



Issue #18

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Editorial

***Climate-Related Flashpoints:
A Useful Notion for Early Warning?***

Search on the Internet for the word "flashpoints" and you will come up with scores of Web sites that use the term somewhere in their description. Many use it in their title, however, mainly in reference to military and political issues.

Flashpoints can be viewed as a catalyst to change, often an abrupt change that can lead to military or political conflict. Identifying potential flashpoints between or within countries in advance can be used to defuse if not avert an unstable situation. What might be sources of instability? Poverty, religious fundamentalism, ethnic rivalries, border disputes, socioeconomic inequities, aggression, greed, a fight over scarce natural resources? In reality, there are many such sources that could lead to instability in the political or economic systems of countries or regions within them. To the possible sources of instability *must* be added "climate and climate-related factors." This includes climate variability on seasonal and interannual time frames, as well as climate fluctuations across decades, climate change, and extreme climate and climate-related events. What was the role, for example, of a multiyear drought situation in North Korea in its *rapprochement* with South Korea?

Flashpoints fall under the umbrella of "early warnings." Governments everywhere like – no, love – early warning systems. Such systems give the government a warning about

impending crises that might be avoided with advance notice. The longer the lead time, the more time governments have to develop a response strategy and tactics. Close scrutiny of almost any government will likely expose early warning (or fail-safe) systems. Government ministries seem to rely only on their own list of early warning indicators. In the Sudan, for example, one can find a dozen or so early warning systems related to food insecurity and famine.

El Niño and La Niña events are known to spawn climate and climate-related hazards in some locations around the globe. El Niño-related forest fires and the resulting smoke and haze in Southeast Asia added to existing political pressures on the Indonesian government and indirectly to cultural instability throughout the country. Might an El Niño-related drought at the end of 2001 serve to destabilize the present-day government of Zimbabwe, a government that has already shown signs of increasing political instability as its president seeks yet another term in office? To what extent might drought-induced migration from Afghanistan to Pakistan become a political flashpoint to the relationship between these countries or to the Indo-Pakistani conflict in Kashmir?

The question here is whether any of the numerous aspects of climate might be used to identify in advance potential instability to a government, economy, or culture. I myself am not yet sure, but it is worth considering.

--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 **31 October 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

Near-normal conditions prevailed across the tropical Pacific during June 2001, as sea surface temperature (SST) anomalies were near zero and the low-level easterly (westward-flowing) winds were near normal over the central and western equatorial Pacific. Since February 2001, SST anomalies have steadily increased in the central equatorial Pacific Niño4 region, rising to their highest levels since the 1997–98 El Niño. In early July, equatorial SST anomalies of 0.5°C were observed in many areas between 160°E and 130°W. Over the past two years, there has been a gradual expansion of the area of positive equatorial subsurface temperature anomalies into the central Pacific and a gradual decrease in the

strength and areal extent of the negative subsurface temperature anomalies in the eastern Pacific. Near-normal conditions are likely to continue in the tropical Pacific during the remainder of the Northern Hemisphere summer, which is consistent with most coupled model and statistical model predictions. Most predictions indicate slightly warmer than normal conditions during late 2001 and early 2002. No ENSO advisory has been issued. Forecasts for the evolution of El Niño/La Niña appear on the *Forecast Forum* at www.cpc.noaa.gov/products/analysis_monitoring/bulletin/forecast.html. This ENSO diagnostics discussion, which replaces the ENSO Advisories, appears regularly around the 10th of each month on the CPC Web site.

ARCTIC OSCILLATION

The Arctic Oscillation refers to opposing atmospheric pressure patterns in northern middle and high latitudes. During the twentieth century, the Arctic Oscillation alternated between its positive and negative phases; however, in the 1970s it began a trend toward its positive phase, causing lower-than-normal Arctic air pressure and higher-than-normal temperatures in much of the United States and northern Eurasia. The Arctic Oscillation is also called the Annular Mode. In an article in the 6 July issue of *Science*, researchers David Thompson and Mike Wallace reported finding a strong correlation between the Arctic Oscillation's negative phase and near-record cold days over a broad region of the Northern Hemisphere. A greater frequency of high winds over northern Europe and the Pacific Northwest correspond to its positive phase.

