

# CLIMATE ALERT

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## Barbados Conference Adopts Strategy for Sustainable Development

The small island states — some 40 of them around the world — present peculiar vulnerabilities for environment and development. They are small and dispersed, with fragile ecologies, limited resources, and are distant from markets. Climate change, climate variability and sea level rise are issues of grave concern. A Global Conference on Sustainable Development of Small Island Developing States — the first such worldwide conference on sustainable development — was held in Barbados, April 25 - May 6, to draw up a Program of Action and policies to confront the particular vulnerabilities of these nations.

Thirteen heads of state — including Fidel Castro — and 30 Government Ministers gathered for the last two days of the session and called for the formation of a partnership between small islands and the international community to support the Conference's agreement on strategies for development.

Prime Minister Patrick Manning of Trinidad and Tobago spoke for the Alliance of Small Island States (AOSIS) to express disappointment about lack of a specific financial commitment by donor countries. But Ambassador Penelope Wensley of Australia, who chaired the year-long preparatory negotiations for the Conference, stated, "The Barbados agreement underscores the

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## Montreal Protocol Consensus Was Not Easy; Its Lessons May Augur Well for Agreement on Greenhouse Emissions

*Editor's Note: In the drive to limit greenhouse gas emissions, as a first step in implementing the Framework Convention on Climate Change, the Montreal Protocol has been cited as an example of an international agreement achieved with ease and dispatch. But reaching consensus on protecting the ozone layer was not as smoothly accomplished as many believe. The same kind of creative and ingenious cooperation by the government, industry and environmental communities may produce unexpectedly rapid progress as they work to restrict greenhouse gas discharges into the atmosphere. The following accounts by participants reveal how many obstacles had to be overcome on the way to final signing of the ozone protocol.*

### GOVERNMENT PERSPECTIVE & OVERVIEW

Stephen O. Andersen, Deputy Director    Major Thomas E. Morehouse  
EPA Stratospheric Protection Division    United States Air Force

Ozone layer protection is generally considered a path-breaking diplomatic and environmental achievement. However, it is not widely appreciated that the success in eliminating ozone-depleting chemicals has been a result of industry leadership and technical partnerships with government and non-governmental organizations (NGOs).

The lessons of ozone layer protection are particularly important because the issue is believed to be more technically and socially challenging than climate protection will be. However, both ozone layer and climate protection involve fundamental changes in behavior, vast changes in infrastructure, and often the introduction of speculative technology.

The worldwide reduction in use of chlorofluorocarbons (CFCs), halons, and other ozone-depleting compounds is one of the great success stories of environmental stewardship. These compounds had a wide range of economically important applications throughout the world—as coolant for refrigeration; insulation foam for consumer goods and building materials; an explosion suppressant critical to protect military and sophisticated commercial property; solvent for electronics and aerospace manufacturing; and aerosol propellants.

Some examples of the corporate success stories where CFCs were eliminated totally are well known. Northern Telecom produces its advanced telecom-

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# Climate News Around the World

## NEW ZEALAND

New Zealand is exploring reforestation as a major component of its national plan to meet the requirements of the 1992 Framework Convention of Climate Change (FCCC) by September 21. The completed plan will set forth the policies New Zealand hopes to implement to limit greenhouse gas emissions and protect and enhance greenhouse sinks.

If New Zealand continued on a business as usual path, emissions would rise significantly. (See box.)

### New Zealand's Net Emissions

#### a) of CO<sub>2</sub> from energy

1990 23.6 million tons (Mt)

2000 an increase of 12%

2005 an increase of 36%

#### b) of methane from agriculture

1990 32 Mt of CO<sub>2</sub> equivalent

2000 an increase of 1%

2005 an increase of 5.4%

#### c) other greenhouse gases

methane from landfill, nitrous oxide, hydrofluorocarbons and perfluorocarbons would all rise

In the approach the Government is now developing it expects, although not with certainty, that forest carbon sinks will offset emissions. Two scenarios are given as examples:

1. Planting 60,000 hectares of new forest per year, combined with already planted forests, could absorb almost all of the CO<sub>2</sub> emissions from energy (23.2 Mt or 6.3 Mt of carbon).
2. A more ambitious planting of 100,000 hectares per year would absorb somewhat more than the total CO<sub>2</sub> emissions from energy (26.4 Mt CO<sub>2</sub> equivalent or 7.2 Mt of carbon) by 2000. Methane emissions would follow similar trends.

