

The science behind the El Niño hype

by Marjorie Mazel Hecht

El Niño is the name for the periodic warmer sea temperatures and weakened trade winds in the tropical Pacific, which have been documented for centuries. It was named El Niño, Spanish for “The Christ Child,” because it brought warm waters around Christmas time to the coast of Peru. Technically, it is known as the El Niño/Southern Oscillation (or ENSO), referring to the physical pattern of warmer waters that originate in the tropical Pacific every two to seven years, as the pressure differences shift between the southeastern and western Pacific.

Pressure rises in the high-pressure system in the southeastern Pacific and falls in the low-pressure system in the western Pacific (over Indonesia and northern Australia). In the El Niño, the pressure difference becomes lower, the westward trade winds weaken, and there is less upwelling of deeper and colder ocean waters to the surface—which is the cause, and which the effect, is not known. The resulting warming of the ocean surface then further weakens the trade winds. When the changes in water temperature and winds are more marked, this is called an El Niño event, and historically these events have been associated with weather extremes.

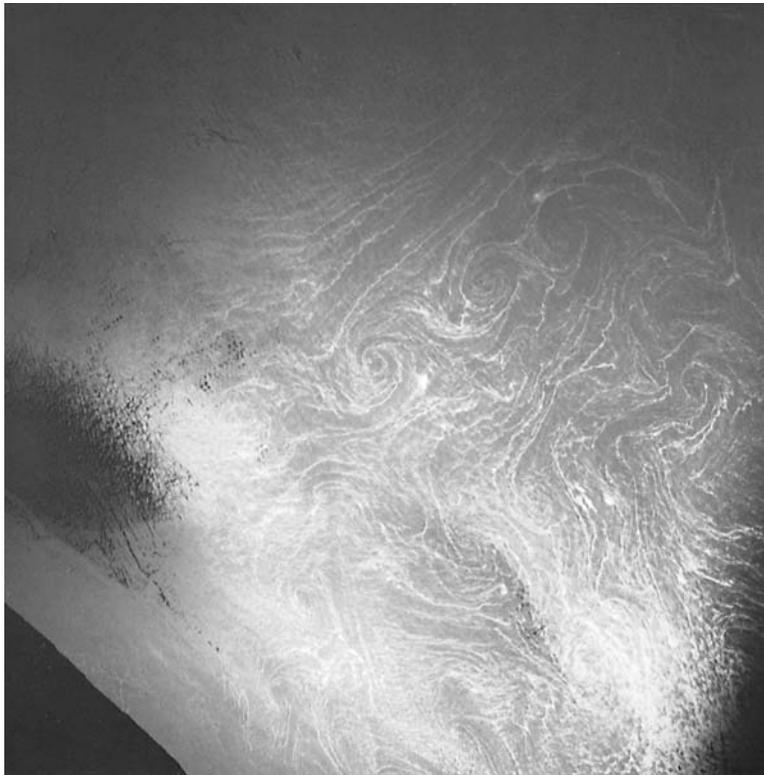
The prominence of press coverage on the present El Niño event, including the scare headlines, and the physical reality of El Niño weather conditions and the lack of preparedness around the globe to handle heavy rains (or drought), are the reason for this cover story. We can’t tell you the *cause* of El Niño; scientists don’t know it. Nor can we tell you that El Niño is the *cause* of severe weather. In fact, what the El Niño event points up, is that there is a lot more to learn about the interaction of the world weather and climate systems, and, in part, for that reason the present computer models are axiomatically flawed and cannot tell us the answers.

Presented here are interviews with three leading scientists concerned with climate and oceans, who each point to areas that require further investigation. We also report on congressional hearings held on Sept. 11 to discuss “Preparing for El Niño,” and on the infrastructure projects necessary to combat the extremes of weather—projects that have been on the drawing boards for decades, but were stopped or stalled by the world financial police. Future issues will continue to pursue the unanswered scientific questions around El Niño, and climate in general, and, of course, to combat the hoax propaganda.

