

Issue #17

May 2001

Editorial

Take Time to Smell the Roses

During a recent trip to Bangkok, I came across a cartoon that captured my attention. As you probably know, cartoons represent yet another way to get us to reflect on our personal life, our career, the way we look at the world and people around us. The cartoon captions often capture our feelings and perceptions of reality, if not reality itself.

The cartoon that prompted me to put down these thoughts was the following: it shows a worker at his desk with papers piled up and the file cabinet behind him overstuffed with papers. The floor, too, was covered with papers. The caption: "I'm giving up trying to get ahead, so I can concentrate on slowing down the rate at which I'm falling behind."

This has many possible meanings. The one that this cartoon sparked for me is that I am spending so much time looking into the future that I am forgetting to think about the present. This applies to my personal life as well as to my work, and (I fear) to many of my fellow workers in the field of scientific research.

In my professional life, I watch myself and my colleagues seeking to add to the existing "body of knowledge." The problem is that we have been so future-oriented that we no longer know what that existing body looks like. Making a bad situation worse is the creation of the Internet. Now, there is so much information available on the Web that it

is not possible to read it all. And we should not forget the abundance of information that is to be found in what is called "grey literature." These are reports produced but neither published for the general public nor widely disseminated.

The point is that we have become so preoccupied with the future that we are doing the same research on the same topics that others are doing, and we are often unaware of it. This is truly a waste of time, resources, and human potential. This focus on the future, decades down the road, is pushed by governments and funding agencies as much as it is by our bosses and our personal ambitions. We must find a way to gain control over such a wasteful situation. We must use what we are learning in order to ratchet up our collective knowledge base, so we can truly add to that existing body of knowledge.

Although those around me had mentioned it to me, I had not realized how I had become so consumed each day with what might happen tomorrow that I had taken no time to think about today. The phrase "take the time to smell the roses" applies to our work efforts as well as our personal lives. Surely, in the long run it will enrich our lives as well as enrich the research activities in which we are involved. One can only hope that governments, corporations, and funding agencies realize that an over-focus on the future may be more detrimental to getting to the future they hope to create than they realize.

--Michael H. Glantz

THANKS FOR YOUR INPUT!

Please send news items, publications, Web sites, and articles of interest to our readers to the address below by **30 July 2001**. This newsletter values input from its readers, which has now reached over 2,000. If you are interested in receiving the newsletter only on line, please subscribe there. You will be notified electronically when a new issue is released. Feedback is encouraged!

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CURRENT STATE OF THE TROPICAL PACIFIC

(from the Climate Prediction Center's
Climate Diagnostics Bulletin)
www.cpc.ncep.noaa.gov

Mature La Niña conditions continued during March 2001, as sea surface temperatures (SSTs) remained more than 1.0°C below average across portions of the central equatorial Pacific between 160°E and 160°W. Since early February, SSTs have become anomalously warm in many sections of the eastern tropical Pacific. Similar features were observed at about the same time of the year in both 1999 and 2000. In both of those years, the anomalous warming lasted until late April or early May and then rapidly disappeared as cross-equatorial flow from the Southern Hemisphere and the Northern Hemisphere became established and seasonal rainfall began to increase over Central America,

southern Mexico, and the southeastern tropical North Pacific. Since the demise of the 1997-98 El Niño, many ENSO indices have shown distinct annual cycles. The evolution of the atmospheric and oceanic anomaly patterns since mid-1998 is similar to (but stronger than) that observed during 1984-86, which followed the strong 1982-83 El Niño. Over the past two years, subsurface temperature anomalies have gradually expanded into the central Pacific, consistent with a slow decay that characterizes the mature phase of cold episodes. Thus, it is likely that cold episode conditions will gradually weaken over the next several months, with near-normal conditions probable during the summer of 2001.

THE ITCZ

The Intertropical Convergence Zone (ITCZ) is an area of low pressure that forms where the northeast trade winds meet the southeast trade winds near the equator. The ITCZ represents the boundary between dry, hot air to the north and warm, humid air to the south. In mid-August, when Sahel rainfall is at its peak, the ITCZ reaches its northernmost position. Typically, after August the ITCZ retreats rapidly southward. It stays north of the equator over the Atlantic and eastern Pacific Oceans. Drought years in West Africa are associated with the ITCZ being south of its normal position, while wet years are associated with the ITCZ north of its normal position. During an El Niño event, the ITCZ is redirected toward the unusually warm SSTs in the tropical Pacific. The Climate Prediction Center monitors the location of the ITCZ and found during June-September 2000, the eastern African ITCZ was the farthest south it had been since 1990. Monitoring for the next season's ITCZ begins in April 2001. For more information, see the Web site at

www.cpc.ncep.noaa.gov/products/african_desk/ITCZ/ITCZ.html

EL NIÑO AND WIND ANOMALIES

In the 15 February issue of the *Journal of Geophysical Research Letters*, Allan Clark and Stephen Van Gorder of Florida State University describe a model they have developed to predict El Niño events using small departures of winds from the normal seasonal cycle in the far western equatorial Pacific. Analysis of eight El Niño events in equatorial wind data since 1960 shows that these events typically begin in the far western equatorial Pacific as small westerly (eastward-flowing) wind anomalies. La Niña events are similarly associated with easterly wind anomalies. This model also predicts the demise of El Niño and La Niña. For more information, contact Harvey Leifert, Public Information Manager, American Geophysical Union, 2000 Florida Ave. NW, Washington, DC 20009-1277 USA; email hleifert@agu.org; Web www.agu.org

Clark, A.J. and S. Van Gorder, 2001: ENSO prediction using an ENSO trigger and a proxy for western equatorial Pacific warm pool movement. *Geophysical Research Letters*, **28**(4), 579-582.

