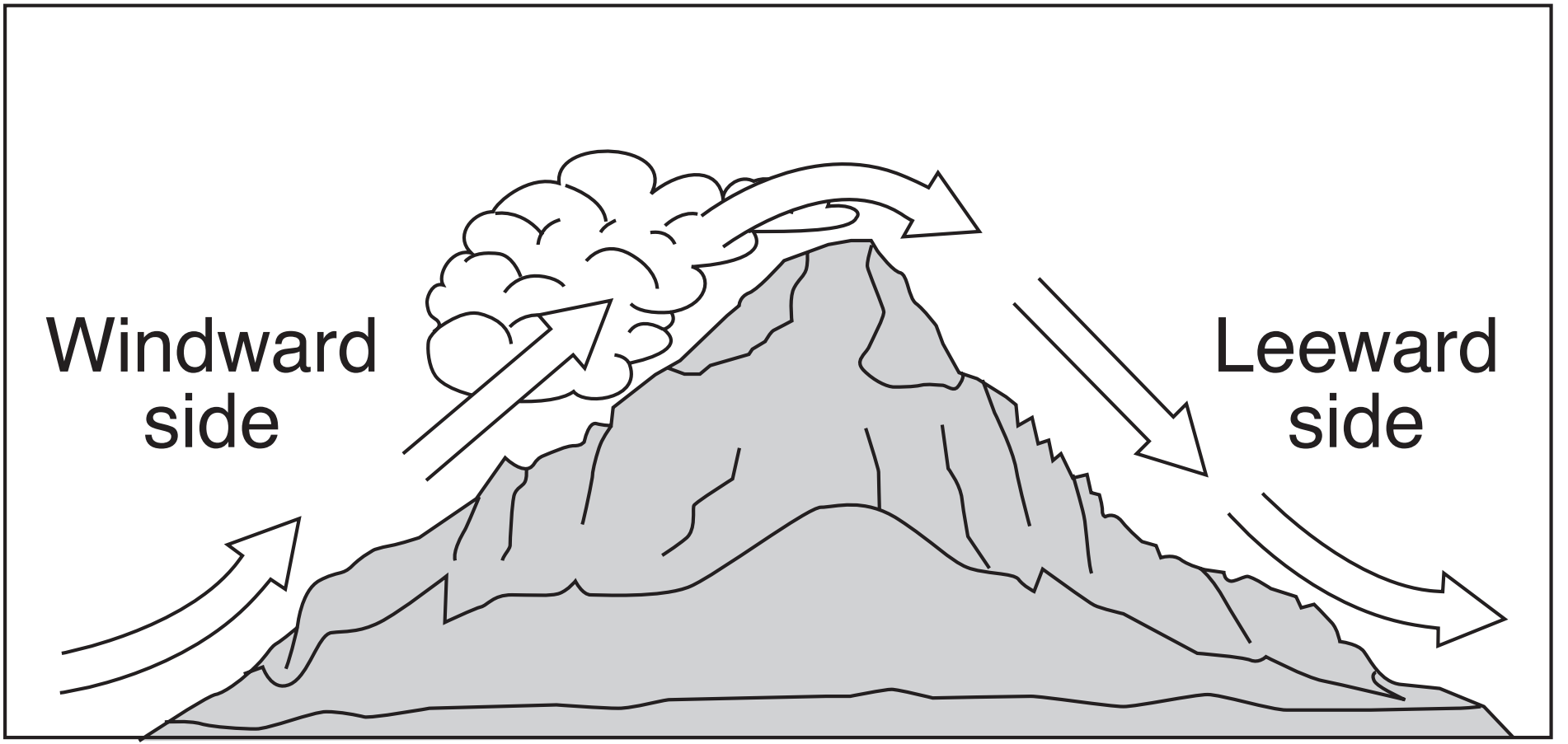
Latitude	Average Number of Days a Thunderstorm Occurs Over Land
60° N	5
45° N	14
30° N	19
15° N	30
0° (equator)	56
15° S	44
30° S	21
45° S	8
60° S	0

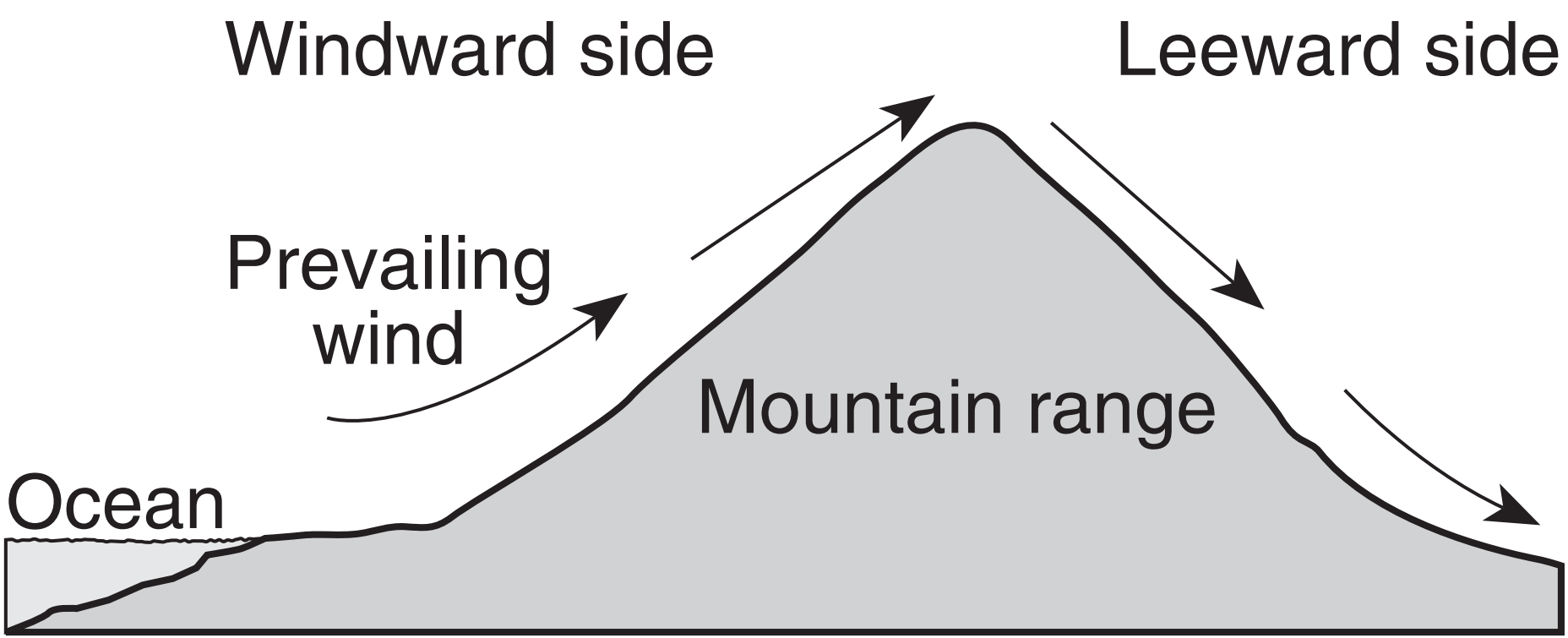

North America
Atlantic Ocean
Europe
Africa
A
B
C
D

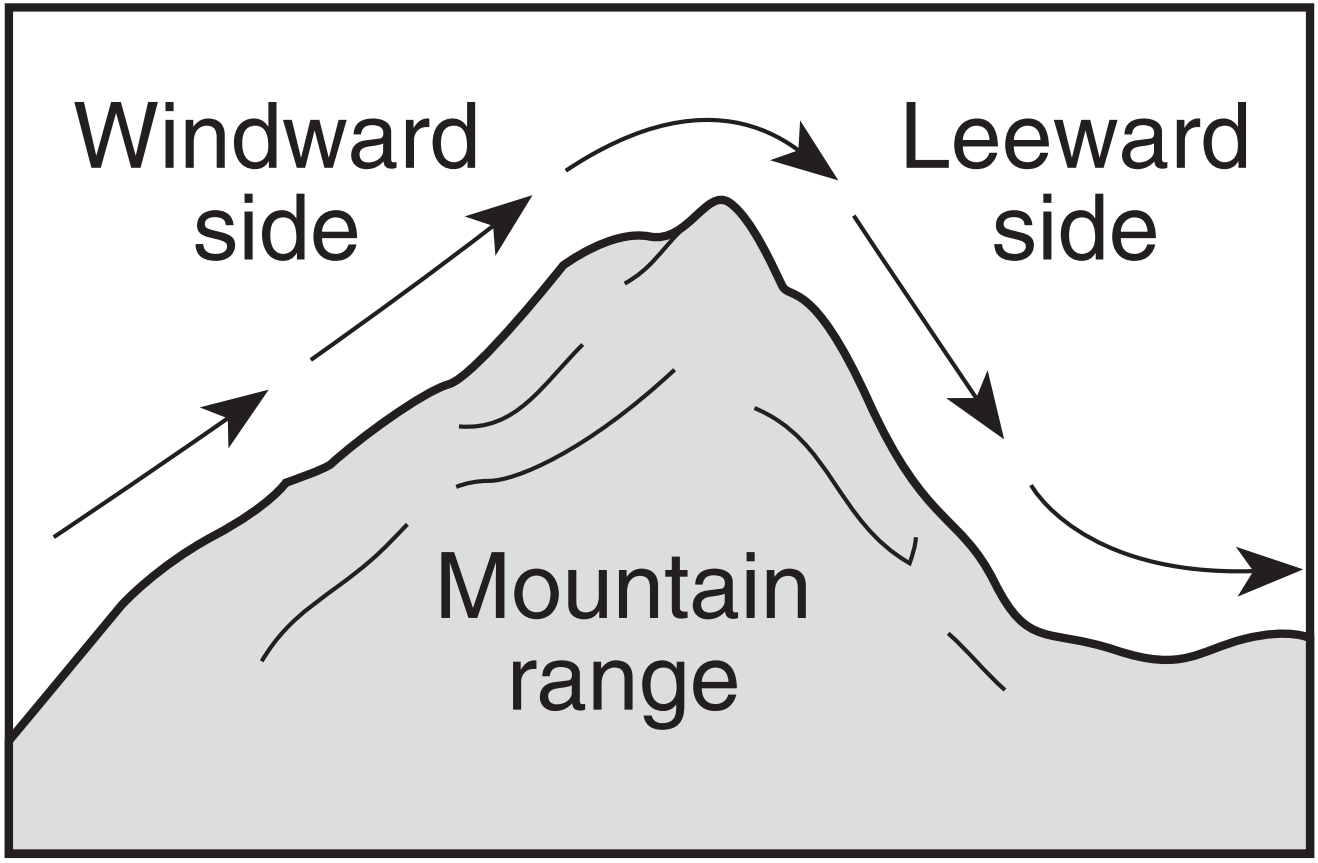

Air rises - expands - cools
Mountain

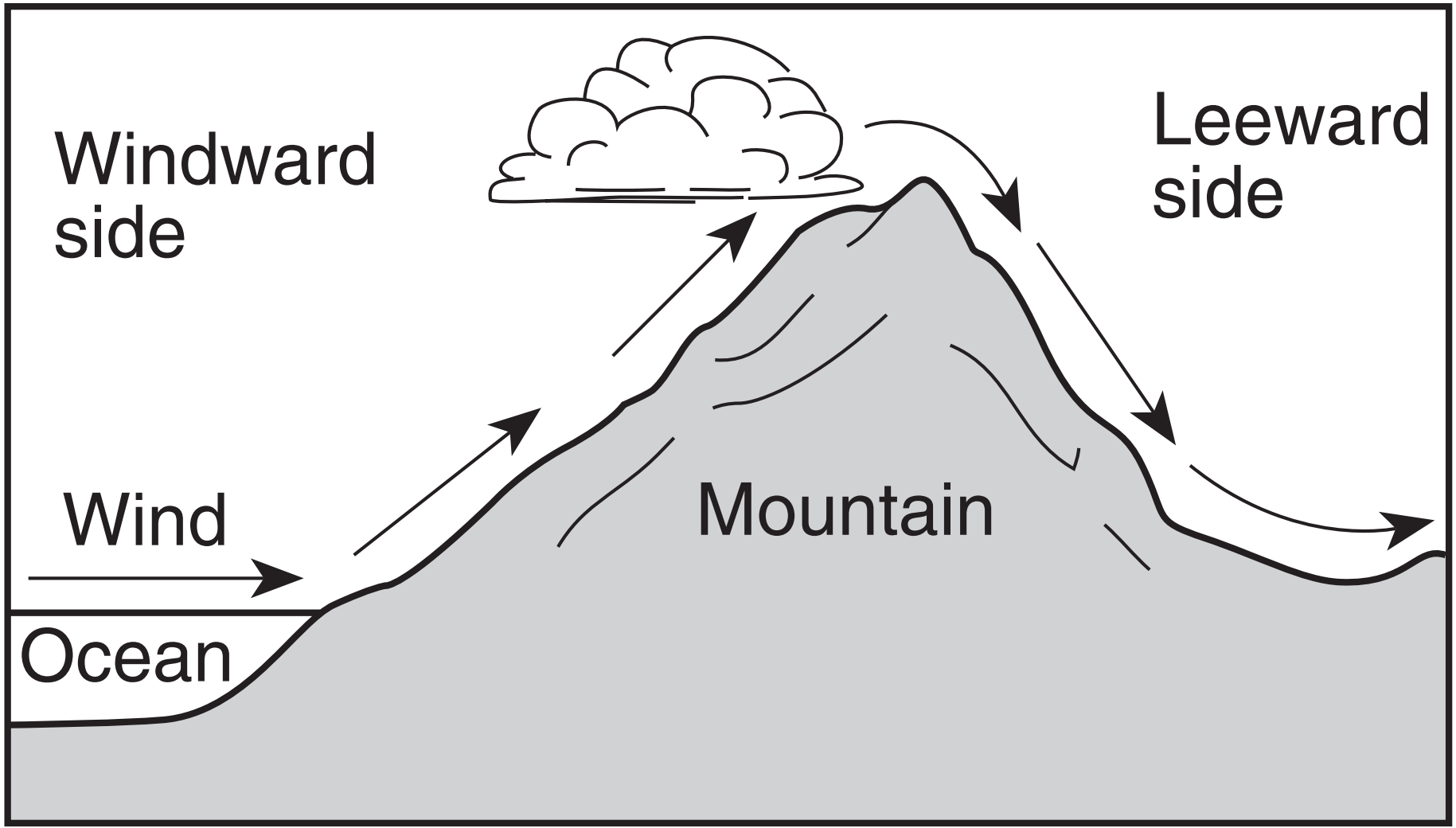

West
Sierra Nevada
Mountain Range
East
Coastal Mountain
Ranges
San Joaquin
Valley
Pacific
Ocean
Death
Valley
Sea Level
60
40
20
0
Yearly
Precipitation (in)
60
40
20
0

