



Network Newsletter

and

Issue #26

ENSO

SIGNAL



Volume 19, Number 1

1 January–31 March 2004

Editorial

Complex Humanitarian Crises (CHCs): Does Climate Matter?

Since the mid-1980s, the phrases “complex humanitarian crises” and “complex emergencies” have become increasingly popular notions in response to the apparent growing complexity of emergency situations appearing worldwide. One definition of CHCs suggests that they are situations that combine internal conflict with large-scale political and humanitarian crises. These can include (source: <http://iadc.iwa.org/en/Unit3.htm>):

- Large numbers of refugees and displaced persons
- Widespread epidemics of communicable diseases
- Food shortages leading to famine and starvation
- Economic collapse leading to massive unemployment
- Collapse of central political authority
- Escalating ethnic or religious violence directed toward civilians
- Severe environmental deterioration or catastrophe

Any one of these can be a catalyst to a CHC. The CHC notion at first related to conflict situations (i.e., warfare) within countries suffering a breakdown of political authority followed by a breakdown in the welfare of the population. When political authority is weak, criminals become emboldened and more organized, seeking control of a section of a city if not the whole country. Guns and other implements of war are easy to come by.

Entry points into a CHC can be either natural or human-induced. An example of a human-induced CHC might be the attempt of a local leader to take control of part of a country, or a soldier leading a coup attempt. Successful or not, a coup attempt can put a country on the slippery slope of instability that leads to the emergence of a CHC. Natural causes of a CHC could be a severe extended drought situation, which can contribute to a slide toward famine. A tropical storm can lead to severe flooding that damages infrastructure and economy in a given region.

Those who study climate-society interactions (like me) often tend to focus attention on the climate anomaly of concern – a drought, flood, freeze, or fire. Physical scientists, interested in highlighting the value to society of their science, tend to be concerned about the cost of the impacts and the benefits that accompany improved research.

Societal impacts researchers tend to do the same: focus on the anomaly or the forecast of it, its impacts, and societal responses. If, for example, better forecasts could be provided, then the cost of the impacts could be reduced and the benefits of the research increased. Such an approach works for many parts of the globe. Unfortunately, it does not work so well for much of sub-Saharan Africa.

I recently looked through a book on Africa (Berkeley, 2001) in which the author discussed various CHCs in Zaire (the Congo), Rwanda, Burundi, Liberia, and Angola. In each CHC there are food shortages, population movement, large numbers of refugees, ethnic conflict, brutality, death and destruction. Millions have died from causes, including climate-related problems, but for the most part untimely deaths were due to other political, socioeconomic, and military factors.

Climate impact researchers should read the book to gain a glimpse of the true setting in which their climate-related studies are expected to be used. The book brings home the point that much of Africa is living at the margins of survival, barely able to eke out enough food to enable their families to survive, while enduring the fallout of a CHC in which they are embedded.

As scientific researchers, we have a duty to care about the well-being of the people in the places we study. We are often in the awkward position of having to choose between sticking to science only, or embedding the science in its societal setting or telling the story as it is.

--Michael H. Glantz

Berkeley, B., 2001: *The Graves Are Not Yet Full: Race, Tribe & Power in the Heart of Africa*. New York: Basic Books.



NCAR

Environmental & Societal Impacts Group (ESIG)
National Center for Atmospheric Research (NCAR)
PO Box 3000, Boulder, CO 80307

www.esig.ucar.edu/newshp • jan@ucar.edu

LET'S HEAR FROM YOU!!

This newsletter depends on YOUR input. Please send relevant information that comes across your desk, whether it is a news item, meeting, job opening, or publication, to the address on the back cover. Information to be included in the next newsletter must be received by **31 March 2004**. If you prefer to receive the newsletter on line, please let us know at www.esig.ucar.edu/newshp and you will be reminded when a new issue is released. Thanks again for your contributions!

GLOBAL DEVELOPMENT RESEARCH CENTER

The Global Development Research Center (GDRC) is a virtual organization that carries out initiatives in education and research in five spheres of activity: the environment, urban concerns, community, economy, and dissemination of information. Each sphere is further broken into themes, including environmental decision-making, sustainable development, urban governance, technology transfer, and knowledge management. The GDRC is an attempt to consolidate disparate issues, themes, and topics under one umbrella in order to highlight their interconnectedness and interdisciplinary nature. It functions as an information repository, as a research and training center, and as an educational center to feed back capacity-building exercises into academic programs. For more information, see the website at www.gdrc.org or write to Hari Srinivas at harinivas@gdrc.org

PACIFIC NORTHWEST REGIONAL COLLABORATORY (PNWRC)

The PNWRC is a partnership whose mission is to integrate geospatial technologies and data to meet the needs of resource managers and decisionmakers in the US Pacific Northwest. Four regional universities and two national laboratories formed the PNWRC in order to provide NASA satellite data and earth science modeling tools to federal, state, and local users in the region. The goal is to help public and private agencies and organizations address complex and pressing challenges of land and water management and sustainable development. The PNWRC aims to create enduring collaborations and promote the exchange of information and learning among regional providers and users of remote sensing and related geospatial technologies and

information. In the first year, the Collaboratory will work to improve the forecasting of water supply and demand in snowmelt-dominated basins in the Pacific Northwest, as well as to test the use of software tools to increase the usefulness of satellite images of landscape features, specifically the location and extent of cheatgrass and the location and condition of forest streams and riparian areas. For more information, contact Roger Anderson, PNWRC Program Manager at andersrg@battelle.org or see the website at www.pnwrc.org

FOUR COUNTRIES WIN AWARD FOR OZONE LAYER PROTECTION WORK

China, Fiji, Jamaica, and Senegal are this year's winners of the 2003 Outstanding National Ozone Units (NOUs) Award, which recognizes excellence in the government implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer. The NOUs of those countries have demonstrated exceptional leadership in their national programs to protect the earth's upper atmosphere from the effects of manmade ozone-depleting substances. NOUs are the government agencies in developing countries responsible for developing, implementing, and reporting on their national strategies to comply with the Montreal Protocol. The awards were presented to representatives of the winning countries at the 15th Meeting of the Parties to the Montreal Protocol in Nairobi, Kenya on 13 November 2003. Organized by the UN Environment Programme's OzonAction every three years, this award affords UNEP the opportunity to publicly appreciate the outstanding work done by the "best of the best" of the NOUs that confront the daily challenges of implementing the Montreal Protocol in their countries. Additional information about the NOU Awards is available on the OzonAction website at www.uneptie.org/ozonaction

GEF SUPPORTS TREATY TO PROTECT THE CASPIAN SEA

The Global Environment Facility (GEF) has approved a US\$6.5 million grant to support the implementation of a new treaty for the protection of the Caspian Sea, the world's largest enclosed body of water. Azerbaijan, Iran, Kazakhstan, the Russian Federation, and Turkmenistan signed the Tehran Convention for the Protection of the Caspian Sea in November 2003. The goal of the project is to facilitate the sustainable development of the Caspian environment, while protecting human health and ecological integrity. Four regional environmental concerns will be addressed: (1) unsustainable use of biological resources; (2) other threats to biodiversity; (3) pollution, and (4) unsustainable coastal area development. The UN Development Programme, in cooperation with UNEP (UN Environment Programme)

will manage the project, which will initiate the implementation of the countries' transboundary environmental convention, as well as fill in remaining gaps in the understanding of how human activities damage the ecology of the Caspian Sea. GEF is an international financial organization that acts as a major catalyst for improving the global environment. For more information on GEF or to read the press release, see the website at www.theGEF.org

Dr. Igor Zonn has compiled *The Caspian Encyclopedia*, edited by A.N. Kosarev. Please contact Dr. Zonn for more information at igorzonn@mtu-net.ru