PREDICATE

PREDICATE is an acronym for "Mechanisms and Predictability of Decadal Fluctuations in Atlantic-European Climate," a new European Union (EU) three-year program to study European climate variability over decadal time scales. By examining interactions between the oceans and the atmosphere, PREDICATE will attempt to fill the gap between seasonal

forecasting and long-term climate change. A greater knowledge of how ocean-atmosphere interactions influence decadal fluctuations is urgently needed. The main goals of PREDICATE are to (1) improve understanding of the processes responsible for decadal time-scale fluctuations in the climate of the Atlantic-European region, and (2) assess the extent to which such fluctuations are predictable. For more information, see the Web site at ugamp.nerc.ac.uk/predicate or write to Rowan Sutton, Centre for Global Atmospheric Modeling, University of Reading, Reading, UK, email r.sutton@reading.ac.uk



CLIVAR EXCHANGES

The newsletter of the Climate Variability and Predictability Program (CLIVAR) is highlighting recent scientific results relating to decadal variability and predictability. Two issues will be dedicated to this topic. The first issue (*Exchanges*, **6**(1), March 2001) relates to the Atlantic sector and global aspects. The next issue will focus on monsoons and Pacific decadal variability. CLIVAR is currently forming panels to deal with the scientific questions relating to these areas. The newsletter is available free of charge. Contact the International CLIVAR Project Office, Southampton Oceanography Centre, Empress Dock, Southampton, SO14 3ZH, UK. *Exchanges* is also available on line at www.clivar.org

GUEST EDITORIAL

A National Climate Service: 21st Century Necessity

Imagine that an announcement of opportunity is issued every three years to maintain the upper air rawinsonde network. Imagine further that the weather forecasts are done by university departments and are issued as regularly as a university department is able (presumably never on spring break or during finals). The need has long been recognized that weather data and weather forecasts must be part of a regular and timely system. It is to avoid any ad hoc nature in the production and distribution of weather information that the US Weather Service was established. The National Weather Service has an ongoing mission to observe the atmosphere, analyze the observations, forecast the weather, archive the results, and appropriately disseminate the information. Every modern nation has a similar weather service, and every modern nation centralizes at least the numerical weather prediction activity at a single location. But when it comes to climate, the United States has no analogous organization.

In particular, there is no climate observing system. There are observations taken by numerous agents and agencies for other purposes that prove useful for climate. A climate observing *system* is one that is specifically designed, in terms of data quality and continuity, to meet climate requirements. Existing atmospheric observations could be converted to climate observations by additional calibration, overlap, and continuity requirements. Additional measurements not currently taken – on land, in and over the ocean, under and in ice and snow – would also have to be included. These would have to be distributed and

subsequently assimilated into a coupled atmosphere ocean ice model to guarantee a dynamically consistent field that would describe the state of the climate system. Finally, recognizing that climate measurements need to be global, those taken by the United States would have to be coordinated and combined with measurements taken outside the United States. All this takes time, concentrated effort and resources, and could best be accomplished in a *National Climate Service* dedicated to this effort.

Also best done by a service dedicated to this mission would be the kinds of climate prediction and projections that need to be done on a regular basis. Among these would be global warming projections in support of the Intergovernmental Panel on Climate Change (IPCC) and national assessments, ozone projections in support of the Montreal Protocol, and seasonal-to-interannual forecasts in response to the growing opportunities and needs for future climate information. These activities require ensemble runs and, therefore, a tremendous amount of computer capability and capacity in a number of centralized computing and modeling facilities.

The key to a successful National Climate Service is an intimate and ongoing relationship with the research community. The design of observing systems, the development of climate models, and the analysis of climate information are all research topics needed for climate operations. The ongoing data and analyses from a climate observing system and the output of projection and prediction models are invaluable sources of input to the research enterprise.

As the nation becomes more sophisticated about climate problems, as the population of the United States

increases and begins to put pressure on natural systems, and as government and individuals at home and abroad need to have reliable climate information available for decision making in climate-sensitive sectors of the economy, the need for a dedicated National Climate Service becomes more important and more pressing.

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CORAL REEFS AND EL NIÑO

Coral reefs are the most biologically diverse marine ecosystems on earth. They occupy less than one-quarter of one percent of the earth's marine environment, yet they are home to more than a quarter of all known fish species. During the 1997-98 El Niño and the subsequent La Niña, significant bleaching of hard and soft corals occurred in widely separated parts of the world. Bleaching occurs when coral expels its algae, which often happens with high water temperatures. Bleaching starves and often kills corals. SeaWeb is a multimedia public education project designed to raise awareness of the world ocean and the life within it. It provides information and opinions from a broad spectrum of sources. SeaWeb has several articles about coral bleaching and global warming. See the Web site at www.seaweb.org or contact SeaWeb at 1731 Connecticut Ave. NW, 4th Floor, Washington, DC 20009.

