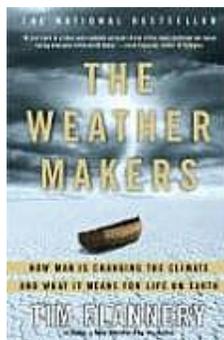


## The Weather Makers: How Man Is Changing the Climate and What It Means for Life on Earth

Tim Flannery

Grove/Atlantic, Inc



### Review

Rafi Rom 2007: <http://towardfreedom.com/home/content/view/954/>

Since coming into office in 2001, George W. Bush, his administration, and his supporters (mainly ideological religious groups and corporate powers) have waged an unprecedented attack on science. Broadly speaking, these attacks have focused on debunking scientific conclusions relating to evolution, health care (i.e., stem cell research), and perhaps most strikingly, the environment. It is in the realm of the environment that the administration's policies will have the most lasting damage. A plethora of articles have documented the Bush administration's systemic weakening of important environmental policies and even their agencies, the stacking of commissions with people directly from the business world hell bent on the bottom line, and the silencing of our nation's top scientists.

The sum total of Bush's policies is the speeding up of climate change. For many, it is somewhat difficult to understand how extreme the reversal of environmental policy is, primarily because a lot of people do not have even a basic grasp of the scientific principles that should guide our environmental policies. Several respected authorities on climate change, including former Vice President Al Gore, and conservationist Tim Flannery, whose book, "The Weather Makers: How Man Is Changing the Climate and What It Means for Life on Earth", is reviewed here, have published works that hope to explain what climate change is all about.

Ironically, Flannery's book reads almost like an apocalyptic prophecy. "[Human] health, water, and food security are now under threat from the modest amount of climate change that has already occurred," writes Flannery. "If humans pursue a business-as-usual course for the first half of this century, I believe the collapse of civilization due to climate change becomes inevitable." However, Flannery's doomsday scenario is carefully backed up by several decades of brilliant scientific research, rather than the New Testament. For that reason, his end-of-the-world prediction deserves to be treated seriously.

Flannery centers his book on the major chemical changes that have been taking place throughout the earth's "aerial ocean" over the last several decades. In the troposphere, the lowest level of the atmosphere, carbon dioxide and other "greenhouse gases" (gases that trap heat, including water), is getting hotter, and also expanding. It is this change that has led to some of the bizarre weather patterns the earth has experienced over the last few years (although the book was written prior to Katrina and the devastating tsunami in Southeast Asia, there is no doubt he would have included these two disasters in this discussion). Above the troposphere lies the stratosphere, which functions as a giant filter, ensuring that ultraviolet light (UV), which is extremely harmful to living organisms (it's a known carcinogen, for one), is converted to harmless heat. The main agent in this filter is ozone, which, due to another set of gases, chlorofluorocarbons (CFCs) has been greatly depleted. "As a result of the hole [CFCs] punched in the ozone layer, people living south of 40 degrees are experiencing a spectacular rise in the incidence of skin cancer...microscopic single-celled plants that form the base of the ocean's food chain are severely affected by it...Indeed, anything that spawns in the open is at risk."

A good deal of "The Weather Makers" focuses on the "ozone hole," both as a way of explaining complex scientific concepts, and as a working model of how the nations of the world can address the major issue of the growing concentration of carbon dioxide in the earth's atmosphere. CFCs were "invented"—there is no known example of these molecules existing naturally—in 1928, "and were found to be very useful for refrigeration, in making Styrofoam, as propellants in spray cans, and in air-conditioning units." It took almost 50 years for a new generation of scientists to link CFCs to ozone depletion, and nearly a decade for governments to take serious action. By 1992, "the world's governments pledged to phase out the offending chemicals" in the Montreal Protocol. According to Flannery, "scientists are optimistic that in fifty years' time the ozone layer will be returned to its former strength."

This is a stunning achievement, one, unfortunately, that current world powers do not seem willing to replicate by tackling the issue of carbon dioxide emissions. Carbon is perhaps the single most important element to life on earth. Besides serving as the backbone of all living organisms, it is also the primary form of energy storage. In chemistry, energy is stored in the bonds between atoms. When a bond is broken, energy is released as heat. Heat can either be harnessed for other uses, or, it can simply warm its surroundings. Plants, especially growing ones, have the unique ability to take in carbon dioxide and convert it into sugars (fundamental for growth) and oxygen (fundamental for growth of animals). When any living thing dies, it breaks down into its fundamental building blocks, one of which is carbon.