Thompson, D.W.J., and J.M. Wallace, 2001: Regional climate impacts of the Northern Hemisphere Annular Mode. *Science*, **293**, 85–89.

KELVIN WAVE HEADS TOWARD SOUTH AMERICA

The TOPEX/Poseidon satellite, managed by the US Jet Propulsion Laboratory (JPL), shows an equatorial, eastward-traveling Kelvin wave (a bulge of warm water) headed toward South America at about 150°W. When this wave arrives at the west coast of South America (late July 2001), a modest warming of the eastern Pacific should occur. Kelvin waves are often seen before an El Niño develops and are triggered by westerly wind bursts in the western Pacific. The TOPEX/Poseidon data were taken during a ten-day collection cycle ending 11 June 2001. They show that the near-equatorial ocean has slowly warmed in the past year. The satellite image is available at www.jpl.nasa.gov/images/earth/pacificocean and shows that the Pacific basin continues to be dominated by the persistent Pacific Decadal Oscillation (PDO). More information on TOPEX/Poseidon is available at topex-www.jpl.nasa.gov

ENSO FORECASTING IN THE USA

It is apparent that El Niño and La Niña events can have an effect on the average surface winter temperature and snowfall over North America. Two recent papers examine the regional changes in winter temperature and snowfall distributions over North America in association with ENSO events. Cathy Smith and Prashant Sardeshmukh examined December through February daily surface air temperatures 1958–1998 and found that El Niño winters tend to have smaller-than-normal temperature fluctuations over most of North America. La Niña winters had larger fluctuations with a less pronounced effect. Shawn Smith and James O'Brien compared shifts in

regional snowfall distributions to ENSO winter climate studies. They identified geographic regions with internally similar ENSO warm, cold, and neutral phase snowfall distributions using a composite technique. Both studies aim to improve mitigation strategies for those adversely impacted by ENSO extreme events.

Smith, C., and P. Sardeshmukh, 2000: The effect of ENSO on the intraseasonal variance of surface temperature in winter. *International Journal of Climatology*, **20**, 1543–1557.

Smith, S.R., and J.J. O'Brien, 2001: Regional snowfall distributions associated with ENSO: Implications for seasonal forecasting. *Bulletin of the American Meteorological Society*, **82**, 1179–1192.

GPOS AND PALEOARCHIVES

Keith Alverson, Executive Director of the International Project Office at PAGES (Past Global Changes) of the IGBP (International Geosphere-Biosphere Programme) is leading a call for scientists, funding agencies, and institutional partners to establish a coordinated international Global Paleoclimate Observing System (GPOS) to complement the Global Climate, Terrestrial, and Ocean Observing Systems (GCOS, GTOS, and GOOS) that focus on contemporary observations. Some of the most valuable paleoclimate archives are being rapidly destroyed as a result of human influences, such as the rapid retreat of alpine glaciers in the tropics and temperate latitudes. Ice cores from such glaciers have been used to reconstruct temperature, precipitation, and atmospheric dust levels and provide records of changes in monsoon and ENSO events. Paleoarchives provide

information about past variability of the climate system. For more information, contact Keith Alverson at the PAGES International Project Office, Bärenplatz 2, Bern, CH-3011, Switzerland; tel: 41-31-312-3133; fax: 41-31-312-3168; Web www.pages-igbp.org/ or email alverson@pages.unibe.ch



GUEST EDITORIAL

Opportunities Emerging from the Climatic Change Associated with the Impacts of El Niño

We Peruvians, in both society and the scientific community, have always viewed the appearance of El Niño with an almost-sure negative impact on the country's economy and society. Since Pre-Columbian times, the heavy rainfall along the usually desert coastline has, for the most part, caused permanent damage to the local economies. It also contributes to the idea that sustainable development cannot be achieved in the area, because the sudden deluge resulting from torrential rainfall takes with it whatever progress may have been accomplished since the previous episode.