IWMI OPENS OFFICE IN NEW DELHI

The International Water Management Institute (IWMI) opened a new office in New Delhi in November 2003 to help tackle water scarcity issues in India. If current trends continue unchanged, by 2025 India will consume 396 cubic kilometers of water, nearly one-fifth of the total global water consumption. In some parts of India, such as northern Gujarat, over-extraction of groundwater is threatening food security; however, in other areas of the country (including Assam, coastal Orissa, North Bihar, and North Bengal), groundwater reserves remain under-exploited. IWMI research focuses on finding new and innovative ways to address the water needs of poor communities in India. IWMI is also involved in a research proposal that is part of the "Challenge Program on Water and Food," a global research program initiated by the Consultative Group on International Agricultural Research (CGIAR) that is aimed at finding ways to produce more food using less water. IWMI has been present in India for almost two decades, and establishment of the New Delhi office brings IWMI researchers closer to policy planners, members of Parliament, and other key players in water management. For more information, contact Patrick Fuller, IWMI, PO Box 2075, Colombo, Sri Lanka; email p.fuller@cgiar.org or see the website at www.iwmi.cgiar.org

BCAS HAS MOVED

The BCAS (Bangladesh Centre for Advanced Studies) has recently moved its headquarters. BCAS is an independent nonprofit, nongovernmental policy, research, and implementation institute working on sustainable development at local, national, regional, and global levels. The new mailing and contact information is: BCAS, House 10, Road 16A, Gulshan-1, Dhaka-1212, Bangladesh; tel: 880-2-8851237, 8851986, 8852217; fax: 880-2-8851417; email info@bcas.net and website at www.bcas.net



PEGGY SHEPARD RECEIVES HEINZ AWARD FOR ENVIRONMENT

Peggy Shepard, the founder and executive director of the West Harlem Environmental Action (WE ACT) and tireless advocate for environmental justice, has received the Heinz Award for the Environment, one of the largest individual achievement prizes in the world. Shepard is widely recognized for her pioneering work to improve the quality of life in communities of color and her efforts to combat environmental racism. WE ACT operates programs in environmental health, environmental education, and community and youth empowerment. It also has cooperative partnerships with physicians and scientists at leading medical and academic institutions, labor unions and diverse environmental, public health and urban constituencies. Shepard has successfully combined grassroots organizations, environmental advocacy, and scientific research to become one of the most highly respected environmental advocates in the country today. For more information about the awards, see the website at www.heinzawards.net or more about WE ACT at www.weact.org

SUMMARY OF COP9

The Ninth Session of the Conference of Parties to the UN Framework Convention on Climate Change (COP9) was held in Milan, Italy, in December 2003. Most countries signaled continued support of the Kyoto Protocol, which is still not operational, given the withdrawal of the United States and uncertainty about Russia's ratification, which would bring the Protocol into effect. The most important decisions that came from the Milan meeting were (1) rules for "sinks" projects (reforestation under the Clean Development Mechanism); (2) guidelines for the operation of the Special Climate Change Fund (SCCF); and (3) the Least Developed Countries Fund. COP9 adopted a decision that breaks Certified Emissions Reductions (CERs) into two kinds of sinks: (1) tCERs (temporary CERs, which are valid only for one commitment period), and ICERs (long-term CERs, which are valid for the project's full

crediting period). The decision also addresses the issues of additionality, leakage, uncertainties, and socioeconomic and environmental impacts. COP9 also adopted a decision providing guidance to the Global Environment Facility (GEF) on administration of the SCCF. The decision allows the GEF to make the SCCF operational through the funding of technology transfer and adaptation activities, and calls on countries to submit further views at COP10. The COP also adopted a decision providing further guidance on the operation of Least Developed Countries Fund, which supports national implementation of adaptation plans on a "full-cost" basis, taking into account the level of funds available. For the full report, see the website at www.usembassy.it/policy/COP9/COP9.htm

UN DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

The UN General Assembly has officially designated the decade of 2005–2015 as the UN Decade of Education for Sustainable Development (UN-DESD). The Decade will start on 1 January 2005, extending to the end of 2015. The UN-DESD seeks to (1) incorporate quantitative and qualitative ESD indicators into ongoing monitoring and evaluation of education for all; (2) monitor the progress of ESD activities undertaken by UN agencies, governments and NGOs in observance of the Decade and facilitate implementation and followup; (3) evaluate the achievement of measurable results in realizing the aims and objectives of the Decade, particularly in regard to the integration of ESD into national educational policies, programs and systems; and (4) make recommendations to further promote ESD based on results and lessons learned from the UN-DESD. For more information, see the website at www.gdrc.org/sustdev/un-desd/

GUEST EDITORIAL "Island Affairs"

Islands are isolated but inspiring, small yet fascinating. Is one lifetime ever enough to explore an island? How could the collective knowledge of islands, islanders, and island topics be made available to everyone with an interest? The answer requires borrowing a concept proposed and implemented by Michael Glantz: "affairs."

The Glantzian notion of "affairs" refers to "commercial, professional, or public business" or a "matter, concern." Rather than pigeonhole and separate fields that must interact and cross over to solve problems, he creates a think-and-do space where anyone interested in a specific topic can contribute.

Thus, *Climate Affairs* is a book, workshops, educational programs, and *Desert Affairs* is an environmental education program, an international research, education and application center. The six subdivisions in each Affairs area are Science, Impacts, Policy and Law, Politics, Economics, and Ethics and Equity. But the goal is to join them rather than separate them. Anyone with interests in climate or deserts, irrespective of their training, professional background, or job finds a forum to interact with others.

Rather than staid labels such as "issues" or "topics," "affairs" galvanizes attention and forces inquiries. Once drawn in through "Climate Affairs," meteorologists can talk to water lawyers. Once drawn in through "Desert Affairs," farmers in arid regions can talk to international development philosophers. "Affairs" ventures beyond a collection of ideas or subjections and requires all aspects to be dealt with simultaneously and equitably.

The expected expansion is more "affairs" collectives. Not only for environmental phenomena beyond climate: Volcano Affairs, Evolution Affairs, and Pollution Affairs – but also for environmental types beyond deserts: Ocean Affairs, Mountain Affairs, Forest Affairs, and Space Affairs. Island Affairs emerges naturally.

Despite the difficulties of defining "islands" or "small islands," they can be intuitively understood as a relatively small land mass surrounded by water. Dozens of countries and territories are islands, while thousands more islands dot the globe. Due to their isolation and smallness, islands tends to have unique environments, people, cultures, and challenges. The power of islands to inform non-islands often remains unrealized.

The phrase "Island Affairs" is not new. Witness the International Journal of Island Affairs and New Zealand's Ministry of Pacific Island Affairs. Understanding islands in a comprehensive context occurs in James Lewis's *Island Anthology* and the International Centre for Island Studies.

But the six subdivisions of *Climate Affairs* and *Desert Affairs* form the core around which workshops, programs, a center, or a book could be developed, thereby giving Island Affairs the prominence and comprehensiveness deserved. Meanwhile, the opportunity would be provided for expanding into other fields, including History, Culture, Environments, and Sociology. We must not only be inspired by islands, but we must inspire others about islands.

--Ilan Kelman
University of Cambridge, UK
ilan_kelman@hotmail.com

IN MEMORIAM

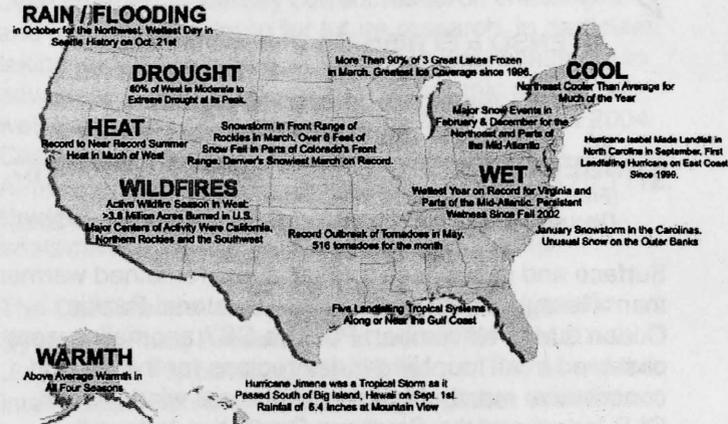
Paul Bell passed away on 16 May 2003 in San Jose, Costa Rica. He was a Senior Regional Advisor in the Office of US Foreign Disaster Assistance (OFDA), Bureau for Democracy, Conflict, and Humanitarian Assistance. Paul was the son of a missionary living in Latin America, and he started his career with the Peace Corps, serving as Peace Corps Director for almost two decades. In 1983, he joined OFDA as a Senior Regional Advisor for Latin America and the Caribbean. He was a firm believer in strengthening the capacity of Latin Americans to mitigate and prepare for disasters. His team trained over 32,000 Latin Americans as First Responders and also worked with governments to promote self-sufficiency in disaster response. As a role model, Paul Bell touched many lives worldwide. He is survived by his five children.

