Cross Curricular Math Extension

Sculpting South Carolina Extension
Fourth Grade Math Extension

SCA Theme: Communities

Focus Question
How can we use climate data to understand annual weather and weather patterns?

Activity Synopsis
Students will review data about South Carolina's climate and make graphs, charts and maps illustrating annual climate information and will record climate measurements or extreme climatic events.

Time Frame
3 days

Objectives
The learner will be able to:

- Use data to make graphs, charts and maps
- Analyze data in a report

Standards

Math – 3.MD.3, 4.MD.4, 5.MD.2
Science – 4-1.5, 4-1.6, 4-4.3, 4-4.4

Materials

- Climate data (below)
- Blank SC map
- Graph paper
- Colored pencils

Procedure
Climate data for South Carolina from the South Carolina Department of Natural Resources Office of South Carolina Climatology (web addresses are included below).

1. Divide students up into climatologist groups of three to four students.
2. Assign a portion of the data set to each group by county so all counties are represented.
3. Students review the data by reading the included climate information or retrieving information off of the internet at the Department of Natural Resources web pages listed below.
4. Each group should represent the climatological data in the form(s) of graphs, charts and/or maps. Each illustration should be well labeled and easy to understand. For example: a graph can be made showing the average and record annual precipitation for the different regions of the state.
5. The graphs and other illustrations should be displayed and/or presented to the rest of the group.
6. Discuss the results of the climate data analysis with the students. Are there trends in the climate data that correspond to the state's geography?

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Website references

- South Carolina Department of Natural Resources climate data for South Carolina by county: http://water.dnr.state.sc.us/climate/sco/products/maps/counties/countyfrm.html
- South Carolina Office of Climatology: http://water.dnr.state.sc.us/climate/sco
- South Carolina Department of Natural Resources: http://water.dnr.state.sc.us
- Data from: South Carolina Office of Climatology: http://water.dnr.state.sc.us/climate/sco

Charleston County

Temperature Summary (1930-1999)
Highest Maximum: 105 F, August 1, 1999
Highest Mean: 93 F, August 1, 1999
Lowest Mean: 16.5 F, January 21, 1985
Lowest Minimum: 6 F, January 21, 1985
Annual Average:
Maximum 75.1 F
Mean 65.6 F
Minimum 56.1 F

Precipitation Summary (1930-1999)
Highest Daily Rainfall: 10.33 inches, September 6, 1933
Annual Average Rainfall: 50.53 inches
Wettest Year: 74.87 inches, 1945
Driest Year: 28.80 inches, 1931
Mean Snowfall: .5 inches
Largest Snowfall: 8.9 inches 1989

Extreme Events (1975-1995)

6 Tornadoes
0 Tornadoes that cost over $50,000 in damage
4 Injuries from all the tornadoes
79 Wind Events (thunderstorm winds exceeding 60 miles per hour)
21 Hail Events
4 Deaths from Lightning>
31 Lightning Events
14 Lightning-related Injuries
46 Total Floods

9 Flash Floods
20 River Floods
17 Urban Floods
24 Ice, Sleet or Snow
22 Extreme Cold Events
2,266 Wildfires
22,276 Acres burned in wildfire
38 Months in Moderate to Severe Drought
4 Earthquake epicenters

Orangeburg County

Temperature Summary (1948-1999)
Highest Maximum: 106 F, August 6, 1954
Highest Mean: 92.5 F, August 6, 1954
Lowest Mean: 14.5 F, January 21, 1985
Lowest Minimum: 2 F, January 21, 1985
Annual Average:
Maximum 75.3 F>
Mean 63.5 F
Minimum 51.8 F

Precipitation Summary (1948-1999)
Highest Daily Rainfall: 9.99 Inches, October 10, 1990
Annual Average Rainfall: 47.53 Inches
Wettest Year: 71.47 Inches, 1964
Driest Year: 25.42 Inches, 1954
Mean Snowfall: .4 Inch
Largest Snowfall: 7.5 Inches, 1980

Extreme Events (1975-1995)

18 Tornadoes
6 Tornadoes that cost over $50,000 in damage

8 Flash Floods
14 River Floods

South Carolina Aquarium

15 Injuries from all the tornadoes<
83 Wind Events (thunderstorm winds exceeding 60 miles per hour)
33 Hail Events
3 Deaths from Lightning
19 Lightning Events
9 Lightning-related Injuries
25 Total Floods