Yet, it appears that this scenario may not be the case in the future for the Piura Valley, if we pay close attention to regional climatic changes associated with global warming and a hypothesized greater frequency of El Niño events in future decades. During the last fifty years or so, major climatic changes have been noted in the Piura Valley, which lies almost parallel to the equator at 5°S. This area is considered by many Peruvians to be "ground zero" for El Niño. These changes are having tremendous impacts in the Sechura Desert. The desert is giving way to dry

equatorial forest because of measurable changes in humidity. What is going on? As far as I have been able to interpret from the climatological data and with the assistance of Peruvian researchers, the wind patterns have altered in the past decade to give the Piura Valley a very healthy rainy season in both El Niño and La Niña years. As a result, the volume of water from the Andean foothills produces increased pastureland, which in turn produces a favorable environment for cattle production in an area which is traditionally interrupted by severe droughts in neutral and La Niña years.

Data available from 1926 support the notion that the dry equatorial forest has been descending from higher elevations, confining the Sechura Desert to an ever-shrinking area on the coastline. That also correlates with the 1997–98 El Niño event, when the rain in the higher coastal elevations surpassed that of the 1982–83 El Niño event. The opposite effect occurred at sea level.

For the first time, these considerations are being taken into account by both the national and regional governments and economic communities. This is partly because of media attention to weather and climate events since the 1997–98 El Niño. This increased attention is brought to Peru by Satel, which is an acronym that translates from Spanish to "El Niño Early Warning System." It is run by America Television, currently the largest network in Peruvian television.

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CALL FOR PAPERS

CLIVAR (Climate Variability) *Exchanges* is requesting the submission of papers

for its next two issues. The next issue will appear in September 2001 and is dedicated to climate change prediction, detection, and attribution. Deadline for this issue is **5 August 2001**. The last issue of 2001 will be dedicated to climate research in the Southern Ocean area. CLIVAR's focus on Southern Ocean Climate Variability will soon be organized through a Southern Ocean Implementation Panel. Thus, scientific input for this part of the CLIVAR program will stimulate the development of a strong Southern Ocean component within CLIVAR. Deadline for this issue is **5 November 2001**. Guidelines for the submission of papers for CLIVAR *Exchanges* is at www.clivar.org/publications/exchanges/guidel.htm

SPEAKING OF CLIVAR...

CLIVAR has implemented the SPRINT (Searchable Program Information Network) database to give an overview of the status of the implementation of CLIVAR's major projects and national programs, with objectives, timelines, contacts, Web sites, and data information. This project has just begun and welcomes input about new projects. For more information, see the Web site at clivar-search.cms.udel.edu/projects/



SEADAS

SeaDAS (SeaWiFS Data Analysis System) is a comprehensive image analysis package for the processing, display, analysis, and quality control of

all SeaWiFs (Sea-viewing Wide Field-of-view Sensor) data products, including meteorological and ozone data. The SeaDAS package is available via anonymous FTP at seadas.gsfc.nasa.gov free of charge. SeaDAS is a stand-alone package meant for individuals or groups who would like to generate and/or analyze SeaWiFS data. SeaDAS is more general than the SeaWiFS data processing system and provides an interface to allow the user control of the input parameters of the processing programs. For more information, see the SeaDAS Web page at seadas.gsfc.nasa.gov or for more information about SeaWiFS, see the site at seawifs.gsfc.nasa.gov/SEAWIFS.html