Since the FCCC requires developed countries to address all greenhouse gases, New Zealand must also consider its significant methane discharges. The only way to cut agriculture methane emissions would be to curtail the population of stock animals, an unacceptable option. Thus methane is likely to supply a greater proportion of future total emissions.

Beyond enhancing sinks some economic instruments would be needed to significantly limit CO<sub>2</sub> emissions. Two possibilities are being considered, a carbon charge and tradeable emissions permits, each having tradeoffs.

A **carbon charge** would raise the price of fossil fuel to users, but it is not yet clear the extent of emission reduction that would be gained. "[P]reliminary indications," according to the document, "are that a carbon charge on the order of \$100-120 per ton of carbon ... might reduce emission of CO<sub>2</sub> by around 7-10% below business as usual." It could also raise significant revenues which might be used to reduce personal or corporate income taxes, retire public debt or increase expenditures, including for such items as energy efficiency improvements.

A key advantage to **tradeable emission permits** is the guarantee that emissions would be reduced, the document asserts. However, unlike the carbon charge, there would be no certainty of the extra costs the emitter might pay or the overall costs to the economy. There also might be a redistribution of wealth from energy users to producers through price increases.

## GLOBAL EXTREME WEATHER

In late May and early June, India and Pakistan suffered from temperature of over 120 degrees F. While readings of

more than 100 degrees F are not uncommon at that time of year, New Delhi had its highest temperatures in half a century, and one man was killed and dozens injured in a protest over water shortages in Islamabad. At the same latitude in parts of southwestern U.S., there were record high temperatures of 120 degrees or more in Oklahoma, New Mexico, Arizona and Nevada in June. This southwestern high helped create the conditions for the July wildfires in the Rockies by delaying the arrival of moisture-laden winds from the Pacific.

A band of high pressure systems girdling the globe at a latitude of about 25 to 35 degrees north is apt to bring hot weather at this time of year when the sun is hottest in the Northern hemisphere. Part of this system — a Bermuda high — stalled over the Atlantic in early July and prevented tropical storm Alberto from moving out with the usual prevailing west to east winds. The lingering storm dumped record rains which flooded Georgia, Alabama and Florida; more than 21 inches fell in the city of Americus, Georgia.

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## Greenhouse Emissions

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munications equipment without ozone-depleting solvents while maintaining the same or improved quality. Motorola eliminated its use of ozone-depleting substances (ODS) which resulted in increased performance of sophisticated military equipment. Texas Instruments and its German partners produce "smart" weapons without ODS. Lufthansa Airlines has virtually eliminated the use of such solvents in aircraft maintenance. Lockheed Fort Worth and its partners in the U.S. Air Force have virtually halted the use of ODS solvents in the manufacture of the F-16 Aircraft, and Saab has ended the use of these substances in the manufacture of the JAS 39 Gripen Aircraft. Nissan and Ford led the effort to eliminate ODS from automobile manufacturing and air conditioning units. Food and product packaging foam is now CFC-free, as is insulating foam. Also, as it turns out, refrigeration equipment can actually be more energy efficient without CFCs.

The elimination of these chemical substances has been successful, but it has not been easy. They were used around the world in many sophisticated products. In the past, virtually every consumer depended on these chemicals, and it was initially feared that drastic lifestyle changes would be necessary to eliminate them. What has been learned from this process, is that even the most difficult changes are possible and that industry-government cooperation is vital. In addition, the government learned how to be a good partner in change.

Consider the achievements and benefits from the government perspective:

- Government and the public got the immediate action from

industries to protect the ozone layer which they sought.

- Government learned to serve industry clients by removing bureaucratic barriers to change.

- Industry spearheaded technical developments and received valuable services from its government partners.

- By removing the potential of reprisals, industry associations and ad hoc working groups were able to persuade their members to support rapid change.

- Environmental NGOs became more technically articulate and exact in their demands as they developed an understanding of the delicate interrelationships between technical quality and secondary effects, such as the increased use of other undesirable chemicals.