MORE CORAL BLEACHING RESOURCES

Two important publications have recently been released about coral bleaching. The first, *Management of Bleached and Severely Damaged Coral Reefs* (Westmacott et al., 2000) is aimed at providing guidance to local stakeholders, managers, and policy makers on appropriate management approaches for coral reefs that have been severely degraded. It is available on line at www.iucn.org/places/usa/literature.html#marine. The second publication is by C.R. Wilkinson (ed.), *Status of Coral Reefs of the World* (2000). It discusses the role of the 1997-98 El Niño and subsequent La Niña events on the world's coral reefs. At: www.aims.gov.au/pages/research/coral-bleaching/scr2000/scr-00.html See the "Publications" section in this newsletter for more ordering details. Several Web sites on coral reefs are also included on the last page of this newsletter.

EL NIÑO CD-ROM

REMedia, Inc. has just released a new CD-ROM on El Niño, Volume 1 in a series of 9 CD-ROMs. It contains interviews with El Niño experts, animations, and printable photographs and text. Also included are chapters on the causes and effects of El Niño, as well as how they are predicted and modeled. Cost is US\$29.95. For more information, write to REMedia, 13525 Midland Rd., Poway, CA 92064; tel: 1-800-736-3342; or see the Web site at www.remedia.com/ENpromo.html

CLIPS PROJECT

The Climate Information and Prediction Services (CLIPS) project of the World Meteorological Organization (WMO) demonstrates the socio-economic benefits of climate information and

prediction services; provides an international framework to promote climate information and prediction; encourages the development of operational climate prediction; and facilitates the development of a global network of regional and national climate centers. Climate information and prediction services can be used to minimize impacts of interannual climate variability, including that related to El Niño and La Niña events. CLIPS acts as a liaison between national meteorological and hydrological services and the prediction products of the research community. It also provides a link between climate science and the applications of that science. CLIPS is part of the WMO's World Climate Program. See the Web site at www.wmo.ch/web/wcp/wcp-home.html for more information, or contact clips@gateway.wmo.ch

IRI'S ASIA DIGEST

The International Research Institute for climate prediction (IRI) has a new product, "Climate Update for Asia," which is based on material from the *IRI Climate Digest* and the IRI Map Room. It contains topics on Asian climate impacts, a climate summary, and three-month forecasts. The Web site also has information on such topics as last season's floods and droughts, as well as a current forecast for a potential rainfall deficit in Malaysia, Northern Sumatra and southern Thailand. See the Web site at iri.ldeo.columbia.edu/~lareef/iri/climate/asiadigest.html or contact Lareef Zubair at lareef@iri.ldeo.columbia.edu

ENSO IN NORTHEAST BRAZIL

José M. Brabo-Alves, a meteorologist with FUNCEME (Fundação Cearense de Meteorologia e Recursos Hídricos) in Ceará, Fortaleza, Brazil, sent the *ENSO*

Signal an analysis of the impacts of the ENSO cycle on subsistence agriculture (corn and bean) in the semi-arid region of Northeast Brazil. His research indicates that this agriculture is negatively affected during El Niño and positively affected during La Niña events in Ceará state. In El Niño years, the yields of corn and bean were 35% to 50% below average, and 15% to 20% above the long-term mean during La Niña years. According to Brabo-Alves, his research demonstrates the theoretical knowledge of the correlation between El Niño and La Niña anomalies in sea surface temperatures in the tropical Atlantic basin and anomalous climatic conditions in Brazil's semi-arid region. For more information, contact brabo@funceme.br or see FUNCEME's Web site at www.funceme.br (in Portuguese).

EPIC 2001

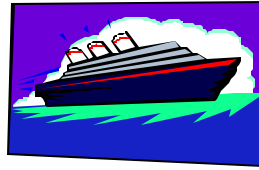
EPIC (Eastern Pacific Investigation of Climate processes) in the ocean-atmosphere is a program that began in 1998 and will extend through 2004. To predict ENSO over the Pacific Ocean and its effects on surrounding land, the annual cycle of the eastern Pacific Cold Tongue/ITCZ Complex (CTIC) and its interactions with seasonal-to-interannual climate anomalies must be well simulated in coupled ocean-atmosphere models. EPIC2001 is an intensive process study for August and September 2001. The cross-equatorial SST difference is strongest during this period, and stratocumulus cloud coverage along the coasts of North and South America is the largest. EPIC2001 intends to make atmospheric observations along the longitude of the easternmost TAO moorings, as well as to study small-to-mesoscale oceanic and atmospheric processes at one or two sites. Since the east Pacific ocean-atmosphere information is relatively

sparse, this study should increase understanding of processes in this region. The high-quality data sets that will be collected in the sparsely observed CTIC and stratocumulus regimes are expected to reveal many quantitative aspects of the ocean-atmosphere structure for the first time. For more information, see the EPIC Web site at www.physics.nmt.edu/raymond/epic2001/epic2001.html or contact David Raymond at New Mexico Tech, Socorro, NM 87801; tel: 505-835-5610; email Raymond@kestrel.nmt.edu

TRANS-NIÑO INDEX

Kevin Trenberth and David Stepaniak, in the 15 April issue of the American Meteorological Society's *Journal of Climate*, report that they have developed a new El Niño index called the Trans-Niño Index (TNI), which calculates the difference between sea surface temperature changes in the central equatorial Pacific Ocean and in waters along the coast of South America. The TNI allows scientists to see how and where El Niño events have developed over the last 50 years and helps to detect decadal-scale changes. The TNI shows that El Niño events 1950-76 tended to develop first along the coast of South America and then spread westward. More recent El Niño events developed in the central Pacific and spread eastward. The entire article is on line at www.cgd.ucar.edu/cas/papers/jclim2001b/ENflavorsr.html

Trenberth, K.E. and D.P. Stepaniak, 2001: Letters: Indices of El Niño evolution. *Journal of Climate*, **14**(8), 1697-1701.