PACIFIC CORAL CONFIRMS CLIMATE CHANGES IN THREE OCEANS

Coral extracted from a remote central Pacific island (Palmyra) has helped scientists at Scripps Institution of Oceanography (SIO) to construct a new record of climate conditions during the twentieth century. The record, which allowed the researchers to trace sea surface conditions over a 112-year period, may hold implications for long-range climate forecasting and predictability due to the central tropical Pacific's key influence on climate conditions around the world. The new coral record shows that a 12- to 13-year cyclical pattern of temperatures emerges in the Pacific that is related to similar patterns in the Atlantic and Indian Oceans. The coral record also revealed a rapid warming in the tropical Pacific over the last 30 years. The researchers are in the process of extending the coral-based climate record from Palmyra beyond the 112-year period. A paper based on the previous research appeared in *Geophysical Research Letters*:

Cobb, K.M., C.D. Charles, and D.E. Hunter, 2001: A central tropical Pacific coral demonstrates Pacific, Indian, and Atlantic decadal climate connections. *Geophysical Research Letters*, **28**(11), 2209–2212.

ARCTIC CLIMATE IMPACT ASSESSMENT (ACIA)

ACIA is an international project organized under the auspices of the Arctic Council to evaluate and synthesize knowledge on climate variability, climate change, and increased ultraviolet radiation and their consequences. The goal of ACIA is to provide useful and reliable information to the governments, organizations and peoples of the Arctic on policy options to meet these changes. The process will be open and transparent, and the degree of uncertainty of the conclusions will be made clear. Three major volumes will be completed by 2004: a peer-reviewed scientific volume, a synthesis document summarizing results, and a policy document providing recommendations for coping and adaptation measures. The document preparation will be guided by an Assessment Steering Committee (ASC). For more information, contact Gunter Weller, Executive Director, ACIA Secretariat, Cooperative Institute for Arctic Research, University of Alaska, PO Box 747740, Fairbanks, AK 99775-7740; tel: 1-907-474-7371; email gunter@gi.alaska.edu; Web www.acia.uaf.edu

WAVES2005 REQUEST FOR PROPOSALS

The Organizing Committee of WAVES 2005 is entertaining proposals for hosting WAVES2005 (The Fifth International Symposium of Ocean Wave Measurement and Analysis) at a

location outside the United States. The 4 previous conferences have been held within the US, and the Organizing Committee is soliciting locations and dates, the names of the organizing committee, including mail and email addresses, and the level of assistance that the local organizing committee will commit to provide. This must include at the least all coordination and planning, including financial, activities. Oversight will be provided to ensure the quality of the conference series. Proposals should be sent electronically to Mike Hemsley at mike.hemsley@noaa.gov or b-edge@tamu.edu by **15 August 2001**.



IMAGES

In its fifth year, the IMAGES program (International Marine Global Change Study) now includes 24 countries. The IMAGES Office relocated last year to Kiel University in Germany. The program was initiated to respond to the challenge of understanding the mechanisms and consequences of climatic changes at time scales of decades to millennia using oceanic sedimentary records. IMAGES plans cruises to retrieve sediment cores and supports workshops and symposia. See the Web site at www.images-pages.org for more information or write to Anne Holbourn, IMAGES Office, Kiel, Germany, email ah@gpi.uni-kiel.de

FLAGSHIP PROJECT: EXTREME WEATHER IMPACTS

Canada has seen recent increases in human and economic costs due to weather-related disasters and the devastating January 1998 Ice Storm (which some attribute to El Niño). Research efforts of Environment

Canada's Adaptation and Impacts Research Group (AIRG) are focused on understanding the impacts of weather, extreme weather events, air quality, and related environmental impacts in Canada. AIRG recently renewed a five-year agreement to support a cooperative research project with the University of Toronto until June 2005. This new flagship project deals with adaptation to weather extremes in an urban environment. For more information, see the AIRG/UofT Web site at www.utoronto.ca/env/ies/airg.htm or contact Roger B. Street, Director, AIRG, Institute for Environmental Studies, 33 Willcocks St., Suite 1016 University of Toronto, Toronto, Ontario Canada, M5S 3E8, tel: 416-739-4271; email roger.street@ec.gc.ca



