

4.9 El Nino and La Nina

Name: _____ Class: _____ Date: _____ **Total: 10 marks**

KEY WORDS el niño 厄尔尼诺 • la niña 拉尼娜

Objective

Build the skills to answer exam questions on **El Niño and La Niña**.

You must be able to:

- describe **El Niño** 厄尔尼诺 and **La Niña** 拉尼娜
- link them to changes in ocean temperature and weather
- explain effects on ecosystems and fisheries

1 Worked examples

Study these first. Each one shows the method for a question type used later — follow the steps and you can do the Practice and Exam-style questions yourself.

■ The normal pattern

Normally, trade winds push warm surface water **west** across the Pacific, and cold, nutrient-rich water **upwells** off South America (supporting fisheries).

■ El Niño

In **El Niño**, the trade winds weaken, so warm water spreads **east**. Upwelling is suppressed, so nutrients (and fish) decline off South America; global weather shifts (droughts and floods in different regions).

■ La Niña

La Niña is the opposite — trade winds strengthen, warm water piles up in the **west**, and upwelling off South America is **stronger** (more nutrients).

■ A worked effect

During El Niño, reduced upwelling means fewer nutrients, so plankton and fish populations crash off Peru, hurting the fishing industry.

2 Practice

Now apply the methods above.

2.1 In El Niño, which way does warm water spread across the Pacific? [1]

2.2 What happens to upwelling off South America during El Niño? [1]

2.3 How is La Niña different from El Niño? [1]

3 Exam-style questions

3.1 During El Niño, the fishing industry off South America suffers because [1]

- | | |
|---|---|
| A | B |
| C | D |
- A upwelling and nutrients decrease
B upwelling increases
C the water freezes
D trade winds strengthen

3.2 An El Niño year begins.

(a) Describe what happens to the trade winds and warm water. [2]

(b) Explain the effect on plankton and fish off South America. [2]

3.3 Explain why upwelling of cold water supports rich fisheries. [2]