Eduardo Franco Temple died on 31 October 2003 at the age of 51 in Miraflores, Peru. A respected anthropologist, Eduardo was one of the first in Peru to study the relationship between the accumulation of vulnerability and risks and the models and practices of unsustainable development. He assisted in the implementation of La Red, a project of the Inter-American Institute (IAI) of global change. He was employed by the Intermediate Technology Development Group (ITDG) in Peru, and was a passionate advocate of efforts to mitigate the effects of El Niño in Peru. He will be sorely missed.

TOXIC ACCUMULATION SHOWS NEED FOR NEW SAFETY RULES

The European Union's (EU) environment Chief, Margot Wallstrom, was one of 156 people from Britain and Belgium who were tested for a World Wildlife Fund survey for 77 chemicals used in household products such as television sets, carpets, furniture, and food. The results showed that 28 toxic chemicals, including DDT, PCBs (used in electrical equipment and fire retardants), and PBDEs (polybrominated diphenyl ethers), have accumulated in her blood. Wallstrom helped launch a proposed new chemicals safety law, which would mean that tens of thousands of chemicals developed before 1981, and exempt from checks under existing safety rules, would be reevaluated for safety. The proposal was adopted by the EU in November 2003 and is expected to face vigorous lobbying from industry, environmentalists, and consumer groups, all of which are trying to change the proposal as it heads to the EU governments and Parliament for review. See the Fragilecologies website for an editorial on this issue at www.fragilecologies.com/jun07_01.html (*Lab Rats of the World Unite!*)

Significant U.S. Weather and Climate Events for 2003



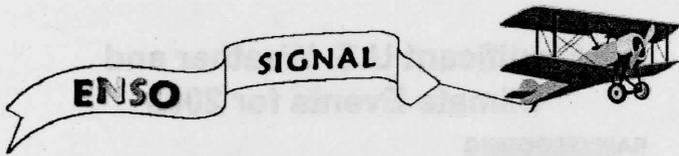
Source: NOAA

2003 MARKED BY CONTRASTING CONDITIONS IN USA

NOAA reported that the 2003 climate in the US was wetter and cooler than average in the East, warmer and drier than average in the West, while drought conditions persisted or worsened through much of the central and western regions. Temperatures in Alaska were above the 1971–2000 average in all four seasons, and 2003 is estimated to be one of the five warmest years since the beginning of Alaska statewide records in 1918. A sharp contrast in precipitation showed drier-than-average conditions persisted throughout much of the west, and North Carolina, Virginia, and Maryland had their wettest January–November on record. Conversely, 17 states along and west of the Mississippi River were significantly drier than average. (from *NOAA Magazine*)

THE PEMBINA INSTITUTE

The Pembina Institute is an independent, not-for-profit environmental policy research and education organization. The Institute's major policy research and education programs are in the areas of sustainable energy, climate change, environmental governance, ecological fiscal reform, sustainability indicators, and the environmental impacts of the energy industry. The Pembina Institute envisions a world where sustainable communities take creative actions to protect the natural beauty and ecological health of the planet, allowing other species to flourish and future generations of humanity to live both satisfying and healthy lives. The Institute's sister organization, the GAIA Foundation for Earth Education, carries out education and research programs. See the website at www.pembina.org to learn more.



ENSO = El Niño–Southern Oscillation

(www.esig.ucar.edu/signal)

CURRENT STATE OF THE TROPICAL PACIFIC

(From the Climate Prediction Center's *ENSO Diagnostic Discussion*) www.cpc.ncep.noaa.gov (as of 11 December 2003)

Surface and subsurface temperatures remained warmer than average across most of the equatorial Pacific Ocean during November. Positive SST anomalies were observed in all four Niño index regions for the second consecutive month. However, the zonal wind indices, OLR index, and the Southern Oscillation Index all indicate ENSO-neutral conditions. A majority of statistical and coupled model forecasts indicate near-average conditions in the tropical Pacific through the Northern Hemisphere 2003–04 winter. However, some forecasts indicate that weak warm episode conditions will develop during the winter. The September–November average SST anomaly in the Niño3.4 region is just below the threshold required for NOAA to declare a weak Pacific warm episode (see article below). It is likely that this threshold will be reached during December 2003 and that borderline weak El Niño/ENSO-neutral conditions will persist through the Northern Hemisphere winter of 2003–04. In the past, these weak Pacific warm episodes have not shown consistent temperature and precipitation impacts, especially for areas outside the tropical Pacific.

NOAA GETS CONSENSUS FOR ENSO INDEX

After more than a year of study, NOAA announced in September 2003 that it reached a consensus among experts in the US federal government and scientists for an operational index and definitions for El Niño and La Niña, which are extremes of the ENSO cycle. NOAA, in collaboration with experts at the Scripps Institute of Oceanography, the Center for Ocean-Land-Atmosphere Studies, the International Research Institute for Climate Prediction, the National Center for Atmospheric Research, and the University of Washington, have agreed to a primary index for assessing the state of the ENSO cycle. These definitions are: for El Niño, a positive SST departure from normal in the Niño3.4 region greater than or equal in magnitude to 0.5 degrees C, averaged over three consecutive months. For La Niña: a negative SST departure from normal in the Niño3.4 region greater than or equal in magnitude to 0.5 degrees C, averaged over three consecutive months.

*****Reader's Comment*** AUSTRALIA'S EXPERIENCE DURING 2002-2003**

Ed – The previous newsletter editorial generated responses as to "What to Do When the Pacific is Pacific." One researcher at the National Climate Centre in Melbourne, Australia, wrote the following:

I have just received my copy of the *Network Newsletter* and while I found your editorial (as ever) both entertaining and thought-provoking, I feel compelled to comment on one of your "perceptions" that is clearly not shared by the 20 million or so people of Australia. I quote your opening line: "We have recently emerged from a relatively weak El Niño (2002–03)..." As you may be aware, Australia again bucked the trend when it came to the impacts of an El Niño event – this time experiencing a drought that rivaled in its extent, duration and intensity the fearsome droughts of 1982–83 and the great Federation Drought of 1901–02. Interestingly, the 2002–03 Australian drought was also the hottest on record. In contrast, you may recall that during the 1997–98 event, referred to by outsiders (to Australia that is) as the "El Niño of the Century," Australia (and South Africa I might add) escaped relatively lightly, while many other countries suffered severely. So what is and what is not a "weak" or a "strong" El Niño? Do we judge it in terms of SST anomalies in the central/east Pacific, or on some weighted average of impacts? Or something else? Clearly, there's no simple answer and perhaps it is best not to try and apply such simple categorical classifications as "weak" and "strong" to El Niño or La Niña events, at least unless one is very specific about what particular aspects fit the category. (M.J. Coughlan, Bureau of Meteorology, Head, National Climate Centre, Melbourne, Victoria, m.coughlan@bom.gov.au)

CLIMATE FORECASTS IMPROVE FOR LATIN AMERICA

David Enfield of NOAA's Atlantic Oceanographic and Meteorology Laboratory has begun a project with the University of Costa Rica (UCR) to improve the way climate forecasts are prepared at Regional Climate Outlook Forums (RCOFs) in Latin America. With a grant from NOAA's Office of Global Programs and the scientists at UCR, an easy-to-use software program has been created that incorporates standard statistical methodologies with uniform predictor indices. The user-friendly program requires no statistical expertise and produces tercile climate forecasts using the local climate data of each Latin American country. A "beta" version of the software was used to train 15 regional meteorologists at an RCOF in Honduras in April, and additional software training was developed for an RCOF held in Guayaquil, Ecuador, in November 2003, and will be used as well for the Caribbean in April 2004. The

users' manual will be published in English and Spanish to accompany distribution of the software to future RCOF participants. For more information, contact David Enfield at NOAA/AOML/PhOD, 4301 Rickenbacker Causeway, Miami, FL 33149; email david.enfield@noaa.gov

CREWS NETWORK

The Coral Reef Early Warning Systems (CREWS) Network is a series of monitoring stations that NOAA has committed to install at all major US coral reef areas by 2010. The second monitoring station has recently been installed at the US Virgin Islands, which will establish long-term data sets for environmental conditions. CREWS technology incorporates artificial intelligence software to analyze in-situ measurements of the atmospheric and oceanic conditions at strategic coral reef locations. These stations provide near real-time information for use in coral bleaching alerts and verify sea surface temperatures from satellites used for coral bleaching predictions. CREWS is part of the larger Coral Health and Monitoring Program (CHAMP) that provides information sources to researchers and the public in order to help improve and sustain coral reef health throughout the world. For more information, visit the website at www.coral.noaa.gov/crews/ or write to NOAA's Atlantic Oceanographic and Meteorological Laboratory, 4301 Rickenbacker Causeway, Miami, FL 33149-1026.

