

FIELD NOTES FROM A CATASTROPHE

Maybe the saddest thing about global warming is that our children and grandchildren will suffer its worst effects: crop failures and droughts (and hence famine and thirst), more (and more violent) storms like Katrina, more and bigger forest fires, increased spread of disease, loss of lowlands to the ocean, and, I would add, probably increased political destabilization, revolutions and wars.

Yet it's now, not in the next generations, that we need to spend billions if we hope to mitigate those effects – a hard political sell.

Such is the news announced by Elizabeth Kolbert in *Field Notes from a Catastrophe: Man, Nature and Climate Change* (255pp., Bloomsbury, U.S.A., 2006).

Journalist Kolbert interviews the world's leading climate scientists in such places as Alaska, Greenland, Iceland, New Orleans, Costa Rica and Washington, D.C. She tackles the earth's chemistry, the basic science of global warming, its timeline, what is, and is not, in doubt about it, and what we can and cannot do.

By the mid-19th century we knew that without greenhouse gases to trap warm air, earth's temperature would be zero degrees, not the average 57 degrees it now is. Then, for nearly a century humans showed little interest in CO₂ levels or climate. The first major global warming study came in 1979. By 2003 scientists knew that natural causes alone couldn't be responsible. Oceans were warming and acidifying, the difference between day and night temperatures was shrinking, animals (including diseases

and disease vectors) were expanding their ranges north and south, plants bloomed earlier.

Earth absorbs about a third of the energy that hits it; ice is the best reflector of that energy, water the worst. By 2006 Arctic sea ice had shrunk by 250 million acres and is predicted to be gone by 2080. Ice sheets in Greenland, Iceland and Antarctica are also shrinking fast. More open water means more heat absorption, which means sea ice melting faster.

We know from ancient climate records that CO₂ and temperatures are linked: as CO₂ levels drop, earth cools; as they rise, it warms. As arctic seawater, heavy with salt, sinks, it draws warm water from the tropics northward. This “conveyor belt” is “the energy engine for the world’s climate,” as one scientist says, and if the Greenland ice sheet melts, it could shut down. During the 1990’s it shrank 12 cubic miles a year.

Because of feedback – a little warming allows more and more warming – climate change is occurring much faster than first predicted. And we know from ice cores that a tiny change can yield a huge transformation.

These cores also show that earth’s climate has varied wildly in the past, and that by the mid 2000’s CO₂ will have doubled over pre-industrial levels. The last time we had higher temperatures and CO₂ levels was perhaps 50 million years ago.

What can we do? Of course, reduce CO₂ emissions. But since there’s now no direct cost for emitting CO₂, there’s no incentive to cut back. So Kolbert recommends buying and selling of carbon credits, and levying taxes on emissions. Radical alternative energy proposals include

space-based solar collectors, wind turbines suspended in the jet stream, and super efficient electrical transmission.

The U.S. emits by far the most CO₂ worldwide. A new car getting 20 miles per gallon will spew 11 metric tons of carbon in its lifetime. Every American generates 12,000 pounds of carbon yearly.

Could a technologically advanced society choose to destroy itself? “That is what we are in the process of doing.” But global warming’s problems are still largely in the future, and its costs are in the here and now.

Kolbert ends with, “And so life went on as before, and everyone hoped for the best.”