**El Nino Introductory Reading**

The weather phenomenon called El Nino was first recorded in the 1500s when fishermen in South America noticed that near Christmas some years the water was noticeably warmer than others.

Only in recent years has there been any serious investigations into the causes and results of El Nino. The 1997-1998 El Nino was the first to be studied extensively. Scientists from France, Japan, Korea and Taiwan combined the various readings they had from satellite and surface measurements of wind speeds and water temperatures to make the Tropical Atmosphere Ocean Array. This combined information allowed them to see the overall patterns of an El Nino and helped them predict when one was starting.

The wind in the central Pacific tends to blow from the east. This pushes water from South America towards Australia. As a result, sea levels have been found to be up to 60 cm higher in the west. The water that is pushed westward from the South American coast is replaced by colder water through upwelling. This makes the waters off Peru and Ecuador good fishing grounds since there is a high nutrient level in cold water that will attract more fish.

An El Nino happens when the winds weaken and sea levels drop. The warmer water moves towards South America instead and less water evaporates to form clouds. There are two results of an El Nino. First, the warmer water near South America reduces the number of fish. Secondly, the lack of rain causes droughts. This can cause problems such as the forest fires that have plagued Indonesia and Australia in recent years.

As the population has increased the effects of changing weather have had a greater impact. More people are living in places that are likely to be affected by adverse weather than ever did before. This means that natural disasters affect more people. Natural resources are being used closer to their limits, so small changes in their availability can cause disruption. For example, in the past, South American fishermen could make a profit even during an El Nino, but modern industrial fishing needs larger fish stocks to be profitable. A system of buoys and satellites monitoring the Pacific allows scientists to predict the start of the 12 to 18 month El Nino cycle. As a result people can prepare for damage and the potential loss of crops.

The question of whether El Nino has been strengthened by global warming is unanswered. The National Center for Atmospheric research believes that El Nino could be responsible for the increased temperatures in North America by changing the jet stream. Global warming may not be the direct cause. However, global warming may cause the local warming changes that cause El Nino and change atmospheric circulation. The National Oceanic and Atmospheric Administration suggests that global warming may increase El Nino effects by increasing temperatures and increasing water evaporation over land leading to floods.

**Reading Passage Questions**

1. The first extensive study of the El Nino phenomenon took place from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. What do the call the combination of satellite and surface measurements that used to track wind speed and water temperatures?

1. Which THREE of the following are effects of El Nino?
   1. There are more clouds.
   2. The level of the sea goes down.
   3. There is a lack of rain.
   4. Fewer fish for fishermen to catch.
   5. There are plagues in Australia and Indonesia.
   6. There are more strong storms.
2. Why is El Nino more noticeable now than in previous times?
   1. There are small changes in natural resources.
   2. Industrial fishing.
   3. People are now living in more dangerous areas than those of the past.
   4. South American fishermen cannot make a profit during an El Nino.
3. What is the benefit of monitoring the weather in the Pacific?
   1. Scientists can prevent El Ninos.
   2. The length of an El Nino is reduced by six months.
   3. Farmers will harvest more grain.
   4. Provisions can be taken in advance against the El Nino.
4. In what way is there a **definite** link between El Nino and global warming?
   1. It increases Northern American temperatures by affecting the jet stream.
   2. By inducing local warming changes.
   3. Increasing rain and causing floods.
   4. The direct link between El Nino and global warming is unknown at this time.