NEW ENSO FORECASTS BASED ON SOLAR MODEL

Dr. Theodor Landscheidt of the Schroeter Institute for Research in Cycles of Solar Activity (Germany), has recently published his online study of ENSO forecasts based on a solar model. Using the model, he correctly predicted the last three El Niños, years before the respective events, and the course of the last La Niña event as well. He bases his forecast exclusively on the Sun's variable eruptive activity. He presents his advanced version of the solar model in this paper, together with new detailed ENSO forecasts. See the paper at www.john-daly.com/theodor/new-enso or write to Landscheidt at Klammerfelsweg 5, 93449 Waldmuenchen, Germany; email th.landscheidt@t.online.de

SHORT-TERM FORECASTS INFORM LONG-TERM CHANGE

Tom Downing of the Stockholm Environment Institute and Richard Washington, Oxford University, are investigating the statistical connection between short- and long-term climate predictions and how seasonal

forecasts influence the behavior of farmers in southern Africa. The science to predict seasonal climate several months in advance is well established, as well as is the infrastructure to deliver the forecasts to farmers. This endeavor is a research project of the Tyndall Centre for Climate Change Research in the UK. For more information, contact richard.washington@geog.ox.ac.uk or tom.downing@sei.se or see the Tyndall Centre's website at www.tyndall.ac.uk (from *The Effect 2003*).

TROPICAL OCEANS BECOMING SALTIER

Tropical ocean waters have become dramatically saltier over the past 40 years, while oceans closer to the earth's poles have become fresher, scientists report in the journal *Nature*. The distribution of salinity in the ocean is widely measured and therefore can be used to diagnose important components of climate dynamics. These results extend a growing body of evidence that indicates shifts in the worldwide oceanic distribution of fresh and saline waters that suggest links to global warming and possible changes in the hydrologic cycle of the earth. The study was conducted by Ruth Curry, a research specialist in the Woods Hole Oceanographic Institute's Oceanography Department, Bob Dickson of the Center for Environment, Fisheries, and Aquaculture Science in the UK, and Igor Yashayaev, Bedford Institute of Oceanography in Dartmouth, Nova Scotia, Canada. Correspondence should be addressed to rcurry@whoi.edu

Curry, R., B. Dickson, and I. Yashayaev, 2003: A change in the freshwater balance of the Atlantic Ocean over the past four decades. *Nature*, 426, 826-829 (18 December 2003); doi:10.1038/nature02206.

REQUESTS FOR PROPOSALS

The **National Commission for Science on Sustainable Forestry (NCSSF)** is soliciting Letters of Intent, due 2 February 2004. NCSSF will fund 8 specific projects in 2004 on sustainable forest management (SFM) and biodiversity related to: intensive even-aged forest management; incentives for practicing SFM on non-industrial private forest lands; engaging non-industrial private landowners; implications of post-fire recovery strategies; assessing public knowledge, values, and attitudes; invasive decision support approaches; species invasions and impacts; and guidelines for participatory inventorying and monitoring. Based on the Letters of Intent, 3 candidates for each project will be invited to submit proposals for external review. Further information, project descriptions, and instructions for Letters of Intent are available at www.ncssf.org

The Society of Wetland Scientists is soliciting proposals for their **Ramsar Support Grant Program**. This grant program was established to advance Ramsar Convention objectives, including the selection, designation, management, and networking of Ramsar sites and to promote Ramsar's Wise Use guidelines. Two to five projects are funded each year. Only applicants working on Ramsar-related activities in less-developed countries are eligible to receive grants under this program. Priority is given to projects being conducted in countries for the Organization for Economic Cooperation and Development. Applications must be received by 1 March 2004. Grant guidelines, an application form, and a description of previous awards can be found at www.sws.org/regional/international/ramsar.support.framework/

JOB AND FELLOWSHIP OPPORTUNITIES

Oceans Division (OD) of Centro de Investigación Científica y de Educación de Ensenada (CICESE) announced the search for **postdoctoral researchers** for high-quality research in their field to contribute to priority areas in the aquaculture, ecology, biological oceanography, and physical oceanography departments. These positions aim to foster the education and training of recent PhD recipients through independent research, while collaborating with OD scientists. Candidates should have a PhD awarded in 2001 or later in marine, atmospheric or basic science, or a related field. The closing date for applications is **29 February 2004**. Send a Letter of Intent (free format, research interests, and group or project); full CV, and name and address of 3 persons willing to send academic references to: Francisco J. Ocampo Torres, Director, División de Oceanología, CICESE (www.cicese.mx), Km. 107, Carretera Tijuana-Ensenada, Ensenada BC, 22860 Mexico; email ocampo@cicese.mx

The University Corporation for Atmospheric Research (UCAR), in cooperation with the National Centers for Environmental Prediction (NCEP) in Camp Springs, MD, is seeking a visiting scientist to work in the area of monthly to seasonal-to-interannual forecast modeling using NCEP's coupled atmosphere-ocean prediction system. The applicant will work with NCEP scientists from the NCEP Environmental Modeling Center and the Climate Prediction Center. The 2003 NCEP coupled atmosphere-ocean prediction system will be the subject of all studies. Applicants should have a PhD or equivalent in meteorology, atmospheric science, or climate science. The position will remain open until filled. See the full text announcement at www.vsp.ucar.edu. Send letters and application to Meg Austin, Director, UCAR/VSP, PO Box 3000, Boulder, CO 80307-3000 USA. Email vsp@ucar.edu

UCAR, in cooperation with the Air Force Weather Agency, is seeking visiting scientists to work in areas of **advanced techniques in mesoscale numerical weather prediction** at the Joint Center for Satellite Data Assimilation, which is co-located with NCEP and the NESDIS Office of Research and Applications in Camp Springs, MD. Applicants should have a PhD in meteorology or atmospheric science. The position will remain open until filled. Full text announcement at www.vsp.ucar.edu

Past Meetings

UNFCCC Workshops on Insurance and Climate Change

When: 12–15 May 2003

Where: Bonn, Germany

Contact: Ms. June Budhooam; tel: 49-228 815-1415;

email: jbudhooam@unfccc.int; web:

unfccc.int/sessions/workshops.html

Workshop on the Application of Climate Change and Energy Technologies: Opportunities and Incentives for Investment in Africa

When: 3–5 September 2003

Where: Nairobi, Kenya

Contact: Secretary General & Business Development Manager, Janewit Pitayataratorn, email:

janewit@climatebusiness.net; web:

www.climatebusiness.net/Members.htm#top

3rd ECF Autumn Conference: The Biofuels Directive: Potential for Climate Protection?

