

NAME: _____ PERIOD: _____ DATE: _____

LAB PARTNERS: _____ LAB #36

EL NIÑO

INTRODUCTION

An El Niño is a disruption in the normal ocean circulation that affects the weather worldwide. Relatively small changes in ocean temperature over large areas can make very big changes in the weather patterns. The effects of El Niño reach considerably further than the area surrounding the tropical Pacific: Jet Streams are altered all over the world, and many places have weather that is very different from normal.

MATERIALS

Pencil

Colored pencils

APPROXIMATE TIME

1 – 2 Period(s)

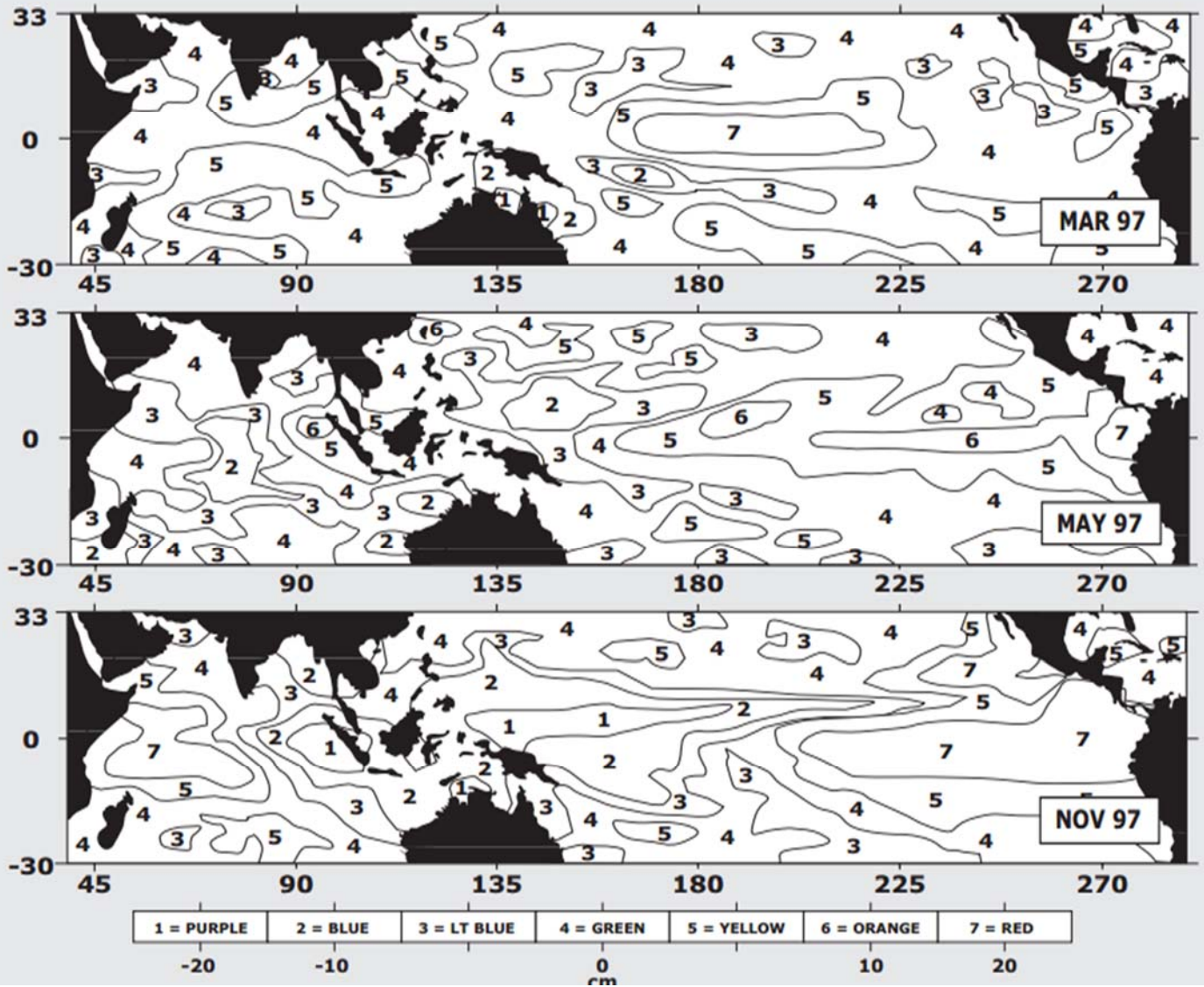
PART 1 MAP ACTIVITY

PROCEDURE

1. Read the paragraph below underlining important information about El Niño
2. Color the maps that show the rise and fall of the 1997 El Niño so that areas of similar height are the same color from one month to the next. These maps show the sea-surface height anomaly which is the difference between the height during that particular 10-day period and the average height for that time of year. High areas correspond to warm water, low areas to cold water.