Flannery explains to his readers that over time, this carbon, rather than being released into the atmosphere, has been stored in carbon "sinks," either at the bottom of the ocean, or deep in the earth's crust. These sinks make life on earth possible; Should even a fraction of all the carbon stored in these sinks be released into the atmosphere (in some sort of gaseous form), the earth's temperature would increase to the point of dramatically changing the earth's ecosystem, and swallow up all of the available oxygen in the atmosphere, effectively cooking and smothering the entire animal kingdom.

Suffocation of all earth's inhabitants is thankfully not around the corner, but global warming is certainly already here. Since the industrial revolution, mankind has harnessed the power stored in these carbon sinks, primarily in the forms of natural gas, oil, and coal. By taking massive amounts of carbon stored safely below the earth's surface (be it land or ocean), and using it for a multitude of energy purposes, we have unleashed an unprecedented amount of carbon into the earth's atmosphere in the form of carbon dioxide. "Prior to 1800, there were about 280 parts per million of carbon dioxide in the atmosphere... Today, the figures are 380 parts per million, or around 869 gigatons." Already, animal species living in the arctic, including polar bears and harp seals, have lost huge swaths of territory due to melting ice, and at least one species of tropical animal, the golden toad has gone into extinction due to climate change. (Flannery, a zoologist by training, often turns to the animal kingdom for evidence, which both provides compelling evidence of global warming, as well as for an interesting narrative).

Flannery believes that international actors have the ability to lessen carbon dioxide emissions, similar to the success in controlling CFC production. He strongly endorses the "Kyoto Protocol," the international agreement that has the promise to reduce emissions. The heart of this protocol is carbon emissions trading, which works the following way:

"A regulator imposes a permit requirement for the pollutant and restricts the number of permits available. Permits are then given away on a proportional basis to polluters or are auctioned off. Emitters who bear a high cost in reducing their pollution will then buy permits from those who can make the transition more easily. Benefits of the system include its transparency and the ease of administration, the market-based price signal it sends, the opportunities for new jobs and products it creates, and the lowered cost of reducing pollutants."

The United States, notably, has signed, but not ratified the protocol, claiming that it would damage the US economy, since developing countries were given more "shares" of carbon. This makes sense; since these countries are developing, they need more energy, and more time to get into compliance.

Flannery spends considerable time debunking assertions that regulating carbon dioxide will have negative impacts on the economy. Powerful business interests loudly objected to CFC regulation, but since those same businesses are finding that after an initial investment in safer alternatives, profit has actually increased. This hardly matters to many in the energy sector, which is "full of established,

cached-up businesses that use their influence to combat concern about climate change, to destroy emerging challengers, and to oppose moves toward greater energy efficiency." Flannery focuses his accusations at corporations based out of the US and Australia (of which he is a citizen), and elegantly summarizes their pseudo-scientific propaganda aimed at discrediting evidence of climate change. One such example is the Global Climate Coalition, which, before disbanding in 2000, donated over 60 million dollars to anti-environmental politicians, and spent even more on propaganda, meant to "cast doubt on the theory of global warming" (its own words).

Thankfully, Flannery does not simply provide an overview of the science and a history of failure. The last quarter of his book is a survey of many of the solutions offered to counter climate change. Some scientist-engineers have proposed grandiose solutions that, rather than change mankind's dependence on carbon based energy, would lessen the damage caused by removing carbon dioxide from the atmosphere. Flannery sees little use in most of these quixotic plans, "which are neither as straightforward nor as cost effective as industry would like." Instead, he focuses on alternative energy sources, nuclear power, and what seems to be his favorite, energy derived from turbines, a highly reliable and cost efficient means of harnessing energy. None of the solutions Flannery proposes are radical or out of reach; Brazil, a "developing country" has largely switched to ethanol derived from sugar cane as an alternative to natural gas.

For Flannery, the solution (although this is a misnomer—much of man-made climate change is somewhat irreversible) is an international agreement adopting reductions of carbon emissions by 70% by 2050, which in turn would stimulate even more growth in alternative energy sources. Flannery's blend of skepticism and optimism, scientific theory and historical precedent, offer an incredibly compelling argument of what the civilizations of the world must do to maintain an earth in balance.