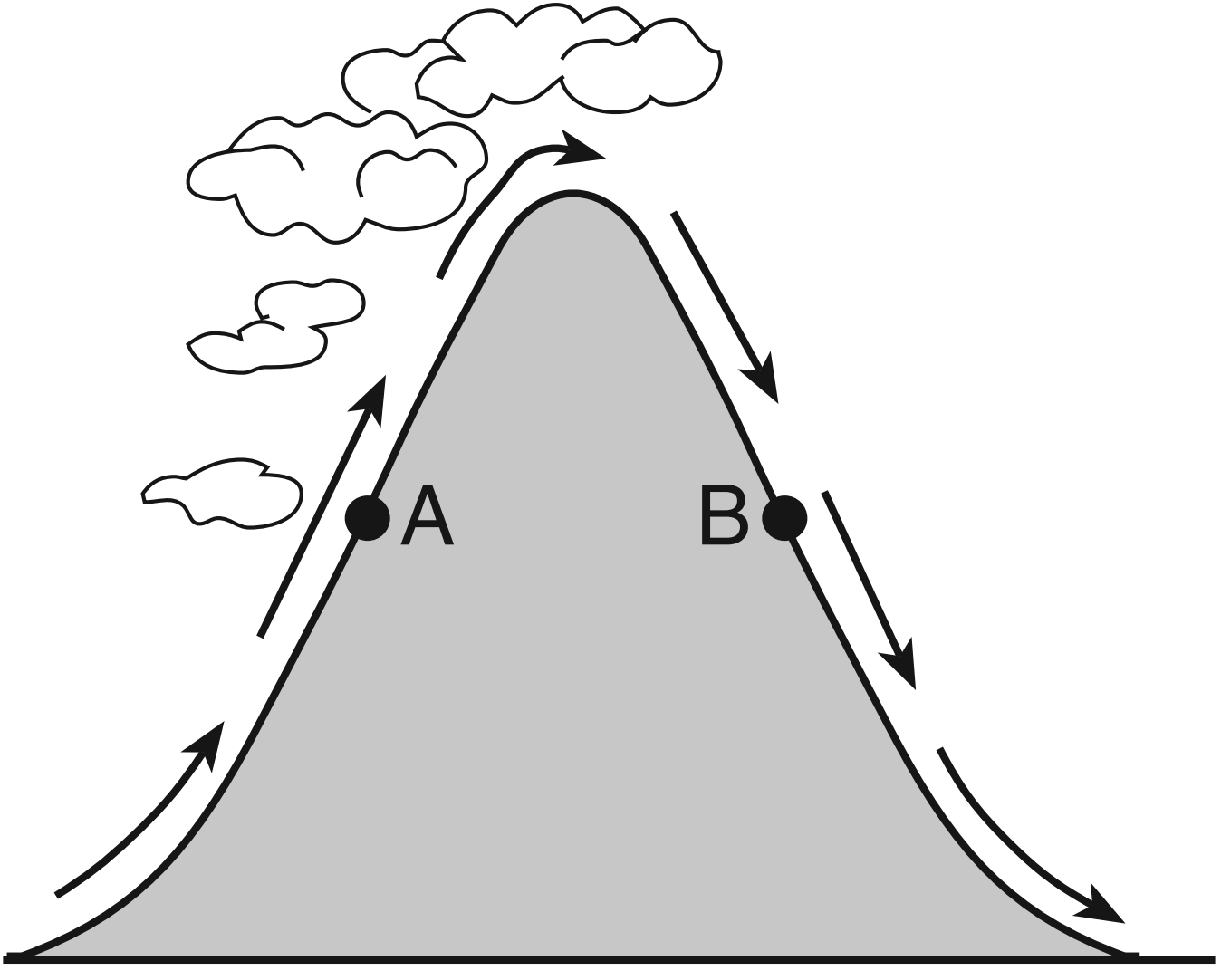

A
B

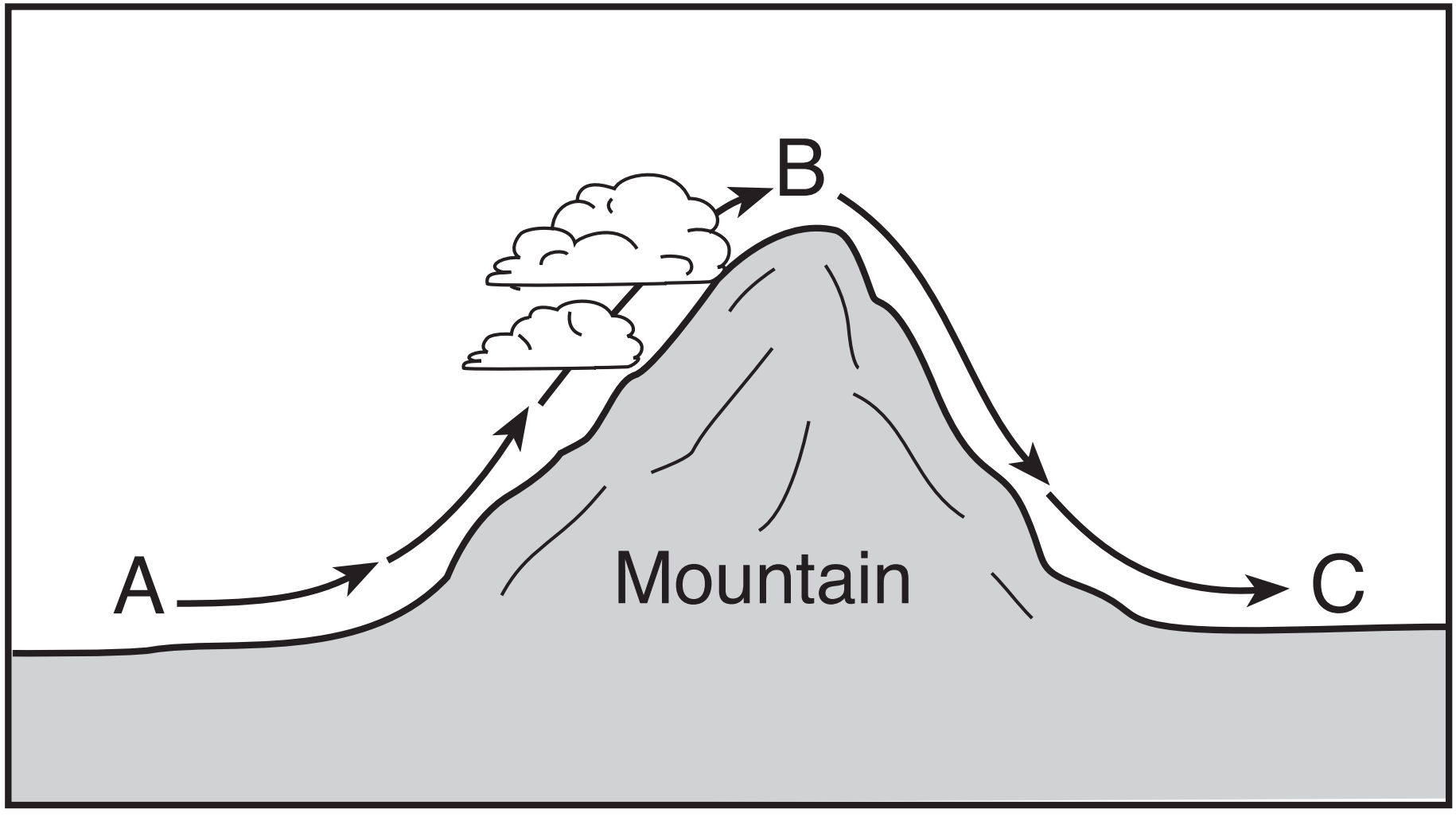

Windward
side
Leeward
side

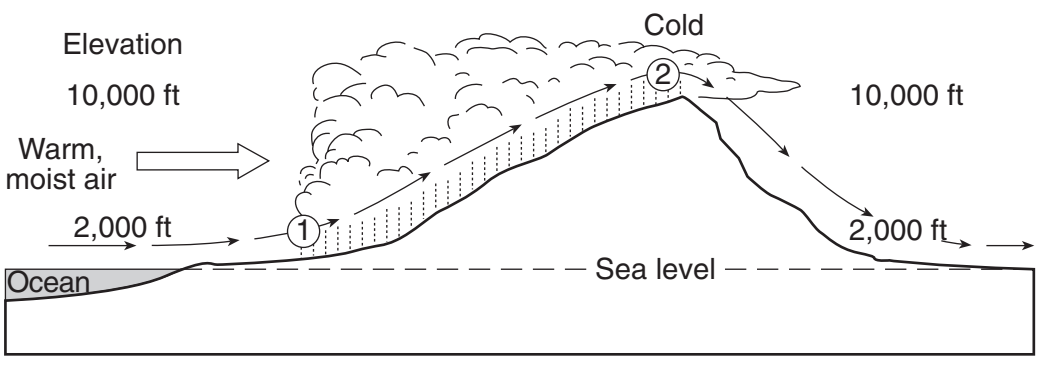

Windward side
Leeward side
Prevailing wind
Mountain range
Ocean

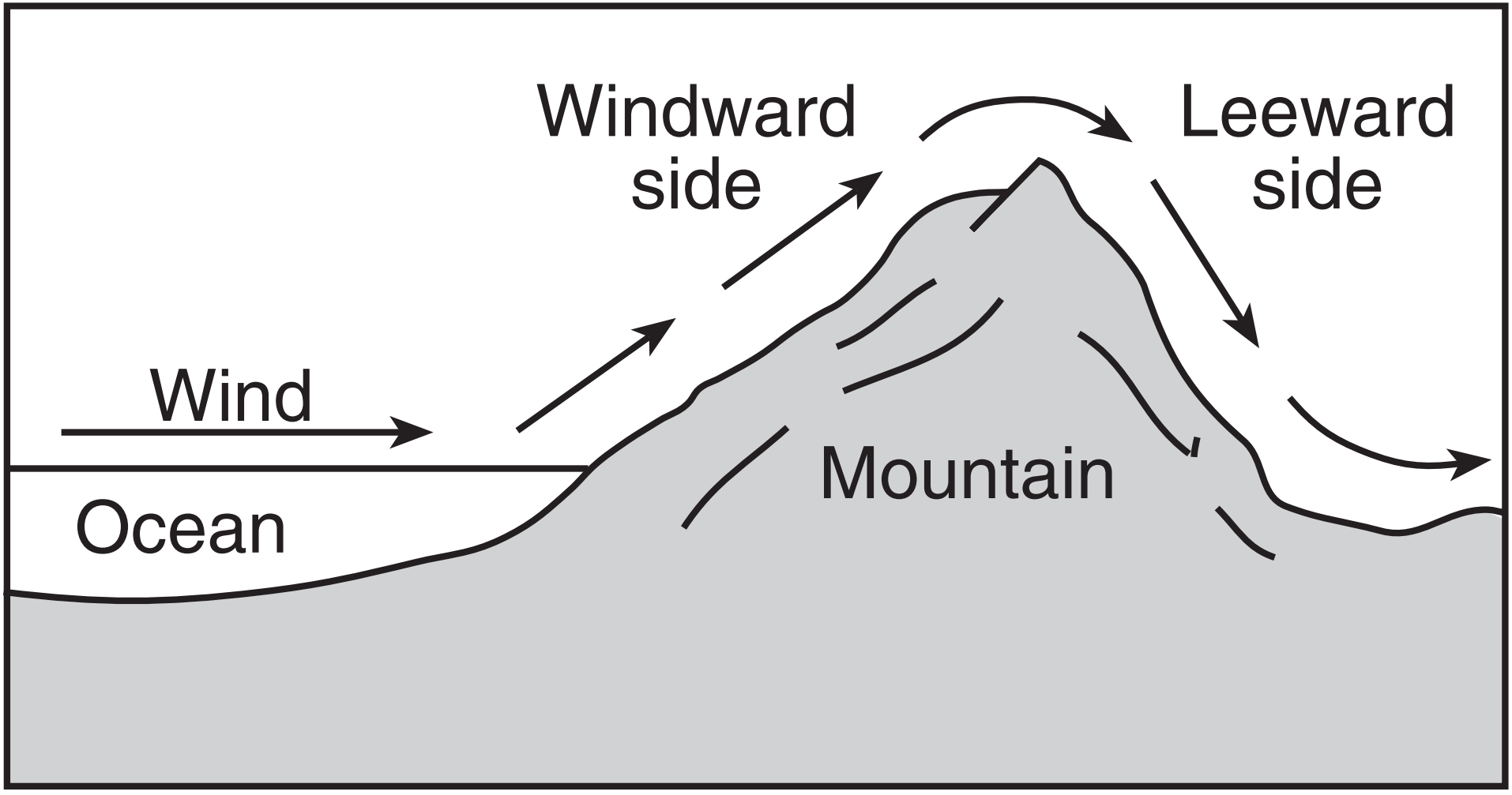

Windward
side
Leeward
side
Mountain
range