When: 8–10 September 2003

Where: Norwich, United Kingdom

Contact: Laura Middleton, School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, UK; tel: 44(0)1603 592836; email:

laura.middleton@uea.ac.uk; web: www.european-climate-forum.net/08092003

Fifth World Parks Congress: Benefits Beyond Boundaries

When: 8–17 September 2003

Where: Durban, South Africa

Contact: Andres Alcantara; tel: 0034 952 02 84 30;

email: andres.alcantara@iucn.org; web:

www.iucn.org/wpc2003

South East Asia Forum on Greenhouse Gas Market Mechanisms and Sustainable Development

When: 10–12 September 2003

Where: Manila, The Philippines

Contact: IETA Secretariat; email: dornau@ieta.org;

web: www.ieta.org/seasia.html

The Third World Conference on Climate Change

When: 29 September–3 October 2003

Where: Moscow, Russia

Contact: B. Predtechensky per., 7, Moscow 123242, Russia; tel: 7 (095) 255 21 43; email: wccc2003@hydromet.ru; web: www.wccc2003.org/index_e.htm

Second International Conference on Early Warning (EWCII)

When: 16-18 October 2003

Where: Bonn, Germany

Contact: EWC II Conference Secretariat, German Committee for Disaster Reduction (DKKV), Tulpenfeld 4, D-53113, Bonn, Germany; tel: +49 228 243 48 79; fax: +49 228 243 48 36; email: miketta@dkkv.org; web: www.ewc2.org

Usable Science 8: Early Warning Systems Do's and Don'ts

When: 20–23 October 2003

Where: Shanghai, China

Contact: Michael Glantz, ESIG/NCAR, 3450 Mitchell Lane, Boulder, Colorado; tel: 303-497-8119; email: glantz@ucar.edu; web: www.esig.ucar.edu/warning/

Global Conference on Oceans, Coasts and Islands

When: 12–14 November 2003

Where: Paris, France

Contact: Stefano Belfiore and Catherine Johnston, Center for the Study of Marine Policy, Univ. Delaware, Newark, DE 19716; tel: 1-302-831-8086; fax: 1-302-831-3668; email: sbelf@udel.edu, johnston@udel.edu; web: www.globaloceans.org/globalconference/index.html

UNFCCC (Framework Convention on Climate Change) COP-9

When: 1–12 December 2003

Where: Milan, Italy

Contact: Secretariat, Haus Carstanjen, Martin-Luther-King-Strasse 8, D-53175 Bonn, Germany; tel: 49-228 815-1000; fax: 49-228 815-1999; email: secretariat@unfccc.int; web: unfccc.int/cop9

World Summit on the Information Society

When: 12 December 2003

Where: Geneva, Switzerland

Contact: Jean-Charles Bigot, International Relations Dept.; email: jcbigot@esa.int; www.esa.int/export/esaCP/SEMHD274OD_index_0.html

Upcoming Meetings

NCSE's 4th National Conference on Science, Policy and the Environment: Water For a Sustainable and Secure Future will be held 29–30 January 2004 in Washington, DC. Organized by the National Council for Science and the Environment (NCSE), this conference

aims to develop science-based strategies for achieving water sustainability. The event will address: sustainable water management and institutions; water quality and sanitation; water technologies; and estuaries and coastal resources management. For more information, contact the Conference Secretariat, EWE ME and Co., 2545 SW Spring Garden St., Ste. 150, Portland, OR 97219; tel: 1-503-244-4294 ext. 202; email register@eweme.com; www.ncseonline.org/NCSEconference/2004conference/

Bridging Scales and Epistemologies: Linking Local Knowledge and Global Science in Multi-Scale Assessments

will be held 17–20 March 2004 in Alexandria, Egypt. This conference is convened as part of the Millennium Ecosystem Assessment (MA) and organized around five key themes, each designed to address a major challenge confronted by the MA in doing a multi-scale integrated assessment. The five themes are: Integrating Local Knowledge into Global Scientific Assessments; Understanding Cross-Scale Interactions; Methodologies for Integrating Data Across Multiple Scales; Designing Better Assessments: Lessons Learned; and Scale and Epistemology Issues in Resource and Ecosystem Management. For more information contact Ms. Chan Wai Leng, Program Assistant, Millennium Ecosystem Assessment, WorldFish Ctr., PO Box 500, GPO 10670 Penang, Malaysia; tel: 60 4 626 1606; email w.chan@cgiar.org; www.millenniumassessment.org/en/about.meetings.bridging.aspx

Eco-Efficiency for Sustainability: Quantified

Methods for Decision Making will be held 1–3 April 2004 in Leiden, The Netherlands. This conference will focus on identifying operational methods for quantified eco-efficiency analysis that can guide decision making towards societal eco-efficiency and sustainability. Participants will represent a range of subject areas, from economics to environmental science, social choice theory, and evaluation and decision theory. Applications involving sustainability decision makers in research and development, eco-design, business and politics will also be represented. For more information contact Esther Philips, Conference Secretariat, Institute of Environmental Sciences, Leiden Univ., The Netherlands; email: info@eco-efficiency-conf.org; web: www.eco-efficiency-conf.org

The 15th Annual Earth Technologies Forum: Conference on Climate Change and Ozone

Protection will be held 13–15 April 2004 in Washington, DC. The Forum provides information on two of the biggest environmental issues affecting industry today: climate change and stratospheric ozone protection. Technology development and dissemination are critical for industry's response to these environmental problems. Three days of conference sessions will provide a forum for discussion of current technologies and efforts to bring

them into the marketplace. For more information contact the Conference Secretariat, 2111 Wilson Blvd., 8th Fl., Arlington, VA 22201; tel: 1-703-807-4052; email: earthforum@alcalde-fay.com; www.earthforum.com

The XVth Global Warming International Conference & Expo (GWXV) will be held *20–23 April 2004* in San Francisco, California. Sessions will be held on remote sensing and global surveillance, energy and transportation, industries, agricultural and forestry resources management, sustainable environment and health for the 21st century, ecosystems and biodiversity, human health in a changing climate, international law and mitigation, state and local government's responses to climate related disasters, education, global change, carbon budget and carbon cycle. For more information contact GWXV Secretariat, PO Box 5275, Woodridge, IL 60517; fax: 1-630-910-1561; email: Abstracts@globalwarming.net; web: www.globalwarming.net

The Colorado Mitigation and Wildfire Conference will be held *23–25 April 2004* in Colorado Springs, Colorado. This conference focuses on managing and preparing for fire-related issues in the wildland-urban interface. Firefighters, planners, policy makers, public groups, and private industry will discuss and develop ideas to help reduce the loss of life, property, and natural resources in these areas. For more information, contact CMWC, 100 Jefferson County Pkwy., Ste. 4550, Golden, CO 80419; tel: 1-303-271-8217; www.wildfirecolorado.org

Coastal Environment 2004: Fifth International Conference on Environmental Problems in Coastal Regions will be held *26–28 April 2004* in Alicante, Spain. It will address the subjects of monitoring, analysis and modeling of coastal regions. The fifth in this international series, the conference will deal with topics related to the prevention, alleviation, and minimization of the adverse effects of environmental problems to seek a balanced use of the coastal regions. The meeting will also cover a series of related topics, including the practical applications of computer modeling of sea and coastal areas. The conference is of interest to government officials, academics, and researchers involved in the field of environmental quality. For more information contact Rachel Green, Senior Conference Coordinator, Coastal Environment 2004, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK; tel: 44(0)238 029 3223; email: rgreen@wessex.ac.uk; web: www.wessex.ac.uk/conferences/2004/coastalenvironment04/

Advanced Institute on Vulnerability to Global Environmental Change will be held *3–21 May 2004* in Laxenburg, Austria. Organized by the SysTem for Analysis, Research, and Training (START) and the International Institute for Applied Systems Analysis

(IIASA), this training institute is the third in a series of focused training/research institutes aimed at increasing the number of trained young scientists from developing countries able to play a leadership role in cross-disciplinary approaches to key issues of global environmental change and sustainable development. Participants will focus on the theoretical foundations and methods of vulnerability analysis, evaluate and derive lessons from case studies, and learn selected analytic tools with the objective of building a base of knowledge and skills from which to conduct research on vulnerability. For more information contact Sara Beresford, Application to Vulnerability Institute, International START Secretariat, 2000 Florida Ave. NW, Ste. 200, Washington DC 20009; tel: 1-202-462-2213; email: sberesford@agu.org; www.start.org/links/announce_oppo/P3_Announcement.pdf

