

## **San Diego's Climate and Weather**

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**Time:** 55-90 minutes plus ongoing weather journal

### **Standards:**

6. Climate is the long-term average of a region's weather and depends on many factors. As a basis for understanding this concept:

a. Students know weather (in the short run) and (in the long run) involve the transfer of energy into and out of the atmosphere.

### **Topical Objectives:**

How does weather and climate along with latitude, elevation, topography and proximity to large bodies of water effect San Diego's climate?

### **Lesson:**

Discussion of Cloud Formation as it relates to latitude, elevation, topography and proximity to large bodies of water. See the following link for lesson plan and Water in the Bottle Lab;

[http://ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud\\_types.htm](http://ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud_types.htm)

### **Safety Rules:**

See: Cloud in a Bottle Lab Safety Information

### **Materials:**

Weather journal (spiral notebook)

Internet access

See: Cloud in a Bottle Lab Information

### **Preparation: (Students prior knowledge from prior units)**

Latitude and Longitude

Celsius/Fahrenheit

Convection

Atmospheric Circulation

Standard 5

### **Key Terms:**

Coriolis effect

(water cycle terminology: ex. humidity, dew point, condensation, etc)

(cloud types: ex. cumulus, etc..)

Pressure gradient force

Jet stream

High pressure

Divergence

Fronts (cold & warm)

Convergent zones

Meteorology  
Topography  
Convergent zones  
Low pressure

**Activities:**

Students will create climate journal.

-students use worksheets for cloud photography and identification available at:  
[http://ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud\\_types.htm](http://ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud_types.htm)

Students perform Cloud in a Bottle Lab.

[http://ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud\\_types.htm](http://ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud_types.htm)

Students, using a topography map of San Diego, create a Water Cycle diagram.

<http://ga.water.usgs.gov/edu/watercycle.html>

**Science Notebook Ideas:**

Climate Journal for entire unit.

Collect weather data: temperature high & low, humidity, dew point, wind direction, pressure, sunrise, sunset, moon phase, tides, rainfall

Include Observations from: Satellite radar and Doppler radar maps

Identify: Cloud types

(see:[ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud\\_types.htm](http://ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud_types.htm))

**Procedure:**

Students will use these websites for climate journal:

[www.weatherbug.com](http://www.weatherbug.com)

[http://www.nasa.gov/audience/for\\_kids/home/Observing\\_Clouds.html](http://www.nasa.gov/audience/for_kids/home/Observing_Clouds.html)

[www.noaa.gov](http://www.noaa.gov)

Regarding Cloud in a Bottle Lab:

Teacher note: This is a student inquiry lab. Students are given all materials to make a cloud in the bottle. The last item given to students is one match.

**Extensions:**

Students can use a comparison city with similar latitude on the east coast.

Students will use data from climate journal to make predictions on:

Sea level rise

Tidal gauge data: [http://www.pol.ac.uk/psmsl/psmsl\\_individual\\_stations.html](http://www.pol.ac.uk/psmsl/psmsl_individual_stations.html)

Global warming

Biodiversity

Ocean currents

Trade winds

Hurricanes

Drought

**Synthesis:**

Students will understand how the water cycle affects the San Diego climate. Students will be able to make predictions on weather patterns locally and globally.

Students will analyze and interpret data.

**Additional Links/References for extensions:**

USA Today Weather Book. 1997

**Sources: Used Internet sites to compile**

Cloud types and formation lesson plan

[http://ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud\\_types.htm](http://ccc.atmos.colostate.edu/~hail/teachers/lessons/cloud_types.htm)

NOAA Home Page

[www.noaa.com](http://www.noaa.com)

Weather and forecast information on WeatherBug.com

[www.weather.weatherbug.com](http://www.weather.weatherbug.com)

NASA - Observing Clouds

[www.nasa.gov/audience/for\\_kids/home/Observing\\_Clouds.html](http://www.nasa.gov/audience/for_kids/home/Observing_Clouds.html)

National Weather Service - NWS San Diego

[www.wrh.noaa.gov/sgx/cpm/station.php?wfo=sgx](http://www.wrh.noaa.gov/sgx/cpm/station.php?wfo=sgx)

The Water Cycle, from USGS Water Science for Schools. Diagram available in 60+ languages

<http://ga.water.usgs.gov/edu/watercycle.html>

USA Today weather

<http://www.usatoday.com/weather/wwater0.htm>

World Climate: Weather rainfall and temperature data

<http://www.worldclimate.com/>

Coriolis Effect Movies

<http://www.baesi.org/TRG/coriolis/movies.htm>

Blue Man Group on Global Warming & Chris Farley El Nino Video  
(use Google Video)