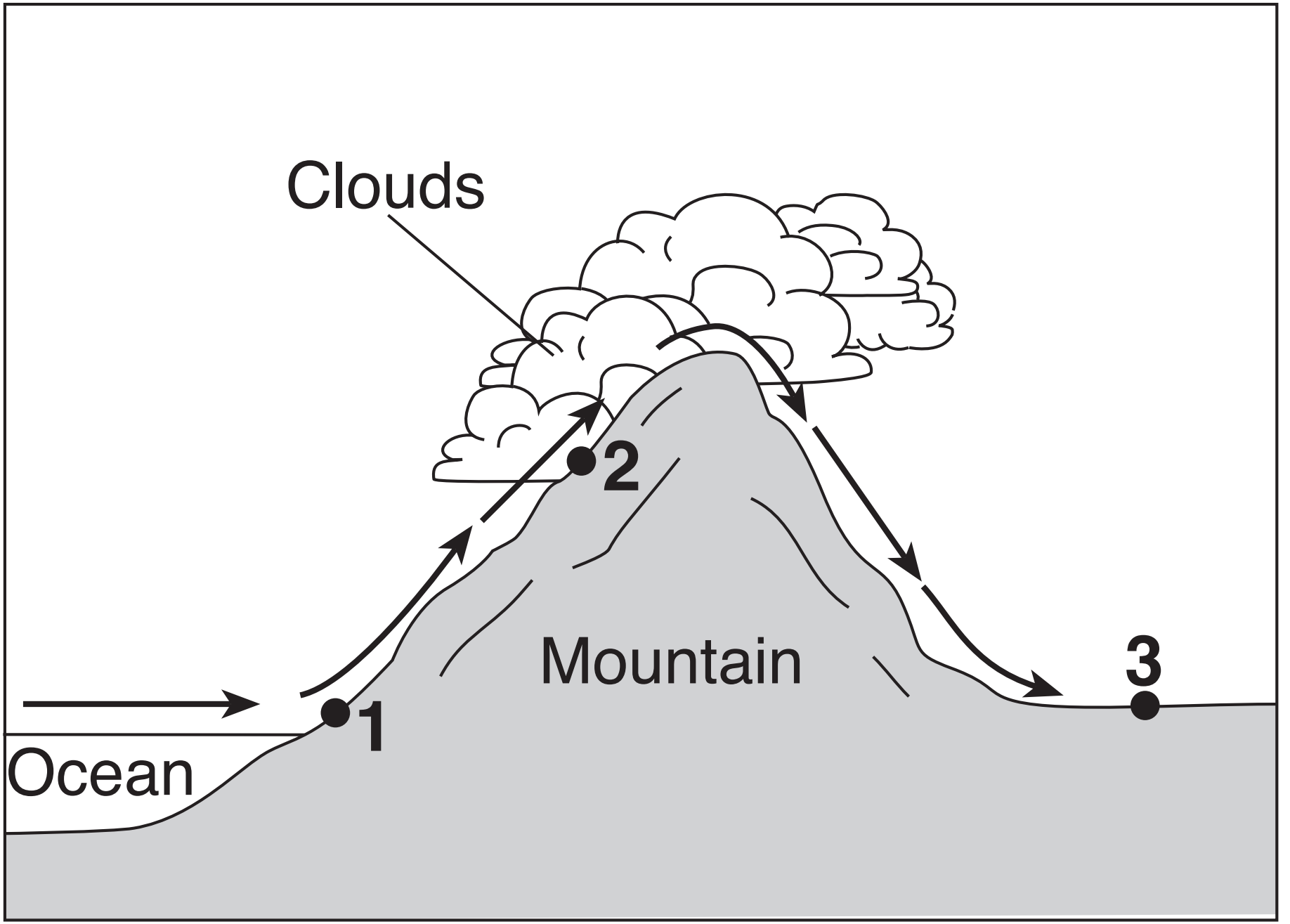

Windward side
Leeward side
Wind
Mountain
Ocean

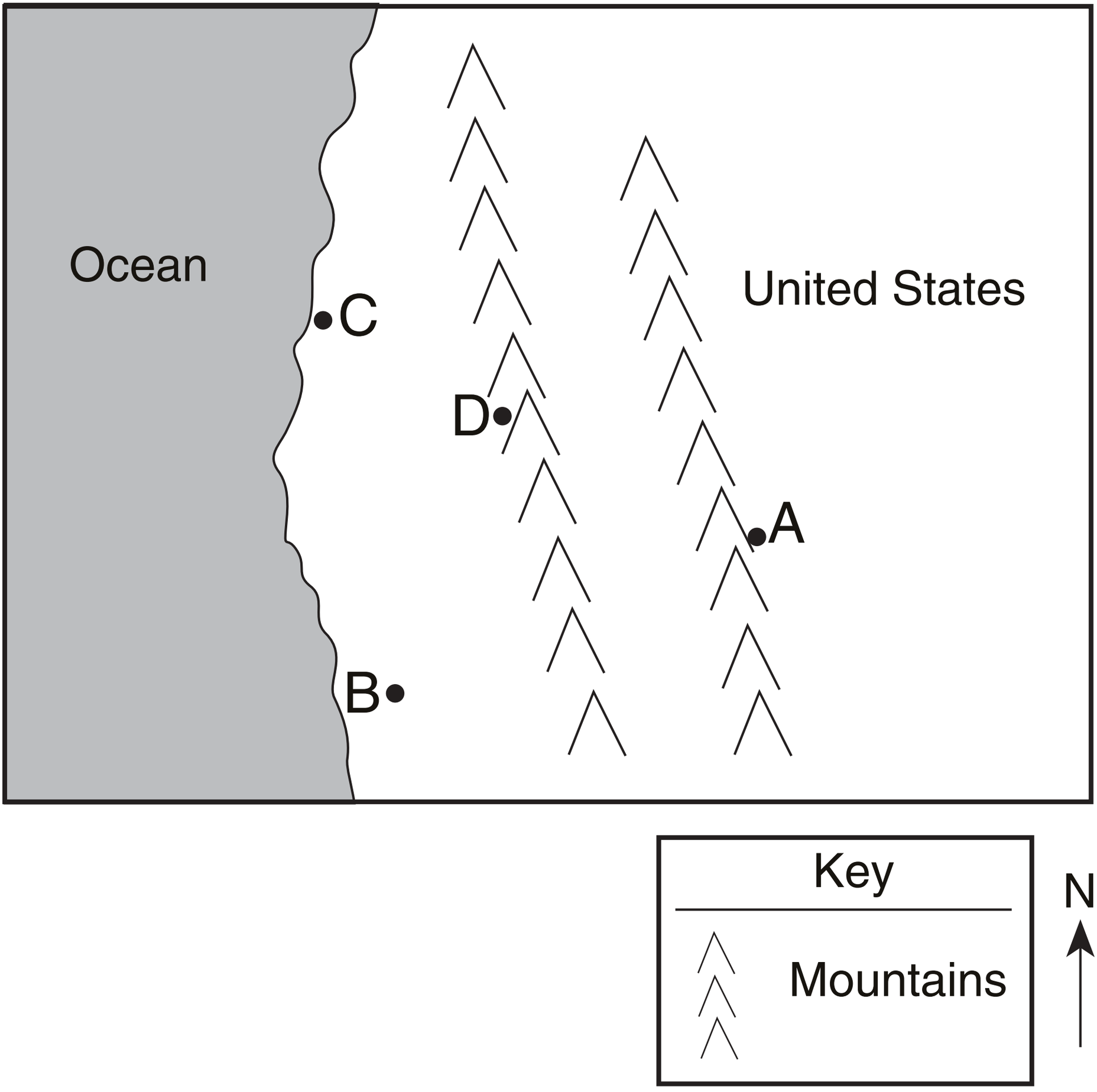

A
B

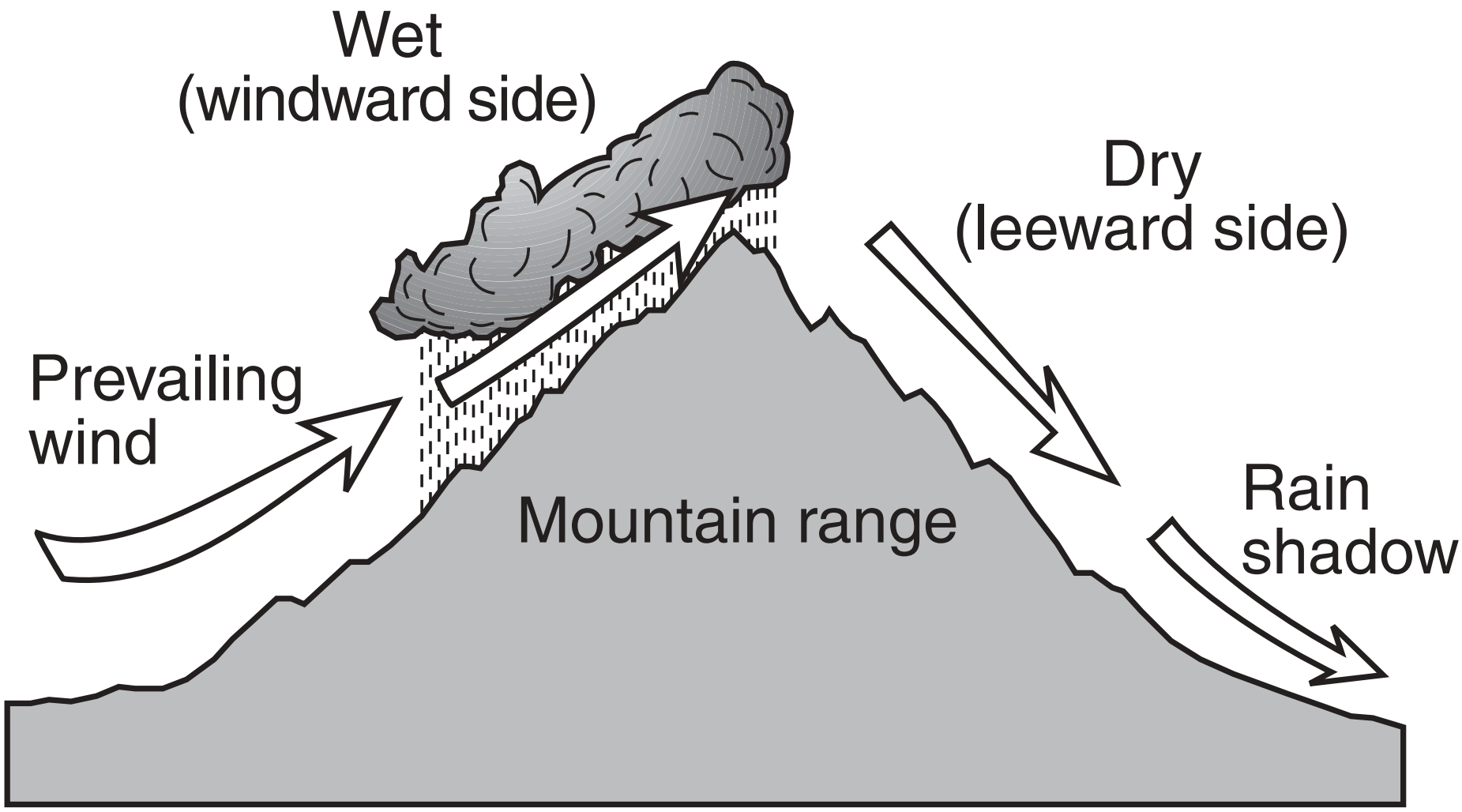

B
A
Mountain
C

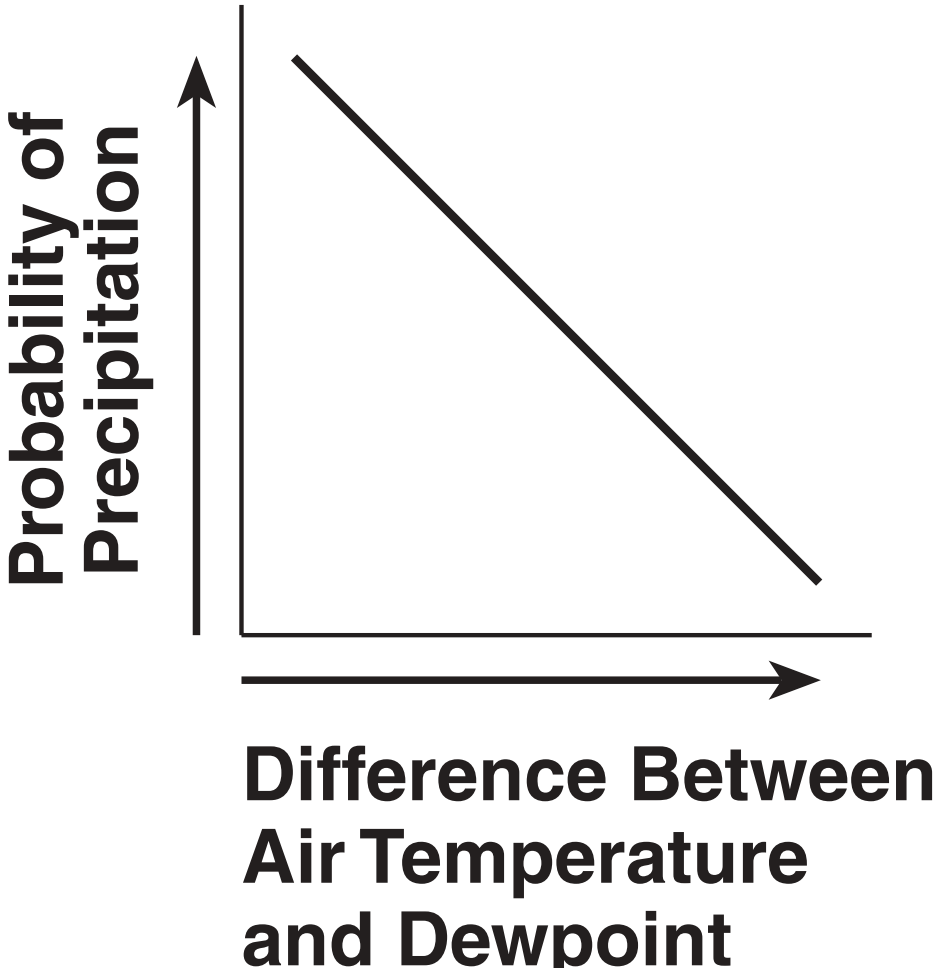

Elevation
10,000 ft
Warm,
moist air
2,000 ft
1
Cold
2
10,000 ft
2,000 ft
Sea level
Ocean