The International Liège Colloquium on Ocean Dynamics: Marine Environmental Monitoring and Predictions will be held *3–7 May 2004* in Liège, Belgium. The aim of the colloquium is to bring together scientists in order to identify the most critical scientific improvements to be brought to modeling and monitoring systems for marine environmental predictions. The colloquium will give the operational community an opportunity to express scientific needs and priorities based on experience from years of ocean observations and forecasting. For more information contact JM Beckers, GHER, Modelenvironment, University of Liège, Sart Tilman, B5, B-4000 Liège, Belgium; tel: 32 4 366 33 50; JM.Beckers@ulg.ac.be; web: modb.oce.ulg.ac.be/Colloquium

GHG (Greenhouse Gas) Registries, Climate Policy, and the Bottom Line will be held *5–7 May 2004* in San Diego, California. This two-day event brings together experts from the business, government, NGO and academic communities to discuss the key issues related to climate change policy and strategy. Topics include: harmonization of GHG policies; GHG registries in the U.S. and beyond; carbon constraints and sustainability; investors and climate change; competitive advantage in a carbon constrained world; and the future of U.S. climate policy. For more information contact Gwendy Donaker, Manager of Member Services; tel: 1-213-891-6920; gwendy@climaterestry.org; web: 198.104.131.213/Default.aspx?tabid=3374

Global H₂O Partnership Conference: Hilltops to Oceans will be held *11–14 May 2004* in Cairns, Australia. UNEP and partners launched the Hilltops-2-Oceans (H₂O) Partnership Initiative in September 2002 as a Type II Partnership of the WSSD with the aim of highlighting the links between the freshwater, coastal and marine environments, and promoting concrete actions to address river, coastal and marine pollution. The Conference seeks to renew the commitment of

stakeholders of the need for sustained and adequately resourced National Programs of Action to protect the marine environment from the harmful effects of land-based activities; explore financial arrangements for financing capital-intensive initiatives; further strengthen the links between water supply and sanitation; and debate and recommend the appropriate use of Wastewater Emission Targets as a tool for protecting the marine environment from the harmful effects of activities from the hilltops to the oceans. For more information contact David Osborn or Erin Hyland, UNEP/GPA Coordination Office, The Hague, The Netherlands; tel: 31 70 311 4473 or 31 70 311 4467; email h2o@unep.nl; web: www.hilltops2oceans.org

The 16th Rencontres de Blois: Challenges in the Climate Sciences will be held 23–28 May 2004 in Blois, France. The conference will be organized around the following four basic themes: (1) The uniqueness of the Earth in the Solar System; planets and other bodies with atmospheres and how they differ from the Earth; life as a key ingredient for planetary change; (2) Key processes involved in climate fluctuations; past changes in terrestrial climate; natural vs. human-induced variability; global sustainability; socioeconomic implications; (3) State of the art in forecasting; understanding the atmospheric, land surface, water and energy cycles; (4) Earth system science; models which need data, and data which need models. The conference will consist of plenary sessions for in-depth oral presentations, and long poster sessions for contributed papers. For more information contact Ms. Elizabeth Hautefeuille, Rencontres de Blois, BP 33, F-91192 Gif sur Yvette, France; tel : 33 (0)1 69290550; email: Elizabeth.Hautefeuille@th.u-psud.fr; opserv.obsprm.fr/conf/allinformationcombined.lwp/odyframe.htm

The 9th International Meeting on Statistical Climatology (IMSC) will be held 24–28 May 2004 in Cape Town, South Africa. Its purpose is to bring together climatologists and statisticians to exchange concepts and approaches to analysis of problems. The IMSC provides a forum for climatologists to present statistical problems in climatology (including meteorology and related fields) and consider the methods currently used to deal with these problems. Techniques tailored by climatologists for the specific needs of climatology are also presented. By discussing the needs of climatology and the possibilities offered by modern statistics, synergetic effects are obtained, advancing the methodical basis of climatology and helping statistics to focus on relevant problems. For more information contact: Bruce Hewitson, ENGEO Dept., Univ. of Cape Town, Private Bag, Rondebosch 7701, South Africa; fax: 27-21-6505773; email: imsc@egs.uct.ac.za; web: www.csag.uct.ac.za/IMSC/

The 1st International CLIVAR Science Conference will be held 21–25 June 2004 in Baltimore, Maryland. The conference will highlight the many advances in understanding and predicting climate. Speakers have been charged to identify current research challenges and provide a roadmap for future research, in particular, taking into account how CLIVAR can best contribute to advancing the universal goals of economic and social well-being. For more information contact CLIVAR 2004 Conference Secretariat, JOSS/PSO, Univ. Corp. for Atmospheric Research, 3300 Mitchell Lane, Room 1112, Boulder, CO 80301; tel: 1-303-497-8667; email: info@clivar2004.org; web: www.clivar2004.org

The Conference on Climate Change and Aquatic Systems: Past, Present & Future will be held 21–23 July 2004 in Plymouth, United Kingdom. The aim of this international conference is to bring together scientists working in marine and freshwater systems with an interest in the impact of climate change on the physio-chemical, biological and particularly ecological aspects of these systems. Proposed topics include: mechanisms linking climate and aquatic systems; lessons learned from past climate change; climatic influence on ecological processes; evidence for range shifts and changes in phenology; climatic cycles: the NAO and ENSO; climate influence on specific aquatic assemblages; and predicting future trends. For more information contact the Conference Office, Science & Technology Short Course Unit, Faculty of Technology, Univ. of Plymouth, Drake Circus, Plymouth PL4 8AA, UK; fax: 44(0)1752 233310; climate@plymouth.ac.uk; www.biology.plymouth.ac.uk/climate/climate.htm

Bjerknes Centenary 2004: Climate Change in High Latitudes will be held 1–3 September 2004 in Bergen, Norway. The conference will commemorate the centenary of Vilhelm Bjerknes' pioneer publication of 1904: *The problem of weather forecasting as a problem in mechanics and physics* (Met. Zeits. Wien 21: 1–7). This scientific article paved the way for modern meteorology and practical weather forecasting, as well as leading to modern climate research. The conference will focus on climate change in polar and sub-polar regions by featuring keynote talks, plenary and poster presentations and discussion forums. Contributions are solicited on research topics that include: ocean, land, sea ice response to atmospheric variability; abrupt climate changes and extreme weather events; coupled ocean-land-sea ice-atmosphere processes; high-resolution paleoclimate reconstructions; carbon cycle and high-latitude climate processes. For more information contact Beatriz Balino, Bjerknes Centre for Climate Research, Allégaten 55, 5007 Bergen, Norway; tel: 47 555 89804; email: conference2004@bjerknes.uib.no; web: www.bjerknes.uib.no/conference2004/

RECENT PUBLICATIONS

Books

Aryeetey, E., J. Court, M. Nissanke, and B. Weder (Eds.), 2003: **Asia and Africa in the Global Economy**. UN University, 53-70, Jingumae 5-chome, Shibuya-ku, Tokyo 150-8925, Japan; www.unu.edu

Assel, R.A., 2003: **An Electronic Atlas of Great Lakes Ice Cover: Winters: 1973-2002**. NOAA, Great Lakes Environmental Research Laboratory, Ann Arbor, MI 48105 USA; www.glerl.noaa.gov/data/ice/atlas; iceatlas.glerl@noaa.gov

Barry, R.G. and R.J. Chorley, 2003: **Atmosphere, Weather and Climate**. Eighth edition. Routledge, UK Head Office, 11 New Fetter Lane, London EC4P 4EE, UK; www.routledge.com

Berkes, F., J. Colding, and C. Folke (Eds.), 2003: **Navigating Social-ecological Systems: Building Resilience for Complexity and Change**. Cambridge University Press, 40 W. 20th St., New York, NY 10011-4211; www.us.cambridge.org

Berkhout, F., M. Leach, and I. Scoones (Eds.), 2003: **Negotiating Environmental Change: New Perspectives from Social Science**. Edward Elgar Publishing, Inc., 136 West St., Ste. 202, Northampton, MA 01060 www.e-elgar.com

Canadian Centre for Policy Alternatives, 2003: **An Action Plan for Kyoto**. CCPA National Office, Ste. 410, 75 Albert Street, Ottawa, ON, K1P 5E7, Canada; www.policyalternatives.ca