El Niño conditions occur with a buildup of warm water in the equatorial Pacific Ocean off the coast of South America. The immediate cause of the buildup is a change in air pressure that weakens the southern trade winds. These are the planetary winds that move air from 30°S to the equator. In a normal year, the easterly (westward blowing) trade winds push warm surface water against the western boundary of the Pacific Ocean near Australia and Indonesia. An El Niño occurs when the trade winds over the equator weaken and even reverse direction, blowing from west to east. This allows a warm pile of water normally held against the western shore of the Pacific to move eastward along the equator. When this bulge reaches South America, it moves north and south along the coast for hundreds of miles. With the warm ocean, there is an increase in evaporation and subsequent precipitation over the mountains in that area. El Niño conditions may last only a few months, but often last a year or two

Activity 1. Color the El Niño



LABORATORY QUESTIONS:

1. What is El Niño? _____

2. Which way did the warm water travel? _____
3. The El Niño was at a maximum in November. How can we know that? _____

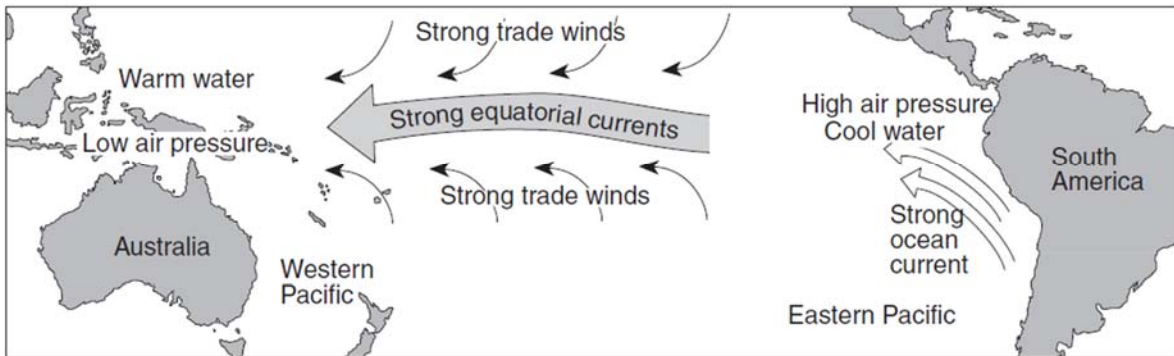
4. How long did it take for the El Niño to reach a maximum? _____
5. How long do you think it will take for El Niño to disappear? _____
6. What other measurements from satellites, ships, or buoys might help scientists to understand El Niño conditions?

PART 2
NORMAL VS. EL NIÑO CONDITIONS DIAGRAM

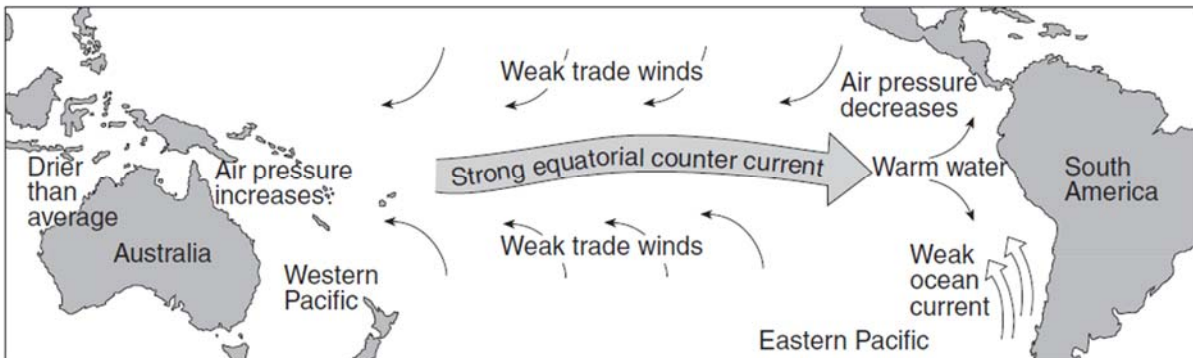
PROCEDURE

1. Use both diagrams below to answer the questions on the next page.

Normal Climate Conditions



El Niño Conditions



PART 2 LABORATORY QUESTIONS:

1. Describe what is happening to the west coast of South America during normal conditions.

2. Describe what is happening to the east coast of Australia during normal conditions.

3. How would Australia be affected during an El Niño year?

4. During El Niño conditions, describe the type of air and weather conditions above the Pacific Ocean near the west coast of South America.

5. What is allowing the strong equatorial counter current to move toward South America during El Niño conditions?

6. If you are a farmer living on the east coast of Australia would prefer El Niño or Normal conditions? Explain why you chose the one you did.

7. In recent years it has been shown that El Niño has been more frequent with greater intensity. What could be a possible explanation for this increase in activity?