PACIFIC CURRENTS ON LINE

Pacific Currents On-Line is a monthly update of news, information, and action items from Pacific Environment, a California-based nonprofit organization that works to protect the living environment of the Pacific Rim. It provides up-to-date coverage on environmental news in the region. For a free subscription to *Pacific Currents*, send a blank email to pacific_currents_subscribe@topica.com or write to Rory Cox, Pacific Environment, 1440 Broadway, Suite 306, Oakland, CA 94612; tel: 1-510-251-8800 Ext. 302; or Web site at www.pacificenvironment.org

MARY VOICE RETIRING

Mary Voice is retiring from the Australian Bureau of Meteorology and plans to do a little university lecturing, assist WMO in some of its activities, and "take time to smell the roses." Here's her take on an Australian poem:

The love of short-term weather
Of tomorrow's daily max
I know and partly share it
But my love was otherwise

I love a sunburnt country
Whose climate is in my veins
And to gain an understanding
Of her droughts and flooding rains

We live:
In an El Niño-hearted country
A willful probabilistic land
A challenge for seasonal forecasts
There are few who understand

The Bureau gave me wide horizons
She sent me o'er the sea
She brought me back to work here
The wide brown land for me

Though retirement holds much pleasure
Because it isn't 9 to 5
Superannuation is my treasure
As is the Lexus in my drive

I've enjoyed the years I've worked here
With millibars and stuff
But I'm just as glad to leave here
'Cause hectopascals are too tough

No more OPRs and Pls
And endless ruddy reviews
I'll leave them to my successors
From San Tropez I'll send you news!

SUMMARIES OF PAST MEETINGS

The **First International Symposium on Deep Sea Corals**, held 30 July - 2 August 2000 at Dalhousie University, Halifax, Nova Scotia focused on the natural science of the coral species and their assemblages. Topics included the biology, community ecology and biogeography of deep-sea corals; their

use in climatic reconstruction; and the assessment of human impacts. Conservation of deep-sea coral was an important theme in many of the presentations. Participants urged that conservation of deep-water corals be given a high priority at the national, regional and international levels. For additional information, contact Susan Gass, Ecology Action Centre, 1568 Argyle Street, Suite 31, Halifax, Nova Scotia, Canada B3J 2B3; email: coral@is.dal.ca; tel: 1-902-429-2202; fax: 1-902-422-6410.

The European Conference on Marine Science And Technology took place 29 August - 2 September 2000 in Hamburg, Germany. Organized by the European Commission, the meeting was attended by representatives of both the public and private sectors. The conference shared information and addressed critical issues relating to European marine research and its application. Sessions were held on a variety of issues, including: coastal zone management; the contribution of marine research to sustainable development; marine biotechnology; technology and management approaches for European Seas; industry perspectives; fisheries and aquaculture research; continental margin research; and the availability of data for marine research. More information on this meeting is available online at: www.europa.eu.int/comm/research/envsc/eurocean.html

A Pacific CLIVAR International Implementation Workshop was held 5–8 February 2001 at the International Pacific Research Center at the University of Hawaii, Honolulu, Hawaii, USA. Emphasis was placed on participation by atmospheric scientists as well as oceanographers and on engaging as many Pacific rim nations as possible. Some of the topics covered included broad-scale ocean and atmospheric sampling, regionally enhanced observations, atmospheric

and ocean data assimilation, model development, and ocean and atmosphere process studies. The workshop recommended the formation of an international Pacific sector panel to oversee and facilitate the implementation of CLIVAR, to improve and expand the availability of ENSO predictions, and to improve climate change prediction, detection and attribution. More information is available from the International CLIVAR Project Office, 256/20 Southampton Oceanography Centre, Empress Dock, Southampton SO14 3ZH, UK; tel: 44-2380 596777; fax: 44-2380 596204; email: icpo@soc.soton.ac.uk; Web site: www.clivar.org/organization/pacific/activities/workshop_2001/

