

Year Level: 7/8

Key learning area: Science

El Niño and Rainfall

Objectives

By the end of this lesson the student will:

- understand how an El Niño episode is detected
- understand the relationship between El Niño and rainfall
- demonstrate the ability to process simple data from tables and models, when investigating the causes of natural phenomena.

Background

El Niño is here!

Sometimes, the Pacific Ocean near America warms. Normal ocean currents and winds change. The oceans to the north-east of Australia cool. El Niño is here! See the El Nino animation:

(http://www.bom.gov.au/lam/Students_Teachers/elanim/elani.shtml - size 350KB requires javascript enabled browser) to get a better understanding of El Niño.

The following link to the El Nino table:

http://www.bom.gov.au/lam/Students_Teachers/WS5table.shtml presents information on El Niño and rainfall for the years from 1947 to 1992. The rainfall column of the table gives the total annual rainfall for Canary Island in northern Victoria. (It's not actually an island but a place about 30 km south of Kerang and 90 km north of Bendigo). Students are to use this information to answer the set questions.

The "SOI", or Southern Oscillation Index, is a measure that scientists use to establish whether El Niño is present and how strong it is. A negative SOI value indicates an El Niño. The lower the value of the SOI, the stronger the El Niño event. If the SOI value is positive, it means that there was no El Niño event in that year.

The Southern Oscillation Index (SOI) is determined by the difference in barometric pressure between Tahiti and Darwin. Pressure fluctuates between the two locations, but in El Niño years (SOI is negative), the pressure is higher in Darwin than in Tahiti. See the SOI graph for the current values:

<http://www.bom.gov.au/climate/current/soi2.shtml>

El Niño's influence is usually very extensive, with rainfall being affected throughout eastern Australia. For more information about El Niño go to:

<http://www.bom.gov.au/lam/climate/levelthree/analclim/elnino.htm>

Scientists also study sea surface temperatures to help them make predictions about the climate. Have a look at what is happening to the current sea surface temperatures by examining the following sea surface temperature animation: http://www.cdc.noaa.gov/map/clim/sst_olr/sst_anim.shtml. Notice the shift in warmer and colder water. During an El Niño episode you'll see reddish colours in the animation around the Pacific near the top of South America.

Resources and actions

Students will need internet access to the El Niño animation in helping them understand the process of El Niño.

Print off the student's worksheet and photocopy one for each student: http://www.bom.gov.au/lam/Students_Teachers/Worksheet5.shtml.

Ask the students to carry out the activity from the worksheet then go over their results at the end of the class.

Solutions

1. Three.
2. 1982 - 123mm, 1987 - 366mm, 1992 - 544mm.
3. The average rainfall is (344.33mm) 344mm.
4. Five
5. 1950 - 493mm, 1955 - 549mm, 1956 - 635mm, 1971 - 535mm, 1975 - 441mm.
6. The average rainfall is (530.6mm) 531mm.
7. There was less rain during the El Niño episode

Time

45 - 50 minutes

Assessment Task

All Questions.