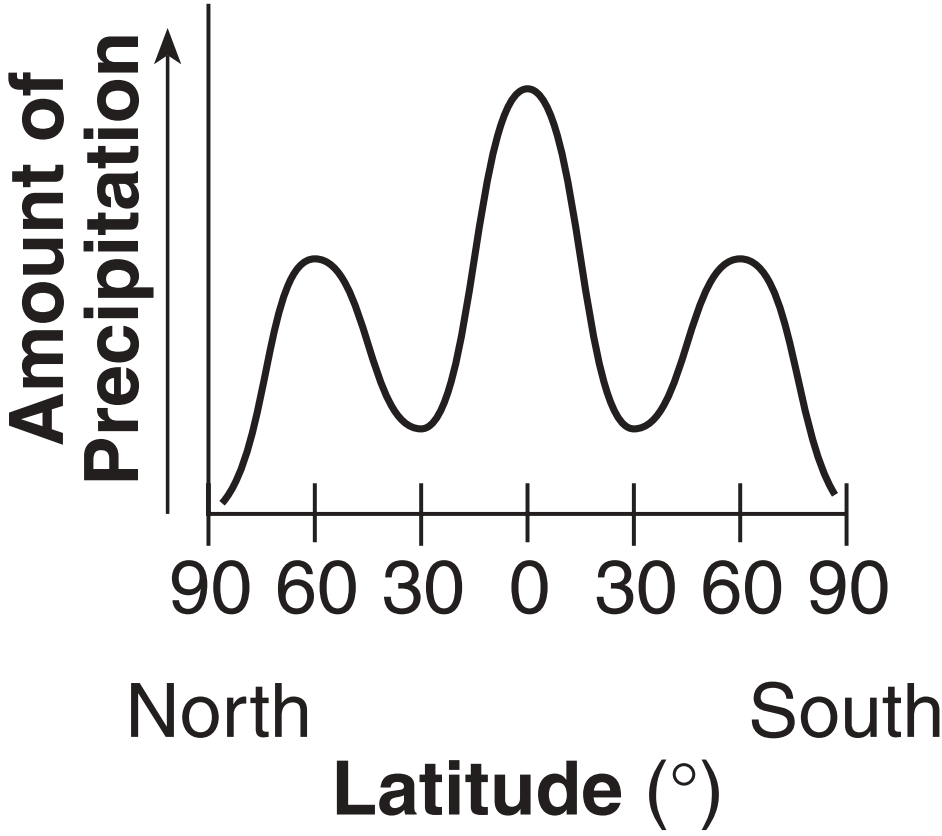

Windward
side
Leeward
side
Wind
Ocean
Mountain

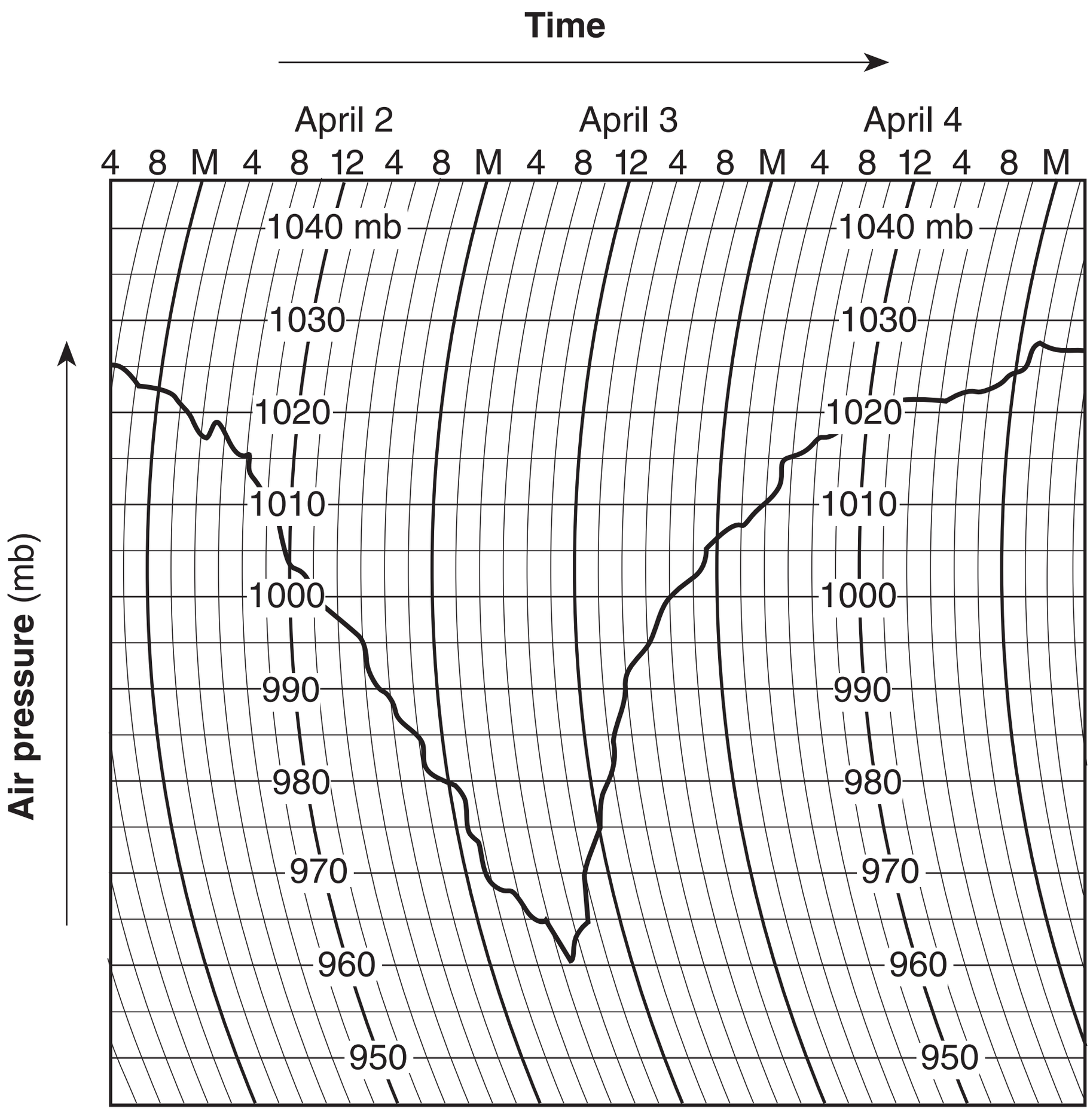

Clouds
2
Mountain
3
1
Ocean


Ocean
United States
C
D
A
B
Key
Mountains
N

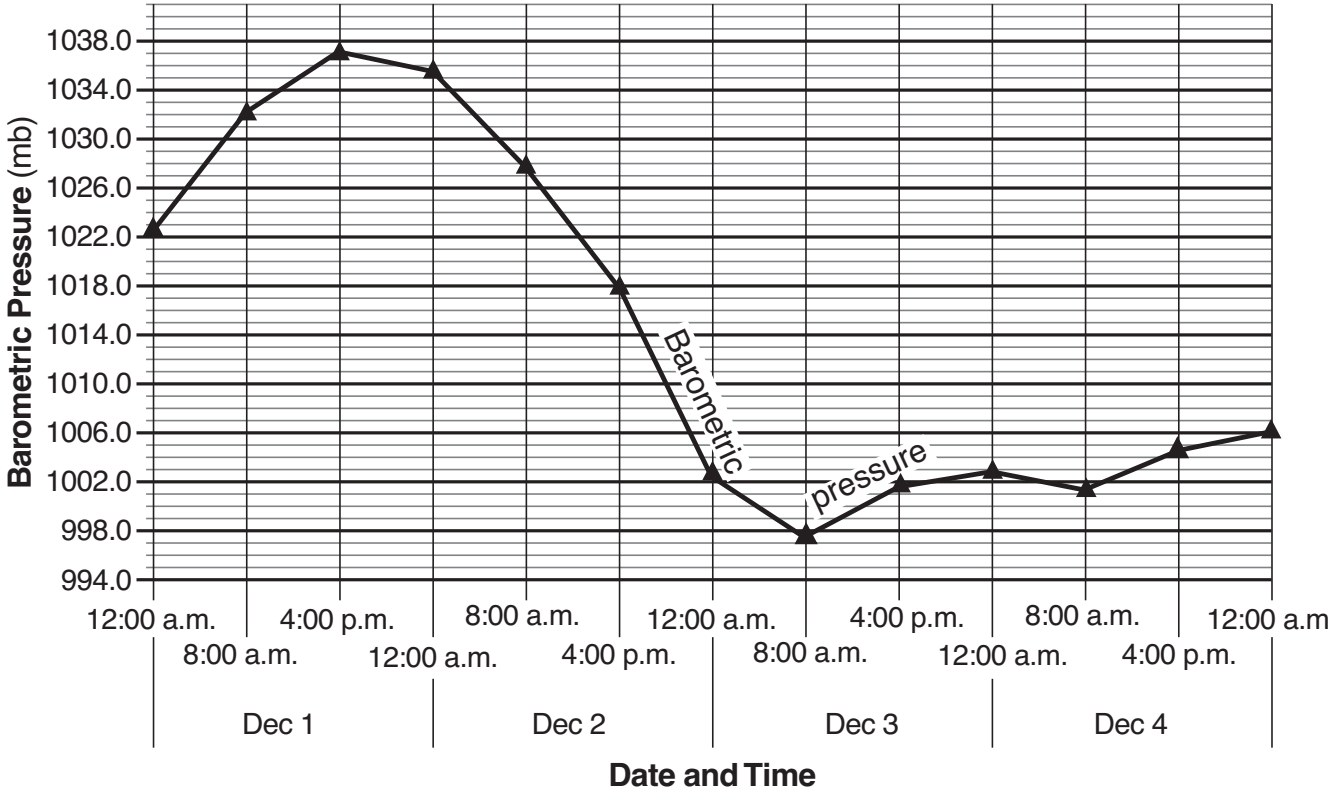

Wet
(windward side)
Dry
(leeward side)
Prevailing
wind
Mountain range
Rain
shadow

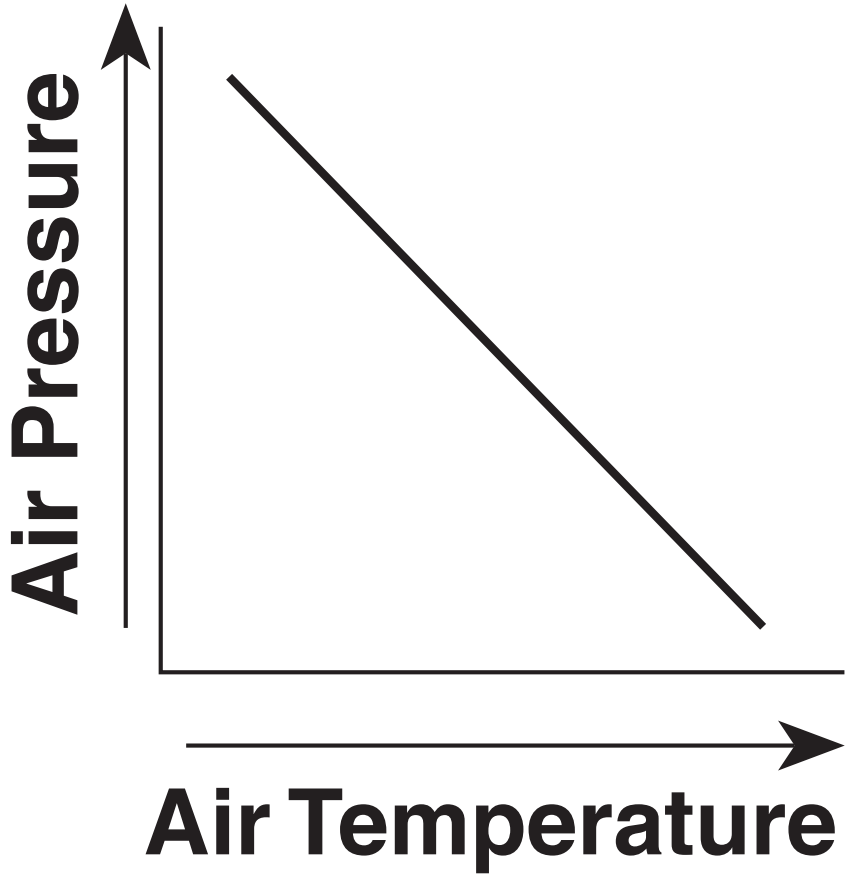

Probability of Precipitation
Difference Between Air Temperature and Dewpoint

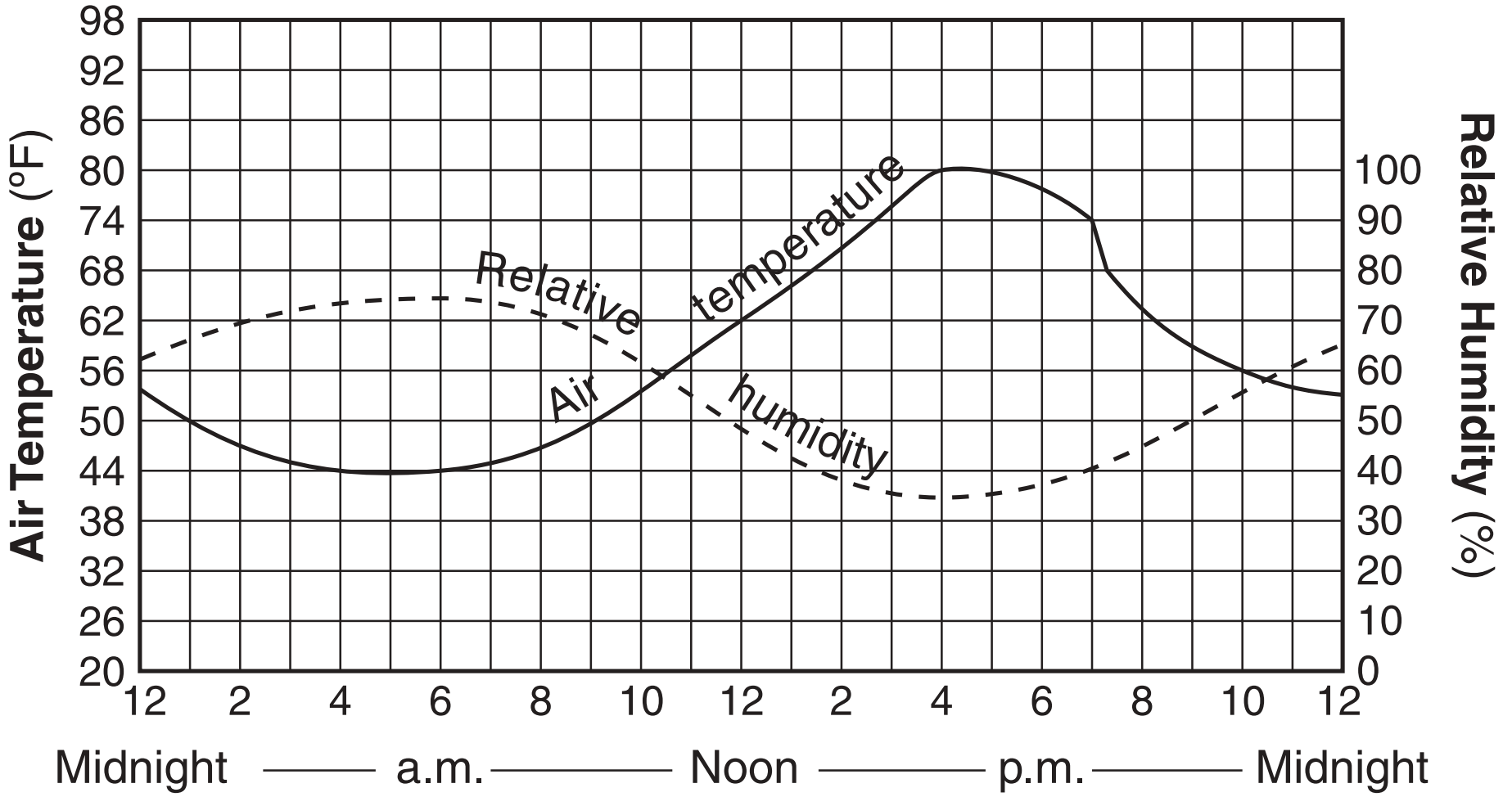

Amount of Precipitation
90 60 30 0 30 60 90
North
South
Latitude (°)