## THE NGO PERSPECTIVE

Alan S. Miller, Executive Director  
Center for Global Change (CGC)  
University of Maryland

Durwood Zaelke, President  
Center for International Environmental Law (CIEL)

The first scientific paper announcing the ozone depletion hypothesis was published by Mario Molina and Sherwood Rowland in 1974. It almost immediately resulted in public outcries for action, regulatory proposals by federal and state agencies, and strong industry opposition. Although roughly half of CFCs used during the late 1970s were propellants for cosmetic products that could be easily and cheaply replaced, industry resistance was nevertheless intense and successfully delayed a response in most other nations. During this

period, communication between industry and environmentalists was limited primarily to formal, adversarial proceedings before government agencies. Even scientists were not immune from the polarization of positions as Sherwood Rowland and other experts who expressed their concerns were criticized by industry groups.

In the early 1980s, interest in ozone depletion waned while non-aerosol uses of CFCs continued to grow. Only the efforts of a handful of environmentalists and EPA officials kept the issue alive, avoiding proposed changes in U.S. laws that could have prevented future regulation. Industry groups throughout the industrialized countries maintained a united front of opposition to further regulation. They asserted that allowing a decade or more for additional research posed little or no risk to the environment. As late as March 1986, a U.S. industry coalition publicly denied the availability and even the potential availability of substitutes for CFCs.

Despite the rigid public posture taken by industry in the period, the mid-1980s was a turning point in relations between environmentalists, industry, and the U.S. government. The discovery of the ozone hole in 1985 was a major factor in this shift because it demonstrated that delay could be dangerous. EPA also played a critical role by bringing interest groups together, often for the first time. Former adversaries found they could work together to identify CFC substitutes and establish workable timetables. This shift within the United States helped reduce opposition in other nations as well, facilitating the Montreal Protocol in 1987.

The rate of progress since the Montreal Protocol has exceeded

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almost all expectations, including those of the NGOs. This would not have been possible without the spirit of cooperation that took full flower in Montreal. While much remains to be done, the history of efforts to save the ozone layer demonstrates what is possible when NGOs, industry, and government work together.

## INDUSTRY PERSPECTIVE

Margaret Kerr, Senior Vice President  
Environment and Ethics  
Northern Telecom Limited

Ralph Ponce de Leon  
Vice President for Environment  
Motorola

Working closely with competitors, governments and non-governmental agencies on the elimination of CFC-113 from our manufacturing processes turned out to be a positive and productive experience. It also reinforced our conviction that cooperating with organizations of diverse experience and resources is the most effective strategy for addressing complex environmental issues.

While the international negotiations leading to the Montreal Protocol were still going on, Motorola and Northern Telecom were planning a response. Like other companies in the electronics, aerospace and automobile industries, we depended heavily on cleaning solvents containing CFC-113 for our manufacturing processes. We knew that in the future, regulatory controls would restrict supplies of this chemical. We also knew that as large multinational corporations, we had a responsibility to play an active role in finding solutions to this global problem. Soon after the Protocol was ratified, calling for 50% reduction in CFC use by 1999 in developed countries, we each

announced more aggressive CFC-113 phaseout target dates for our corporations.

At the time, however, we knew of no proven replacements for the solvents and processes in question. The EPA played a valuable role in facilitating access to the best scientific and technological expertise available on this issue, and in supporting the development of this knowledge into practical industrial applications. Encouraged by the EPA, Motorola and Northern Telecom were among the 15 electronics companies that joined together in 1989 to form the International Cooperative for Ozone Layer Protection (ICOLP). The goal of this organization, whose membership now includes many respected government and environmental organizations (see box at end of article), is to cooperate globally in the sharing of information on alternative technologies. The cooperative has proven to be a catalyst for innovations that are allowing electronics, automobile and aerospace companies to halt their CFC and 1,1,1-trichloroethane solvent use—while at the same time improving product quality and reducing costs.

The ICOLP structure allowed the engineering experts from companies that are normally competitors to work together on the development and implementation of alternative technologies to support ozone layer protection. Potential anti-trust concerns were allayed by the public purpose of cooperation, and the participation of government and non-governmental organizations. The government agencies involved encouraged environmentalists to give industry time to take the lead in finding appropriate solutions, instead of trying to drive change through strict regulations.

