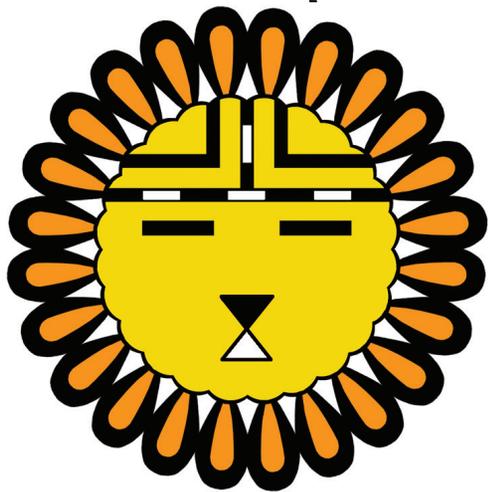
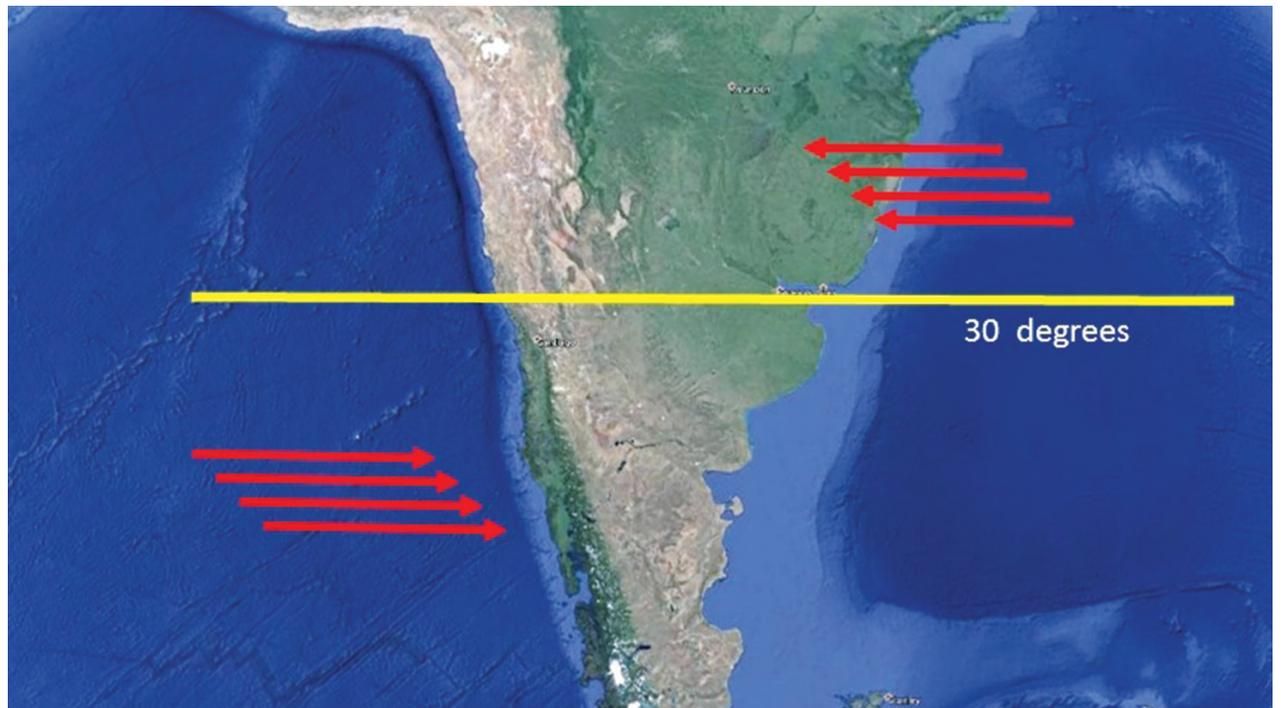


Journal from



the James



South America photo: Winds blowing from the east north and from the west south of 30 degrees latitude produce opposite effects on the climate of southern South America. PHOTO COURTESY JOHN LAUNDRE

Sky islands continued ...

BY ASSISTANT DIRECTOR
JOHN LAUNDRE

In the last "Journal from the James," I pointed out the uniqueness of mountainous sky islands such as the San Jacintos. As unique as they are, I hinted that besides being islands of diverse climate, vegetation and animals, their impact can extend far beyond their lowland island boundaries. In fact, of the major natural structures, mountains rank up there with oceans in global impacts.

Before we can appreciate the extensive impact mountains can have, we need to review a little of how this planet works. Suffice to say, there is not time or space to go into huge detail but there are a few important facts to remember. One, the Earth is a ball, roughly (sorry you flat earthers; it is a fact). It is a ball spinning around on its axis, giving us our days and nights. And lastly, the axis of this spinning ball is tilted relative to the Sun, giving us our seasons as we travel around the sun.

From these fairly simple facts of nature we can explain a lot about how our world functions. One of these is the patterns of the winds moving across the surface of the Earth. Because it is a ball, the air heats unevenly from the equator toward the poles. This

uneven heating produces our wind patterns. Prominent among them are the winds primarily from the west (the westerlies) above 30 degrees latitude toward the poles and from the east (east trade winds) below 30 degrees toward the equator.

Though we don't give them much thought now, when ships were moved by the wind, it was important on what side of 30 degrees you were. But that's another story.

So we have wind racing across the planet west to east and east to west, depending on where you are. Because most mountain ranges, the sky islands, run north and south, the wind will eventually slam into them. When it does, it is forced upward.