There are already scare headlines around El Niño—predicting torrential rains, landslides, floods, blizzards, and so on. Unlike the hoax stories of global warming or ozone depletion, however, in this case even the climate modellers acknowledge that El Niño is not *caused* by “global warming.” El Niño, in fact, is a good example of how you cannot discover anything about climate by taking averages of phenomena like temperature, and basing your predictions on these averages. The atmosphere and the oceans are full of structures, nonlinearities, which cannot be averaged to suit a computer model. These structures, and systems of structures, interact in complex ways that cannot be understood in terms of the quick-fix correlations that characterize the global warming or ozone hoaxes.

Structures in the environment

From the depths of the ocean to the heights of the atmosphere and beyond, the physical world is not smooth and continuous. In the oceans, for example, since the Space Shuttle flights of the 1980s, scientists have discovered three new categories of phenomena, described by Dr. Robert E. Stevenson (see interview), who has worked with the NASA astronauts to develop oceanography from space. As Stevenson



In-line spiral eddies in the eastern Mediterranean, photographed by the crew of the Challenger Shuttle on Oct. 6, 1984. These non-linear structures cannot be modelled in linear computer models.

notes, these structures, spiral eddies, solitons, and *suloys*, carry most of the thermal and kinetic energy of the oceans. Stevenson discusses the thermal “patchiness” created by these phenomena, and how this patchiness, and hence the relationship between ocean and atmosphere, cannot be modelled in a computer program based on averaging.

The atmosphere and stratosphere also contain large-scale structures that elude the computer modeller’s averaging. The way the ozone layer, for example, is described by those promoting the ozone-depletion theory,¹ it sounds like a thin, flat hat, with a built-in sun filter, placed firmly around the globe to keep out the rays of the Sun. But the ozone layer is not a flat rim, nor is it homogeneous, and its thickness is not driven by chemistry alone, but by atmospheric dynamics.

As with the newly discovered ocean phenomena, the Space Shuttle and new satellite technology have given us a

1. The ozone-depletion theory, devised by Dr. F. Sherwood Rowland and Mario Molina in 1974, is based on chemistry, specifically the idea that man-made chlorofluorocarbon molecules waft up to the Earth’s upper stratosphere, get hit by ultraviolet radiation, break apart, and release a chlorine atom. The chlorine then supposedly destroys the ozone in the ozone layer by stripping away an oxygen atom from the ozone molecule. As this process is repeated hundreds of thousands of times, the theory goes, the Earth’s fragile ozone layer is destroyed. This supposed chemical reaction, however, has not been observed in the atmosphere, or even in the laboratory.

much truer picture of the ozone layer than that presumed by the ozone-depletion theorists. *Crista-Spas*, the Cryogenic Infrared Spectrometers and Telescopes for the Atmosphere (*Crista*), housed on the Shuttle Pallet Satellite (*Spas*), which was deployed on the Shuttle in 1994, and again in August 1997, has provided the first three-dimensional map of the ozone layer. *Crista-Spas*, a joint project of NASA and the University of Wuppertal and the German Space Agency, monitored 15 atmospheric gases in great depth and detail.

The measurements from the first mission show that the ozone layer is a complex dynamic system, with vortical and filamentary structures that are constantly changing. Thus, as with the oceans, zonal averaging and linear equations cannot provide an accurate picture. The computer models that have been used to forecast ozone depletion rates — and make policy decisions that affect the livelihood and lives of millions of Americans — are wrong, because their methodology is axiomatically wrong.

To quote from a press statement of the *Crista* researchers on Nov. 6, 1995:²

“One finds no solution to the ozone problem if one examines only the photochemical side, but neglects the energetics and dynamics.

“Instead of a uniform distribution of ozone along a [band of constant] latitude, as the current models predict, *Crista* showed a patchwork of large and small scale structures in the ozone distribution. . . . The first results show that photochemical models alone do not adequately describe the condition of the atmosphere. Dynamic processes and transports must be considered, for which temperatures, waves, and turbulences show themselves responsible. . . . What we see in nearly all emissions and also in ozone density is that there are large fluctuations from point to point and that the ozone distribution in a horizontal map looks like a weather map.”