The breakthrough came when it was discovered that equipment

manufacturers had conceived of "no-clean" technology—technology that actually eliminated the need for cleaning solvents altogether. While serving together on a United Nations Montreal Protocol Technical Options Committee, technical experts from AT&T, Ford, Texas Instruments, Motorola, Northern Telecom and several other companies investigated the technology. They saw the potential, and enlisted the support of ICOLP and EPA in developing the concept.

Bringing the technology to the point of practical applicability in industrial settings was not an easy task, but we believe that the participation of so many players made it happen much more quickly and efficiently than would have been possible if we were all working in isolation. Working in such a novel way on what seemed to be an "impossible" challenge served to energize the company engineers and manufacturing experts involved. The long hours and personal and professional commitment they devoted to the project was a key factor in its success.

There were other hurdles along the way, including inflexible standards, "not-invented-here" attitudes, worker resistance, counteracting publicity from the solvents manufacturers, and the complexity of having the new process approved by EPA under the terms of the Clean Air Act. Participating companies worked with EPA to persuade the Department of Defense to accept this no-clean manufacturing method for the most sophisticated weapons systems. EPA and the companies also convinced the telecommunications standards organization (BELCOR) to allow the new technology to be used in the manufacturing of high-reliability phone systems.

The no-clean system is now recognized as one of the most important

breakthroughs in electronic manufacturing. By switching to no-clean, companies reduce their environmental impact and avoid the costs of buying cleaning solvents. In some applications, the technology also has the potential to decrease manufacturing defects, increase product performance, and enable new designs and manufacturing processes.

Finding solutions to global environmental problems is rarely easy or inexpensive. Northern Telecom, Motorola and other members of ICOLP have an ongoing commitment to taking leadership in

meeting emerging environmental challenges, in partnership with industry, government, and non-government organizations around the world. Recognizing and optimizing the expertise and influence that each player brings to the table greatly increases the likelihood that future efforts will achieve success. The lesson for climate change is that cooperation between government, industry and environmental groups—when properly organized—can overcome the technical and regulatory barriers that ordinarily restrict business choices.

tion of fragile reefs and rain forests, coastal pollution, fresh water shortages, and weak economies highly dependent on imports and offering little attraction for investment.

#### **Coral Reef Initiative**

Under-Secretary of State Timothy Wirth who represented the United States at the Conference announced the US will spearhead a new Coral Reef Initiative to assist islands and other countries in preserving and managing reef ecosystems. Reefs have been mined for construction materials, blown up by fishermen to increase their catch, or killed by silting or dumping of rubbish. The US intends to host an international meeting on coral reefs under the auspices of the UN Commission on Sustainable Development.

#### **Vulnerability Index**

Although per capita income is ordinarily used as a basis for determining a country's need for financial and technical assistance on concessional terms, island governments argue it is not a true indicator of their circumstances. The Conference called for development of a "vulnerability index," (taking into account exposure to natural disasters, high population densities, geographic isolation, distance from markets, and susceptibility to global market fluctuations), to be used with social and economic indicators by donors and international lending agencies. The islands point out that poverty, unfavorable terms of trade and external debt often force them to exploit their natural resources too heavily and pollute the environment.

#### **Networks**

The plan adopted at the Conference calls for a Small Island States Information Network (SIDS/NET) to facilitate exchange of information and a Technical Assistance Program to pool indigenous expertise. It recommended national, regional

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### **Membership in the International Cooperative for Ozone Layer Protection**

#### **Companies who have been members:**

AT&T, Boeing, British Aerospace, Compaq, Digital Equipment, Ford Motor Company, Hitachi, Honeywell, IBM, Matsushita, Mitsubishi Electric, Motorola, Northern Telecom, Ontario Hydro, Sundstrand, Texas Instruments, and Toshiba.

#### **Affiliate Members:**

American Electronics Association, Association pour la Recherche et Développement des Methodes et Processus Industriels, Canacintra (Mexico), Center for Global Change, Electronic Industries Association, Halogenated Solvents Industry Alliance, Industrial Technology Research Institute of Taiwan, City of Irvine, California, Japan Electrical Manufacturers Association, Korea Anti-Pollution Movement Association, Korea Specialty Chemical Industry Association, National Academy of Engineering, Research Triangle Institute, Russian Federation Ministry of Environmental Protection and Natural Resources, Russian State Institute of Applied Chemistry, Swedish Environmental Protection Agency, Turkish Ministry of Environment, United States Air Force, and United States Environmental Protection Agency

### **Sustainable**

*(Continued from page 1)*  
commitment of the international community to the small islands. Absence of immediate financing should not detract from what has been achieved. The conference has put small islands — their concerns and interests — on the global map." Other island leaders noted the Conference had strengthened ties among the 41 AOSIS members and focused world attention on their special vulnerabilities and problems.

