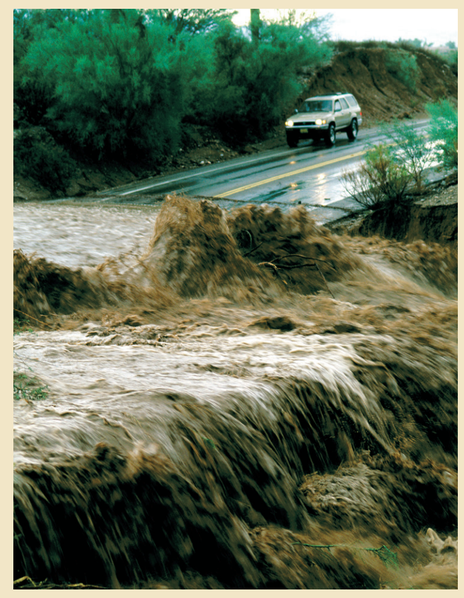
When the desert *smells like rain*

Each summer Tucsonans impatiently await the pungent aroma even the smallest amount of rain releases from the creosote bushes, the signal that the monsoon has at last arrived.

Traditionally, meteorologists held that the monsoon officially began on the first of three consecutive days the average dew point was 54°. (The dew point is the air temperature at which water vapor condenses into water; a high dew point means high humidity.)

In 2008, the National Weather Service removed all the guesswork and decreed that the monsoon begins June 15 and ends September 30. Local legend says that if it arrives before the Feast of San Juan (June 24), summer rains will be in short supply; if the season begins later, rains will be plentiful.



During monsoon season, intense late-afternoon thunderstorms can build quickly. In a matter of minutes, torrential rains fill usually dry washes to overflowing and send dangerous flash floods miles downstream, where the sky may still be blue and the sun shines.

"It is truly like inhaling wetness."
— Ofelia Zepeda, Tohono O'odham

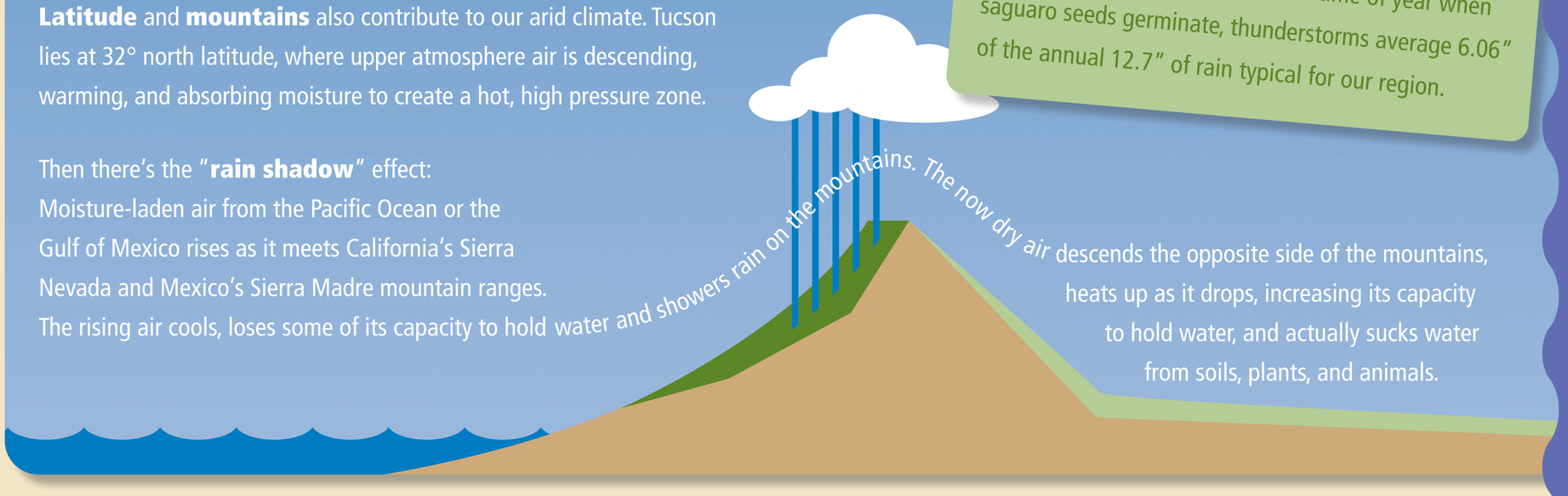
cloud, lightning and rain symbol

Why a Desert?

The common denominator of all deserts is a lack of moisture, but what makes them dry? Primarily it's because rainfall is exceeded by evaporation—it's not how many inches, but the **ratio** of precipitation to evapo-transpiration, the total water loss by evaporation from the soil and transpiration of water vapor from plants.

Latitude and **mountains** also contribute to our arid climate. Tucson lies at 32° north latitude, where upper atmosphere air is descending, warming, and absorbing moisture to create a hot, high pressure zone.

Then there's the "**rain shadow**" effect: Moisture-laden air from the Pacific Ocean or the Gulf of Mexico rises as it meets California's Sierra Nevada and Mexico's Sierra Madre mountain ranges. The rising air cools, loses some of its capacity to hold water and showers rain on the mountains. The now dry air descends the opposite side of the mountains, heats up as it drops, increasing its capacity to hold water, and actually sucks water from soils, plants, and animals.



Despite the dryness, the Arizona Upland is rich in a diversity of plant and animal life because of the unique bi-seasonal rains—summer and winter. More than half the rain that sustains the Tucson area each year falls during the summer monsoon. Between July and mid-September, the main growing season for many shrubs and trees and the time of year when saguaro seeds germinate, thunderstorms average 6.06" of the annual 12.7" of rain typical for our region.

Monsoon Magic

Derived from the Arabic word for season (mausim), "monsoon" refers to prevailing winds that seasonally change direction, bringing about large-scale weather changes. Southern Arizona experiences low humidity and high temperatures in May and June, which push the jet stream north, allowing the winds to shift from westerly to southeasterly, bringing moisture from the Gulf of California. The monsoon is the shifting wind pattern, not the storms or the rain itself.

Water Serpents and Rain Birds

In the desert, rain is unreliable—and rain is life. Among the native peoples of the desert Southwest, symbolism associated with life-giving rain and water can be found in both ceremonial and everyday objects. A rattle represents the sound of falling rain; turquoise is the color of water.

On pottery, stair-stepped pyramid patterns represent terraced clouds and abstract bird designs reflect the image of messengers to the cloud spirits.

The horned and feathered sky serpent, "Avanyu" to the Tewa, is believed to have given birth to the waterways of the Pueblo world. To the Zuni, tadpoles mean spring rain, and frogs…

and dragonflies mean summer rain.

Tucson thunderstorm © Thomas Wiewandt / www.wildhorizons.com • flash flood © 1996 A.T. Willett • pottery frog by Michael Kanteena • feather, cloud, Avanyu (water serpent) and dragonfly symbols in sidebar courtesy of the Heard Museum, Phoenix, Arizona • quote from "Days of Summer Rain" by Ofelia Zepeda in *Rain: Native Expressions from the American Southwest*, Museum of New Mexico Press, 2000