

El Niño shifts Earth's momentum

The current El Niño warming has grown so strong, it has added a noticeable zip to atmospheric winds and slowed Earth's spin, suggest scientists who track the planet's rotation.

El Niño exerts these profound effects by speeding up the eastward movement of the atmosphere, relative to the solid body of the planet, says David A. Salstein of Atmospheric and Environmental Research in Cambridge, Mass. The change shows up in analyses of the atmosphere's angular momentum—a property comparable to the momentum of a spinning tire. From mid-March through late November 1997, the atmosphere's angular momentum remained significantly above average, reports Salstein.

During non-El Niño years, winds in the tropics blow from east to west, whereas winds over the rest of the globe travel from west to east. Combined, they give the atmosphere a net eastward momentum.

The atmosphere routinely trades some of this momentum back and forth with the solid Earth as winds drag across the surface of the planet and push against mountain ranges. In the Northern Hemisphere's winter, the atmosphere speeds up and Earth slows. In summer, the reverse happens.

El Niño boosts the atmosphere's angular momentum by slowing down the tropical easterlies and speeding the westerlies outside the tropics, says Salstein.

As the atmosphere speeds up during El Niño, Earth itself slows down to conserve the combined angular momentum. John M. Gipson of NASA's Goddard Space Flight Center in Greenbelt, Md., has tracked the planet's spin by monitoring changes in the length of the day. Over a typical year, the day shortens and lengthens by roughly 1 millisecond, mostly because of shifts in atmospheric angular momentum. During the current El Niño, the day has grown longer by four-tenths of a millisecond, he says. —R.M.

Did humans scorch Australia's outback?

Ancient humans may have desiccated the interior of Australia by burning the region's vegetation during the last 50,000 years, according to computer simulations.

Information about past conditions in central Australia comes from sediments in Lake Eyre—a dry lake bed in the heart of the continent. The sediments reveal that monsoonal summer rains fell on large regions of inland Australia during particular climate epochs more than 60,000 years ago, says Gifford Miller of the University of Colorado at Boulder.

The Australian rains were strongest during the last warm interglacial period, about 120,000 years ago. During this phase, monsoonal winds spilling off the Tibetan plateau carried ocean moisture far into central Australia, says Miller. When the present interglacial period started 10,000 years ago, wet conditions should again have developed in Australia—indeed, India's monsoon strengthened at this time. However, central Australia remained dry.

Miller and his colleagues used a computer climate model to test whether loss of vegetation could explain the recent aridity. When the researchers covered Australia with forest, the model produced a moist interior. Without the moderating effects of plants, rains failed to reach the center of the continent.

The link to people is circumstantial. Miller notes that ancient humans migrated from southeast Asia to Australia 50,000 years ago, about the time the continent dried out. Plant records are too poor to tell whether the interior was vegetated before human settlement, however.

Although the case of Australia remains uncertain, scientists have documented other instances in which vegetation strongly influenced the climates of Africa and the Amazon, says John E. Kutzbach of the University of Wisconsin-Madison. —R.M.

Year of the troubled oceans

The United Nations has designated 1998 the International Year of the Ocean. To kick off this 12-month focus on the marine world, which accounts for most of the volume permanently inhabited by life on our planet, some 1,600 scientists signed their names to a public "call for action."

Unveiled at a news conference in Washington, D.C., last week, the emphatic, one-page declaration argues that life in the world's estuaries, coastal waters, and seas is increasingly threatened by overfishing, habitat alteration, pollution, introduction of non-native species, and global climate change.

"This statement says that the sea is in trouble, much worse trouble than we had previously thought," says Elliott A. Norse, organizer of the effort and president of the Redmond, Wash.-based Marine Conservation Biology Institute. An "out-of-sight, out-of-mind" mentality has allowed much of the land-dwelling public to ignore the oceans' plight, he charges.

Through the new statement, marine scientists are issuing "a wake-up call, saying 'we need to get your attention,'" Norse adds.

The declaration calls on governments and their constituencies around the world to take immediate, "decisive action" that would include ending all subsidies that encourage overfishing; increasing the number and effectiveness of marine sanctuaries so that 20 percent of exclusive economic zones, as well as the high seas, are protected by the year 2020; abandoning fishing methods that destroy fish habitats (SN: 10/26/96, p. 268); and funding studies to determine what is needed to conserve imperiled marine populations.

As marine and conservation biologists, Norse told SCIENCE NEWS, "we are realizing slowly but surely that we can't hide in our ivory towers any longer and just do our thing. It's our job—as people who know the most about this issue—to speak out."

Rep. Curt Weldon (R-Pa.) championed the move, noting that he and other representatives have been prodding scientists to do more than just chronicle what's happening in the seas. They "need to get involved politically," he says, and "to get their faculties, their students, their consumers, and their suppliers into the process of convincing us in the city that oceans are a top priority" for research and conservation. —J.R.

Millennium bug bites?

With only about 700 days left until Jan. 1, 2000, businesses, governments, and individuals are scrambling to make sure computers recognize that a year given as 00 refers to 2000, not 1900. That massive reprogramming effort is accompanied by predictions of dire consequences—from airplane crashes to financial system disasters—if the problem isn't fixed.

To help sort fact from fancy, a group known as Computer Professionals for Social Responsibility (CPSR), based in Palo Alto, Calif., has established a "rumor center" on its World Wide Web site (<http://www.cpsr.org/program/y2k/>).

"The impact of the problem will vary considerably," says Norman Kurland of Delmar, N.Y., who chairs the CPSR working group on the year 2000 problem. "No one knows for sure just how extensive the failures are going to be."

Rumors known to the group or submitted by visitors to the Web site are put into various categories, ranging from confirmed to disproved. "There are some things that are clearly not going to happen," Kurland says. "No airplane will fall out of the sky or go off course because of the year 2000 problem, and no elevator is going to crash to the ground. But there will be even wilder rumors as the time nears."

The CPSR effort is aimed at providing information that could be helpful to small organizations, businesses, and individuals, who may lack the resources or expertise to address the year 2000 problem on their own. —I.P.