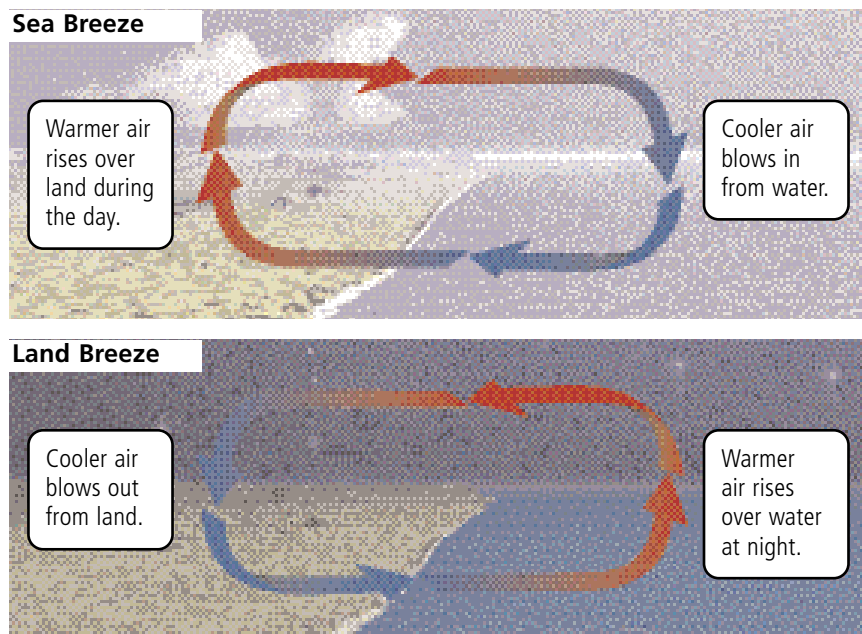


Patterns of heating and cooling cause local winds and monsoons.

Have you ever noticed how the wind can change in predictable ways? For example, at the beach on a hot day you will often feel a cool breeze coming off the water. At night a breeze will flow in the opposite direction. The change in the breeze occurs because water and land heat up and cool down at different rates.

LOCAL WINDS

Some winds change daily in a regular pattern. These local winds blow within small areas.



- Sea breezes and land breezes occur near shorelines. During the day, land heats up faster than water. The air over the land rises and expands. Denser ocean air moves into the area of low pressure, producing a sea breeze. As the illustration shows, this pattern is reversed at night, when land cools faster than water. Warm air rises over the ocean, and cooler air flows in, producing a land breeze.

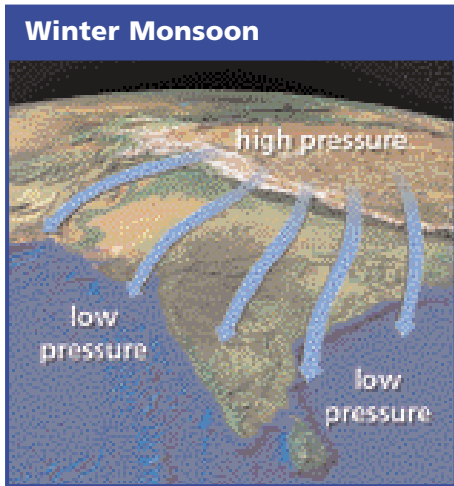
- Valley breezes and mountain breezes are caused by a similar process. Mountain slopes heat up and cool faster than the valleys below them. During the day, valley breezes flow up mountains. At night mountain breezes flow down into valleys.

MONSOONS

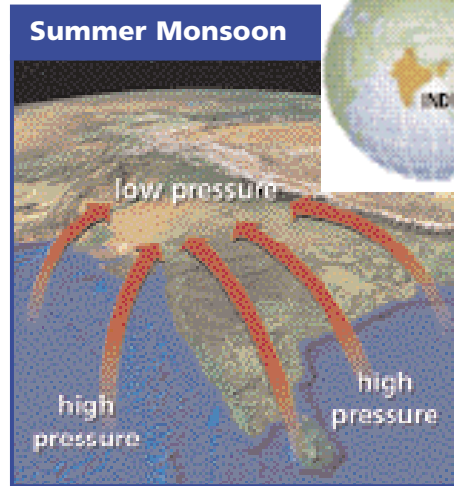
Winds that change direction with the seasons are called **monsoons**. Like sea breezes and land breezes, monsoons are caused by the different heating and cooling rates of land and sea. However, monsoons flow longer distances and affect much larger areas.

Winter monsoons occur in regions where the land becomes much cooler than

the sea during winter. High pressure builds over the land, and cool, dry wind blows out toward the sea. During summer this pattern reverses as the land becomes much warmer than the sea. Moist wind flows inland, often bringing heavy rains. The most extreme monsoons occur in South Asia and Southeast Asia. Farmers there depend on rain from the summer monsoon to grow crops.



Dry air blows from the high-pressure area over the continent to the low-pressure areas over the ocean.



Moist air blows from the high-pressure areas over the ocean to the low-pressure area over the continent.



1. What are two examples of winds that change daily in a regular pattern?

2. What are three characteristics of monsoons?