VOS AND THE IOC

Ships in the world's oceans and seas are recruited by National Meteorological Services (NMSs) around the world to transmit meteorological observations in support of weather forecasting. This World Meteorological Organization (WMO) program recognizes the role of the oceans in the global climate system and recruits volunteer ships to gather meteorological data by becoming a Voluntary Observing Ship (VOS). The instruments are supplied free of charge to the ship, installed by a professional from the NMS who explains the use of the equipment and offers guidance on the transmission of the observations from ship to shore. VOS is being combined with the Intergovernmental Oceanographic Commission's (IOC) Ships of Opportunity program to provide a higher-quality data set from a subset of the VOS, specifically for climate study needs. For details of this program, see the project document on the Web at oceanic.cms.udel.edu/gos/ios/VOS.htm or at www.vos.noaa.gov/wmo.html

ENSO PROBABILITY MAPS

It is common during El Niño and La Niña events to have persistent weather patterns that result in a particular outcome for the seasonal climate. For example, it is not unusual for southern California to receive larger amounts of rain during an El Niño event in January through March. Thus, there is an increased probability for above-normal rainfall in that season. The International Research Institute (IRI) for climate

prediction has produced global maps that illustrate the probabilities of seasonal temperature and precipitation outcomes that are associated with El Niño and La Niña. These maps show the frequency of years that above-normal, near-normal, and below-normal temperature and precipitation occurred during the strongest ten El Niño and La Niña years. The high-resolution data used to make these maps of probabilistic climate anomalies come from the Climate Research Unit at the University of East Anglia. To make a Probability Map Request, see the Web site at iripred.ideo.columbia.edu/ or write to info@iri.ideo.columbia.edu for more information. The IRI is a unit of the Columbia Earth Institute and is located at Lamont-Doherty Earth Observatory, 51 Rt. 9W, PO Box 1000, Palisades, NY 10964-8000; tel: 1-845-680-4468.

MARE

The Center for Maritime Research (MARE) in Amsterdam, The Netherlands, was established in June 2000 by the University of Amsterdam and the Netherlands Institute for the Social Sciences to collect, advance, and apply scholarly knowledge on the relationship between mankind and the marine and coastal environments. An inaugural conference for MARE will be held August 29-1 September 2001 in Amsterdam to examine cross-disciplinary issues in maritime research. For more information, see the MARE Web site at www.siswo.uva.nl/mare or write to MARE, SISWO, Netherlands Institute for the Social Sciences, Plantage Muidergracht 4, 1018 TV Amsterdam, The Netherlands; tel: 31-20-527-0623; email mare@siswo.uva.nl

EMPLOYMENT & EDUCATIONAL OPPORTUNITIES

National Institute of Water and Atmospheric Research (NIWA) has vacancies to undertake research on ocean climate and variability in the New Zealand region. Researchers are needed with skills and interest in subantarctic oceanography and regional modeling. NIWA is New Zealand's principal aquatic and atmospheric research organization (see Web site at www.niwa.cri.nz). The successful candidate will work with atmospheric scientists, numerical modelers, biological and fisheries experts, and palaeoceanographers. Positions are based in Wellington. A PhD or advanced degree in oceanography will be essential. Send applications with resume or requests for more information to Margaret Devlin, NIWA, PO Box 14-901, Wellington, New Zealand; tel: 64-4-386-0300; fax: 64-4-386-0574; email m.devlin@niwa.cri.nz by 14 May 2001.

The **Oceanography Department at Florida State University** has a PhD fellowship available for a student with a background in physics or geophysical fluid dynamics. Projects involve the calculation of large-scale circulation and mixing in the Atlantic Ocean and the Southern Ocean, data analysis, and modeling of flow over mid-ocean ridges, and paleoclimate models. The candidate may participate in the effort to analyze and interpret recent WOCE data, as well as other oceanographic datasets such as drifting buoys and floats. For more information about the department and applications procedures, see the Web site at www.ocean.fsu.edu or write to Kevin Speer, Department of Oceanography, Florida State University, Tallahassee, FL 32306; email kspeer@ocean.fsu.edu

SUMMARIES OF PAST MEETINGS

The National Consultation Workshop on Extreme Climate Events and their Impacts on Society and the Environment in Vietnam was held 15-16 May 2000 in Hanoi, Vietnam, to follow up on the results of an assessment study held in Vietnam 29-30 April 1999, which examined the status of El Niño Southern Oscillation (ENSO) climate forecast applications in Vietnam. The objectives of the Workshop were to share the results of the study undertaken during the pilot project phase, present potential applications of ENSO forecast information, and prepare an action plan for implementation to manage the impacts of future ENSO events in Vietnam. These workshops aim to formulate a further work plan to institutionalize a climate forecast and application system in Vietnam. Contact the Extreme Climate Events Program, Asian Disaster Preparedness Center, PO Box 4, Klong Luang, Pathumthani 12120, Thailand; tel: 66-2-524-5359; fax: 66-2-524-5360, or email: ece@ait.ac.th

