



What is El Niño?

El Niño is a natural climate pattern that causes extreme weather conditions. It starts in the Pacific Ocean, but it's so big that it affects weather all over the world—even in Spokane!

Weather depends a lot on ocean temperatures. Where the ocean is warm, more clouds form and more rain falls. In the Pacific Ocean near the equator, the Sun makes the water especially warm at the surface.

Normally strong trade winds along the equator push the warm surface ocean water near South America westward to Indonesia. When this happens, the cooler water underneath rises to the surface. This is called upwelling. *A side note—Did you know that cool, upwelling water is found off the Washington coast too?*

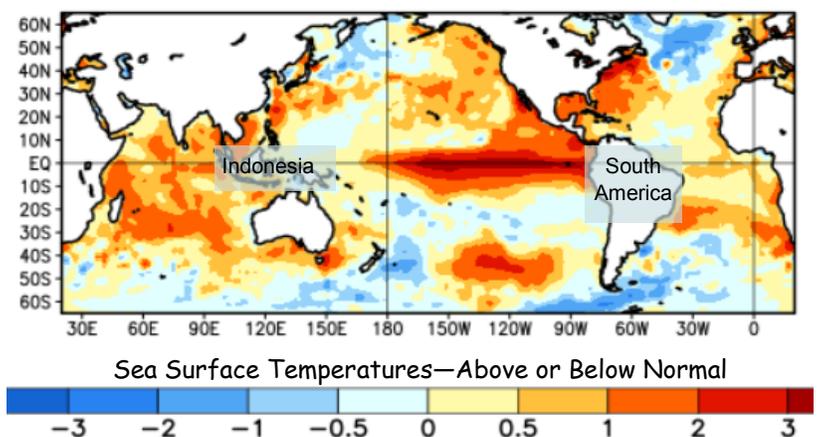
Sometimes these winds are much weaker, and may even blow in the other direction. When this happens, the warm water along the equator piles up off the coast of South America. This large-scale warming of ocean water is called El Niño. Fishermen in South America noticed the change in fish pattern when the water was warm. "El Niño" is Spanish for "Christ Child" because in years past it started around Christmas.

An El Niño affects weather patterns—especially the jet stream that drives the storms late in the winter. El Niño winters typically bring wetter weather for California and drier weather in Alaska. For Spokane and eastern Washington, expect milder weather and usually less snow than normal. So far, Spokane has seen around 32" of snow and normal snowfall is 44"!

El Niño affects more than weather. It can also impact:

- Mountain Snowpack
- Water Supply & Drought
- Air Quality
- Hibernation of Animals
- Fish and Bird Habitats

Warm ocean water seen in the Pacific Ocean along the equator.



Make Your Own El Niño—in the Kitchen!

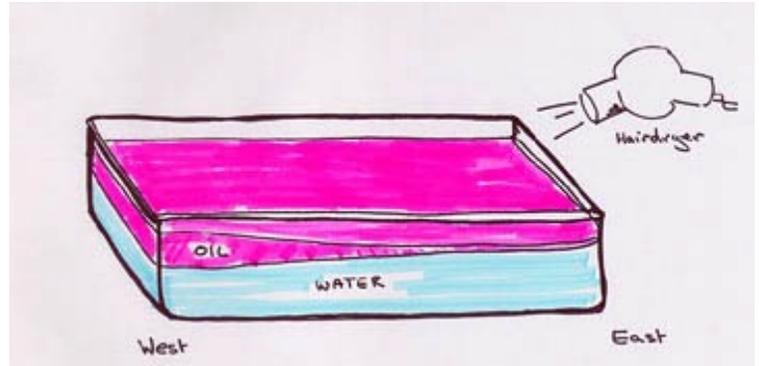
Great for a Science Fair project!

Purpose: Hands on demonstration of the El Niño effect and trade winds.

Parent Supervision is Recommended

Materials:

- Clear plastic oblong container (approx. 18"x4"x4" or smaller size)
- Water
- Mineral oil
- Blue food coloring
- Hair dryer
- Red Oil-based Paint - optional
- Paper sheet map showing the Pacific Ocean



Email us a picture of your experiment and Earn 5 points!

