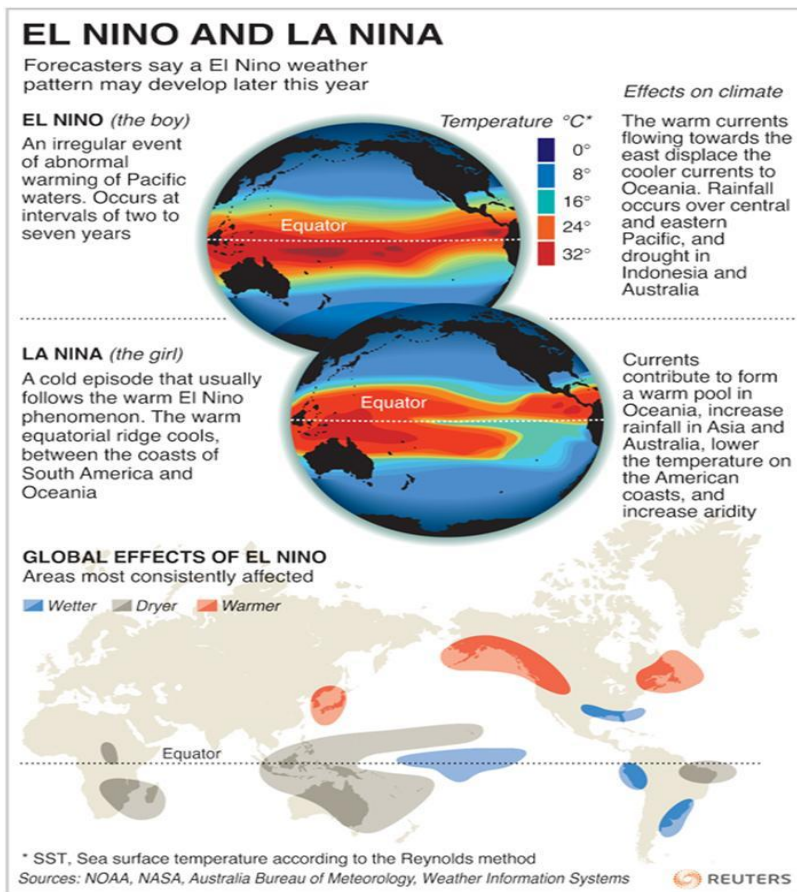


El Niño and La Niña

Name: _____ Period: _____ Date: _____

Essential Question: How do El Niño and La Niña affect sea temperature, and weather?



Hundreds of years ago, South American fishermen observed that every year around December or Christmas, coastal waters of the **Pacific became warmer as a current flowed from north to south**. This change often meant a smaller fish catch but more rainfall inland that translated to more abundant crop harvest. They said the current came from El Niño (el NEEN yo) — Spanish for “the boy.” But villagers were not referring to just any boy. Used at this time of year, their term referred to Jesus, “the Christ child.”

El Niños can bring heavy rainfall and flooding to the **West Coast of South America**. Meanwhile, **Australia and Southeast Asia** may face a drought and high risk of wildfires. In **North America**, scientists have also linked unusual weather events — including ice storms, droughts and mudslides — to the arrival

of an El Niño.

Today, **researchers** use the term El Niño only for those periods when the surface water around the equator in the eastern and central Pacific warms for an extended period of time. Scientists declare the development of an El Niño when they observe a temperature increase of at least 0.4 degree Celsius (0.72 degree Fahrenheit) for five months in a row in the eastern Pacific near the equator.

At other times, the surface water in the eastern Pacific instead may cool for long stretches of time. When the average temperature drops by at least 0.4° C (0.72° degree F), climate scientists will announce the arrival of a **La Niña** (lah NEEN yah). This is Spanish for “the girl.” In general, effects of a La Niña run opposite to those triggered by an El Niño: Now, Central and South America may face severe droughts while Australia floods. Much of the rest of the world, including large portions of Africa and North America, may also see substantial climate impacts from ENSO events. <http://www.sciencenewsforkids.org/2013/02/el-nino-and-la-nina/>

Clarifying Questions:

1. What is El Nino? (Read the chart)

2. What is La Nina? (Read the chart)

3. What are the GLOBAL EFFECTS OF El Nino? (Read the chart)

4. What did South American fishermen observed every year around Christmas in the coastal waters of the Pacific?

5. How were the fishermen affected by the warmer current in Pacific that flowed from North to South?

6. How were the farmers affected by the warmer current in Pacific that flowed from North to South?

7. Why did they call the warming of the equatorial Pacific El Niño?

8. Why do farmers in South America get abundant crops during El Niño? Think!

9. Why do fishermen get less catch during El Niño? Think!

10. How are the following places affected by El Niño?

a. West Coast of South America

b. Australia and Southeast Asia

c. North America

11. El Niño when they observe a temperature increase of at least _____ Celsius (0.72 degree Fahrenheit) for _____ months in a row in the eastern Pacific near the _____.

12. When the average temperature _____ (0.72° degree F), climate scientists will announce the arrival of a **La Niña** (lah NEEN yah). This is Spanish for “_____.” In general, effects of a La Niña run _____ to those triggered by an El Niño:

Multiple Choice: Write your answers on the spaces before each number.

___ 1. Episodes of ocean warming that affect the eastern tropical Pacific are called

- A. La Niña B. monsoons C. El Niño

___ 2. Strong El Niño events happen every five years.

- A. True B. False

___ 3. Winds are the link between the Southern Oscillation and ocean warming associated with El Niño.

- A. True B. False

___ 4. The trade winds are weaker during an El Niño event.

- A. True B. False

___ 5. Which of the following is a possible condition during an El Niño event?

- A. drought in Australia C. trade winds weaken
B. more rain during the dry season in Florida D. all of the above

___ 6. Surface ocean temperatures of the eastern tropical Pacific are colder than average during an El Niño event.

- A. True B. False

___ 7. Some of the heaviest annual precipitation occurs

- A. over most of Australia B. within the Amazon Basin C. in the Sahara

___ 8. The 1997-98 El Niño event was responsible for

- A. floods from Texas to the Gulf states C. Landslides along the California coast
B. significant coastal erosion in California D. all of the above

___ 9. The strongest La Niña on record occurred in 1997-1998.

- A. True B. False

___ 10. The warm, humid trade winds converge and produce abundant rainfall in the tropics.

- A. True B. False

http://wps.prenhall.com/esm_tarbuck_escience_11/32/8326/2131584.cw/content/index.html
<http://www.youtube.com/watch?v=uySu7Zv2cbU&safe=active>
<http://www.youtube.com/watch?v=2nK-b6bb0nA&safe=active>
http://www.youtube.com/watch?v=wpAe_hdFYrE&safe=active
<http://forum.santabanta.com/showthread.htm?286003-El-Ni%C3%B1o-vs-La-Ni%C3%B1a>

1. Episodes of ocean warming that affect the eastern tropical Pacific are called

Your Answer: El Niño

2. Strong El Niño events happen every five years.

Your Answer: False

El Niño event patterns are irregular, but occur approximately every 3-5 years.

3. Winds are the link between the Southern Oscillation and ocean warming associated with El Niño.

Correct Answer: True

The trade winds weaken because of a pressure decrease in the western Pacific.

4. The trade winds are weaker during an El Niño event.

Correct Answer: True

The trade winds weaken and warm ocean water builds up in the tropical eastern Pacific.

5. Which of the following is a possible condition during an El Niño event?

Correct Answer: all of the above

El Niño has many far-reaching effects including warmer temperatures west of the Rockies.

- 6.** Surface ocean temperatures of the eastern tropical Pacific are colder than average during an El Niño event.

Your Answer: False

As the pressure changes the tradewinds will weaken and strengthen, setting up the conditions for El Niño and La Niña.

- 7.** Some of the heaviest annual precipitation occurs

Correct Answer: within the Amazon Basin

The Amazon Basin includes much of the lands we refer to as the rainforests.

- 8.** The 1997-98 El Niño event was responsible for

Correct Answer: all of the above

Hurricane activity increases during La Niña events.

- 9.** The strongest La Niña on record occurred in 1997-1998.

Correct Answer: False

Two of the strongest El Niño events occurred in 1983-84 and 1997-98.

10. The warm, humid trade winds converge and produce abundant rainfall in the tropics.

Your Answer: True

The Amazon Basin receives some of the highest annual rainfall.