International Peer-Review Meeting, Extreme Climate Events Program, organized by the Asian Disaster Preparedness Center (ADPC), was held 5-6 October 2000, in Bangkok, Thailand. Experts from around the world met to discuss strategies for dealing with future extreme climate events, such as El Niño and La Niña, and how they affect the society and the environment in Southeast Asia. ADPC, in collaboration with the National Oceanic and Atmospheric Administration (NOAA), runs a program on Extreme Climate Events (ECE) in three Southeast Asian countries: Indonesia, the Philippines, and Vietnam. More information may be found by contacting the ADPC as noted above. Visit the Web at

www.adpc.ait.ac.th/ece/programevents/prm.html

Climate Variability, the Oceans, and Societal Impacts, and Precipitation, Impacts and Responses were the themes of the American Meteorological Society's (AMS) 81st Annual Meeting, held 15-18 January 2001 in Albuquerque, NM. More than 2800 attendees and 130 companies participated. For more information, please contact the American Meteorological Society, 1200 New York Ave., NW, Suite 410, Washington, DC 20005; tel: (202) 682-9006; fax: (202) 682-9298; web, www.ametsoc.org/AMS

The 9th International Coral Reef Symposium (ICRS) was held 23-27 October 2000 in Bali, Indonesia. The theme was "World Coral Reefs in the New Millennium: Bridging Research and Management for Sustainable Development." This summit is held every four years, sponsored by the International Society for Coral Reef Studies. It is the primary vehicle used by experts, including scientists, policy makers, resource managers, and conservationists, for providing data and news concerning the state and health of coral reef ecosystems around the world. More than 1500 scientists from more than 50 countries attended. Scientists in attendance agreed that climate change is having a significant impact on the world's coral reef. High water temperatures (such as the record sea surface temperatures reached throughout the tropics during the 1997-98 ENSO event) caused coral to "bleach." For more information, visit the website at www.nova.edu/ocean/9icrs or contact SeaWeb, 1731 Connecticut Ave., NW, 4th Floor, Washington, DC 20009; tel: 202-483-9570; fax: 202-483-9354.

The first meeting of the **Variability of the African Climate System (VACS) Panel** was held at the Drought Monitoring Centre in Nairobi, Kenya, 29-31 January 2001. Discussions included the 4 projects identified in the International Research Programme on Climate Variability and Predictability (CLIVAR) Africa Implementation Plan: 1) Annual Cycle; 2) Interannual Variability; 3) Intraseasonal Variability; and 4) Decadal Variability. A high priority to be promoted during the first year of VACS is a case study of the 1997-98 East African/Southern Africa rainfall event. Climate anomalies in Africa will also be studied, including consideration of the impacts of ENSO, the interaction of ENSO with regional ocean basin forcing, feedbacks of African climate anomalies in remote circulations and regional oceans, and evaluation of land surface processes in the anomalous evolution of the annual cycle in these years. More information can be found at the CLIVAR website, www.clivar.org or the International CLIVAR Project Office, 256/20 Southampton Oceanography Centre, Empress Dock, Southampton SO14 3ZH, UK; tel: 44-2380 596777; fax: 44-2380 596204.

ANNOUNCEMENTS OF UPCOMING MEETINGS

The Pacific Congress on Marine Science and Technology (PACON) is sponsoring **PACON 2001: Environmental Technologies for Sustainable Maritime Development** in San Francisco, California, 8-11 July 2001. PACON 2001 will bring together scholars and resource people to address key issues concerning marine technology related to the ocean's economic potential for the region from a multidisciplinary perspective. Topics to be discussed include climate change, operational experience in environmental monitoring, coral reef preservation, and

coastal environmental Issues. For more information, please contact PACON International, PO Box 11568, Honolulu, HI 96828-0568; tel: 1-808-956-6163; fax: 1-808-956-2580; email pacon@hawaii.edu or Web at [/www.hawaii.edu/pacon](http://www.hawaii.edu/pacon)

An **International Symposium on Ice Cores and Climate** will be held 19-23 August 2001 in Kangerlussuaq, Greenland. Ice cores provide a wealth of information on the past climate. Recently several deep ice cores and many shallow cores have been drilled and analyzed. This symposium will focus on results from ice-core measurements and what they reveal about our understanding of global, regional, and historical climates. Topics will include interpretation of ice-core records; comparison of results from different ice cores; meteorological, modeling, and air-snow transfer studies; and comparison between ice-core records and other paleoclimatic and paleoenvironmental records. For more information, contact the International Glaciological Society, Lensfield Road, Cambridge CB2 1ER, UK; tel: 44-1223-355-974; fax: 44-1223-336-543; email Int_Glaciol_Soc@compuserve.com; www.spri.cam.ac.uk/igs/Green.htm or www.glaciology.gfy.ku.dk

