

Ask the Experts The Environment (even in 2016, Scientific American was delightfully non-PC)
Scientific American

Written for the intelligent layman – delightfully non-polemic. Just the facts.

This is a collection of articles from the Scientific American over the past couple of decades. It is a relatively brief read, 48 articles each about one page long. In Kindle format this is 1891 locations, about one third of the average nonfiction book.

Most of the topics are simply the kinds of things that you wonder about. How come hurricanes hit the East Coast instead of the West Coast of the United States? How can the Earth's weight be determined? Is salt bad for us? The answer to the latter is truly delightful: they can't prove that salt is bad for us because everybody's diet contains so much of it that conducting a controlled experiment with true low-salt eating turns out to be extraordinarily difficult.

The book handles areas of possible controversy thoughtfully and with admirable scientific remove. They address climate change as a collection of observable scientific phenomena without getting into advocacy or taking sides. They examine the question of whether or not sunspots and fluctuations in solar radiation are responsible in part for global warming. The conclusion is that they probably are. On the other hand, they except as given the obvious fact that anthropogenic greenhouse gases such as carbon dioxide have grown, and our growing far more abundant than at any time in history for which it can be measured.

The articles on chlorofluorocarbons and the ozone layer seem to date back to the period prior to the Montréal protocol, the time at which these seemed to be a major environmental issue. Montréal appears to be about the most successful global treaty ever concluded; an article noting as much would have been welcome.

They address the question of the depletion of fossil fuels with similar objectivity. This is one area in which history seems to have outrun them. As I write this review, the price of oil has plunged because nontraditional oil – tar sands from Canada and shale oil from the United States – have cause an oversupply. Although the articles included in the collection are on solid ground scientifically, marketplace conditions and politics have changed quite rapidly.

I had an unusual experience reading this book in Kindle. It tended to skip pages. I found that I finished the book in half the time I expected, but going back I found that I had missed about a third of the articles. No harm done – I could jump to them from the table of contents. I would be interested in hearing of anybody else experiences this quirk in Kindle.

An altogether satisfying read. A little bit short, but you get what you pay for. Here are the titles of the articles; judge for yourself whether this is your cup of tea.

Weather

1.1 Why Do Clouds Always Appear to Form in Distinct Clumps?

1.2 Why Do Clouds Turn Gray before It Rains?

1.3 Why Do Clouds Float When They Have Tons of Water in Them?

1.4 How Do Water Droplets in Clouds Cohere?

1.5 What Causes Thunder?

1.6 What Causes Humidity?

1.7 What Is El Niño and Why Does It Affect Weather all over the World?

1.8 Why Are Snowflakes Symmetrical? How Can Ice Crystallizing on One Arm "Know" the Shape of the Other Arms on the Flake?

1.9 What Is the Meaning of the Phrase, "It's Too Cold to Snow"?

1.10 Where Does Wind Come from?

Section 2 Natural Disasters

2.1 Why Twisters Hammer Tornado Alley

2.2 What Makes Kansas, Texas and Oklahoma So Prone to Tornadoes?

2.3 Why Don't Tornadoes Hit Cities More Often?

2.4 How Does an Earthquake Trigger a Tsunami Thousands of Kilometers Away?

2.5 What Causes a Volcano to Erupt, and How Do Scientists Predict Eruptions?

2.6 How Do Volcanoes Affect World Climate?

2.7 Why Do Hurricanes Hit the East Coast of the U.S., but Never the West Coast? Why Don't Any of the Hurricanes That Form in the Pacific Ocean Reach the Continental U.S.?

2.8 Why Do We Have a Hurricane Season?

Section 3 Earthly Energy: Resources

3.1 Is "All of the Above" the Right Strategy for U.S. Energy?

3.2 Why Is Oil Usually Found in Deserts and Arctic Areas?

3.3 Ooze-Down Economics: Will Opening Global Oil Reserves Stimulate the World Economy?

3.4 How Does Geothermal Drilling Trigger Earthquakes?

3.5 Why Don't We Get More Drinking Water from Desalinating the Ocean?

3.6 Is Salt Bad for Us?

4 Section Climate Change

4.1 How Can Global Warming Be Traced to CO₂?

4.2 What Role Does Climate Change Play in Tornadoes?

4.3 Could the Increase in the Sun's Brightness Be a Reason for Global Warming?

4.4 Chlorofluorocarbons (CFCs) Are Heavier Than Air, So How Do These Chemicals Reach the Ozone Layer to Adversely Affect It?

4.5 Why Is There an Ozone Hole in the Atmosphere but Too Much Ozone at Ground Level? Why Doesn't Stratospheric Ozone Sink and Ground Level Ozone Rise?

Section 5 Extreme Measurements

5.1 Why Is the Earth's Core So Hot? How Do Scientists Measure Its Temperature?

5.2 How Can Earth's Weight Be Determined?

5.3 How Are Past Temperatures Determined from an Ice Core?

5.4 How Are Temperatures Close to Absolute Zero Achieved and Measured?

5.5 Why Is the South Pole Colder Than the North Pole?

5.6 If Heat Rises, Why Does the Temperature Decrease at Higher Elevations?

5.7 What Causes the Periodic Reversals of Earth's Magnetic Field? Have There Been Any Successful Attempts to Model the Phenomenon?

5.8 Is It True That the Strength of Earth's Magnetic Field Is Decreasing? What's the Effect?

5.9 Why Does a Regular, Wavelike Pattern Form on Beach Sand When It's Windy? And What Determines the Spacing (Frequency) of These Waves?

Section 6 Phenomena

6.1 Why Is Most of the Ground Brown?

6.2 Why Is the Sky Blue?

6.3 What Is a Geyser?

6.4 Why Are Impact Craters Always Round?

6.5 Does the "Green Flash" Said to Occur at Sundown in the Tropics Exist? If So, What Causes It?

6.6 What Do We Know about the Origin of Earth's Oceans?

6.7 What Causes the High-Speed Wind, or "Jet Stream," in the Stratosphere? And Why Does the Path of the Jet Stream Wander?

6.8 How Can Graphite and Diamond Be So Different If They Are Both Composed of Pure Carbon?

6.9 Why Are Rainbows Curved?

6.10 What Determines the Size of a Rainbow?