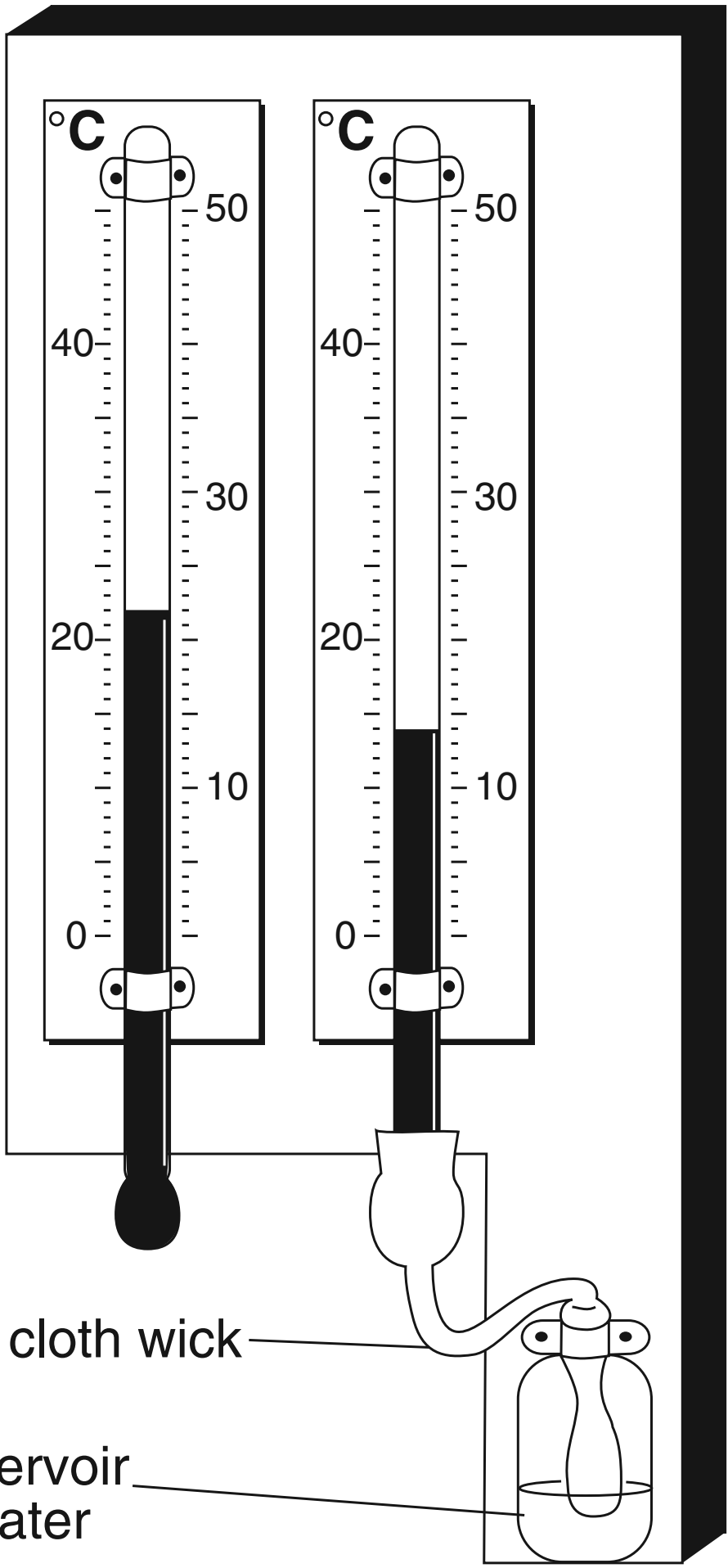

Time
April 2
April 3
April 4
4 8 M 4 8 12 4 8 M 4 8 12 4 8 M 4 8 12 4 8 M
1040 mb
1030
1020
1010
1000
990
980
970
960
950
Air pressure (mb)

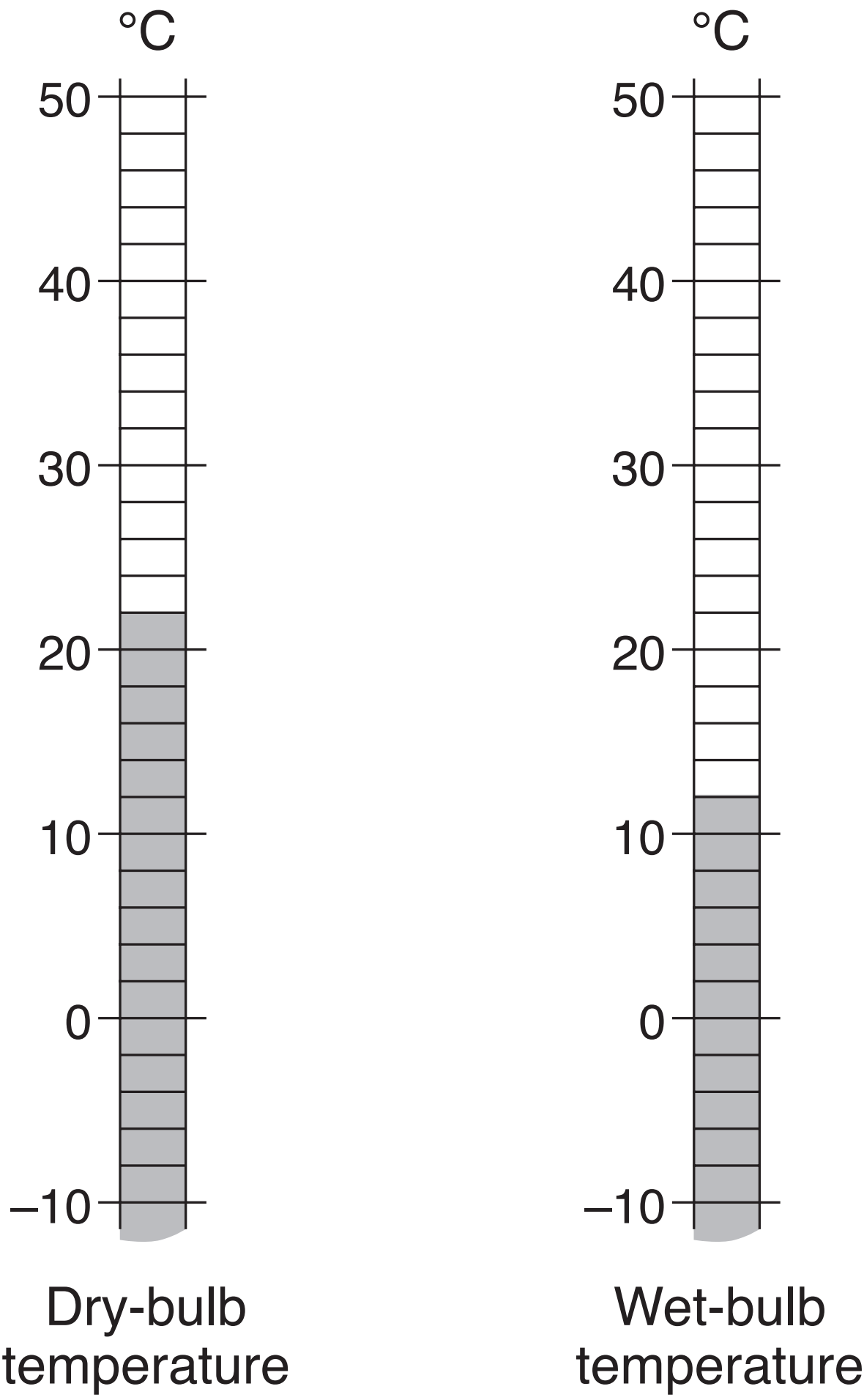
Graph 2: Barometric Pressure at Syracuse, New York

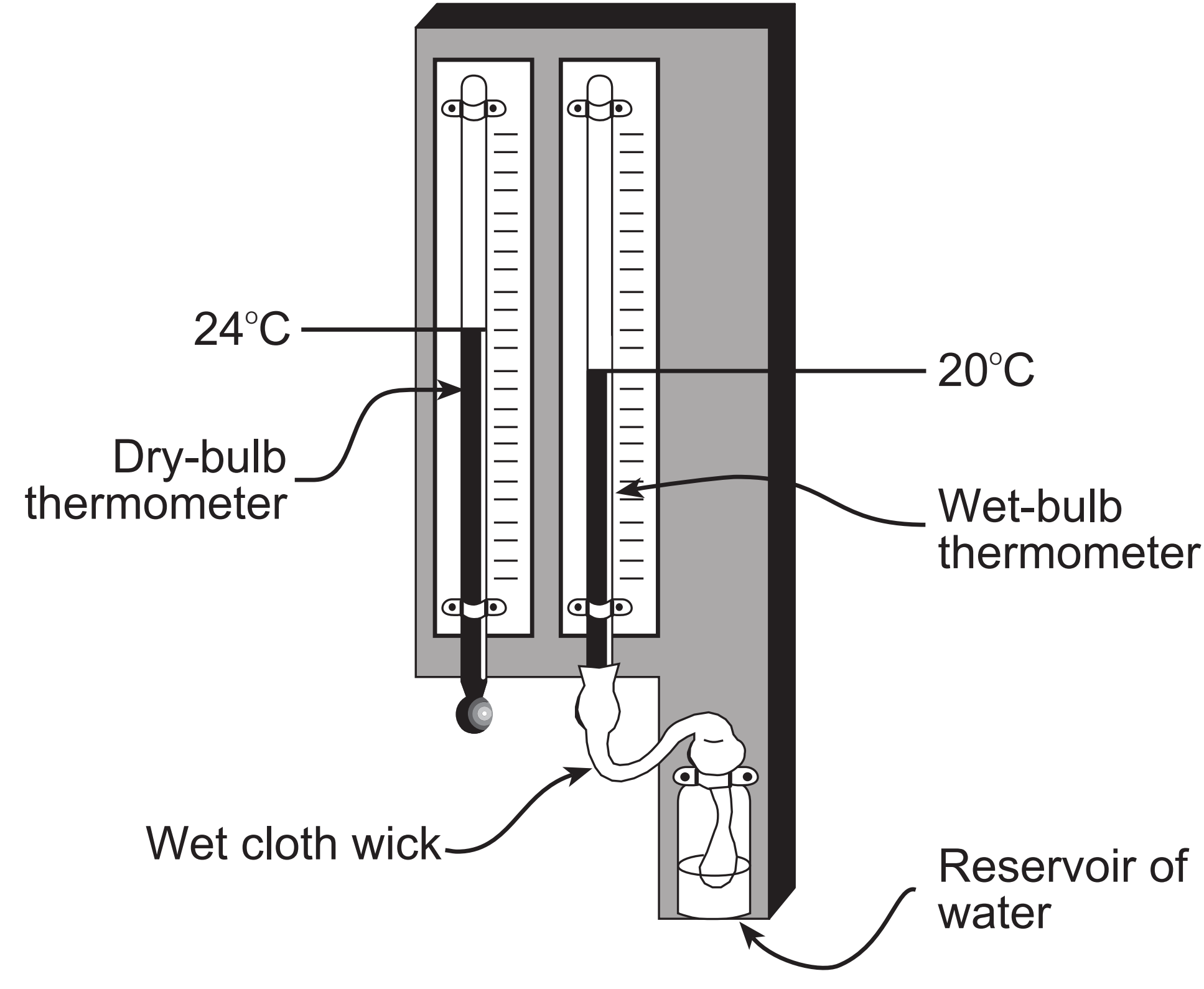


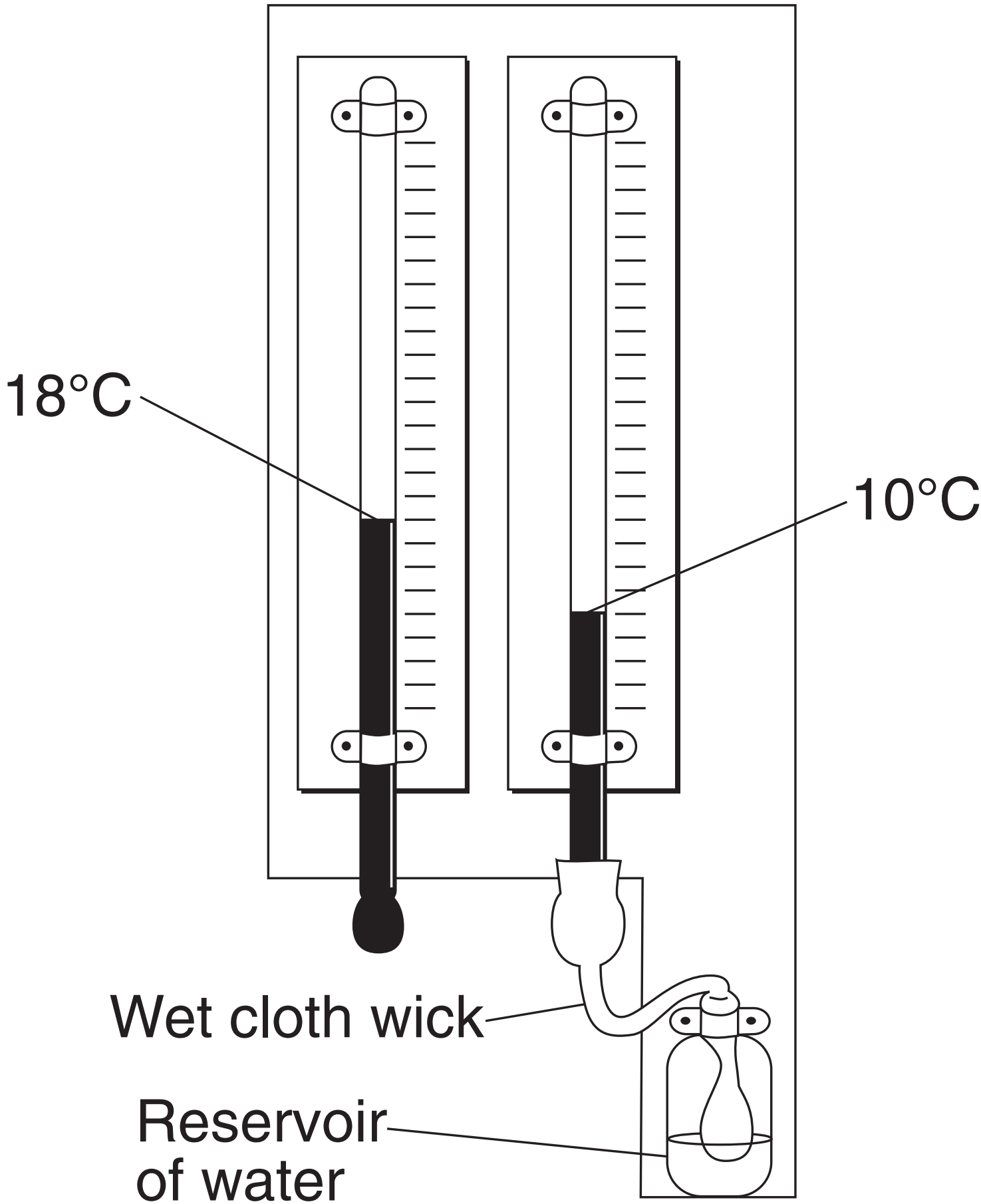

Air Pressure
Air Temperature


Air Temperature (°F)
98
92
86
80
74
68
62
56
50
44
38
32
26
20
Relative humidity (%)
100
90
80
70
60
50
40
30
20
10
0
Air temperature
Relative humidity
12 2 4 6 8 10 12 2 4 6 8 10 12
Midnight a.m. Noon p.m. Midnight


