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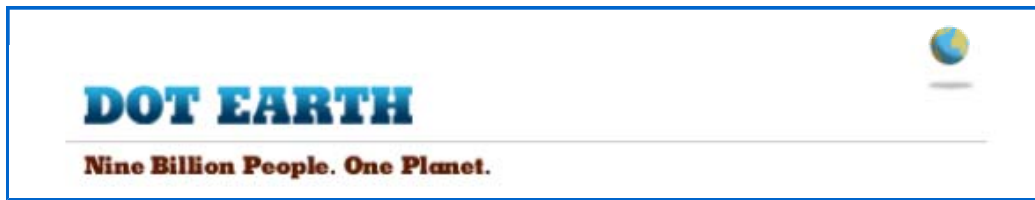
## The New York Times

Wednesday, March 31, 2010

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March 31, 2010, 7:16 am

## Can Humans Manage the Atmosphere?

By [ANDREW C. REVKIN](#)

As recently as 2006, [geoengineering](#) — using countermeasures to blunt the heat-trapping impact of accumulating greenhouse gases or sop them up directly — [had a someday feel to it](#). The following video clip is a fun introduction to some of the basic ideas:



But the failure of recent efforts to curb greenhouse-gas emissions has built some momentum toward expanding research on such options. One step on that road was a big meeting on [geoengineering science and policy questions](#) at the [Asilomar Conference Center](#) in northern California last week. The result is [intensifying debate](#) over what is still widely viewed as a last-ditch option should worst-case projections of warming pan out. The questions transcend simple worries about environmental impacts. The biggest, perhaps, could be one of global diplomacy. Who gets to set the Earth's thermostat? Russia and Maldives would probably have entirely different views.

A few environmental groups — including the [Natural Resources Defense Council](#) and [Friends of the Earth \(U.K.\)](#) [pdf] have started to express conditional support for some of this research. Many [environmentalists still oppose such techno-fixes](#) as either bound to produce unintended consequences or a cop-out that could reduce pressure to stop emissions at the source. (A list of new books on the issue can be found at the bottom of this post.)

To my mind, some of the intensity in the discourse over this broad suite of possible climate interventions — on top of the unintended one under way now — derives from the uncomfortable situation the human species finds itself facing at this moment in its history.

Humanity stands poised between its [fossil-fueled adolescence](#) and [whatever comes next](#).

[Twenty years of accumulating research](#) has shown that we have altered the composition of the atmosphere in ways that could have centuries-long impacts on climate patterns, coastlines and ocean chemistry. But we haven't yet fully figured out what to do with that knowledge. As I wrote in [my first book on climate, in 1992](#), other life forms have had a big influence on the atmosphere (photosynthetic microbes and plants, for instance), but they weren't aware of their potency.

The struggle to initiate the big shifts in behavior and technology that would be required to reduce carbon dioxide emissions in a world with a fast-growing energy appetite is of epic scale.

The struggle over weighing possible manipulations of the atmosphere as a backstop strategy brings home the reality that we're poised to move from a mainly extractive relationship with the planet to a more managerial role. ( [James Lovelock](#) thinks [humans may simply be "too stupid"](#) to deal with this kind of problem.) I'm not nearly that cynical; I see this as kind of a species-scale variant on an individual poised [to come of age after a long, rambunctious adolescence](#).

I summarized some of this in that old climate book, with a lot of help from [Matthew Fontaine Maury](#), one of America's first oceanographers:

When I was a college student in London some 30 years ago, I stopped by one day at a little booksellers' fair that convened every lunch hour in the financial district. Among the crumbling leather-bound remains of someone's literary estate, piled high on one of the wooden carts, I found a slim volume called "The Physical Geography of the Sea," by Matthew Fontaine Maury. It was a sea captain's guide to the basics of oceanography and meteorology, published in 1859 by Sampson Low, Son, and Company. The book sat on my shelf, largely unread, until recently, when I opened it and found a chapter entitled, "The Atmosphere." Nowhere else have I seen a passage that so effectively describes the workings of the "spherical shell which surrounds our planet," as the author puts it. And the book speaks powerfully of the importance of treating the atmosphere with respect:

The atmosphere "warms and cools by turns the earth and the living creatures that inhabit it. It draws up vapors from the sea and land, retains them dissolved in itself, or suspended in cisterns of clouds, and throws them down again as rain or dew when they are required. ... It affords the gas which vivifies and warms our frames, and receives into itself that which has been polluted by use, and is thrown off as noxious. ...