Preparation:

- Fill the tray with water to within 1" of the top.
- Put the container on the paper. Mark *West/Indonesia & East/South America* at each end.
- Add blue food coloring to the water until you have a nice "ocean blue".
- Pour some mineral oil in a bowl and mix in some red oil-based paint until the oil is evenly colored. If you don't have paint, it does not affect the outcome. It's just more colorful.
- Gently pour the oil over the surface of the water. It's okay if it mixes a bit—as it will separate out again.
- Plug in hair dryer, being careful to keep it away from any water spills.

Explanation: The liquids in the plastic container represent a slice across the Pacific Ocean in the vicinity of the equator. The oil (red layer) represents the warm layer of surface water that has been heated by the sun. The blue water represents the colder water below the surface warm layer. Where the two layers meet is the thermocline. The hair dryer is about to represent the trade winds.

Action! (Stage 1) - Turn on the hair dryer (no heat needed) and direct the 'wind' across the surface of the oil-topped water from the East to the West. Describe what happens.

Action! (Stage 2) - Now turn off the "trade winds". What happens to the water? You may need to do this several times to observe the motion. The "warm" water pulses across the "ocean" from West to East, this pulse of water is the warm water that is the ocean's part of the El Niño condition.

For more information, see <https://sealevel.jpl.nasa.gov/science/elninopdo/>

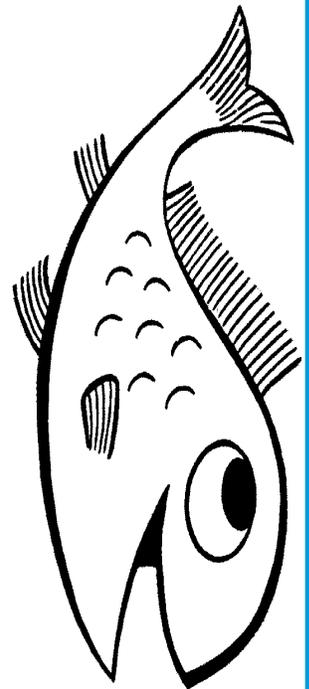
El Niño Puzzle

Complete the activities and mail it back to us. Earn 5 points!

H B J W L D U S Q Q F Y F R X
 A P L R M C H E V J W B I O R
 O K A N G D A R B K E Y S T Z
 C I F I C A P L E Q R H H A Y
 N W O N S F S V I H I J E U O
 S P A N I S H V B F T G R Q C
 X Q S E T G M M D J O A M E E
 H D O K R R S N E M A R E B A
 T E M P E R A T U R E S N W N
 W S O U Y B S H L W M D D I Y
 B L J C N T M H I Y I A M P A
 V R X N R L S M B K F N T Z T
 K B W E V B R M W N K Z D R U
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 A M N H M Z K J E P Q S F H D