°C
50
40
30
20
10
0
°C
50
40
30
20
10
0
Wet cloth wick
Reservoir of water

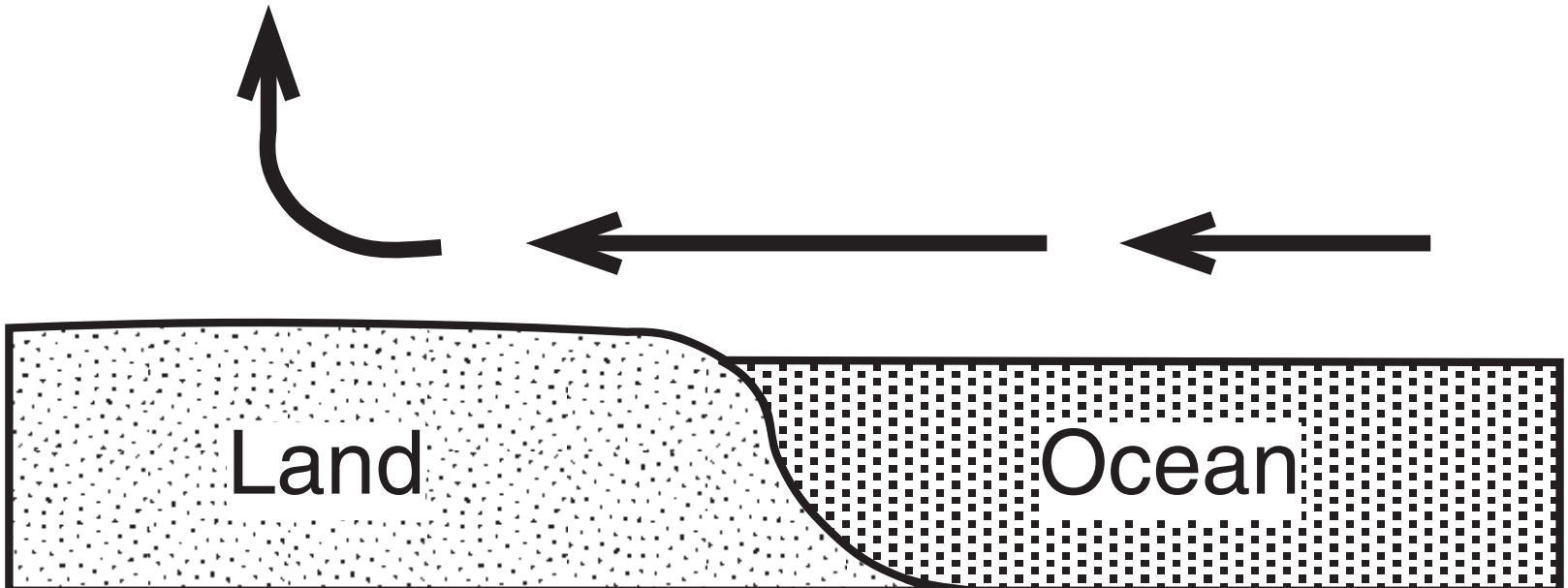

°C
50
40
30
20
10
0
–10
Dry-bulb temperature
°C
50
40
30
20
10
0
–10
Wet-bulb temperature

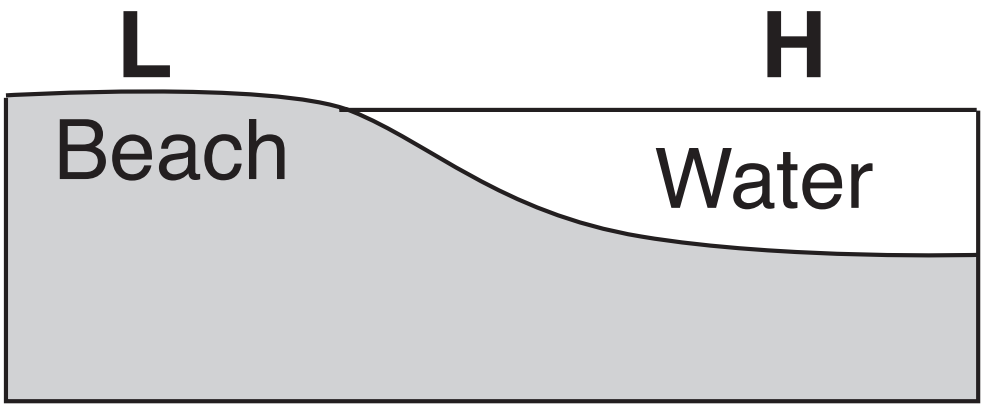

24°C
20°C
Dry-bulb thermometer
Wet-bulb thermometer
Wet cloth wick
Reservoir of water

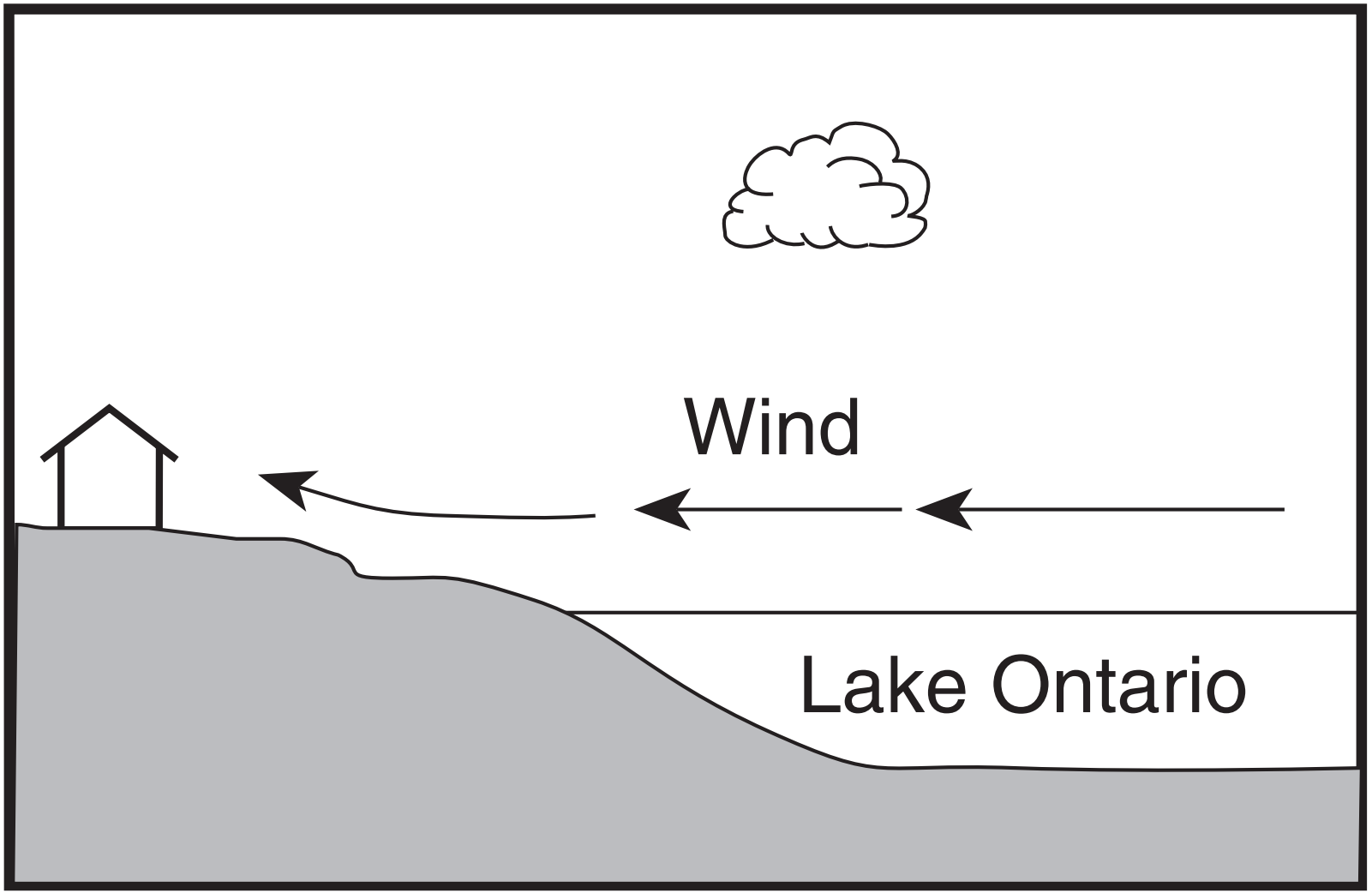

18°C
10°C
Wet cloth wick
Reservoir
of water

Data Table II

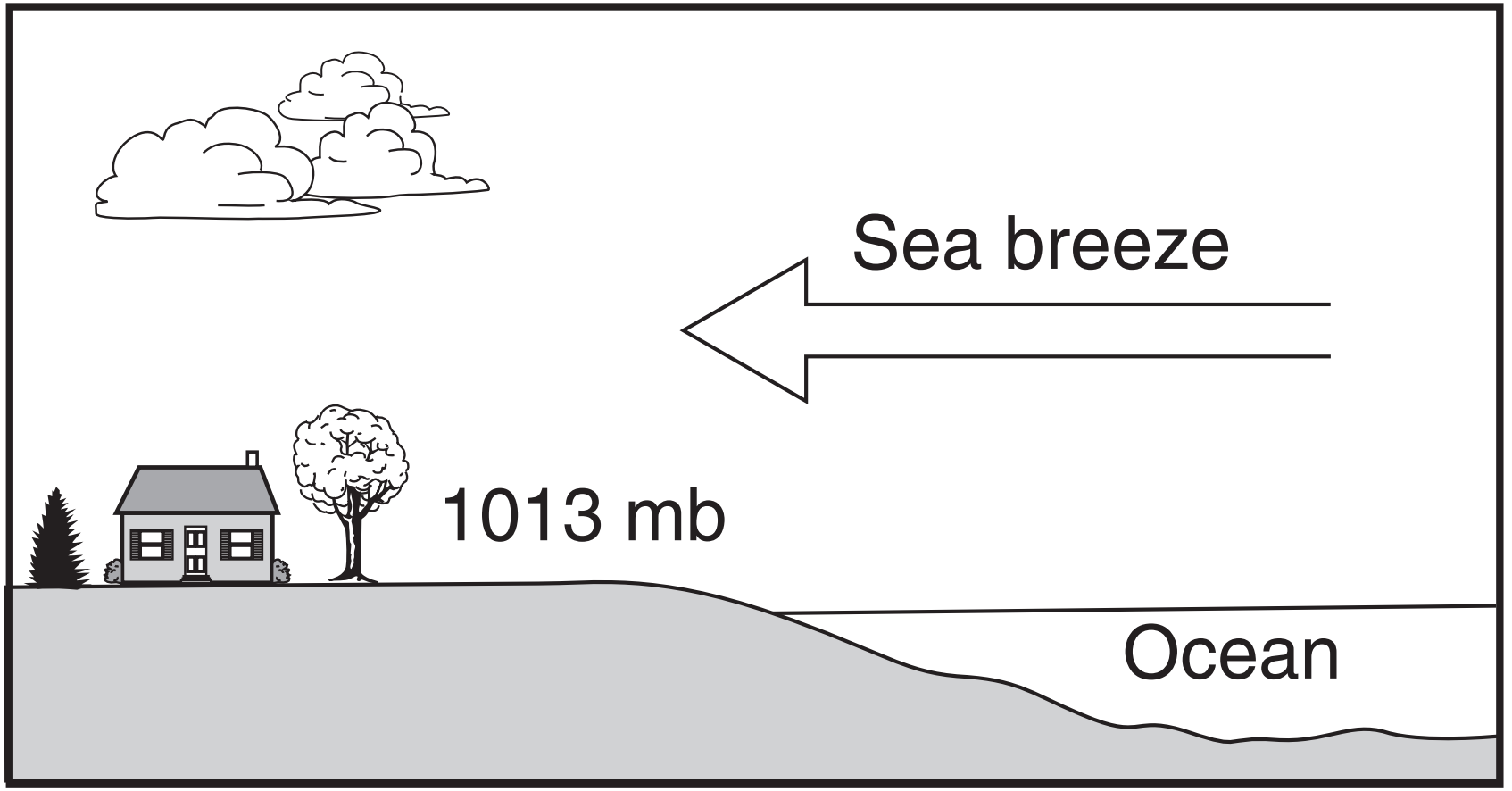
Storm Strength Scale	Relative Strength
Tropical depression Tropical storm Category 1 Category 2 Category 3 Category 4 Category 5	Weakest  Strongest

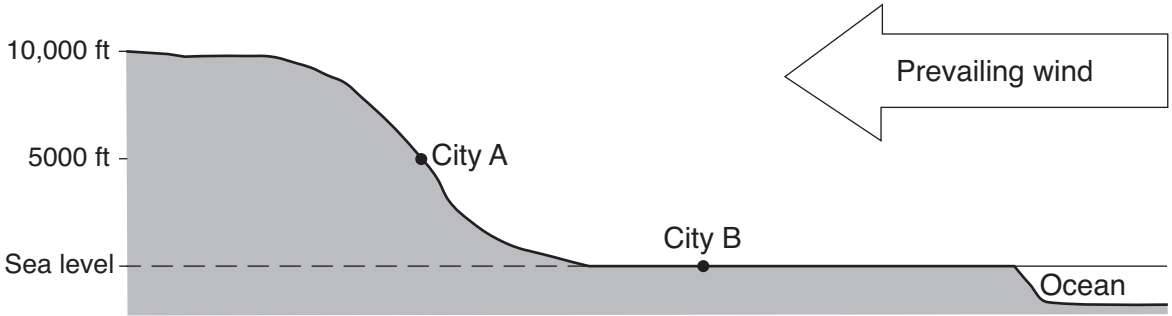

Land
Ocean


L
H
Beach
Water

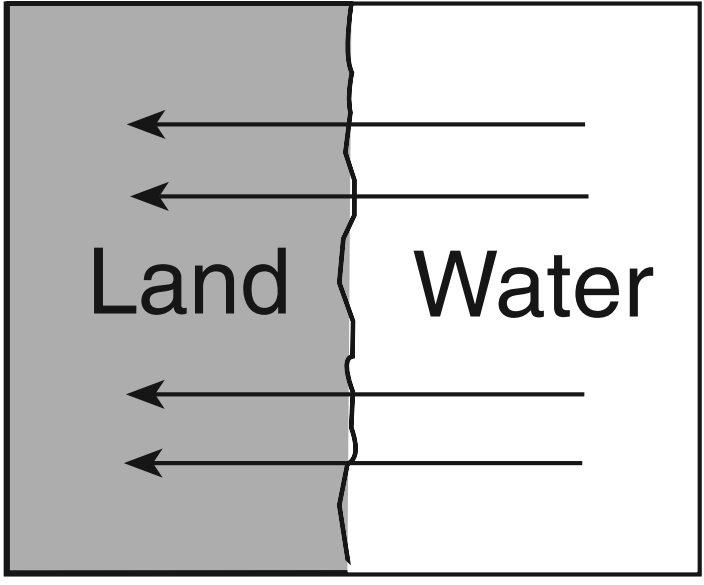


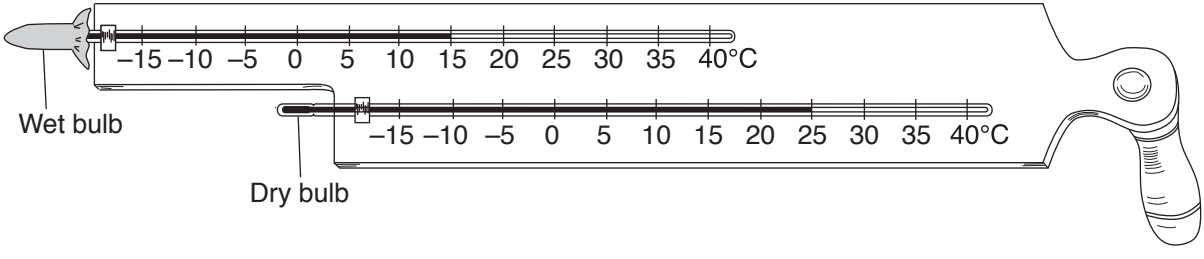
(Not drawn to scale)