The Asian Monsoon Variability on Milankovitch and Sub-Milankovitch Time Scales Symposium was held 9–11 May 2001 in Beijing, China. Paleoclimate records and modeling studies of monsoon variability at Milankovitch and sub-Milankovitch time scales were discussed in an effort to better understand linkages among oceanic, atmospheric, and terrestrial components of the monsoon system. Linkages between orbital-scale and abrupt-change variability in the monsoon record, and the physical mechanisms driving monsoon variability at these time scales were also discussed. For more information, contact S. Clemens, Geological Sciences, Box 1846, Brown University, Providence, RI 02912-1846 USA ; tel 1-401-863-1964; fax: 1-401-863-2058; email: Steven_Clemens@Brown.edu

Oceans III Millennium: Oceanology and Human Development between the Coastline and the Continental Margin was held 24-27 April 2001 in Pontevedra, Spain. Scientists and technologists gathered to work on four thematic areas: coastal processes, human impact on the coastal strip, marine technologies, and coastal

policies and integrated management. Some of the topics covered included interactions between continents and oceans, interactions between the atmosphere and oceans, the ocean and climatic and environmental changes, and capturing, processing and transmitting data. For more information, contact viajes iberia congresos, C/ San Bernardo, 20, 28015 Madrid. Spain; tel: 34-91-5319449; fax: 34-91-5324543; email: congresos.madrid@viajesiberia.com; Web site: www.fomar.org/

Second Symposium on Marine Conservation Biology was held 21–26 June 2001 in San Francisco, California, USA. The symposium included the participation of more than 400 scientists, marine resource managers, policy specialists, NGO representatives, and others marine conservation advocates. The symposium was an international forum for researchers and students in natural and social sciences, marine resource managers and others interested in the science of protecting, restoring and sustainably using biodiversity in the world's estuaries, coastal waters, enclosed seas and open oceans. For additional information, contact MCBI, 15806 NE 47th Court, Redmond, WA 98052; tel: 1-425-883-8914; fax: 1-425-883-3017; email: assistant@mcbi.org; Web site: www.mcbi.org/

ANNOUNCEMENTS OF UPCOMING MEETINGS

The **14th Australia New Zealand Climate Forum** will be held 18–21 September 2001, in Darwin, Australia. The forum is a platform for researchers in climate science and users of strategic climate information to review the latest research and applications of climate science, with a special reference to the Australia–New Zealand region. This year the forum will

focus on developments in the study of tropical climate. The forum will discuss various management and education issues with a common theme of weather and climate. Participation is not limited to Australians and New Zealanders. Input on relevant work from elsewhere in the Indian and Pacific Ocean regions would be particularly welcome. For more information, contact or write to ANZ Climate Forum, Bureau of Meteorology, PO Box 40050, Casuarina, NT, 0811; fax: 08-8920-3832 (within Australia), 618-8920-3832 (overseas); email: anz2001@bom.gov.au, Web site: www.bom.gov.au/weather/nt/inside/anzcf_2001/

The **Fifth International Conference on Computer Modeling of Seas and Coastal Regions** will take place 19–21 September 2001 in Rhodes, Greece. The meeting aims to provide a forum for the dissemination and exchange of information on seas and coastal regions and their relationship to environmental problems. Coastal Engineering 2001 will address the computer modeling of seas and coastal regions under normal and extreme conditions, emphasizing the practical applications currently being carried out around the world. Discussions on environmental problems of coastal areas, coastal protection, and remediation are also planned. The meeting is of interest to scientists, engineers, and other technologists actively involved in the coastal engineering field. For more information, contact the Conference Secretariat, Coastal Engineering 2001, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, SO40 7AA; tel: 44-2380-293223; fax: 44-2380-292853; email: gcossutta@wessex.ac.uk Web site: www.wessex.ac.uk/conferences/2001/coastal01/

