

## **Sept 7, 2013. Editor's Headline: "Just Say No to Fossil Fuels"**

Whenever I comment that global warming and attendant sea-level changes mandate weaning ourselves of fossil fuels, someone responds that disappearing ice sheets and glaciers are phenomena that have happened before. This is true. Below is a synopsis of a few such historical events. These cycles don't exonerate human complicity in today's climate forcing.

21,000 years ago huge ice sheets covered North America. Over Hudson Bay the ice was 3,353 meters thick. So much water was sucked out of the oceans and locked up in ice that global sea levels were some 122 meters below those of today. What is now Bangladesh lay far above sea level; Sri Lanka was a land bridge to India. When the ice retreated, rapid global warming set in, along with fluctuating El Nino and La Nina patterns. Sea levels began to rise.

It isn't just a warming globe and melting ice that cause sea-level change. Shifts in tectonic plates far below the earth's surface also contribute. But these develop over eons. Today's changes are happening so fast, there's no comparison. For the first time in human history, CO2 level have reached 400 parts per million. It's the red light that signals a dying planet.

Sometimes, as a continent sheds its huge weight of ice, the land begins to rise, catching some meltwater as new-formed lakes. With alternating warming and cooling, such a lake can become a sea, as happened with Europe's Baltic and North Seas. In the Pacific Northwest, dryland existed between what are now islands in southeast Alaska. Fifteen thousand years ago the Bering land bridge linked Siberia and Alaska, bringing humans to the Americas. Seven thousand years later you could still walk from Britain to France, except where marshes demanded a canoe.

Back then the world was thinly populated. Humans roamed the earth as nomads or lived in temporary fish camps or hunting camps; hence, rapid sea-level change had little effect on the few humans who experienced them. Only as people settled along coastal plains in India, China, and the Arab peninsula did they become vulnerable to sea surges caused by hurricanes, tropical cyclones, earthquakes, or volcanic eruptions. Lives were lost, repeatedly, when tsunamis brought destruction to low-lying regions.

By 4000 B.C.E., nine centuries before the first pharaohs ruled the Nile valley, the rising seas had reached near modern levels, stabilizing around six thousand years ago. Then, around 1860 C.E. the industrial revolution's large-scale burning of wood and coal began to change the world's climate. It's been warming ever since. Oceans are climbing again. All over the planet, deadly surges are becoming frequent. And now, tens of millions live in coastal cities or on farming land but a few meters above sea level, places where sea surges and tsunamis wreak savage destruction. Already environmental refugees number in the millions.

"Without question, we humans have contributed to the accelerating warming of recent decades," writes Brian Fagan in his 2013 "The Attacking Ocean." Even a rise of one meter, he projects, will inundate thousands of hectares of rice paddies and many international airports. As savage winter storms coincide with high tides, the sea cascades much farther inland, lingering on the flooded land for agonizingly long periods. Additionally, in places like California, intensive groundwater pumping has caused widespread subsidence.

“In the lowlands, near the seashores, the harbors, the bays, the Sound, the river: apocalypse. The very ocean rose, tsunami-like, relentless, terrifying, bringing devastation by flood and wind and windshipped fire . . . in a swath a thousand miles wide . . . darkness and dread.” The historian quoted thus did not comment on ancient floods of biblical scope; rather, he spoke of Hurricane Sandy.

Sandy brought us face to face with an already-present future: such catastrophes are becoming increasingly frequent. Wyomingites may think themselves exempt from these dangers; still, some of us have family in California or New York. While roaring seas hardly reach the Midwest, environmental refugees do. Like every other state in the union, Wyoming took in Katrina refugees.

Some farmers in New Mexico and Texas, impacted by drought, are selling their water to the fracking industry. Some are even pumping precious water from aquifers to sell to frackers. They are digging their own graves—and those of their children.

The peak-oil people hadn't been wrong when they predicted years ago, we'd hit a limit in “conventional” oil production. At this point, big energy companies' staggering profits could have been invested in alternative energies: solar, wind, tidal, geothermal, algal, and so forth. They could have backed efforts to search for other ways that might, in decades to come, offer something close to the energy levels of fossil fuels. They could have opted to keep the extreme-energy reserves deep in the Earth. Instead, they invested remarkable amounts of money to develop techniques that would allow them to recover previously unrecoverable reserves, sometimes by processes that themselves burn huge amounts of fossil fuels: fracking, deep-water drilling, tar-sands production.

Tom Engelhardt calls them “the terrarists of our world,” giant energy companies who engage in terricide: ExxonMobil, Chevron, ConocoPhillips, BP, and Shell—companies who, by the way, are the darlings of Wyoming politicians.

We are the ones who are going to pay, especially our children and grandchildren, he writes in his TomDispatch—and we can take one thing for granted: not a single terrarist will ever go to jail, though they certainly knew what they were doing.

Do we join their ranks? It's high time we acted on mitigating climate change. In Wyoming, this means nothing less than leaving some fossil-fuel resources in the ground. Wyoming has plenty of sunshine, wind and, below ground, geothermal heat. And, importantly, the state has enough of a surplus fund to make a dent. We just need the will to say no to fossil-fuel addiction and yes to developing alternative resources.