"It is only the girdling encircling air, that flows above and around all, that makes the whole world kin. The [carbon dioxide] with which to-day our breathing fills the air, tomorrow seeks its way round the world. The date-trees that grow round the falls of the Nile will drink it in by their leaves ... and the palms and bananas of Japan will change it into flowers. The oxygen we are breathing was distilled for us ... by the magnolias of the Susquehanna, and the great trees that skirt the Orinoco and the Amazon. ... The rain we see descending was thawed for us out of the icebergs which have watched the polar star for ages, and the lotus lilies have soaked up from the Nile, and exhaled as vapour, snows that rested on the summits of the Alps.

"Hence, to the right-minded mariner, and to him who studies the physical relations of earth, sea, and air, the atmosphere is something more than a shoreless ocean, at the bottom of which he creeps along. ... It is an inexhaustible magazine, marvelously adapted for many benign and beneficent purposes.

"Upon the proper working of this machine depends the well being of every plant and animal that inhabits the earth; therefore the management of it, its movements, and the performance of its offices, cannot be left to chance."

Now we have arrived at a time when, voluntarily or involuntarily, humans are indeed "managing" the atmosphere. We had better manage it well.

Here are several new books on geoengineering (in order of publication):

- "[Hacking the Earth: Understanding the Consequences of Geoengineering](#)," Jamais Cascio
  - "[How to Cool the Planet: Geoengineering and the Audacious Quest to Fix Earth's Climate](#)," Jeff Goodell
  - "[Hack the Planet: Science's Best Hope – or Worst Nightmare – for Averting Climate Catastrophe](#)," Eli Kintisch
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By 2050 or so, the world population is expected to reach nine billion, essentially adding two Chinas to the number of people alive today. Those billions will be seeking food, water and other resources on a planet where, scientists say, humans are already shaping climate and the web of life. In Dot Earth, reporter Andrew C. Revkin examines efforts to balance human affairs with the planet's limits. Conceived in part with support from a John




Simon Guggenheim Fellowship, Dot Earth tracks relevant news from suburbia to Siberia. The blog is an interactive exploration of trends and ideas with readers and experts. You can follow Mr. Revkin on [Twitter](#) and [Facebook](#).



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### On the Dot

Energy

#### New Options Needed



Access to cheap energy underpins modern societies. Finding enough to fuel industrialized economies and pull developing countries out of poverty without overheating the climate is a central challenge of the 21st century.

- [Africa's Energy Gap](#)
- [The Power of Green](#)
- [The Energy Challenge series](#)
- [How to Spark an Energy Quest](#)

## Climate

### The Arctic in Transition



Enshrined in history as an untouchable frontier, the Arctic is being transformed by significant warming, a rising thirst for oil and gas, and international tussles over shipping routes and seabed resources.

- [The Big Melt series](#)
- [Postcards from the Arctic](#)
- [The North Pole Was Here \(book\) and teaching tools](#)
- [The Arctic Rush](#)

## Society

### Slow Drips, Hard Knocks



Human advancement can be aided by curbing everyday losses like the millions of avoidable deaths from indoor smoke and tainted water, and by increasing resilience in the face of predictable calamities like earthquakes and drought.

- [Times Topics: Disasters](#)
- [Thirsty Giant, India and water](#)
- [The Future of Calamity](#)

## Biology

### Life, Wild and Managed



Earth's veneer of millions of plant and animal species is a vital resource that will need careful tending as human populations and their demands for land, protein and fuels grow.