As island societies struggle to raise living standards for their growing populations and attempt to survive in a complex global economy, they may sacrifice their most valuable assets, their fragile ecosystems. They need protection from the threat of global warming which may result from industrial countries' greenhouse emissions and could lead to rising sea levels, damaged coastal areas and even submergence of some low-lying islands. Other dangers include natural disasters, growing destruc-

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and international action in 15 areas.

### **Insurance availability**

Because the island nations are high risk entities vulnerable to natural and environmental disasters, insurance and reinsurance are exorbitant or unavailable. The Program proposed that national and regional disaster emergency funds be established with joint private and public support to assist in recovery from natural disasters and to cover areas where commercial insurance is not obtainable.

### **Fisheries**

The total area of the small islands' offshore exclusive economic zones covers 30 million square kilometers of ocean — one-sixth of the earth's surface. Coastal and marine resources in these areas are not now managed effectively. Coastal habitats are polluted, natural resources are over exploited, and conflicts exacerbate these impacts. The Conference plan recommends comprehensive monitoring programs and strengthening the capabilities for sustainable harvesting of fisheries. Improving the islands' ability to manage marine resources would help stem the worldwide decline in fish.

### **Population Issues**

The prospects for sustainable development are not propitious when population grows faster than the rate of economic growth and beyond a country's capacity to feed, house, educate and employ its people. The plan draws special attention to population issues stemming from: poor health and nutrition and rising health costs; blighted housing; low levels of female participation in development; inadequate education and means for family planning services; drug abuse; unemployment; crowding and growth in some

areas, depopulation in others. It also urges increasing concentration on the relationship between island carrying capacity and environmental health, especially in fragile, teeming urban areas, coastal zones and hillsides. It recommends incorporating population issues into the mainstream of government decision-making and developing comprehensive policies consistent with sustainable development.

Attempts to include references to family planning in the Program of Action were opposed by Malta and the Holy See (Roman Catholic Church) which sought to ensure that there should be no condonation of abortion or contraception not sanctioned by the Church, (issues sure to be raised at the UN Conference on Population and Development in Cairo in September).

### **Biological Diversity**

The islands harbor a small variety of species; their biological diversity is among the most threatened in the world. Strict protection is required to ward off the threat of extinction. Biological marine and coastal resources require a conservation focus that takes into account customary land use and reef tenure. Emphasis, as in the past, on collection of more information should no longer be a rationale for inaction on these precious resources. The Program recommends formulating and implementing strategies for conservation and sustainable use of terrestrial and marine biodiversity

### **Energy**

Petroleum, often accounting for more than 12 percent of island state imports, keeps transport moving and generates electricity. This use of oil, and the islands' reliance on biomass for cooking and crop drying, is highly inefficient, and use of renewable fuels should be explored. The full potential of substantial solar resources have not been developed.

Wind power is highly variable; hydroelectric power is a possibility only for some islands. Biomass is common but unevenly distributed. Studies of geothermal, ocean thermal energy conversion and wave energy are continuing. The Program recommends promoting efficient energy use with special emphasis on renewable sources.

### **Tourism**

Tourism is one of a few development options for island states but unless carefully planned and managed it could significantly degrade the diversity and fragility of the islands' environments. The Program recommends ensuring that development of tourism proceeds hand in hand with planning for management of the environment.

### **Telecommunications**

AOSIS advocated the reduction of international telecommunication costs to small islands because of the tremendous importance and large expense of communications when huge distances are involved. However, developed countries stated this was not in their mandate. The Program calls on the international community to promote improved international telecommunication services at the lowest possible cost to small islands, recognizing the need to create a favorable investment environment.

### **Contribution of NGOs**

Representatives of 87 nongovernmental organizations (NGOs), some international but mostly from island countries, attended the conference. They created an exhibition of sustainable technology, SUSTECH'94, and the Village of Hope, both of which were open to the people of Barbados.

The Conference requested that the UN Commission on Sustainable Development review implementation of the Program of Action for the Conference.