The **48th Annual Eastern Pacific Oceanic Conference (EPOC) 2001** will be held *23–26 September 2001* at the Stanford Sierra Camp, Fallen Leaf Lake, California, USA. EPOC is a multidisciplinary meeting concerning research results from the eastern Pacific Ocean, including the equatorial region. EPOC provides an opportunity for scientists to meet and discuss scientific issues in a rural setting with few distractions. For more information, contact Ed Dever, Meeting Chairperson, Center for Coastal Studies, Scripps Institution of Oceanography, 9500 Gilman Drive, La Jolla, CA 92093-0209; tel: 1-858-534-8091; fax: 1-858-534-0300; email: dever@coast.ucsd.edu; Web site: ccs.ucsd.edu/~dever/epoc2001/

The **Conference on Responsible Fisheries In The Marine Ecosystem** will be held *1–4 October 2001* in Reykjavik, Iceland. Sponsored by the FAO and the governments of Iceland and Norway, the conference will focus on gathering and reviewing the best available knowledge on marine ecosystem issues; identifying means by which ecosystem considerations can be included in fisheries management; and identifying future challenges and relevant strategies. For more information, contact Grimur Valdimarsson at fax: 354-585-4390; email: grimur.valdimarsson@fao.org; Web site: www.refisheries2001.org/

The **11th Conference on Satellite Meteorology & Oceanography** will be held *15–18 October 2001* in Madison, Wisconsin, USA. Organized by the American Meteorological Society (AMS), some of the conference's sessions will include environmental applications, climatology and long-term satellite studies, operational applications, radiances, clouds, and retrievals, new technology and methods, and future activities. To register, contact the AMS, Satellite Registration, 45 Beacon St.,

Boston, MA 02108; tel: 1-617-227-2426 ext. 228; fax: 1-617-742-8718; Web site: www.ametsoc.org/AMS/

2001: An Ocean Odyssey will be held *21–26 October 2001* in Mar del Plata, Argentina. Individual symposia will be based on different marine environments. The committee aims to have representatives from a wide spectrum of disciplines that study specific environments and to encourage papers to address interdisciplinary research. The scientific program will include ocean processes in models, South Pacific circulation and links with the Indian and Southern Oceans, south Atlantic links with the Pacific and Indian Oceans, decadal variability and predictability, and the role of oceans in climate variability. For more information, contact the 2001 Ocean Secretariat, Instituto Argentino de Oceanografía, CC 804, 8000 Bahía Blanca, Argentina; tel: 54-291-486-1112/1519; fax: 54-291-486-1527; email: odyssey@criba.edu.ar; Web site: www.retina.ar/2001_ocean/

The **NOAA 26th Annual Climate Diagnostics and Prediction Workshop** will be held *22–26 October 2001* at the Scripps Institution of Oceanography of La Jolla, California, USA. The workshop will provide an opportunity to exchange information, ideas, and opinions on a wide variety of topics, including the 2000–2001 climate, assessment of climate predictions in 2000–2001, precipitation forecasting in complicated terrain, drought/water monitoring in the Western US, monsoons, diagnosis and prediction of intra-seasonal oscillations, diagnosis and prediction of decadal variations, and global, regional, and local ocean-land-atmosphere interactions. For more information, contact the Climate Prediction Center, World Weather Bldg., 5200 Auth Rd., Camp Springs, MD 20746. Or contact Ed O'Lenic, W/NP51, Room 604, WWB, 5200 Auth Rd., Camp Springs, MD 20746; tel: 301-763-8000

ext. 7528; email cdwshop@ncep.noaa.gov; Web site: www.cpc.ncep.noaa.gov/products/outreach/meetings.html

The Fourth Conference on Coastal Atmospheric and Oceanographic Prediction and Processes will be held 6–9 November 2001 in St. Petersburg, Florida, USA. Topics will include estuarine and coastal ocean forecasting, utilization and acquisition of observations in the coastal zone, ocean processes, ocean modeling, atmospheric processes and atmospheric modeling. For more information, contact the AMS meeting department, Coastal Registration, 45 Beacon St., Boston, MA 02108; tel: 1-617-227-2426 ext. 228; fax: 1-617-742-8718; Web site: www.ametsoc.org/AMS