The results from this year’s deployment of *Crista-Spas* are not yet analyzed. However, as reported in the German daily *Hessische-Niedersächsische Allgemeine Zeitung* on Aug. 10, the researchers expect to see their initial data and conclusions reaffirmed.

In the troposphere, the layer below the stratosphere, satellite data have indicated the presence of large filamentary structures of water vapor, called rivers, some of which carry more water than the Amazon! The discovery of these rivers created many questions and areas of further research, including work on whether interaction with these rivers can account

2. For a more detailed look at the *Crista-Spas* results, see “New Scientific Evidence Proves Ozone Depletion Theory False,” by Rogelio A. Maduro, in *21st Century*, Spring 1996, p. 40.

for the ozone fluctuations in Antarctica.³

It should not be a surprise, therefore, that the results reported on Aug. 28 by researchers using the Solar and Heliospheric Observatory (SOHO), a joint project of the European Space Agency and NASA, show similar dynamic results looking at the Sun. Scientists report finding “jet streams” or “rivers” of hot, electrically charged gas (known as plasma) flowing beneath the surface of the Sun, as well as features similar to trade winds that transport gas beneath the Sun’s surface. As one of the researchers described it: “We have detected motion similar to the weather patterns in the Earth’s atmosphere. Moreover, in what is a completely new discovery, we have found a jet-like flow near the poles. This flow is totally inside the Sun. It is completely unexpected, and cannot

3. Work on tropospheric rivers has been reported in papers by Reginald E. Newell et al. in *Geophysical Research Letters*. For example, see Vol. 12, No. 24, pp. 2401-2404 (Dec. 24, 1992).

be seen at the surface.”

The point here is not just that there is something new under the Sun, but that there is a coherence to the universe that Man has to continue to discover and understand. Today we have incredible new technologies to make precise observations (if the research programs are funded to make this possible). Our ancestors, however, observed with their own eyes and conducted ingenious experiments using the tools they had available, to test their hypotheses. We know that our ancient ancestors had calculated the long solar-astronomical cycles over centuries: the seasonal precession of the equinox (a 21,000-year cycle), the tilt of the Earth’s axis (a 43,000-year cycle), and the eccentricity of the Earth’s orbit around the Sun (a 100,000-year cycle).⁴

4. For a detailed explanation of the solar astronomical cycles and how they drive climate, see Laurence Hecht, “The Coming (or Present) Ice Age,” in *21st Century*, Winter 1993-1994, p. 23.

Old hoaxes never die, but just keep killing people

After 30 years of continuous cultural bombardment, citizens of industrial nations seem to have lost the capacity to distinguish a scare story from the truth, when it comes to the environment. Correlations have become causal relationships; man-made substances have become enemies of “Nature”; industry has become a villain; all species are considered equal; and the good old days, when man was at the mercy of Nature, are revered. Meanwhile, these environmental scare stories—and the regulations that grow out of them, such as the banning of useful pesticides—continue, directly and indirectly, to kill millions of people worldwide.

What would someone who has internalized the environmentalist scare stories, do, if abandoned on a island, like the Swiss Family Robinson in the classic children’s story? Would they kill “endangered” game for food? Would they be able to use basic astronomical knowledge to keep track of time? How would they combat poisonous snakes and insects, using “natural” means?

The consequence of three decades of environmental hoaxes, including today’s global warming and ozone-depletion, is not simply that Americans have become stupefied; but that they are blinded to the Malthusian intention behind the hoaxes, and their actual effect: population reduction.

DDT is the mother of these environmental hoaxes, although not the first. (Hundreds of thousands of Ameri-

cans dumped their Thanksgiving cranberries in 1959, in response to a scare story about herbicide residues on cranberries.) DDT was banned in 1972 by Environmental Protection Agency (EPA) administrator William Ruckelshaus, for what he admitted were “political” reasons. Ruckelshaus chose to ban DDT, despite the fact that the EPA had held seven months of scientific hearings on DDT, and that the EPA’s own hearing examiner had ruled, on the basis of the voluminous scientific evidence presented, that DDT should *not* be banned.¹

Today, DDT is routinely labeled as a “killer” by the media and in the environmentalist propaganda. In fact, DDT came under fire because it was so effective in saving lives: Since its discovery in 1942, it dramatically cut the incidence of malaria and the death rate in the developing sector, saving more millions of human lives than any other man-made chemical.

