

Global warming comes home to Northwest Colorado

March 10, 2008

Poll results

The Daily Press' recent poll of Moffat County residents' acceptance of the science of global warming produced these numbers:

- 40 percent accepted the science
- 34 percent thought it was propaganda
- 26 percent were uncertain

The news of climate change is now frequent. The changes result from pollutant gases that over-concentrate in the earth's atmosphere, remain caught and less dispersible, and capture the sun's heat, interfering with the sun's various ray components and their dispersal. In some surface areas, concentrated sun heat increases water evaporation, dries soil and foliage, and may release the congested evaporation far away from typical rainfall/snowfall areas. The increased evaporation can be pulled by atmospheric stronger, longer winds — such as those forming and moving the North American Jet Stream — to different-than-usual global zones, abandoning some to drought and others to over-precipitation.

The Pacific Ocean's currents also receive evaporation plus recently melted cold glacier waters that, in colder and greater amounts, sink to ocean bottoms and are carried by current toward the equator where they gradually warm and thus rise toward the surface to become part — but a cooler part — of the Gulf Stream that slants northeast from the Gulf across the Atlantic to eastern Canada, Greenland, and Europe, bringing colder winters.

Or, as recent studies at Steamboat's Mount Werner Storm Peak Lab show, evaporation from longer heat seasons, where the elevated CO2 levels also carry sulphur and nitrate particles from both coal-burning and natural or stronger forest fires, will decrease annual rain and snow totals. The particles attract and hold cloud moisture and scatter it, rather than allowing large enough moisture drops to attract each other into clouds that, when moisture-filled, release rain or snow to the ground. Polluted clouds are shown to “yield at least 15 percent less precipitation than clouds formed in clean air” (Daily Press & Steamboat Pilot, Mike Lawrence, June 14, 2007, Power Play: Ski Area's Face Warm Wind of Change).

In the midst of such changed temperatures and wet/dry cycles and areas, available forage and growth and even the bird and bee carriers of seeds or pollen may have to relocate for reproductive assurance. Bill Stanley of the Nature Conservancy Global Climate Change Initiative has said we may have to “design new nature reserves to accommodate the movement of whole ecosystems — fungi, centipedes, anonymous species and known species.”

Thus, news reports appear of armadillos in northeast Arkansas, 50-million acre fires in Siberia, a hundred gigatons of ice melted from Greenland's glaciers and a manatee seen swimming past Chelsea Pier in New York City.

(Part I of III: Authored by Rick Hammel, David Morris, Monty Robertson, Jane Yazzie Ann Wagner and Pastor Bob Woods. The Daily Press will publish parts II and III Tuesday and Wednesday.)

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Global warming comes home to Northwest Colorado: Part two

March 11, 2008

Poll results

The Daily Press' recent poll of Moffat County residents' acceptance of the science of global warming produced these numbers:

- 40 percent accepted the science
- 34 percent thought it was propaganda
- 26 percent were uncertain

There is no function of nature that will exempt northwest Colorado from climate change. Our winters are either milder or influenced by the relocating jet stream and by the Pacific Ocean's handling of accelerated Arctic ice-cap melt. Our summers are hotter and drier. Ranchers notice even small animal species seeking longer-surviving vegetation on the slightest higher elevations in summer; DOW must decide to monitor big game migration patterns for climate-affected change; the summer tourist and fall hunting seasons may change slowly or unexpectedly; the Yampa/White river basins snowpack in 2007 "peaked on March 13, at a level that was 72 percent of average for that date" (31 days before the April 13 average peak date); agriculture here finds irrigations seasons that are too early and end too soon in summer; fish find streams and rivers too deluged in spring from fast-snowmelt sediment and then overheated in summer, when slower, later snowmelt would normally cool the water.

Northwest Colorado is now home to pine-beetle dying forests (the beetle larvae are no longer sufficiently winter-frozen, and winter thaws often produce one extra beetle generation per year). As reported by Gary Severson, executive director of the Northwest Colorado Council of Governments, bark beetles "strangle trees by cutting off nutritional channels" and can kill 90 percent of an area's lodgepole pines. Our infested forests "are largely the headwaters for our rivers and streams."

When those dead or drought-dried forests burn, we will see decreases in the services that healthy forests provide for free: CO2 uptake and storage, cleaner sediment-free water and watershed (erosion and species habitat) management. Recent congressional hearings on climate change included University of Montana professor Steven Running reporting that since 1986 the fire season in the West has grown 78 days longer, a 20-30 percent increase. Another such increase is likely during the next decades, and fire sizes more than 100,000 acres are now the norm.