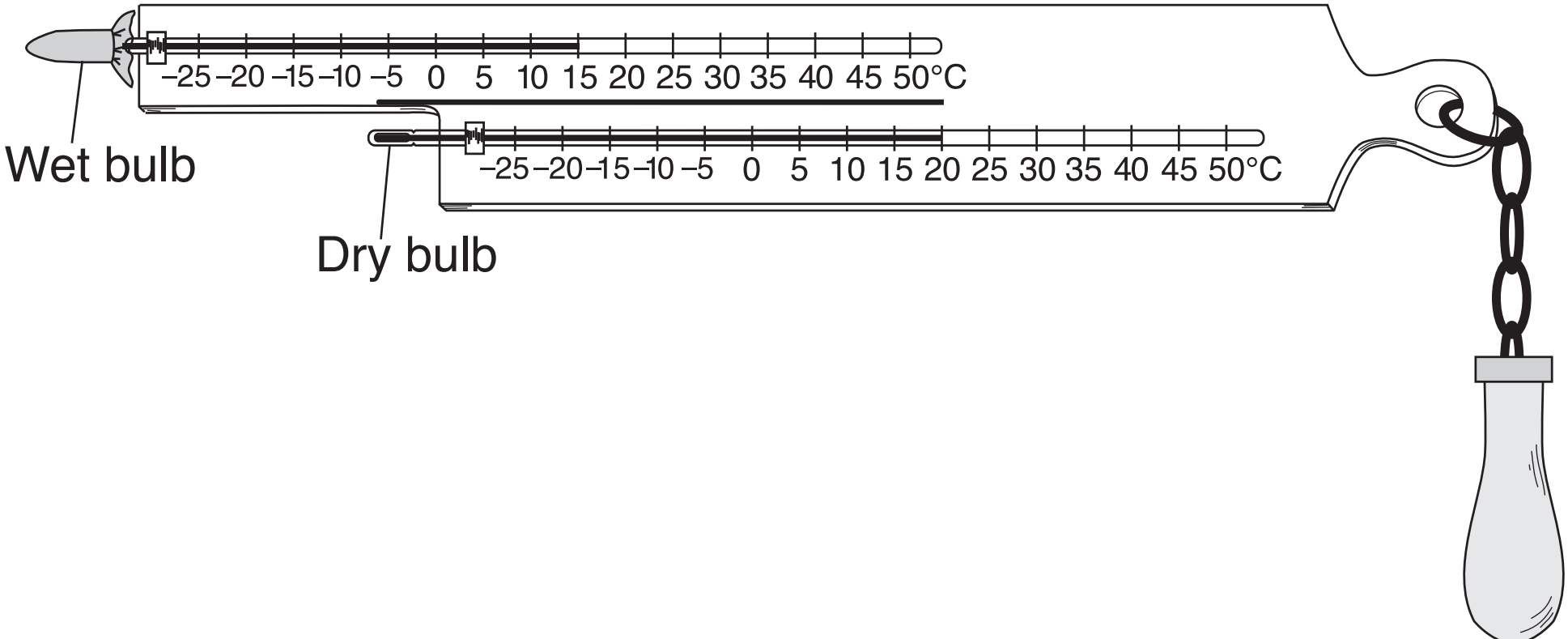

Sea breeze
1013 mb
Ocean

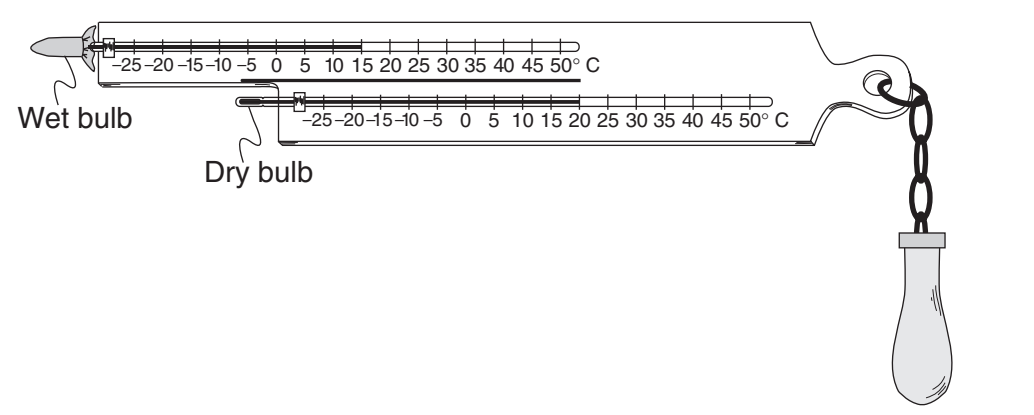


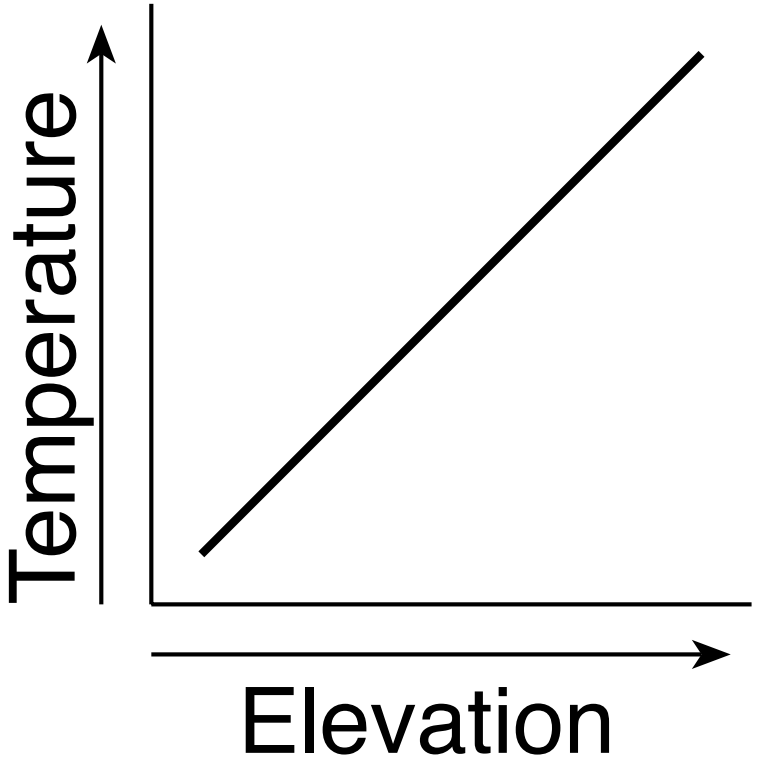
(Not drawn to scale)

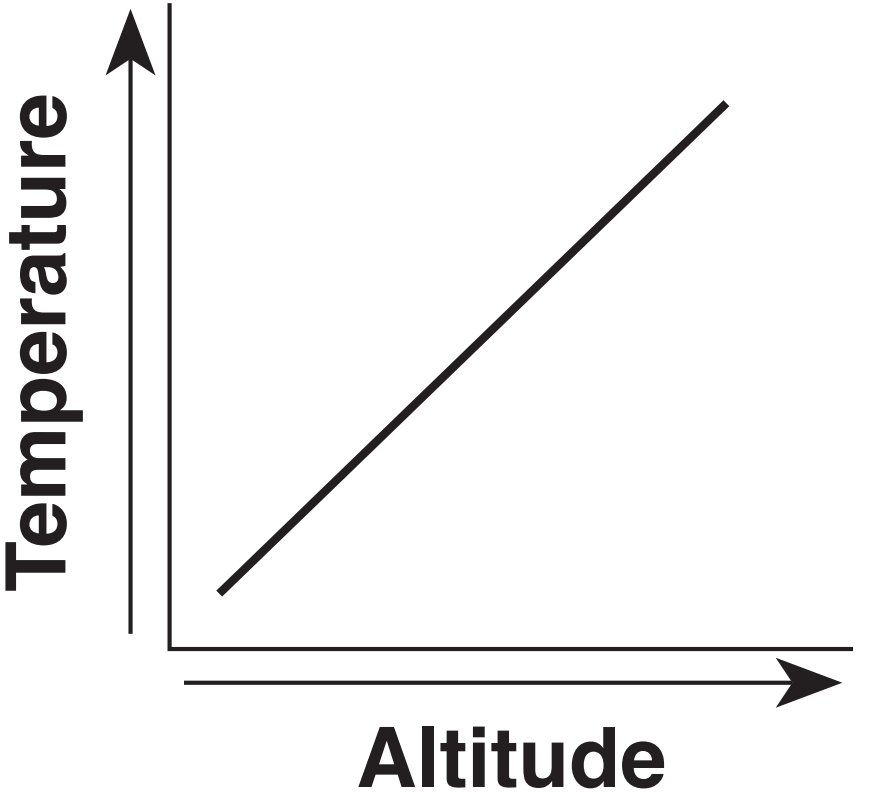

Land
Water

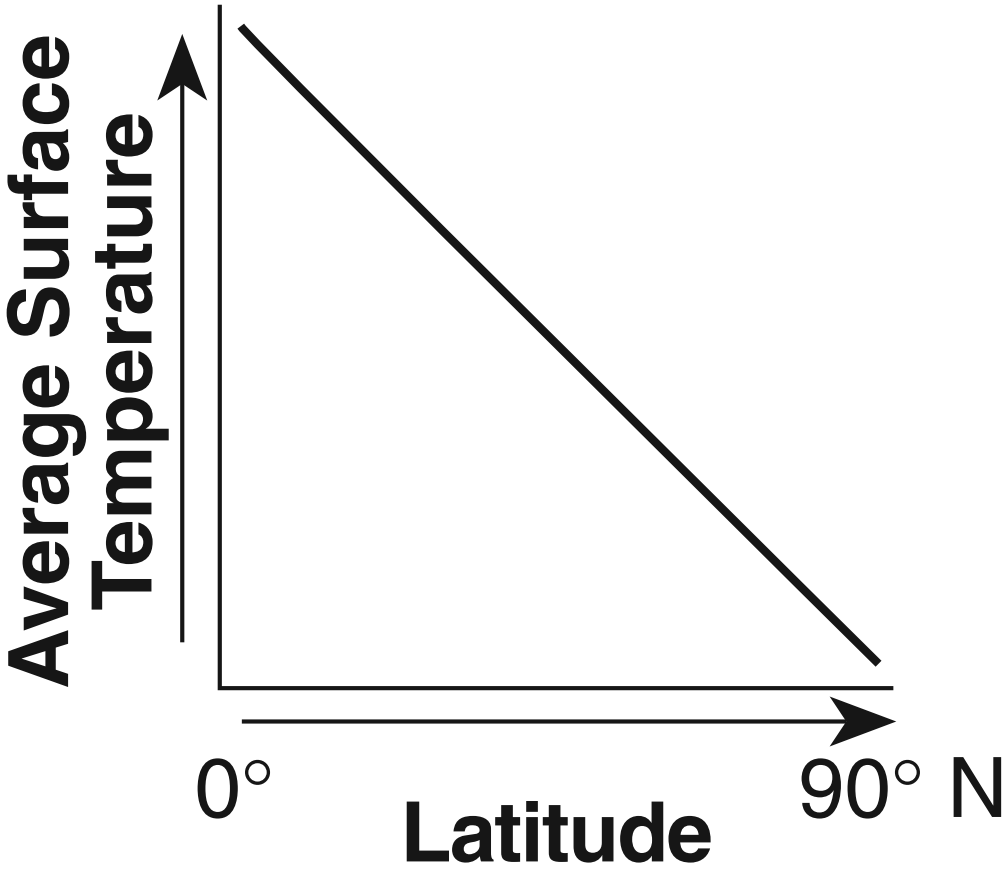

–15 –10 –5 0 5 10 15 20 25 30 35 40°C
Wet bulb
–15 –10 –5 0 5 10 15 20 25 30 35 40°C
Dry bulb


Wet bulb
Dry bulb
–25 –20 –15 –10 –5 0 5 10 15 20 25 30 35 40 45 50°C
–25 –20 –15 –10 –5 0 5 10 15 20 25 30 35 40 45 50°C

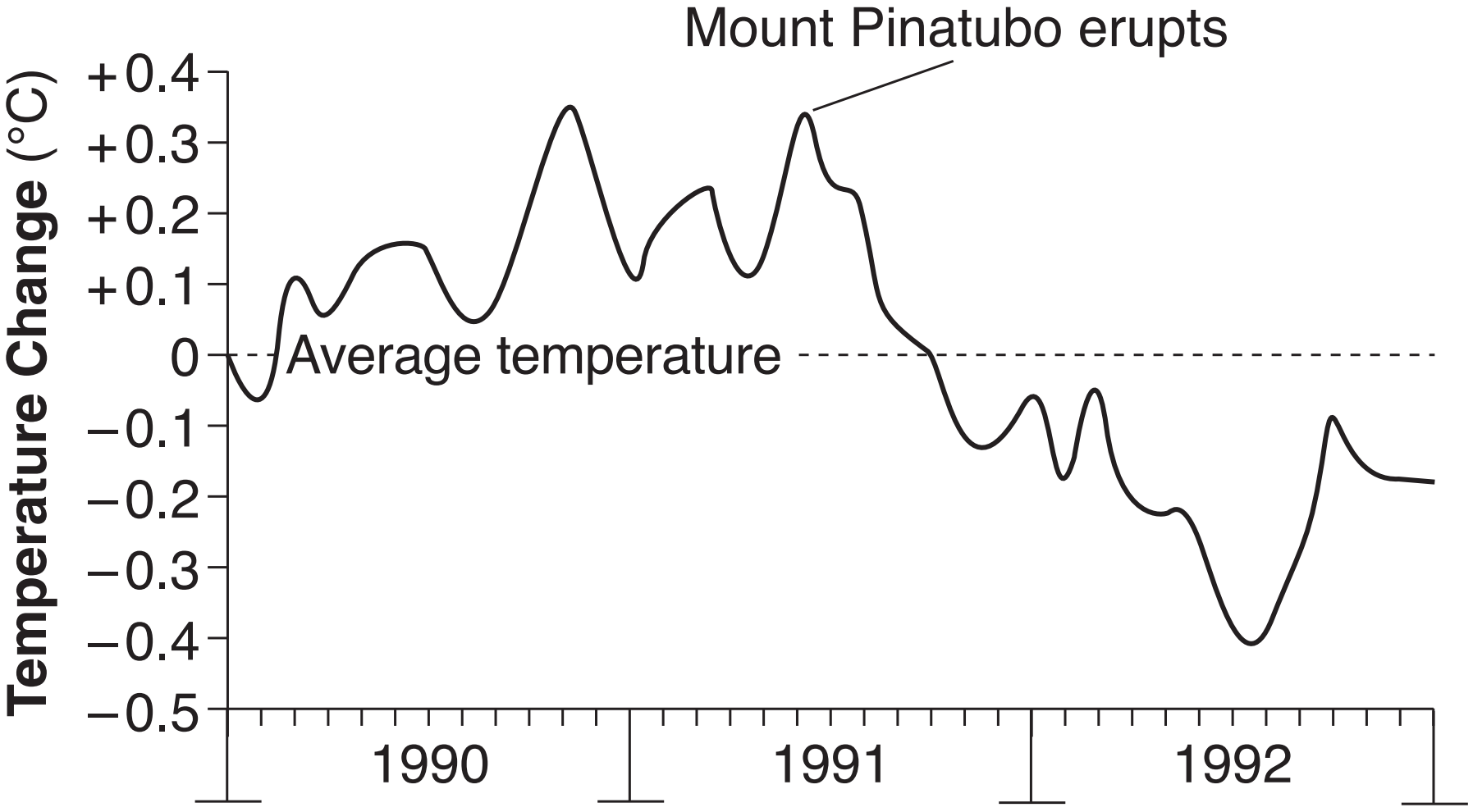

–25 –20 –15 –10 –5 0 5 10 15 20 25 30 35 40 45 50° C
–25 –20 –15 –10 –5 0 5 10 15 20 25 30 35 40 45 50° C
Wet bulb
Dry bulb