Word Bank

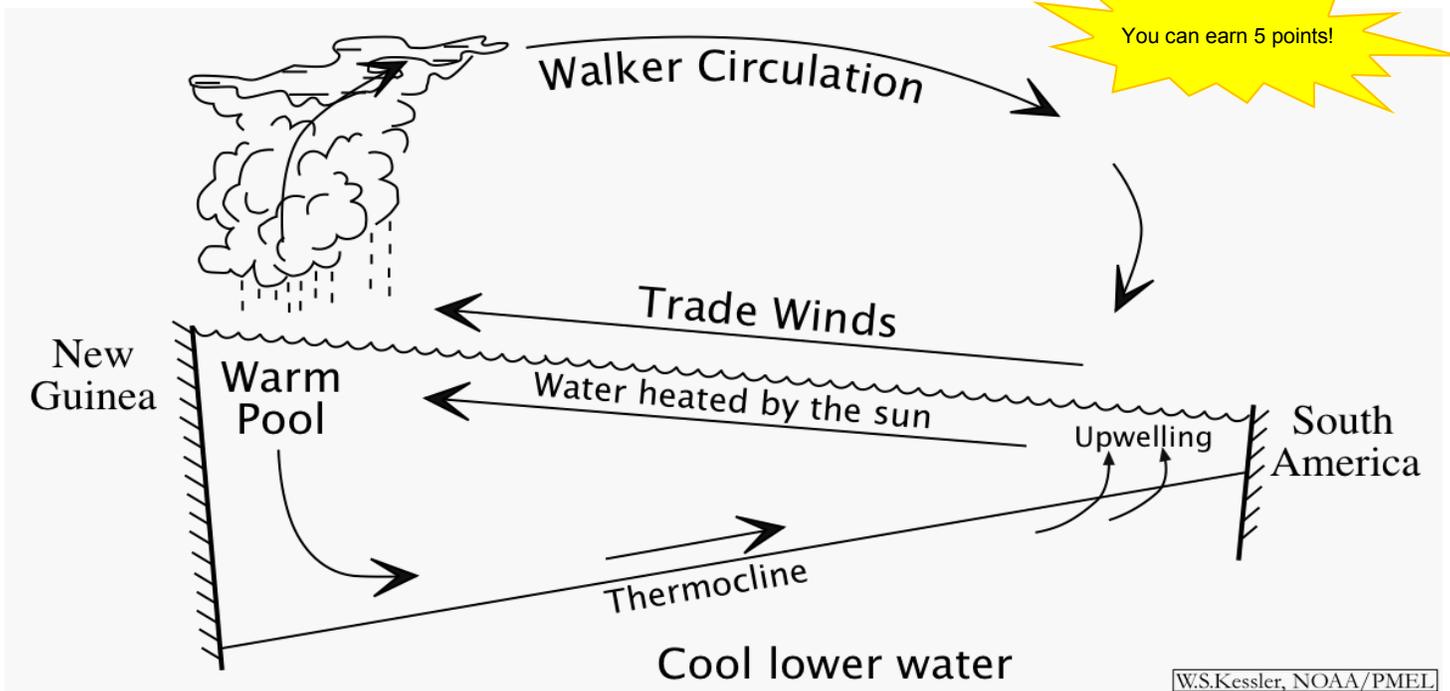
CALIFORNIA
 EQUATOR
 FISHERMEN
 JETSTREAM
 OCEAN
 PACIFIC
 RAIN
 SNOW
 SPANISH
 TEMPERATURES
 WEATHER
 WINDS



YouTube: Understanding El Niño from NOAA Climate.gov
<https://www.youtube.com/watch?v=TuouQcgxI>

Color the El Niño Picture!

You can earn 5 points!





EnviroKids' Club

EnviroKids' Club
c/o City of Spokane Solid Waste Disposal Dept.
2900 S. Geiger Blvd.
Spokane, WA 99224

PRSR STD
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PAID
Spokane, WA
Permit No. 722

**See inside for
Activity Details!**

Members can earn 5 points
by completing each special
EnviroKids' activity that is
marked with a gold star!

EnviroKids'... caring for the Earth

EnviroKids' Club provides its 200+ members with information and activities to explore aspects of the environment: air, water, weather, garbage and recycling, plants and animals. The Club is open to all Spokane County residents who are in grades K-6.

Club members receive a newsletter in the mail four times a year. The newsletter contains activities to complete and ideas for activities at home or in the community. Members who are interested can complete activities and/or participate in some of the events to earn points. Earned points can then be used to trade-in for prizes. **Members need to participate in at least one activity per year to receive newsletters.** For more information, visit www.spokaneenvirokids.org.

To earn points, mail the completed activities page and this page by April 31, 2016 to:

**EnviroKids' Club — c/o National Weather Service
2601 N. Rambo Rd. Spokane, WA 99224—nws.spokane@noaa.gov**

Complete the activities in the newsletter, fill in this form and send it back to us to earn your points! Do you have a friend or sibling who would like to join Envirokids' Club? Copy this page for them to send in and be added to our mailing list.

Name: _____ Age: _____ Grade: _____ School: _____

Home Mailing Address: _____ City: _____ Zip Code: _____

E-mail Address: _____ Phone: _____

My child has permission to participate in EnviroKids' Club activities that I accompany him/her to and permission is granted to use his/her photo that may be taken at such event, for promoting the Club (newsletter, flyers, ads, website, etc.)

Parent Signature. Please print name, then sign and date

EnviroKids' Club Partners: National Weather Service, Spokane County Water Resources, Spokane County Stormwater, Spokane Conservation District, City of Spokane Water Department, City of Spokane Solid Waste Disposal Department and Spokane County Regional Solid Waste System

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