Past Climate Variability Through Europe and Africa: An International Conference will be held 27 -31 August 2001, at the Centre des Congrès, Aix-en-Provence, France. Conference objectives are to 1) understand how and why climate has varied in the past; 2) assess how climate change and variability have affected natural ecosystems and human society in the past; and 3) provide a basis for developing and testing climate models that are needed to forecast future climate change. Questions to be addressed include: To what extent can the instrumental record be used to

identify patterns of climate variability associated with the NAO (North Atlantic Oscillation) and ENSO over the last two centuries? How has climate variability affected human activity and society over these time-scales? To register, see www.geog.ucl.ac.uk/ecrc/pep3/aix2001 or contact Catherine Stickley, Environmental Change Research Centre (ECRC), University College London, 26 Bedford Way, London, UK. WC1H 0AP, UK; tel: 44-171-504-5562; fax: 44-171-380-7565; email: c.stickley@ucl.ac.uk

OCEANS 2001 will be held in Honolulu, Hawaii, 5-8 November 2001. The program will focus on technical advances, economic potential, and military and industrial needs for the future. Topics will include discussions on new technology, developments and applications that describe advances in science and engineering in the ocean environment, and address ocean economic, policy or education issues. For more details, see the Web site at www.oceans2001.com or contact the Technical Program Chair, Dr. Lorenz Maggaard, Executive Associate Director, IPRC, Director of Education, MarBEC, University of Hawaii at Manoa, 1000 Pope Rd., Honolulu, HI 96822; tel: 1-808-956-7509; fax: 1-808-956-5035; email: lorenz@hawaii.edu

The **Fifth International Symposium on Hydrological Applications of Weather Radar** will be held 19-22 November 2001 in Heian-Kaikan, Kyoto, Japan. As radar remote sensing technology is rapidly changing operational hydrology, this symposium provides a forum for exchange of experiences and ideas on its use. The meeting will provide hydrologists and meteorologists an opportunity to share experiences from the rapidly growing number of radar and radar network installations around the world. Topics include estimation and prediction of precipitation using radar

data; distributed hydrologic modeling; application of weather radars for hydrologic forecasting in different climates; contributions of radar data to water management; and coupling meteorological and hydrological models assimilating radar data. Contact the Conference Secretariat, Eiichi Nakakita, Water Resources Research Center, DPRI, Kyoto University, Uji, Kyoto 611-0011 Japan; fax: 81-774-32-3093; email: radconf@civil.ac; Web: www.fishawr.civil.ac

RECENT PUBLICATIONS

Books

Diaz, H.F. and V. Markgraf (Eds.), 2001: **El Niño and the Southern Oscillation: Multiscale Variability and Global and Regional Impacts**. Cambridge University Press, 40 W. 20th St., New York, NY 10011-4211; fax: 914-937-4712; web: www.us.cambridge.org

Markgraf, V. (Ed.), 2000: **Inter-hemispheric Climate Linkages**. Academic Press, Inc., Order Fulfillment Department, 6277 Sea Harbor Dr., Orlando, FL 32887 USA; tel: 1-407-345-3800; fax: 1-407-345-4060.

Reports

Changnon, S.A., S.D. Hilberg, and K.E. Kunkel, 2000: **El Niño 1997-1998 in the Midwest**. Illinois State Water Survey, 2204 Griffith Dr., Champaign, IL 61820-7495; fx: 1-217-333-4983; web: www.sws.uiuc.edu/pubs

Olson, R.S. et al., 2000: **The Marginalization of Disaster Response Institutions: The 1997-98 El Niño Experience in Peru, Bolivia, and Ecuador**. Natural Hazards Research and Applications Information Center, University of Colorado, SP No. 36. In

English at www.Colorado.edu/hazards
and Spanish at www.crid.or.cr

Parks, J.E. and N. Salafsky (Eds.),
2001: **Fish for the Future? A
Collaborative Test of Locally
Managed Marine Areas as a
Biodiversity Conservation and
Fisheries Management Tool in the
Indo-Pacific Region: Report on the
Initiation of a Learning Portfolio.**
World Resources Institute, Biological
Resources Program, 10 G St. NE,
Washington, DC 20002; tel: 1-202-729-
7600; fx: 1-202-729-7651. Available on
line as PDF file: www.FOSonline.org

Vos, R., Velasco, M., and E. de
Labastida, 2000: **Economic and Social
Effects of El Niño in Ecuador.**
Washington, DC: Inter-American
Development Bank. Available in PDF
format at [www.iadb.org/sds/
doc/POV%2D107.pdf](http://www.iadb.org/sds/doc/POV%2D107.pdf)

Westmacott, S., K. Teleki, S. Wells, and
J. West, 2000: **Management of
Bleached and Severely Damaged
Coral Reefs.** Available as PDF file:
[www.iucn.org/places/usa/literature.html#
marine](http://www.iucn.org/places/usa/literature.html#marine); or contact IUCN USA
Multilateral Office, 1630 Connecticut
Ave., 3rd floor, Washington, DC 20009
USA; tel: 1-202-387-4826; fax: 1-202-
387-4823.

