

# EARTH SCIENCE Lesson Plan

## Quarter 2, Week 6, Day 1



### Outcomes for Today

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Standard Focus: Earth Sciences 5.f “students know the interaction of wind patterns, ocean currents, and mountain ranges results in the global pattern of latitudinal bands of rainforests and deserts”, 6.a “students know weather (in the short-term) and climate (in the long-term) involves the transfer of energy into and out of the atmosphere”, and 6.b “students know the effect on climate of altitude, elevations, topography, and proximity to large bodies of water and cold or warm ocean currents”.

### PREPARE

#### 1. Background knowledge necessary for today’s reading.

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Climatology is the study of Earth’s climate and the factors that effect past, present, and future climatic changes. Climate describes the long-term weather patterns of an area. The patterns are based on data continually gathered from thousands of weather stations.

#### 2. Vocabulary Word Wall.

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Introduce 3-5 important words from today’s reading

**climatology**

**climate**

**normals**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

### READ

#### 3. Review the vocabulary and concepts previously covered in this chapter.

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#### 4. Read directions for investigation/activity.

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#### 5. Read text.

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Ch. 14.1, pp. 359-361

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Climate describes the long-term weather patterns of an area.
- Climate describes the annual variations of the temperature, precipitation, wind, and other variables.
- Once data is gathered it is averaged on a monthly or annual basis for a period of at least 30 years to determine the normals, standard values for an area.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

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### 10. Collect data and post.

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**One possible activity:** Climate Variability

**Procedure:** Students graph 30-year periods of climate using playing cards to represent temperature differences.

**Discussion:** Discuss the concepts of climate variability and extreme climatic events.

**Key question:** What makes detecting climate change difficult?

**Source:** [http://www.ucar.edu/learn/1\\_2\\_2\\_9t.htm](http://www.ucar.edu/learn/1_2_2_9t.htm)

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or to the world.

# **EARTH SCIENCE** Lesson Plan

## Quarter 2, Week 6, Day 2



### **Outcomes for Today**

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Standard Focus: Earth Sciences 5.f, 6.b, and 6.b

#### **PREPARE**

##### **1. Background knowledge necessary for today's reading.**

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Climatic variations such as latitude, topography, proximity to lakes and oceans, the availability of moisture, global wind patterns, ocean currents and air masses affect a location's climate.

##### **2. Vocabulary Word Wall.**

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Introduce 3-5 important words from today's reading

**tropics**

**temperate zones**

**polar zones**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

#### **READ**

##### **3. Review the vocabulary and concepts previously covered in this chapter.**

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##### **4. Read directions for investigation/activity.**

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##### **5. Read text.**

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Ch. 14.1, pp. 361-363

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- The tilt of the Earth's axis the amount of solar radiation received by any one place.
- Closeness to large bodies of water effect the climate of coastal areas making them warmer in the winter and cooler in summer than inland areas of similar latitude.
- Deserts are commonly on the leeward side of mountains where there is less moisture and the air warms as it descends.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

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### 10. Collect data and post.

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**One possible activity:** Global Climate Change: Understanding the Greenhouse Effect (Part 1)

**Procedure:** Students view Quick time video and answer questions relating to global climate change

**Discussion:** Discuss the difference between climate and weather.

**Key question:** How is the tilt of Earth's axis related to the changing seasons?

**Source:**

[http://www.teachersdomain.org/resources/ess05/sci/ess/watercyc/lp\\_global\\_1/index.html](http://www.teachersdomain.org/resources/ess05/sci/ess/watercyc/lp_global_1/index.html)

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or to the world.

# EARTH SCIENCE Lesson Plan

## Quarter 2, Week 6, Day 3



### Outcomes for Today

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Standard Focus: Earth Sciences 5.e “students know that rainforests and deserts are distributed in bands at specific latitudes” and 6.b.

### PREPARE

#### 1. Background knowledge necessary for today’s reading.

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Climates are classified using a modified version of the Koeppern classification system which is based on vegetation and the average monthly temperature and precipitation. The system has six main divisions: tropical, dry, mild, continental, polar, and high-elevation.

#### 2. Vocabulary Word Wall.

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Introduce 3-5 important words from today’s reading

**Koeppen classification system    natural vegetation    tropical rainforest    steppes**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

### READ

#### 3. Review the vocabulary and concepts previously covered in this chapter.

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#### 4. Read directions for investigation/activity.

