

El Niño's Powerful Reach

Educational Activities

Clues From The Past

Summary:

Participants learn that El Niño is not a recent phenomenon, but is a natural cyclical occurrence which has left thousands of years of evidence.

Grade Level:

Intermediate (grades 5-8)
Secondary (grades 9-12)

Time Needed:

60 minutes

Learning objectives:

- Demonstrate the ability to do scientific inquiry
- Explain how the Earth operates as a system
- Show how patterns repeat themselves in nature

Materials:

Computer with internet connection

Background:

While many people think that El Niño is a new phenomenon, many scientists believe that El Niño events may have been occurring for at least 15,000 years. Scientists use “proxy data”



records like ice cores, tree rings, sea sediments, coral reef cores, and other natural records of climate to determine past El Niño events. Archaeologists and Anthropologists working with cultural clues from the past have also found evidence of historic El Niño events. Dr. Betty Meggers at the Smith-

sonian's National Museum of Natural History has found changes in ceramic pottery from Peru that shows El Niño may have been occurring for at least 15,000 years. Peruvian artifacts also demonstrate El Niño's far-reaching cultural effects. Peruvian fisherman gave



the warming of the seas

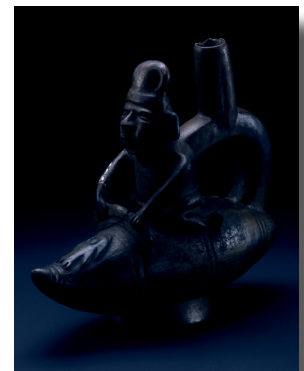
the name “El Niño” which means “The Child” because the warm current usually began close to Christmas.

When the thorny oyster, *Spondylus* shows up in the waters off the desert coast of Peru, people know an El Niño and its rain is coming. Except during an El Niño, the waters off the north coast of Peru are too cold for *Spondylus*. By 1000 B. C., ancient Peruvians



also made the

connection between the appearance of *Spondylus* and heavy rain. The mollusk's predictive value made it an object of great value.



Burial and other archaeological sites have been uncovered that contain ornate pottery with *Spondylus* designs and beautiful beads made from *Spondylus* shells. These clues from the past tell us the value and use of this small mollusk to ancient Peruvian cultures.

PROCEDURE:

Complete the Clues from the Past section of the El Niño Interactive available on-line at <http://www.forces.si.edu/>.

Review the stories available at the following websites:

<http://www.pbs.org/wgbh/nova/elnino/reach/time.html>

<http://www.nationalgeographic.com/elnino/mainpage.html>

Answer the following questions:

- 1) Make a list of at least three different pieces of evidence (or “proxy data”) mentioned in the exhibit interactive that give scientists information about past El Niño events.
- 2) List three types of scientists that study El Nino events or their effects. Describe the scientific research of one Smithsonian researcher and how it explores the deep history of El Niño events.
- 3) Become a scientific detective. Select one piece of evidence scientists use to better understand the deep history of El Niño. Explain what clues this piece can give you.
- 4) List two cultures mentioned in the exhibit that have been affected by past El Niños.
- 5) Make a list of at least 3 pieces of evidence about past El Niño events that are not mentioned in the exhibit interactive.