Wilkinson, Clive (Ed.), 2000: **Status of
Coral Reefs of the World.** Australian
Institute of Marine Science, PMB# 3,
Townsville 4810, Australia; tel: 61-7-
4772-4314; fax: 61-7-4772-2808.
Available on line in PDF at:
[www.aims.gov.au/pages/research/coral-
bleaching/scr2000/Status_2000.pdf](http://www.aims.gov.au/pages/research/coral-bleaching/scr2000/Status_2000.pdf)

Articles

Bergman, J.W., H.H. Hendon, and K.M.
Weickmann, 2001: Intraseasonal air-sea
interactions at the onset of El Niño.
Journal of Climate, **14**(8), 1702-1719.

Boulanger, J.-P et al., 2001: Role of
non-linear oceanic processes in the
response to westerly wind events: New
implications for the 1997 El Niño onset.
Geophysical Research Letters, **28**(8),
1603-1606.

Bretherton, C.S. and D.S. Battisti, 2000:
An interpretation of the results from
atmospheric general circulation models
forced by the time history of the
observed sea surface temperature
distribution. *Geophysical Research
Letters*, **27**(6), 767-770.

Chang, C.-P. and T. Li, 2000: A theory
for the tropospheric biennial oscillation.
Journal of Atmospheric Science, **57**,
2209-2224.

Chipanshi, A.C. and S. Ringrose, 2001:
Reflections on the 1997-98 El Niño
phenomenon in Botswana. *Weather*,
56(1), 11-24.

Chung, C. and S. Nigam, 1999: Asian
summer monsoon-ENSO feedback on
the Cane-Zebiak model ENSO. *Journal
of Climate*, **12**, 2787-2807.

Clarke, A.J. and L. Shu, 2000: Quasi-
biennial winds in the far western
equatorial Pacific phase-locking El Niño
to the seasonal cycle. *Geophysical
Research Letters*, **27**(5), 771-774.

Dai, A.G. and T.M.L. Wigley, 2000:
Global patterns of ENSO-induced
precipitation. *Geophysical Research
Letters*, **27**(9), 1283-1286.

Eissler, Y. and R.A. Quinones, 1999:
Microplanktonic respiration off northern
Chile during El Niño 1997-98. *Journal of
Plankton Research*, **21**(12), 2263-2283.

Enfield, D.B. and A.M. Mestas-Nuñez,
2001: Interannual-to-multidecadal
climate variability and its relationship to
global sea surface temperatures. In: V.

- Markgraf (Ed.), *Interhemispheric Climate Linkages*. San Diego, CA: Academic Press, Inc., 17-29.
- Enfield, D.B. and A.M. Mestas-Nuñez, 2000: Global modes of ENSO and non-ENSO SST variability and their associations with climate. In: H.F. Diaz and V. Markgraf (Eds.), *El Niño and the Southern Oscillation: Multiscale Variability and Global and Regional Impacts*. Cambridge UP, 89-112.
- Filonov, A. and I. Tereschenko, 2000: El Niño 1997-98 monitoring in mixed layer at the Pacific Ocean near Mexico's West Coast. *Geophysical Research Letters*, **27**(5), 705-707.
- Goswami, B.N. and V. Jayavelu, 2001: On possible impact of the Indian summer monsoon on the ENSO. *Geophysical Research Letters*, **28**(4), 571-574.
- Grotzner, A., M. Latif, and D. Dommenges, 2000: Atmospheric response to sea surface temperature anomalies during El Niño 1997-98 as simulated by ECHAM4. *Quarterly Journal of the Royal Meteorological Society*, **126**(567), 2175-2198.
- Hanna, E., 2001: Anomalous peak in Antarctic sea-ice area, winter 1998, coincident with ENSO. *Geophysical Research Letters*, **28**(8), 1595-1598.
- Harrison, D.E. and G.A. Vecchi, 2001: El Niño and La Niña – Equatorial Pacific thermocline depth and sea surface temperature anomalies, 1986-98. *Geophysical Research Letters*, **28**(6), 1051-1054.
- Higgins, W., 2000: Towards improved predictions of the US precipitation and surface air temperature. *The Climate Report*, **1**, 6-9.
- Jin, F.-F., et al., 2001: Dynamical and cloud-radiation feedbacks in El Niño and greenhouse warming. *Geophysical Research Letters*, **28**(8), 1539-1552.
- Kaplan, A., Y. Kushnir, and M. Cane, 2000: Reduced space optimal interpolation of historical marine sea level pressure: 1854-1992. *Journal of Climate*, **13**, 2987-3002.
- Kirtman, B.P. and E.K. Schneider, 2000: A spontaneously generated tropical atmospheric general circulation. *Journal of the Atmospheric Sciences*, **57**(13), 2080-2093.
- Kirtman, B.P. and J. Shukla, 2000: Influence of the Indian summer monsoon on ENSO. *Quarterly Journal of the Royal Meteorological Society*, **126**(562 Part A), 213-239.
- Lambert, S.J. and G.J. Boer, 2001: CMIP1 evaluation and intercomparison of coupled climate models. *Climate Dynamics*, **17**, 83-106.
- Mantua, N.J., 2000: How does the Pacific Decadal Oscillation impact our climate? *The Climate Report*, **1**, 10-13.
- Meehl, G.A., et al., 2001: Factors that affect amplitude of El Niño in global coupled climate models. *Climate Dynamics*, **17**, 515-526.
- Mestas-Nunez, A.M. and D.B. Enfield, 2001: Eastern equatorial Pacific SST variability: ENSO and Non-ENSO components and their climatic associations. *Journal of Climate*, **14**, 391-402.
- Rodionov, S. and R. Assel, 2001: A new look at the Pacific/North American Index. *Geophysical Research Letters*, **28**(8), 1519-1522.