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#### 5. Read text.

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Ch. 14.2, pp. 364-366

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Dry climates make up the largest climate zone covering about 30% of earth's land area.
- Mild and continental climates can each be sub classified into three subtypes.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

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### 10. Collect data and post.

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**One possible activity:** Desert Graphics

**Procedure:** Students compare data from different climates and graph monthly rainfall and temperatures

**Discussion:** Discuss characteristics of a desert climate

**Key question:** Why is it important to keep records that show average rainfall and temperatures for an area?

**Source:**

<http://nationalgeographic.com/xpeditions/lessons07/q68/desert.html>

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or to the world.

# **EARTH SCIENCE** Lesson Plan

## Quarter 2, Week 6, Day 4



### **Outcomes for Today**

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Standard Focus: Earth Sciences 5.e and 6.b.

#### **PREPARE**

##### **1. Background knowledge necessary for today's reading.**

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Microclimates are localized climates that differ from the surrounding regional climates. Microclimates can be, for example, a high-elevation area that is much colder than its immediate area. Other types of microclimates exist in cities that have many skyscrapers and large areas covered by pavement and asphalt.

##### **2. Vocabulary Word Wall.**

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Introduce 3-5 important words from today's reading

**microclimate**

**heat islands**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

#### **READ**

##### **3. Review the vocabulary and concepts previously covered in this chapter.**

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##### **4. Read directions for investigation/activity.**

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##### **5. Read text.**

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Ch. 14.2, pp. 367-368

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- High-elevations or cities can produce microclimates.
- A building can create a microclimate in an area immediately surrounding it.
- The heat island effect created by large areas of asphalt cause cities to be warmer than the surrounding rural areas.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

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### 10. Collect data and post.

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**One possible activity:** What Do Concentrations Mean? Comparing Concentrations of Gases in Our Atmosphere

**Procedure:** Students will use a dilution experiment to understand the concept of part-per-million (ppm) and part-per-billion (ppb) measurements.

**Discussion:** Discuss with students the comparisons given to illustrate the miniscule amounts of the measurements.

**Key question:** How can gases such as carbon dioxide and methane have such a large impact on our atmosphere?

**Source:** [http://www.ucar.edu/learn/1\\_4\\_2\\_14t.htm](http://www.ucar.edu/learn/1_4_2_14t.htm)

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or to the world.



# EARTH SCIENCE Lesson Plan

## Quarter 2, Week 6, Day 5



### Outcomes for Today

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Standard Focus: Earth Sciences 5.g “students know features of ENSO (El Nino southern oscillation) cycle in terms of sea-surface and air temperature variations across the Pacific Ocean and some climatic results of this cycle” and 6.c “students know how Earth’s climate has changed over time, corresponding to changes in Earth’s geography, atmospheric composition, and other factors, such as solar radiation and plate movement”.

### PREPARE

#### 1. Background knowledge necessary for today’s reading.

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El Nino and La Nina are opposites of the same cycle that cause warm waters of the tropical Pacific Ocean to move back and forth across the ocean. El Nino is the warm phase and La Nina is the cold phase. During La Nina the ocean and air off the South American coast is colder than normal and there is a marked increase in hurricane activity in the Atlantic Ocean.

#### 2. Vocabulary Word Wall.

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Introduce 3-5 important words from today’s reading

**ice age**

**interglacial intervals**

**seasons**

**El Nino**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

### READ

#### 3. Review the vocabulary and concepts previously covered in this chapter.

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#### 4. Read directions for investigation/activity.

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#### 5. Read text.

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Ch. 14.3, pp. 369-371

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Earth's climate is in a constant stage of change.
- Ice ages are an example of long-term climatic changes.
- The seasons and the effect of El Nino are examples of short-term climatic changes.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

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### 10. Collect data and post.

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**One possible activity:** El Nino or El No-no, steps 1 and 2 (other steps can be done if time permits)

**Procedure:** Students work in groups to research and answer questions regarding El Nino.

**Discussion:** Read and discuss the articles listed as a whole class.

**Key question:** What is important to people to understand about the El Nino/La Nina cycle?

**Source:** <http://www.powayschools.com/projects/elnino/>

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or to the world.