3 Urban Floods
19 Ice, Sleet or Snow Events
16 Extreme Cold Events
4,473 Wildfires
25,337 Acres burned in wildfire
32 Months in Moderate to Severe Drought
1 Earthquake epicenter

Richland County

Temperature Summary (1930-1999)
Highest Maximum: 109 F, June 29, 1998
Highest Mean: 94.5 F, July 20, 1986
Lowest Mean: 14 F, January 21, 1985
Lowest Minimum: 1 F, January 21, 1985
Annual Average:
Maximum 75.6 F
Mean 64.8 F
Minimum 54.0 F

Precipitation Summary (1930-1999)
Highest Daily Rainfall: 5.90 Inches, September 30, 1960
Annual Average Rainfall: 45.29 Inches
Wettest Year: 74.49 Inches, 1959
Driest Year: 29.81 Inches, 1951
Mean Snowfall: 1.2 Inches
Largest Snowfall: 13.5 Inches, 1973

Extreme Events (1975-1995)

13 Tornadoes
4 Tornadoes that cost over $50,000 in damage
12 Injuries from all the tornadoes
85 Wind Events (thunderstorm winds exceeding 60 miles per hour)
43 Hail Events
1 Death from Lightning
25 Lightning Events
6 Lightning-related Injuries
33 Total Floods

11 Flash Floods
13 River Floods
9 Urban Floods
24 Ice, Sleet or Snow Events
17 Extreme Cold Events
2,326 Wildfires
10,556 Acres burned in wildfire
32 Months in Moderate to Severe Drought
0 Earthquake epicenters

Union County (1949-1999)

Temperature Summary
Highest Maximum: 108 F, July 29, 1952
Highest Mean: 94 F, June 21, 1958
Lowest Mean: 12 F, January 11, 1982
Lowest Minimum: -1 F, January 21, 1985
Annual Average:
Maximum 72.8 F
Mean 59.4 F
Minimum 46.1 F

Precipitation Summary (1949-1999)
Highest Daily Rainfall: 7.33 Inches, October 12, 1990
Annual Average Rainfall: 49.49 Inches
Wettest Year: 65.74 Inches, 1971
Driest Year: 23.64 Inches, 1949
Mean Snowfall: 2.2 Inches
Largest Snowfall: 14.1 Inches, 1960

Extreme Events (1975-1995)

South Carolina Aquarium

7 Tornadoes

4 Tornadoes that cost over $50,000 in damage

3 Injuries from all the tornadoes

32 Wind Events (thunderstorm winds exceeding 60 miles per hour)

16 Hail Events

0 Deaths from Lightning

3 Lightning Events

0 Lightning-related Injuries

33 Total Floods

13 Flash Floods>

18 River Floods

2 Urban Floods

29 Ice, Sleet or Snow Events

20 Extreme Cold Events

341 Wildfires

3,195 Acres burned in wildfire

44 Months in Moderate to Severe Drought

0 Earthquake epicenters

Data from SC Office of Climatology: http://water.dnr.state.sc.us/climate/sco/

Greenville County

Temperature Summary (1967-1999)

Highest Maximum: 99 F, August 21, 1983

Highest Mean: 86.5 F, August 21, 1983

Lowest Mean: -1 F, January 21, 1985

Lowest Minimum: -19 F, January 21, 1985

Annual Average:

Maximum 63.3 F

Mean 54.4 F

Minimum 45.6 F

Precipitation Summary (1967-1999)

Highest Daily Rainfall:7.00 Inches, September 8, 1977

Annual Average Rainfall: 76.23 Inches

Wettest Year: 106.93 Inches, 1979

Driest Year: 12.06 Inches, 1967

Mean Snowfall: 9.7 Inches

Largest Snowfall:47.8 inches, 1969

Extreme Events (1975-1995)

>6 Tornadoes

3 Tornadoes that cost over $50,000 in damage

2 Injuries from all the tornadoes

118 Wind Events (thunderstorm winds exceeding 60 miles per hour)

55 Hail Events

2 Deaths from Lightning

23 Lightning Events

9 Lightning-related Injuries

77 Total Floods

48 Flash Floods

27 River Floods

2 Urban Floods

63 Ice, Sleet or Snow

24 Extreme Cold Events

971 Wildfires

4,573 Acres burned in wildfire

57 Months in Moderate to Severe Drought

0 Earthquake epicenters