Making Ripples

What Creates Wind?

by Amanda Bancroft

Northwest Arkansas received quite a lot of wind recently, and spring will bring more in the coming months. For kites, it's a wonderful time of year. For some truck drivers, not so much. While we have our interstate highways to transport things from one end of the country to the other, nature has the wind. Not only does it create tornadoes, hurricanes, downed tree limbs and destruction, it's a force for good that carries pollen and seeds, can be used to generate electricity, helps hummingbirds to migrate, and assists our trees in riding themselves of last year's leaves.

The Pickles comic by Brian Crane has one humorous explanation for where wind comes from. The character of the little boy explains that he once thought that trees made wind, because they were alive and could move in the breeze. Then, he says, he realized that he was wrong: Grandma says that Grandpa makes wind! But what really creates wind, and why?

Mostly, it's the sun's fault. According to the Iowa Energy Center, "As long as there is sunlight, there will be wind. The wind is a by-product of solar energy. Approximately 2% of the sun's energy reaching the earth is converted into wind energy. The surface of the earth heats and cools unevenly, creating atmospheric pressure zones that make air flow from high- to low-pressure areas." The Earth's rotation also plays a role in wind via the Coriolis Effect, with the air flowing around these high and low pressure areas instead of directly from the highest to lowest pressure spot. Some winds even subtly increase the speed of Earth's rotation, but only by a very small measurable amount.

Without wind, little Ruby-throated Hummingbirds would have a harder time migrating across the Gulf of Mexico each year. The tailwinds help them, but the headwinds of spring can hinder them. Gusts of wind, whether pro-hummingbird or not, can be caused by several factors, one of which is turbulence created by friction when wind blows around obstacles like buildings or trees.

Wind also helps plants through pollination. Some of the most important agricultural crops are pollinated by wind, and this is called "anemophily." Wind-pollinated plants don't need to attract insects, so they don't produce scents or nectar. Examples include cereal crops like wheat, rice, and corn. Maple, oak, and many conifer trees as well as most grasses produce lightweight pollen easily carried by the wind.

Wind energy is another benefit. By the end of 2016, the U.S. wind energy capacity generated 76 GW, although China is leading the world right now. In the future, wind will play a much larger role in renewable energy among many other options that are growing in popularity and availability. Until then, go fly a kite on a nice day and do like the air particles: avoid high pressure situations.

Amanda Bancroft is a writer, artist, and naturalist building an off-grid cottage for land conservation on Mt. Kessler. She and her husband Ryan blog about their adventures and offer a solar-hosted online educational center on how to make a difference with everyday choices at: www.RipplesBlog.org.