Diaz, H.F. and B.J. Morehouse (Eds.), 2003: **Climate and Water: Transboundary Challenges in the Americas**. Kluwer Academic Pubs., PO Box 17, 3300 AA Dordrecht, The Netherlands; www.wkap.nl

Dunlap, R.E. and W. Michelson, 2002: **Handbook of Environmental Sociology**. Greenwood Publishing Group, Inc., 88 Post Rd. West, Westport, CT 06881 USA; www.greenwood.com

Elliot, D., 2003: **Energy, Society and Environment**, 2nd Edition. Routledge, UK Head Office, 11 New Fetter Lane, London EC4P 4EE, UK; www.routledge.com

Giupponi, C. and M. Shechter, 2003: **Climate Change and the Mediterranean: Socio-Economic Perspectives of Impacts, Vulnerability and Adaptation**. Edward Elgar Publishing, Inc., 136 West St., Ste. 202, Northampton, MA 01060n USA; www.e-elgar.com

Harris, P.G. (Ed.), 2003: **Global Warming and East Asia: The Domestic and International Politics of Climate Change**. RoutledgeCurzon, UK Head Office, 11 New Fetter Lane, London EC4P 4EE, UK; www.routledge.com

Hay, J.E. et al., 2003: **Climate Variability and Change and Sea-Level Rise in the Pacific Islands Region: A Resource Book for Policy and Decision Makers, Educators and Other Stakeholders**. South Pacific Regional Environment Programme, PO Box 240 Apia, Samoa; www.sprep.org.ws

Holland, M.M., E.R. Blood, and L.R. Shaffer, 2003: **Achieving Sustainable Freshwater Systems: A Web of Connections**. Island Press; 1718 Connecticut Avenue, NW, Ste. 300, Washington, D.C. 20009-1148 USA; www.islandpress.org

Kasemir, B., J. Jäger, C.C. Jaeger, and M.T. Gardner (Eds.), 2003: **Public Participation in Sustainability Science: A Handbook**. Cambridge University Press, 40 W. 20th St., New York, NY 10011-4211; www.us.cambridge.org

Melillo, J.M., C.B. Field, and B. Moldan (Eds.), 2003: **Interactions of the Major Biogeochemical Cycles: Global Change and Human Impacts**. Island Press; 1718 Connecticut Avenue, NW, Ste. 300, Washington, D.C. 20009-1148 USA; www.islandpress.org

Millennium Ecosystem Assessment, 2003: **Ecosystems and Human Well-being**. Island Press; 1718 Connecticut Avenue, NW, Ste. 300, Washington, D.C. 20009-1148 USA; www.islandpress.org

Parson, E.A., 2003: **Protecting the Ozone Layer: Science and Strategy**. Oxford University Press, Great Clarendon Street, Oxford OX2 6DP, UK; www.oup.co.uk

Postel, S. and B. Richter, 2003: **Rivers for Life: Managing Water for People and Nature**. Island Press; 1718 Connecticut Avenue, NW, Ste. 300, Washington, D.C. 20009-1148 USA; www.islandpress.org

Roberts, J., 2003: **Environmental Policy**. Routledge, UK Head Office, 11 New Fetter Lane, London EC4P 4EE, UK; www.routledge.com

Shugart, H.H., R.A. Sedjo, and B.L. Sohngen, 2003: **Forests and Global Climate Change: Potential Impacts on U.S. Forest Resources**. Pew Center on Global Climate Change, 2101 Wilson Blvd., Ste. 550, Arlington, VA 22201; www.pewclimate.org

Speth, J.G. (Ed.), 2003: **Worlds Apart: Globalization and the Environment**. Island Press; 1718 Connecticut

Avenue, NW, Ste. 300, Washington, D.C. 20009-1148 USA; www.islandpress.org

Wainwright, J. and J.B. Thornes, 2003: **Environmental Issues in the Mediterranean Processes and Perspectives from the Past and Present**. Routledge, UK Head Office, 11 New Fetter Lane, London EC4P 4EE, UK; www.routledge.com

Walters, M.J., 2003: **Six Modern Plagues and How We Are Causing Them**. Island Press; 1718 Connecticut Avenue, NW, Ste. 300, Washington, D.C. 20009-1148 USA; www.islandpress.org

World Bank, 2003: **World Bank Atlas 2003**. World Bank Publications, PO Box 960, Herndon, VA 20172-0960 USA; www.worldbank.org/publications

World Bank, 2003: **World Development Indicators 2003** – Print Edition. World Bank Publications, PO Box 960, Herndon, VA 20172-0960 USA; www.worldbank.org/publications

Wu, B., 2003: **Sustainable Development In Rural China: Farmer Innovation and Self-Organisation in Marginal Areas**. RoutledgeCurzon, UK Head Office, 11 New Fetter Lane, London EC4P 4EE, UK; www.routledge.com

Reports

Dessai, S. and M. Hulme, 2003: *Does Climate Policy Need Probabilities?* Tyndall Centre Working Paper 34. Tyndall Centre, U East Anglia, Norwich, NR4 7TJ, UK; www.tyndall.ac.uk

Downton, M.W., H. Cullen, R. Morss, O. Wilhelmi, and B. Rajagopalan, 2003: Problems of climate variability and uncertainty in flood hazard planning for the Colorado Front Range. Paper #J5.2, AMS Annual Meeting. Available in PDF at www.esig.ucar.edu/downton/floodhaz_ams.pdf

Kabat, P. M. Claussen, P.A. Dirmeyer, J.H.C. Gash, L.B. de Guenni, M. Meybeck, C.J. Vörösmarty, R. Hutjes, and S. Lütkeemeier (Eds.), 2003: *Vegetation, Water, Humans and the Climate*. Kluwer Academic Publishers, PO Box 17, 3300 AA Dordrecht, Netherlands; www.wkap.nl

Kim, J.A., 2003: *Sustainable Development and the CDM: A South African Case Study*. Working Paper 42. Tyndall Centre for Climate Change Research, U East Anglia, Norwich, NR4 7TJ, UK; www.tyndall.ac.uk

Mogelgaard, K., 2003: Helping People, Saving Biodiversity: *An Overview of Integrated Approaches to Conservation and Development*, occasional paper,

March 2003. Population Action International, 1200 19th St, NW, Second Floor, Washington, DC 20036 USA; www.populationaction.org

NRC (National Research Council), Space Studies Board, 2003: *Satellite Observations of the Earth's Environment: Accelerating the Transition of Research to Operations*. National Academy Press, 2101 Constitution Ave NW, Lockbox 285, Washington, DC 20055 USA; www.nap.edu

Turnpenny, J.P. and R. Warren, 2003: *Defining and Experiencing Dangerous Climate Change*. Working Paper 28. Tyndall Centre, U East Anglia, Norwich, NR4 7TJ, UK; www.tyndall.ac.uk

Articles

Aalto, R., L. Maurice-Bourgoin, T. Dunne, D.R. Montgomery, C.A. Nittrouer, and J.-L. Guyot, 2003: Episodic sediment accumulation on Amazonian flood plains influenced by El Niño/Southern Oscillation. *Nature*, **425**, 493-497; doi:10.1038/nature02002.

Adeel, Z., 2003: Introduction to an academic programme designed to meet the human capacity needs of drylands. *Global Environmental Change*, **13**(3), 221-222, doi:10.1016/S0959-3780(03)00050-5.

Archer, E.R.M., 2003: Identifying underserved end-user groups in the provision of climate information. *Bulletin of the American Meteorological Society*, **84**(11), 1525-1532.

Aron, J.L., 2003: Small island developing states: Climate and health effects; chiex.net/presentations_2003.htm

Beguiría, B., J.I. López-Moreno, A. Lorente, M. Seeger, and J.M. García-Ruiz, 2003: Assessing the effect of climate oscillations and land-use changes on streamflow in the Central Spanish Pyrenees; *Ambio*, **32**(4), 283-286.

Bell, M.L., B.F. Hobbs, and H. Ellis, 2003: The use of multi-criteria decision-making methods in the integrated assessment of climate change: Implications for IA practitioners. *Socio-Economic Planning Sciences*, **37**(4), 289-316.

Butler, D., 2003: Heatwave underlines climate-model failures. *Nature*, **424**, 867; doi: 10.1038/424867a.