Today, without the use of DDT, malaria is the world’s leading killer disease. Nearly half the world’s population is at risk from malaria, and its debilitating effects. Most of the 200 to 300 million new malaria cases each year are among children. At least 100 million people die each year, as a result, directly and indirectly, of the anti-pesticide activities of the environmentalists.²—*Marjorie Mazel Hecht*

1. For background information on DDT, see Dr. J. Gordon Edwards, “The Ugly Truth About Rachel Carson,” *21st Century Science & Technology*, Summer 1992; and Dr. J. Gordon Edwards, “Malaria: The Killer That Could Have Been Conquered,” *21st Century Science & Technology*, Summer 1993.

2. This death toll estimate was calculated by entomologist J. Gordon Edwards in 1984, and is probably much higher today.

These solar astronomical cycles are what determine the Earth's climate, not any man-made emissions, and it is on the basis of these cycles that we can definitely say there is no global warming. Until the early 1970s, climate scientists thought in terms of 100,000-year, or at least 10,000-year cycles, which corresponded to the advancing glaciation of an Ice Age and the warmer, interglacial periods, respectively. Climate scientists also were talking about *global cooling*, because the evidence indicated that the Earth was coming out of a 10,000-year interglacial period and on the way to a new Ice Age. Although Malthusian ideology intervened to shift the climate funding and research to "global warming," because it was more scary,⁵ the fact remains that we are in an interglacial period that has already lasted beyond the 10,000-year average.

A study of El Niño, its causes and effects, presents scientists—and the public—with a chance to understand the real and complex forces that shape the Earth's climate. *EIR* intends to continue this series in order to help that process of understanding.

5. See the statement of Dame Margaret Mead, who convened a meeting of scientists on "The Atmosphere: Endangered or Endangering," in November 1975, in Rogelio A. Maduro, "Orbital Cycles, not CO₂, Determine Earth's Climate," *EIR*, May 16, 1997, p. 10.

For previews and
information on
LaRouche publications:

Visit EIR's Internet Website!

- Highlights of current issues of *EIR*
- Pieces by Lyndon LaRouche
- Every week: transcript of the latest **EIR Talks** radio interview with LaRouche.

<http://www.larouchepub.com>

e-mail: larouche@larouchepub.com

Interview: Robert E. Stevenson

The ocean is full of nonlinear structures

Oceanographer Robert Stevenson is a consultant based in Del Mar, California, who trains NASA astronauts in oceanography and marine meteorology. He was secretary general of the International Association for the Physical Science of the Oceans from 1987-95, and worked as an oceanographer for the U.S. Office of Naval Research for 20 years. He was interviewed by Marjorie Mazel Hecht.



EIR: You have described large structures in the oceans, and in the atmosphere, that cannot be modelled on a computer. So what are the climate modellers doing with the oceans?

Stevenson: They have bypassed going out into the world to learn what the world is about, because they can now do computer models, which are no good anyway, because everything you are trying to model in nature is nonlinear. You can't model nonlinearities. Everything we do, everything that exists on Earth and in life, is nonlinear.

EIR: You have a wonderful collection of photographs of the oceans taken from the Space Shuttle. What are some of the discoveries you made from looking at these photos in the early Shuttle days?

Stevenson: I think that the discoveries that are clearly significant, to oceanography and to what we understand about the ocean, were those of the spiral eddies, number one, because they represent scales of motion, scales of turbulence in the ocean, that are smaller than the 150 km diameter eddies that people had known about before (like the Gulf Stream rings), and they are larger than ocean waves and very tiny turbulence.

The eddy scale is 15 to 30 km in diameter, which we now call a sub-mesoscale—a scale that nobody knew about before. We learned that these eddies represent motion down to depths of as great as 300 meters, but mostly down to about 150 meters; that they are ubiquitous, everywhere in the ocean, except near the Equator, because near the Equator, the effect