

## 14 Cold and Warm Currents

TECHTREK

myNGconnect.com For current maps and photos of Peru, Chile, and Brazil

Maps and  
GraphsDigital  
Library

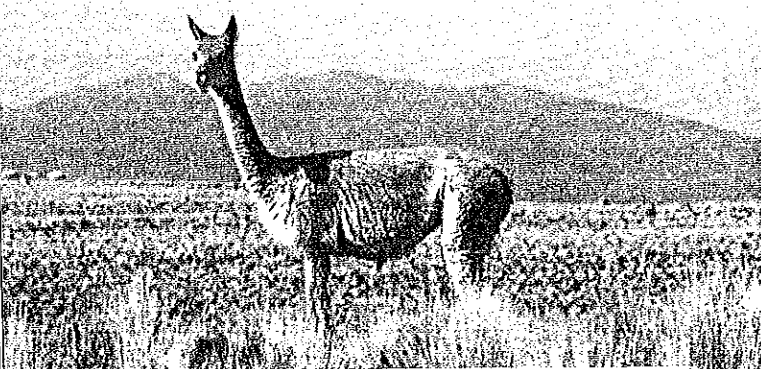
**Main Idea** Wind currents and ocean currents influence climate across South America in powerful and unpredictable ways.

Like elevation, wind currents and ocean currents influence climate too. **Currents** are the continuous movement of air or water in the same direction. As you read about these currents, follow their patterns on the maps at right.

### Currents and Climate

Cold wind and ocean currents flow from the high latitudes near the South Pole toward the equator, making the west coast of South America generally cool and dry. Warm wind and ocean currents flow in the other direction, from the equator toward the South Pole, and create a warm and humid climate on the east coast.

The Peru Current brings cold waters to the Pacific coast in the west. It flows along the southern coast of Chile and northward along the coast of Peru. The Peru Current carries nutrient-rich waters from deep in the Pacific Ocean, so fish thrive off the coasts of Chile, Peru, and Ecuador.



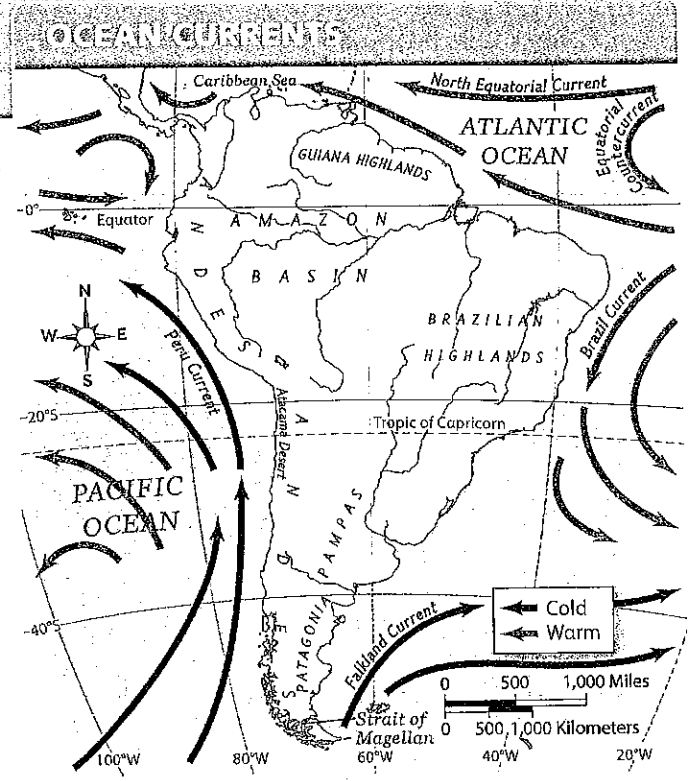
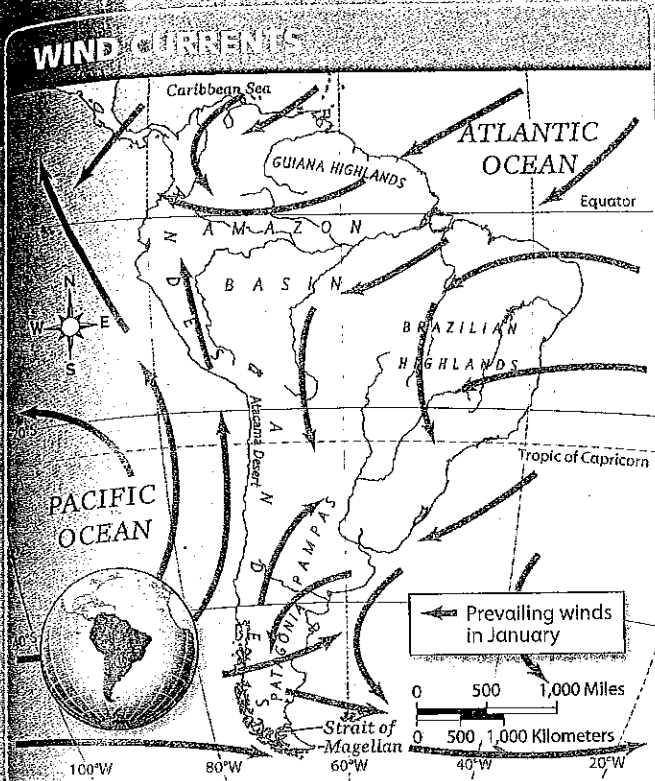
**Critical Viewing** Vicunas live in the Atacama Desert in Chile. From what you can see in the photo, how would you describe their habitat?

On the eastern side of the continent, the Brazil Current brings warm waters from the Atlantic. The coasts and inland areas of Brazil and Argentina receive warm, humid wind currents and, in some areas, plenty of rainfall. This rainfall nourishes crops and vegetation. The plains of the Pampas benefit from the Brazil Current.

These moist wind currents do not reach the **Atacama Desert**, located on the western side of the Andes. This desert lies in a **rain shadow**, a dry region on one side of a mountain range. In South America, the Andes prevent moist Atlantic winds from reaching west of the mountains. Instead, moisture condenses into rain on the eastern side of the Andes. So, even though it lies along one of the world's largest bodies of water, the Atacama Desert is one of the driest places in the world. On average, only a half inch of rain falls each year.



**Critical Viewing** This lush sugarcane plantation in Argentina contrasts with the dry Atacama Desert. What details in the photo tell you that this plantation does not lie in a rain shadow?



**El Niños on the Pacific Coast**

El Niños influence climate on the western coast of South America. An El Niño (ehl NEEN yoh) happens when the usual wind and ocean currents reverse. This reversal brings warm air currents and water currents that produce high rainfall in coastal areas. El Niños occur in Peru because of its location in the current system and on the Pacific coast.

El Niños do not occur every year, but they do happen somewhat regularly, at least once every 12 years. They are difficult to predict and their results can be devastating. Heavy rains saturate, or soak,

coastal areas. These rains cause severe flooding and wipe out habitats. They can also cause damage to crops, canals, bridges, and roads. Scientists try to predict when an El Niño is likely to arrive. This helps prepare local populations to deal with the impacts of heavy rainfall.

**Before You Move On**

**Monitor Comprehension** How do wind and ocean currents influence climate in South America?

**ONGOING ASSESSMENT**  
**MAP LAB**

- 1. Interpret Maps** Locate the Atacama Desert on the wind currents map. Do wind currents from the Pacific flow over the desert? How might this contribute to its lack of rain?
- 2. Describe Geographic Information** Scientists use complex maps like these to predict weather patterns and climate changes. In what ways is the information on these maps similar, and in what ways is it different?