- [Managing Planet Earth](#)
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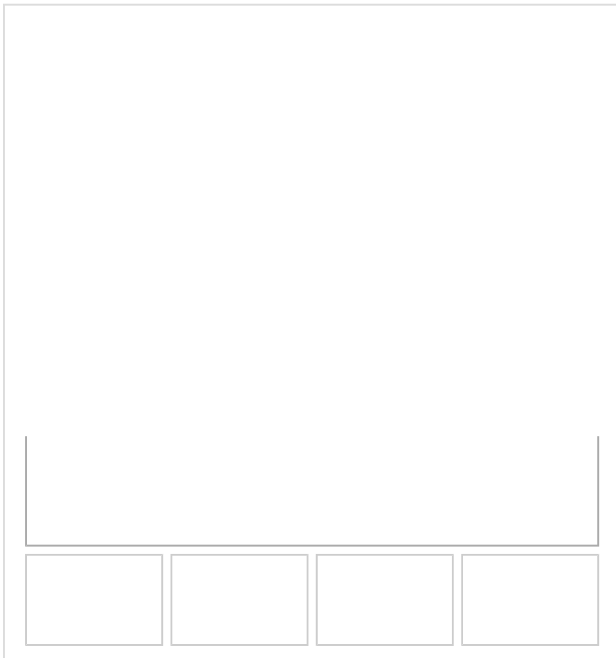


### [A Planet in Flux](#)

Andrew C. Revkin began exploring the human impact on the environment nearly 30 years ago. An early stop was Papeete, Tahiti. This narrated slide show describes his extensive travels.

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### Video



### [Dot Earth on YouTube](#)

Many of the videos featured here can be found on Andrew Revkin's channel on YouTube. Recent reader favorites:

- [Dr. James Hansen](#)
- [Local Cooking](#)
- [41 Days at the North Pole](#)
- [Cuttlefish Camouflage](#)



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- [Environmental Journalism Today \(SEJ.org\)](#)
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- [Energy Outlook](#)
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- [PDX Green \(Portland, Ore.\)](#)

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- [ScienceBlogs : Planet Earth](#)
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- [The Academy of Sciences for the Developing World](#)
  
- [Science and Innovation for Sustainable Development](#)
- [The Pimm Group](#)
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### Poverty, Development, and Design

- [Consilience Journal \(Columbia U., student-edited\)](#)
- [Squatter City](#)
- [TVE Asia Pacific](#)
- [NextBillion.net](#)
- [Appropriate Infrastructure Development Group](#)
- [Chemists Without Borders](#)
  
- [YaleGlobal Online](#)
- [Design that Matters](#)
- [Planetizen — The Planning and Development Network](#)
- [TedBlog](#)
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### Media and Environment

- [Environmental Journalism Today](#)
- [The Observatory \(CJR\)](#)
- [Environmental Journalism Now](#)
- [Developing Radio](#)
- [EarthJournalism.org](#)
  
- [Knight Science Journalism Tracker](#)
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#### Environment and Sustainability Voices

- [Worldchanging](#)
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#### Analysis and Policy

- [Electronic Journal of Sustainable Development](#)
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- [World Climate Report](#)
- [Hit & Run \(Reason\)](#)
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Humanity's growing pains on a finite planet include pondering how to "manage" the atmosphere.

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Video excerpts of on-air comments by meteorologists, who are more likely than climatologists to question the science of climate change. Whom do you trust when it comes to climate science?

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Eskom, South Africa's state run energy supplier, needs to urgently expand its generating capacity, but environmental groups are opposed to such a massive investment in coal.

#### [Koch Industries Responds to Greenpeace](#)

"The Greenpeace report mischaracterizes these efforts and distorts the environmental record of our companies," the company said.

#### [Developer Defends Ethiopian Hydro Project](#)

"The campaign against the construction of the Gibe plant in Ethiopia is merely another initiative without a technical and scientific basis," the company said.

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The health maintenance organization will install solar power systems on 15 of its hospitals, offices and other facilities across California.

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