Two more facts: As air rises it cools and as it cools, it holds less moisture. Consequently, on the windward side of a mountain, be it west or east, rising air loses its moisture and it rains a lot. As this wind travels down the other side of the mountain, the leeward side, the opposite happens. It warms up, holds more moisture and rains very little.

What does this all result in? As we can see from the photos of our own mountain range, increased moisture means increased vegetation. We here in Idyllwild on the west, windward side of the Hill, have the forests

to enjoy while just over the mountain, desert conditions exist.

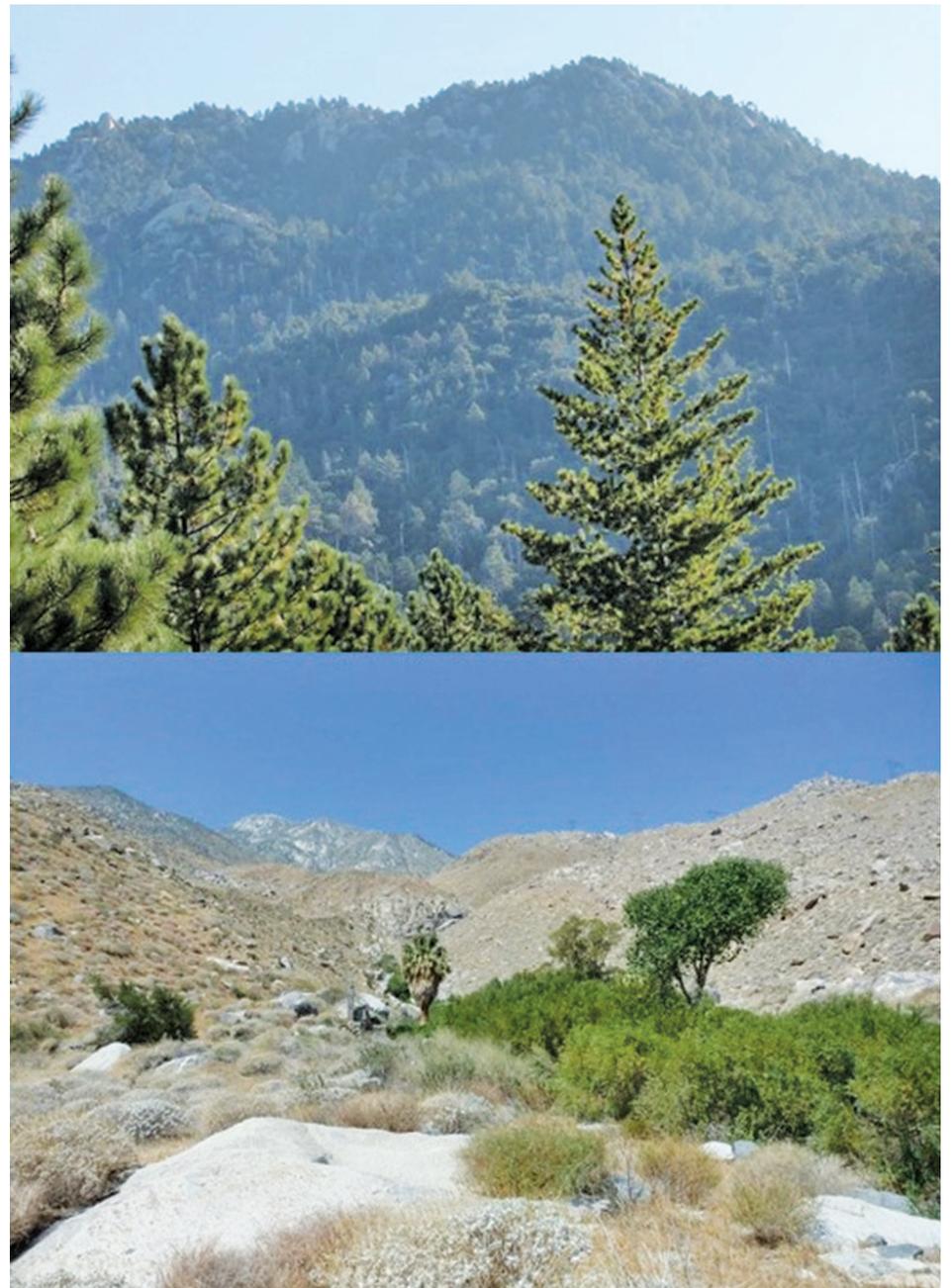
Further north in the Olympic Peninsula of Washington, the Olympic Mountains squeeze enough moisture out of the air to create one of the few temperate rain forests, receiving 150 inches of rain annually. While on the dry east side, central Washington barely receives 30 inches.

What about on a continental scale? By looking at the Google map of South America, it becomes clear. North of 30 degrees, where the winds come from the east, air hitting the Andes produces the lush green vegetation seen. Just to the west of the Andes is the Atacama Desert, the driest place on the planet, receiving zero precipitation most years.

Slip to the south of 30 degrees and the winds and the pattern switches: lush vegetation on the western slopes of the Andes, dry desert like conditions to the east.

Other global examples include the extensive outback of Australia where, because of its position, the winds are out of the east and this vast desert owes its existence to being on the wrong side of the Great Dividing Range.

Closer to home, our own Great Plains, extending across the Midwest, is a product of being on the dry leeward side of the



Views of the lush forest around Idyllwild on the western slope of the San Jacintos in contrast to the desert-like conditions just over the mountains on the east.

PHOTO COURTESY JOHN LAUNDRE

Rockies.

Far from being just idyllic island oases in the sky, mountains, our mountain, are indeed

global factors to be reckoned with. Their impact extends for hundreds, even thousands of miles around them, influenc-

ing the types of plants and animals and even human cultures found in the long, ecological shadow they cast.