

Good Planets are Hard to Find

Ours is a good planet. Its surface temperature averages 57.2°F at 93 million miles from the sun. The highest temperature ever recorded on Earth was 136°F in the Libyan Desert. The coldest temperature was in East Antarctica, -137°F . Kinds of wildlife, wild plants and our food crops depend on relative narrow ranges of stable temperatures. The pika, smallest member of the rabbit family, has adapted to live in mountainous areas of the Rockies, Sierras, and Cascades that rarely get above freezing and it can die when exposed to temperatures as mild as 78 degrees F. Once they move upslope to reach the top and find the temperatures still too warm, the pika has no place to go. In fact, they have already disappeared from over one-third of their previously known habitat in Oregon and Nevada. And for we humans, insects are vitally important. Some are vectors of diseases, but they pollinate plants and they have economic impacts on crops and timber. They are also particularly sensitive to climate change — as invertebrates, they can't regulate their own body temperatures — making them “great little thermometers,” says Jessica Hellmann, biologist at Notre Dame University. She says, “In fact, almost 80 percent of the world's crop plants require pollination, and the annual value of insect pollinated crops in the U.S. is about \$20 billion.” What's more, most of the kinds of living organisms on Earth are insects.

The temperatures of planets depend upon how much heat they absorb from the sun's radiation relative to how much heat they emit back into space. The temperature reaches equilibrium. Mercury averages 427°F at 28.6 million miles from the sun but it has so little atmosphere it doesn't keep a constant temperature. It's temperature varies from -280°F at night to 800°F in the day. Venus, about the size of Earth, is 66.7 million miles from the sun and is the hottest planet. It averages 864°F — lead melts at 622°F — and it has an atmosphere 90 times denser than ours. It is 95 percent carbon dioxide (CO_2) a greenhouse gas, meaning that it absorbs radiation from the sun. Good planets like ours are hard to find.

But this meeting is about leasing coal on federal lands and the relationship to our good planet. The relationship is direct. It has taken 4.6 billion years, the age of earth, to cause the conditions to support the flora and fauna that exist today, and that includes us. And it has been life itself that causes those essential conditions. Photosynthesis evolved over millions of years and the process takes in CO_2 and water to make tissue of plants and algae, the source of energy for nearly all life. From the water photosynthesis emits oxygen that we oxygen dependent organisms use for respiration.

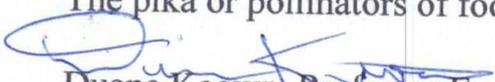
Since the beginning of the industrial revolution we have continually increased our

ability to extract coal and to put more CO₂ into the atmosphere along with other greenhouse gases. Wyoming leads all states and most nations for its contribution to increasing the CO₂. No state except Wyoming has produced more than 200 million tons of coal. The peak year for Wyoming production was 2008 when 462 million tons were shipped. In less abstract terms each train pulls at least 100 cars and each car hold about 100 tons. The train is a mile long. That is 10,000 tons of coal. Do the math. Divide 462 million by 10,000 and it equals the miles of coal, which is 46,000 miles, or enough coal to reach around the earth nearly two times at the equator. Most of the 462 million tons of the 2008 Wyoming coal remains in the atmosphere today as carbon dioxide. Where is Wyoming coal mining in relation to cooling the atmosphere?

In 2015, emissions of CO₂ by the U.S. electric power sector were 37% of the total. Forty-one percent of U.S. coal comes from federal land and seventy-five percent of Wyoming's coal comes from federal land.

At the Paris climate conference in December of 2015, 195 countries adopted the first-ever universal, legally binding global climate agreement. Success in cooling the climate of the planet can only happen by cooperating nations. Wyoming with the federal government, in particular the BLM, has a huge role to play. Should we even consider leasing more federal land for coal production? There are other much less threatening options for electricity happening and taking coal's place. The world market for coal is reacting accordingly and Wyoming is in a coal bust.

From fossil fuels burning, global concentration of CO₂ in the air has gone from 280 parts per million in the mid 18th century, the beginning of the industrial revolution, to 402 parts per million in 2016, only two hundred years. Two hundred years is to 4.6 billion years as seven tenths of a second is to one year. The argument goes that Earth has natural heating and cooling cycles. Yes, but they occurred over hundreds of thousands or millions of years, not two hundred years. The pika or pollinators of food crops do not have this luxury, nor do we.



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