Oceans and Coasts at Rio +10: Assessing Progress, Addressing Continuing and New Challenges will be held 3–7 December 2001 in Paris, France. Sponsored by UNESCO, this global conference will consider the status of oceans and coasts ten years following the 1992 UN Conference on Environment and Development (UNCED). The main goals are to provide an assessment of progress achieved in all aspects of the post-UNCED oceans and coastal agendas; to identify continuing or persistent challenges that need to be addressed with renewed commitment; to identify new challenges; to examine cross-cutting issues among various ocean and coastal sectors; and to consider options for concerted action on outstanding cross-sectoral issues. For information, contact Patricio Bernal, IOC, 1 rue Miollis, 75732 Paris Cedex 15, France; tel: 331-45-683938; fax: 331-45-685810; email: p.bernal@unesco.org or Biliana Cicin-Sain, University of Delaware, 301 Robinson Hall, Newark, DE 10716; tel: 1-831-8086; email: bcsc@udel.edu. Web site: ioc.unesco.org/iocweb/news/items2000/item022.htm

The 3rd Oceanology International Pacific Rim Conference will be held 4–6 December 2001 in Singapore. The meeting will provide an opportunity for scientists, governments, NGOs and industry to share views and information and to shape the future course of marine research and development for the region. Topics include oceanography and environment, information systems, coastal marine resource management, and coastal oceanography and marine information systems. For more information, contact Angela Pederzoli, Project Executive, tel: 44-20-8949 9839; fax: 44-20-8949 8186/8193; email angela.pederzoli@spearhead.co.uk; Web site: www.oipacificrim.com/default.htm

RECENT PUBLICATIONS

Books

Fu, L.L. and A. Cazenave, 2001: **Satellite Altimetry and Earth Sciences: A Handbook of Techniques and Applications**. London: Academic Press. Web: customerservice.apnet.com

Sayre, A.P., 2000: **El Niño and La Niña: Weather in the Headlines**. Twenty-First Century Books: a division of www.millbrookpress.com/ (young adult)

Reports

Climate Prediction Center, 2001: **El Niño/Southern Oscillation (ENSO): Diagnostic Discussion**. Released the 10th of each month on line at: www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

Kirtman, B.P. et al., 2000: **Current Status of ENSO Forecast Skill: A Report to the Climate Variability and**

Predictability (CLIVAR) Numerical Experimentation Group (NEG).

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WEB RESOURCES

www.fao.org/fi/figis/index.jsp

The FAO Fisheries Global Information System (FIGIS) is a global network of integrated information on aquatic resources.

www.cics.uvic.ca/scenarios/index.cgi

The Canadian Climate Impacts and Scenarios project (CCIS) aims to provide climate scenario information and scenario construction advice to impacts researchers in Canada.

www.pangaea.de/Info/

PANGAEA is an information system aimed at archiving, publishing, and distributing data from global change research with special emphasis on geological, marine, and environmental sciences.

scrippsnews.ucsd.edu/releases2001/underwater_mouse.html

Researchers at Scripps Institution of Oceanography are taking computer technology to new heights—or depths, rather—with their new underwater computer mouse.

iri.ideo.columbia.edu/climate/cid/

The IRI *Climate Information Digest* is a monthly web publication that provides a global overview of recent climate anomalies and their societal impacts.

grads.iges.org/ellfb

An on-line experimental long-lead forecast bulletin from the Center for Ocean-Land-Atmosphere Studies.

aom.giss.nasa.gov/

This site allows you to download ocean-atmosphere models. The Atmosphere-Ocean Model is a computer program that simulates the Earth's climate in three dimensions.

www.met.rdg.ac.uk/cag/NAO/

This thematic site aims to collect useful information about the North Atlantic Oscillation phenomenon, including multiple links to related sites.

lumahai.soest.hawaii.edu/Enso/subdir/update.dir/update.html

The *Pacific ENSO Update* is a bulletin of the Pacific El Niño-Southern Oscillation (ENSO) Applications Center. The bulletin supplies information for the benefit of those involved in climate-sensitive sectors.

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.

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