In response to the pine-beetle destruction, Colorado state legislators Al White, R-Hayden, and Joan Fitz-Gerald, a former State Senate president, introduced a bill in April 2007 to "allow municipalities and counties to create tax districts, with voter approval, to fund bark beetle mitigation and forest management measures."

We overproduce CO2 by an over-reliance on carbon fuels like coal and gas. As such fuels are used to produce electricity, gradually more of that electricity has been used to push the "product" through transmission networks. And before transmission, much energy is used to extract coal, gas, or oil and transfer them to power

plants. “United States average net electricity efficiency reached its peak around 1910, at about 65 percent of the input energy. By 1960, efficiency had declined to 33 percent and there it remains today.”

Plants that find ways to recycle ‘waste heat’ and minimize losses to transmission can achieve 65 percent to 97 percent net efficiency (Casten and Downes, *Skeptical Inquirer*, Jan-Feb 05, Albuquerque, N.M).

Northwest Colorado may be scheduled by planners to become another center of the West’s coal bed methane production and oil shale production. Methane gas, held safely in underground geologic formations and, for the planet, in long-frozen Arctic tundra, is released during extraction or continuing, fast-rate Arctic thaws. But methane contributes to climate warming by trapping the sun’s heat at 21 times the rate that CO2 does. And oil shale production uses large quantities of water that are made toxic before evaporation or before being injected back underground.

(Part II of III: Authored by Rick Hammel, David Morris, Monty Robertson, Jane Yazzie, Ann Wagner, Pastor Bob Woods.)

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Global warming comes home to Northwest Colorado: Part three

March 12, 2008

Poll results

The Daily Press’ recent poll of Moffat County residents’ acceptance of the science of global warming produced these numbers:

- 40 percent accepted the science
- 34 percent thought it was propaganda
- 26 percent were uncertain

How subtle can the effects of global warming be on us here in Northwest Colorado? How do the current benefits of extracting our region’s fossil fuels — irreplaceable for nearly one million more years — measure against the costs of that extraction?

As our public and private lands are mined for oil and gas, we are asked to endanger a sustainable economy and environmentally healthy future. We also are distracted from discussing and building a sustainable economic base.

After mining and resource extraction, reclamation of the land may not replace enough of the same topsoil to provide nutrients supportive of anything deeper-rooted than grasses. Reclamation may be underfunded or not priority funded.

What happens to Northwest Colorado after we allow the liquidation and marketing, as soon as possible, of our natural resources, giving profits to corporations that far exceed our royalties or tax intake, while also giving us additional present and future service, health and infrastructure costs? What happens when other natural

resources, used to sustain us with hunting, tourism, agriculture, fishing, recreation, historical sites and research, are less healthy, less productive?

Do we need to learn how Northwest Colorado must be alert to protect our own carbon dioxide-reducing sagebrush steppe ecosystems, after hurricanes such as Katrina and Rita? Those hurricanes killed or damaged about 320 million trees — all now decaying or burnable in forest fires — that will be releasing as much CO₂ into the air currents over the United States as the rest of the nation's forests take out of the air in a year of photosynthesis. The role of the West's sagebrush acreage to remove and hold CO₂ thus becomes more important.

Do we need to learn that to make ethanol from corn requires lye, methane, likely pesticide use, and electricity, while to use renewable switchgrass to make ethanol will produce 4 to 6 times as much for the same energy input?

Does the reality of an event occurring in the oceans from global warming instruct our understanding of our ecosystems? The Earth's oceans, having absorbed about 50 percent of human-caused CO₂ overproduction, have thus now a decrease in the amount of carbonate ions available for shell-building organisms (such as krill) that are at the base of all fish and sea mammal food chains.

Finally, do we need to find and study the climate change data produced in 2007 by the Intergovernmental Panel on Climate Change composed of 2,000 scientists from 100 countries, or will we instead give our allegiance to the reports of Exxon/Mobil, the largest private company in human history, holder of \$300 billion in profits from our natural resources since the 1989 Exxon/Valdez oil spill (for which they have yet to pay any damages), and a founder of its own climate study group — Global Climate Coalitions? Exxon/Mobil's former CEO, Lee Raymond, liked to say often, "Science as a certainty is an oxymoron."

And do we need to take note, in our search for the ties between sustainable ecosystems and economy, of science reports that animal and plant species are disappearing globally 100 times faster than they were 150 years ago, or that in America only about 10 percent of endangered species ever recover?

(Part III of III: Written by Rick Hammel, David Morris, Monty Robertson, Jane Yazzie, Ann Wagner and Pastor Bob Woods.)

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