

# WORKSHEET 5

## Activity - El Niño and Rainfall

Print and copy this worksheet and the El Niño table, for use in the classroom.

### 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 Niño animation: [http://www.bom.gov.au/lam/Students\\_Teachers/elanim/elani.shtml](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 Niño Table: [http://www.bom.gov.au/lam/Students\\_Teachers/WS5table.shtml](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). Use this information to answer the following 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. See the SOI graph: <http://www.bom.gov.au/climate/current/soi2.shtml> for the current values.

### Questions

Answer the following questions in the spaces provided.

1. How many years was the SOI less than -10?
2. Write down the rainfall for each year that the SOI was less than -10.
3. Calculate the average rainfall for all these years in which the SOI was less than -10. This is the average rainfall in years when El Niño was present.
4. How many years was the SOI greater than 10?

5. Write down the rainfall for each year that the SOI was greater than 10.
  
6. Calculate the average rainfall for all these years in which the SOI was greater than 10.
  
7. From your answers to questions 3 and 6, what do you notice about the impact of El Niño on rainfall at Canary Island in northern Victoria?

## Explanation

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. 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/el\\_nino.htm](http://www.bom.gov.au/lam/climate/levelthree/analclim/el_nino.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](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 around the Pacific near the top of South America.

## Extension Activities

Do you think that the Southern Oscillation Index can be used to predict rainfall? If so, explain how you could produce a prediction.