# Climate Institute News

At a meeting of the Institute's Board of Directors on March 23, two new members were elected, Lee Huebner and Tom Roper.

## Lee Huebner

For 15 years, Mr. Huebner was publisher of the International Herald Tribune in Paris, until he resigned in 1993 to become Professor of Communication Studies and Journalism at Northwestern University in Evanston, Illinois.



Lee Huebner

Northwestern is Mr. Huebner's alma mater; he graduated from the university with highest honors and then went on to receive his M.A. and Ph. D. degrees from Harvard University, finishing his work in history there in 1968. He was a founder and president of the Ripon Society, Inc., a political research organization. From 1969 to 1973, he was part of the White House writing and research staff,

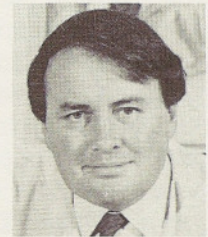
serving as Special Assistant to the President and Deputy Staff Director. In 1974, he became a partner in Whitcom Investment Company and a Vice President and Director of Whitney Communications Company, a parent company of the IHT. During Mr. Huebner's years in Paris, the IHT became the world's only newspaper with a truly global presence, printing simultaneously each day in eleven world capitals. The paper's circulation increased by 70 percent to 200,000 paid copies per day in 164 countries.

Mr. Huebner is Vice Chairman of the Board of Trustees of the American University in Paris and of the European Council of American Chambers of Commerce. He serves on the International Advisory Board of Sing Tao Newspapers in Hong Kong and on the Advisory Council of the Centre for Economic Policy Research in London.

## Tom Roper

Mr. Roper retired in late March after 21 years in the Parliament of Australia's second most populous state, Victoria.

He held a wide range of ministerial portfolios, starting as Health Minister in 1982 and later serving in transport, consumer affairs, Aboriginal affairs, planning and environment, and towards the end, two years as Treasurer. In 1989 when he was Minister for Planning and Environment, he was instrumental in having the State of Victoria become the first state or province in the world to commit to the Toronto Conference goal of a 20 percent CO2 emissions reduction by 2005. A charter member of the Climate Institute's Board of Advisors, he served as co-chair of the Coastal Areas, Marine Resources and Fisheries Panel of the December 1989 Cairo World Conference on Preparing for Climate Change. Roper also served



Tom Roper

as co-chair of the International Workshop on a Framework Convention convened in Washington, DC in February 1990 by the Climate Institute.

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## Tickell Heads UK Panel on Sustainable Development

UK Prime Minister John Major has appointed a panel to give independent advice to the Government on issues of major strategic importance for sustainable development. He named Sir



**Sir Crispin Tickell**

Crispin Tickell, Chairman of the Board of Directors of the Climate Institute, as convenor of the panel.

The 5-member panel will identify problems and opportunities likely to arise in the implementation of "Sustainable Development: the UK Strategy," a plan setting out the problems and opportunities the nation — and the world — faces. Part of the panel's charge is to monitor progress on the Strategy

which was developed over a year with consultation among national and local governments, businesses, academics, scientists and the general public. It covers:

- current policies and projections of where they may lead in 20 years on air, water, land, soil, mineral, wildlife and population
- consideration of economic development and sustainability in such sectors as transport, agriculture, energy, business, waste development and leisure
- a discussion on putting sustainability into practice and how different sectors of society can contribute to achieving it

Other members of the panel include: Lord Alexander of Weedon, Chairman of the National Westminster Bank; Lord Selborne, Chairman of the Joint Nature Conservation Committee; Sir John Houghton, Member of the Scientific Panel of the Intergovernmental Panel for Climate

Change; and Dr. Anne McLaren, Chairwoman of the World Health Organization Scientific and Technical Advisory Group on Human Reproduction.

## El Nino Can Predict South African Harvests

A reliable correlation has been made between the two to seven year Pacific sea surface temperature oscillations — the El Nino — and harvests in Zimbabwe. Between 1973 and 1990, when temperatures rose during an El Nino in the tropical Pacific, rainfall and corn yields dropped, and when temperatures fell, crop yields — and rain — increased. The connection, almost half a world apart, suggests that countries may be able to develop early warning systems for droughts as much as a year in advance, allowing time to conserve water, change crops or import food.

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