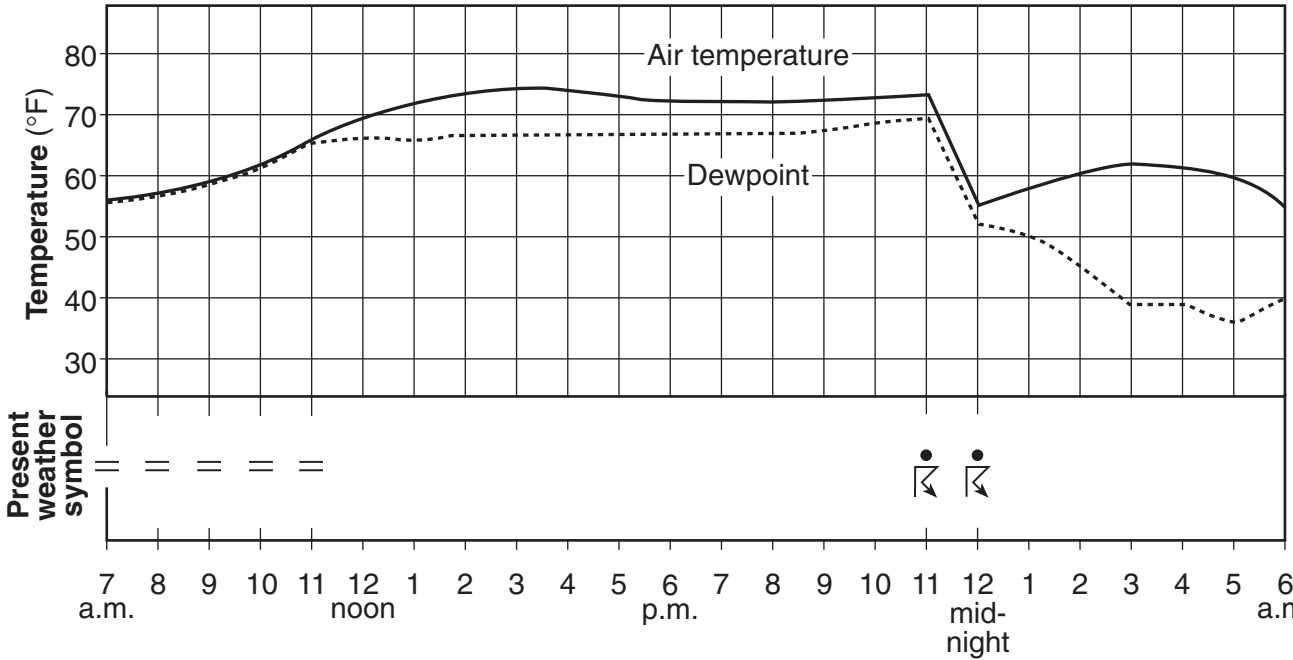

Temperature
Elevation

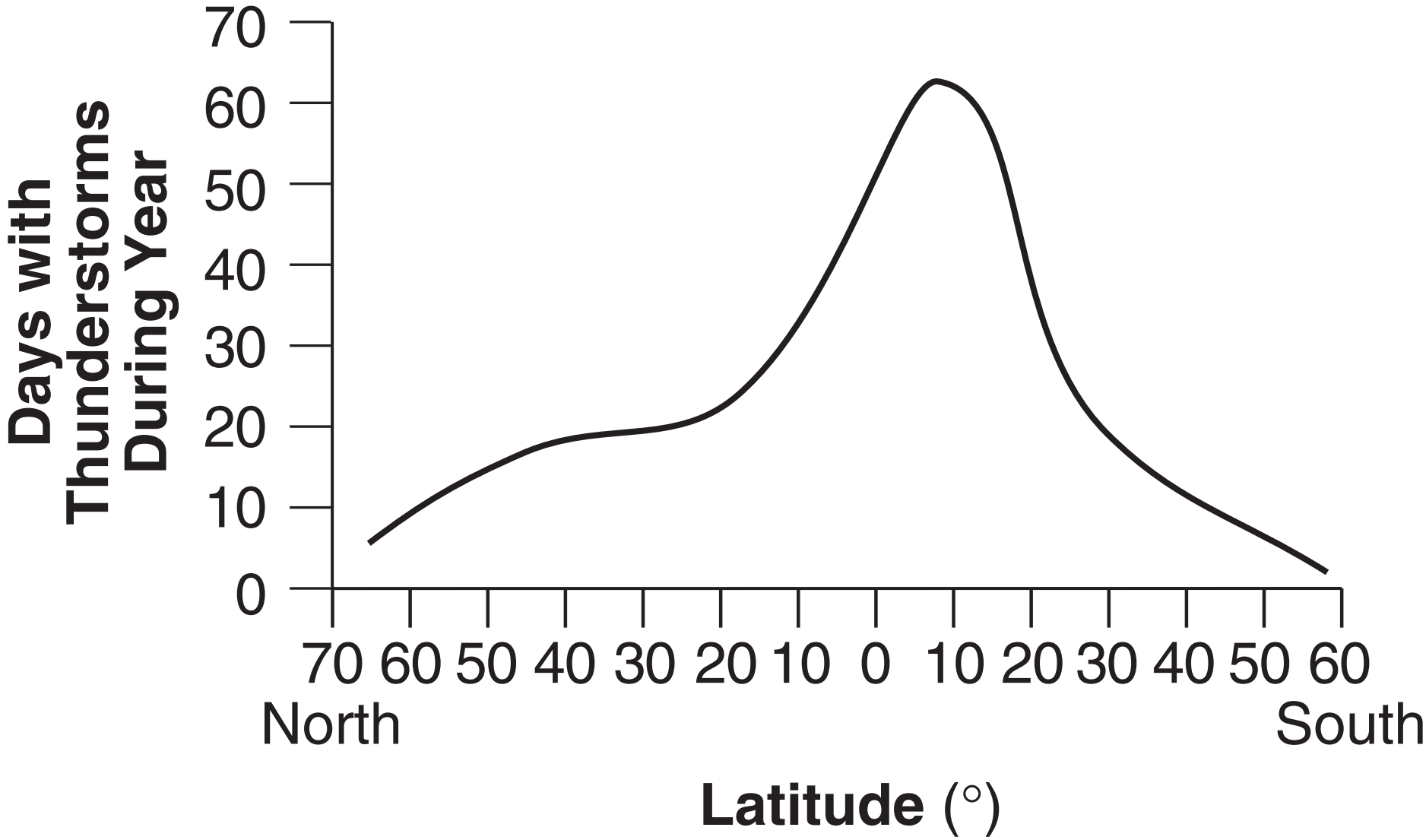

Temperature
Altitude

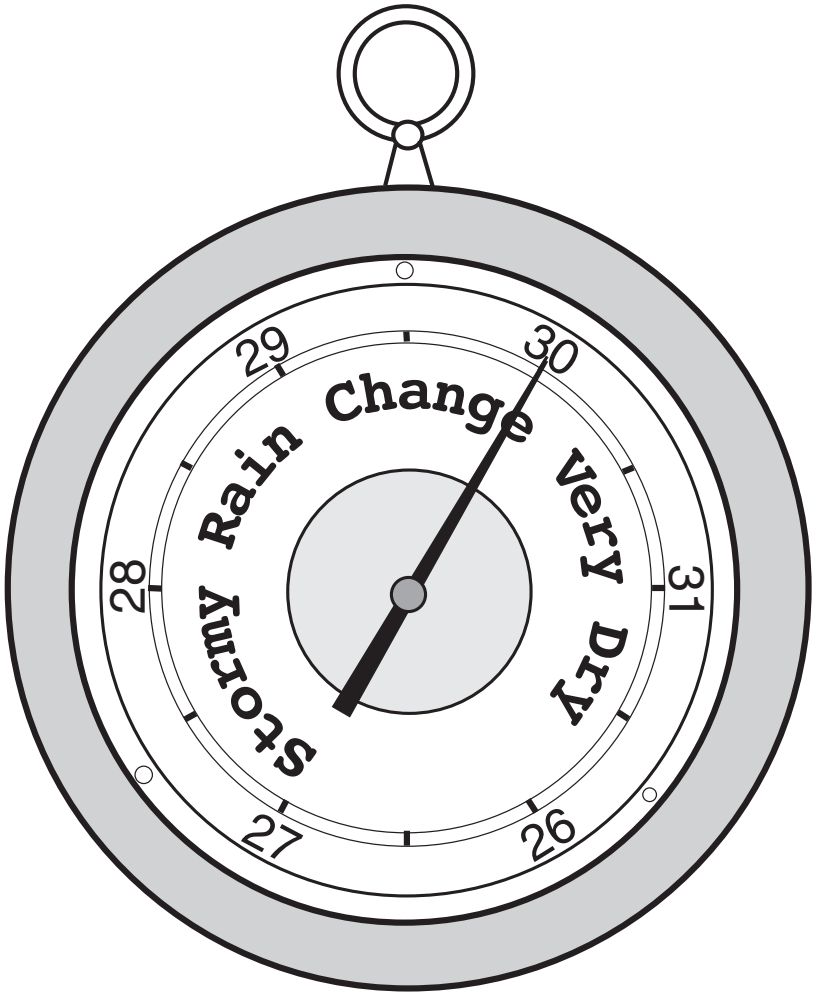

Average Surface Temperature
0°
90° N
Latitude

Time	**Air Temperature** (°F)	**Air Pressure** (in of Hg)
11 a.m.	77	29.81
12 noon	81	29.79
1 p.m.	84	29.77
2 p.m.	88	29.75
3 p.m.	87	29.74
4 p.m.	86	29.73
5 p.m.	85	29.73
6 p.m.	82	29.74
7 p.m.	79	29.76

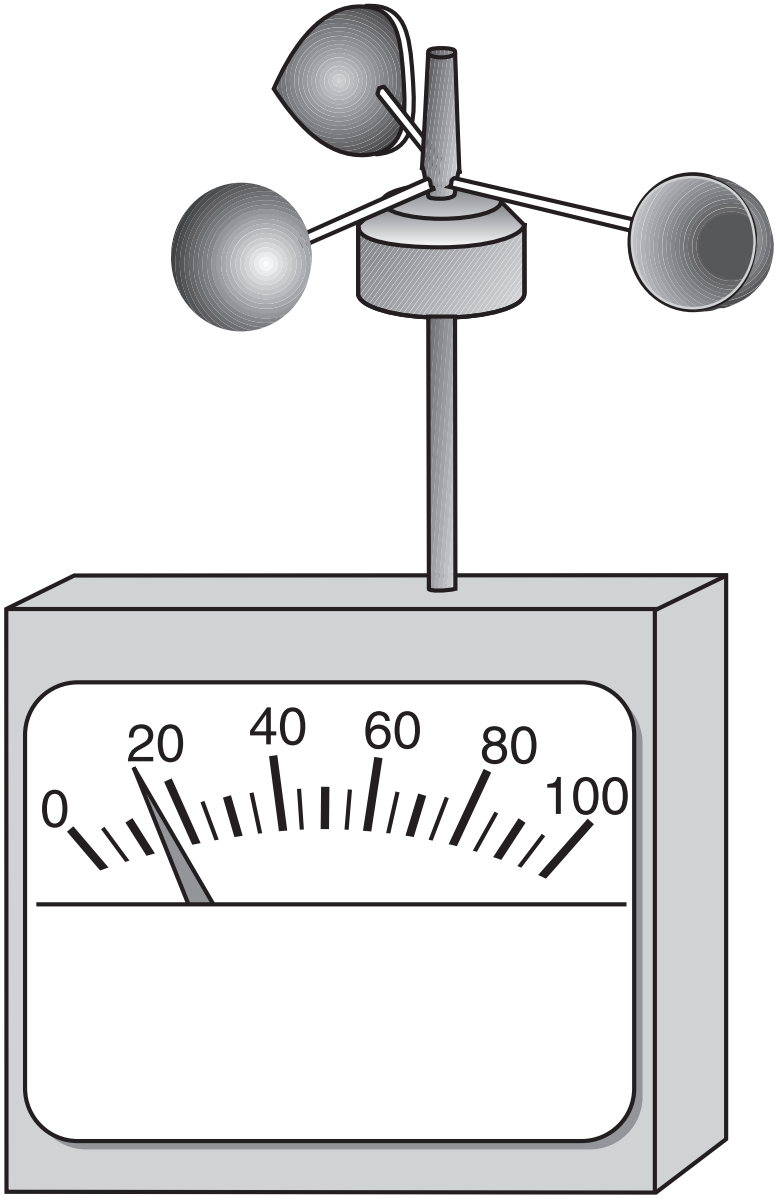

Mount Pinatubo erupts
Temperature Change (°C)
+0.4
+0.3
+0.2
+0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
Average temperature
1990
1991
1992


Air temperature
Dewpoint
Temperature (°F)
80
70
60
50
40
30
Present weather symbol
7 a.m.
8
9
10
11
12 noon
1
2
3
4
5
6 p.m.
7
8
9
10
11
12 mid-night
1
2
3
4
5
6 a.m.


Days with Thunderstorms During Year
70
60
50
40
30
20
10
0
70 60 50 40 30 20 10 0 10 20 30 40 50 60
North
South
Latitude (°)



A



B