Cornford, S.G., 2003: Socio-economical impacts of weather events in 2002. *WMO Bulletin*, **52**(3), 269-289.

De Silva, S., 2003: Global change: Eruptions linked to El Niño. *Nature*, **426**, 239-241; doi: 10.1038/426239a.

Elsner, J. and K.-B. Liu, 2003: Examining the ENSO-typphoon hypothesis. *Climate Research*, **25**, 43-54.

Fedorov, A.V., S.L. Harper, S.G. Philander, B. Winter, and A. Wittenberg, 2003: How predictable is El Niño? *Bulletin of the American Meteorological Society*, **84**, 7, 911-919.

Fisher, G.M, 2003: Integrating space weather and meteorological products for aviation. *Bulletin of the American Meteorological Society*, **84**(11), 1519-1523.

Gardner, T.A., I.M. Côté, J.A. Gill, A. Grant, and A.R. Watkinson, 2003: Long-term region-wide declines in Caribbean corals. *Science*, **301**, 953-960.

Hopp, M.J. and J.A. Foley, 2003: Worldwide fluctuations in dengue fever cases related to climate variability. *Climate Research*, **25**, 85-94.

Huq, S. and H. Reid, 2003: The role of people's assessments. *Tiempo*, **48**, 5-10.

Jenkins, G., 2003: A questions of probability: Latest research identifies new factors in climate change. *New Economy*, **10**(3), 144-149.

Kim, K.-Y., J.J. O'Brien, and A.I. Barcion, 2003: The principal physical modes of variability over the tropical Pacific. *Earth Interactions*, **7**, Paper 3.

Leroux, M., 2003: "Global Warming": Myth or reality? The actual evolution of the weather dynamics. *Energy & Environment*, **14**(2-3), 297-322.

Leung, L.R., L.O. Mearns, F. Giorgi, and R.L. Wilby, 2003: Regional climate research: Needs and opportunities. *Bulletin of the American Meteorological Society*, **84** (1), 89-95.

Liu, K.S. and J.C.L. Chan, 2003: Climatological characteristics and seasonal forecasting of tropical cyclones making landfall along the South China coast. *Monthly Weather Review*, **131**(8), 1650-1662.

Lyon, B., 2003: Enhanced seasonal rainfall in Northern Venezuela and the extreme events of December 1999. *Journal of Climate*, **16**(13), 2302-2306.

Manning, M.R., 2003: The difficulty of communicating uncertainty. *Climatic Change*, **61**(1-2), 9-16, doi:10.1023/A:1026309307763.

Marshall, C.H., R.A. Pielke, Sr, and L.T. Steyaert, 2003: Wetlands: Crop freezes and land-use change in Florida. *Nature*, **426**, 29-30; doi:10.1038/426029a.

Mote, P. et al., 2003: Preparing for climatic change: The water, salmon, and forecasts of the Pacific Northwest. *Climatic Change*, **61**(1-2), 45088, doi: 1023/A:1026302914358.

Newman, M., G.P. Compo, and M.A. Alexander, 2003: ENSO-forced variability of the Pacific Decadal Oscillation. *Journal of Climate*, **16**, 3853-3857.

O'Lear, S., 2003: Environmental terrorism: A critique. *Geopolitics*, **8**(3), 127-150.

Perry, C.T., 2003: Reef development at Inhaca Island, Mozambique: Coral communities and impacts of the 1999/2000 Southern African floods. *Ambio*, **32**(2), 134-139.

Plaen, R.D., R. Geneau, T. Teuscher, A. Koutoua, and M.-L. Seka, 2003: Living in the paddies: A social science perspective on how inland valley irrigated rice cultivation affects malaria in Northern Côte d'Ivoire. *Tropical Medicine and International Health*, **8**(5), 459-470.

Pulwarty, R., 2003: Climate and water in the West: Science, information and decision making. *Water Resources Update*, **124**, 4-12.

Scholes, B. and M. Howden, 2003: Management for sustainable use – global climate change and rangelands. *African Journal of Range and Forage Science*, **20**(2), 153-156.

Smith, S., S. Jacob, M. Jepson, and G. Israel, 2003: After the Florida net ban: The impacts on commercial fishing families. *Society and Natural Resources*, **16**(1), 39-59.

Steemers, K., 2003: Towards a research agenda for adapting to climate change. *Building Research and Information Journal*, **31**, 3-4/May August, special issue on climate change.

Wallner, A., M. Hunziker, and F. Kienast, 2003: Do natural science experiments influence public attitudes towards environmental problems? *Global Environmental Change*, **13**(3), 185-194.

Webster, M., 2003: Communicating climate change uncertainty to policy-makers and the public. *Climatic Change*, **61**(1-2).

Zhang, J., 2003: SARS – an imperative to the People's Republic of China to re-examine its "social management." *Harvard Asia Pacific Review*, Summer 2003, 54-56.

WEBSITES OF INTEREST

www.sustdev.org

Sustainable Development International's website contains in-depth information on a wide range of topics including climate change, energy, water resources, forests, oceans and more.

www.iclei.org

ICLEI is an international association of local governments implementing sustainable development. Its website contains an information clearinghouse, campaign and project pages and links to regional websites.

www.greenglobe21.com

Green Globe 21 is the worldwide benchmarking and certification program that facilitates sustainable travel and tourism for consumers, companies and communities. It is based on Agenda 21, which was developed at the UN Rio de Janeiro Earth Summit in 1992.

www.iucnredlist.org

The IUCN Red List of Threatened Species is the world's most authoritative inventory of the conservation status of plants and animals. Thousands of scientists and conservationists from all over the world contribute to this rapidly expanding list, compiled by the World Conservation Union, through its Species Survival Commission and partner organizations.

www.righttowater.org.uk

This new website is a joint venture between WaterAid, Rights & Humanity and the Freshwater Action Network. The website has been developed to stress the vital importance of water to life, particularly in light of last year's United Nations declaration of access to water as a human right.

www.saveourclimate.org

The International Climate Symbol is a new communication tool. All non-commercial organizations can use it in their communications on climate change. The symbol stands for the need to curb climate change and the ability to make a difference.

www.mailinator.com

When someone requires you to give an email address but you want to avoid spam, just pick any name you want up to 15 characters, add @mailinator.com and you have a disposable email address. Then go online to www.mailinator.com, type in that email address and check your email. After a few hours the message and the email is gone.

www.fema.gov/tab_education.shtm

The Federal Emergency Management Agency (FEMA) announced a new online curriculum. The community-based pre-disaster mitigation curriculum is designed to involve emergency management and community and faith-based organizations in pre-disaster mitigation activities at the local level.

www.esa.int

Stay abreast of the latest developments with the Mars Express orbiter of the European Space Agency. This site also has links to space science and human space flight.

marsrovers.jpl.nasa.gov/home/

Share the excitement of the January landing of the Spirit rover on Mars, with pictures and sites for kids, students, educators, and the press.

The NETWORK NEWSLETTER is intended for those interested and involved in climate-related impact assessment. It is hoped that it will serve to foster a growing network by keeping the community up to date on the many activities in this wide and varied field. Your involvement in supplying relevant information is essential to the success of this endeavor.

The Newsletter is compiled and published free of charge by the Environmental and Societal Impacts Group of the National Center for Atmospheric Research (NCAR) with additional support from the University Corporation for Atmospheric Research (UCAR). NCAR is sponsored by the National Science Foundation.

NETWORK NEWSLETTER

tel: 1-303-497-8134; fax: 1-303-497-8125
E-mail: jan@ucar.edu
www.esig.ucar.edu/newshp

Michael H. Glantz Editor
D. Jan Stewart Managing Editor
Jan Hopper Associate Editor
Anne Oman Webmaster, Associate Editor

-
- Please send the Newsletter to:
 - Please discontinue sending Newsletter
 - Change of Address:

Name _____

Affiliation _____

Address _____

Please print or type, make sure address is complete

**Network Newsletter
Environmental and Societal Impacts Group
NCAR
PO Box 3000
Boulder, CO 80307-3000**

<p>NON-PROFIT ORGANIZATION U.S. Postage PAID Boulder, Colorado Permit No. 558</p>
--