- Saravanan, R. et al., 2000: Decadal variability and predictability in midlatitude ocean-atmosphere system. *Journal of Climate*, **13**(6), 1073-1097.
- Spencer, T. et al., 2000: Coral bleaching in the Southern Seychelles during the 1997-1998 Indian Ocean warming event. *Marine Pollution Bulletin*, **40**(7), 569-586.
- Strong, A.E. et al., 2000: Sea surface temperature signals from satellites – an update. *Geophysical Research Letters*, **27**(11), 1667-1670.
- Susanto, R.D., A.L. Gordon, and Q. Zheng, 2001: Upwelling along the coasts of Java and Sumatra and its relation to ENSO. *Geophysical Research Letters*, **28**(8), 1599-1602.
- Tian, B., G.J. Zhang, and V. Ramanathan, 2001: Heat balance in the Pacific warm pool atmosphere during TOGA COARE and CEPEX. *Journal of Climate*, **14**(8), 1881-1893.
- Trenberth, K.E. et al., 2001: Quality of reanalysis in the Tropics. *Journal of Climate*, **14**(7), 1499-1510.
- Trenberth, K.E. and J.M. Caron, 2000: The Southern Oscillation revisited: Sea level pressures, surface temperatures, and precipitation. *Journal of Climate*, **13**, 4358-4365.
- Ueda, H. and J. Matsumoto, 2000: A possible triggering process of east-west asymmetric anomalies over the Indian Ocean in relation to 1997/98 El Niño. *Journal of Meteorological Society Japan*, **78**, 803-818.
- Ulloa, O. et al., 2001: Evolution and biological effects of the 1997-98 El Niño in the upwelling ecosystem off northern Chile. *Geophysical Research Letters*, **28**(8), 1591-1594.
- Urban, F.E., J.E. Cole, and J.T. Overpeck, 2000: Influence of mean climate change on climate variability from a 155-year tropical Pacific coral record. *Nature*, **407**, 989-993.
- Villaba, R. et al., 2000: Decadal-scale climatic variability along the extra-tropical western coast of the Americas: Evidence from tree-ring records. In: V. Markgraf (Ed.), *Interhemispheric Climate Linkages*. San Diego, CA: Academic Press, Inc., 155-172.
- Wang, C., 2001: A unified oscillator model for the El Niño-Southern Oscillation. *Journal of Climate*, **14**, 98-115.
- Wang, C., 2000: On the atmospheric responses to tropical Pacific heating during the mature phase of El Niño. *Journal of Atmospheric Science*, **57**, 3767-3781.
- Wang, C. and D.B. Enfield, 2001: The tropical Western hemisphere warm pool. *Geophysical Research Letters*, **28**(8), 1635-1638.
- Wang, C. and R.H. Weisberg, 2000: The 1997-98 El Niño evolution relative to previous El Niño events. *Journal of Climate*, **13**, 448-501.
- Wigley, T.M.L., 2000: ENSO, volcanoes and record-breaking temperatures. *Geophysical Research Letters*, **27**(24), 4101-4104.

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This site features the careers of remarkable women in oceanography. Learn how these women are contributing to our understanding of the ocean.

www.reefrelief.org/ReefLine/Newsletter/rlframe2.html

The quarterly official newsletter of Reef Relief's is now on line in both PDF and html. Back issues are also archived.

psbsgi1.nesdis.noaa.gov:8080/PSB/EPS/SST/climohot.html

NOAA/NESDIS has created a Web site for SST Anomaly Coral Bleaching Hot Spots around the world.

www.wri.org/marine/reefrisk.html

The World Resources Institute has a Web site for its "Reefs at Risk" project to raise awareness and improving decision making processes in Southeast Asia.

www.coaps.fsu.edu/lib/biblio/enso-bib-intro.html

The Center for Ocean-Atmosphere Prediction Studies (COAPS) has a searchable comprehensive bibliography on El Niño here.

www.ssec.wisc.edu/visitview/

VISIT (Virtual Institute for Satellite Integration Training) has developed a real-time collaboration tool developed to meet the needs of science training of the National Weather Service's forecasters.

www.bbc.co.uk/weather/weatherwise/

The BBC's Weather Centre Web site is updated and has developed extensive Fact Files and Weatherwise pages.

www.nhc.noaa.gov/HAW/

NOAA has proposed designating the third week in May as Hurricane Awareness Week and has unveiled a new Web site on hurricane education and safety.

THE ENSO SIGNAL

The El Niño-Southern Oscillation (ENSO) Signal will be published four times a year by the Environmental and Societal Impacts Group at the National Center for Atmospheric Research, with financial support from the National Oceanic and Atmospheric Administration's Office of Global Programs. It is available both in hard copy and an electronic version.

The *ENSO Signal* is intended for those interested in the ENSO cycle and its impacts on ecosystems and societies. We intend to provide news items, publications, web sites, and articles of interest to our readers. Please give any feedback about the Signal to the Managing Editor. It is published quarterly free of charge. Subscribe on line or at the address below. For the next issue, please send any materials for inclusion by **30 July 2001**.

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