Federal Hazard Mitigation Partners in the Pacific Islands (FHMPPI)

ACTIVITY REPORT – January 2004

E lauhoe mai na wa`a, pae aku i ka`aina.
If everyone paddles the canoe, the shore is reached.

! On-line registration for the 2004 FHMPPI Meeting will close on February 14th !

2004 ROUNDTABLE OF FEDERAL HAZARD MITIGATION PARTNERS IN THE PACIFIC ISLANDS

Convening a follow-up to the 2003 FHMMPI meeting within the next year was at the top of the list of items identified in the meeting's **embryonic action plan**. We are happy to announce that a 2004 FHMPPI meeting is scheduled for March 16 to 18 in Honolulu, Hawai`i.

Like last year's meeting, the 2004 FHMPPI will take the form of a series of presentations and roundtable discussions. An **agenda** is currently under development by the organizing committee. Please note that, in response to requests following the 2003 FHMPPI, the 2004 FHMPPI will be one day longer than last year's meeting**.** The meeting will be held at the Sheraton Waikiki**.**

HUI O HANA

A central element of the embryonic action plan is the concept of a regional coordinating council and *hui o hana*, or working groups (Figure 1). The *hui o hana* represent clusters of ongoing or proposed activities identified at the 2003 FHMPPI meeting.

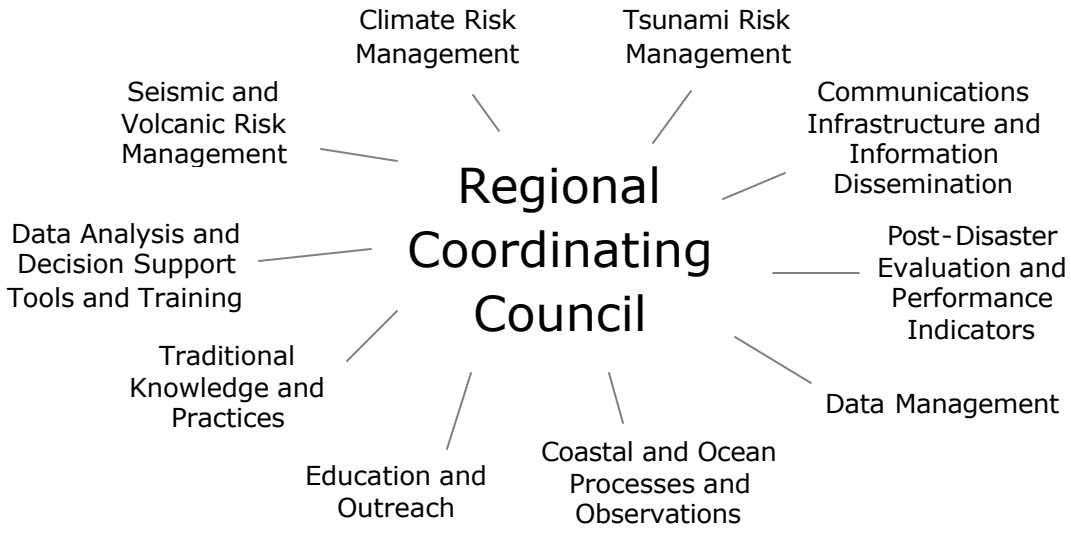

Figure 1. Conceptual Framework for Regional Communication, Coordination, and Collaboration among Federal Hazard Mitigation Partners in the Pacific Islands. A regional coordinating council composed of individuals from within the federal `*ohana*, among others, will play the lead role in supporting dialogue between the

users and providers of information. Members of the council will be drawn from several working groups, or *hui o hana*. These working groups will provide guidance to the council in its efforts to evaluate and prioritize regional hazards-related products and services needs.

Hazard mitigation-related projects and activities that have been recently completed or are about to get under way in the Pacific Islands are summarized in the context of the *hui o hana* topic areas.

- **Climate Risk Management**
- **Seismic and Volcanic Risk Management**
- **Tsunami Risk Management**
- **Coastal and Ocean Processes and Observations**
- **Data Management**
- **Data Analysis and Decision-Support Tools and Training**
- **Communications Infrastructure and Information Dissemination**
- **Post-Disaster Evaluation and Performance Indicators**
- **Education and Outreach**
- **Traditional Knowledge and Practices**

You can find **more information about the *hui o hana***, and how you and your agency, institution, or organization can join a *hui o hana*. If you have information about projects or activities in any of the areas identified above that you would like to see in next quarter's activity report, please contact John.Marra@noaa.gov.

PROJECT AND ACTIVITY SPOTLIGHT

The Federal Emergency Management Agency (FEMA) HAZUS-MH, a nationally applicable, standardized methodology and software program that contains models for estimating potential losses from earthquakes, floods, and hurricanes.

OTHER ITEMS OF NOTE IN THE PACIFIC ISLANDS

- Cristelle Pratt was selected as the new Director of the South Pacific Applied Geoscience Commission (SOPAC) at its September 2003 governing council meeting in Niue. SOPAC is an intergovernmental, regional organization based in Suva, Fiji, and dedicated to providing services to promote sustainable development. SOPAC's work focuses on providing assistance to its member countries in three key areas: resource development, environmental science, and national capacity development. Member countries are Australia, the Cook Islands, the Federated States of Micronesia, Fiji, Guam, Kiribati, the Marshall Islands, Nauru, New Zealand, Niue, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu, and Vanuatu. American Samoa, French Polynesia, and New Caledonia are associate members. More information about SOPAC can be found at www.sopac.org.fj/. Cristelle's appointment to the director's chair is effective February 1, 2004. Congratulations, Cristelle!!

- On November 28, 2003, the Maui Planning Commission approved new setback rules for the Island of Maui. The new rules rely upon a data set of historical shoreline change rates based on photogrammetric analysis of vertical aerial photographs and NOAA topographic and nautical charts extending over the period 1900 to 2002. These data were provided by

the Coastal Geology Group at the University of Hawai`i at Manoa following a three-year study funded by federal and local partners. Commission Chairwoman Star Medeiros said finally passing the long-awaited rules would be a "crowning moment" of her tenure on the planning commission. The main effect of the rules will be to base a property's shoreline setback—the open space that must be left between buildings and the public beach—on erosion rates. Currently they are based on the size of the property. The new setback is calculated as 50 times the annual erosion rate plus 20 feet or the current setback, whichever is greater. Maps of Maui erosion rates can be accessed through the Maui County Web site or through the Hawaii Coastal Imagery and Data link at www.soest.hawaii.edu/coasts/cgg_main.html.

- Please mark your calendars and plan to attend the international workshop on Gender Equality and Disaster Risk Reduction, August 10 to 12, 2004, in Honolulu, Hawai'i. The workshop is supported by U.S. AID's Office of Foreign Disaster Assistance, the U.S. Department of Agriculture, the University of Hawai`i, the East-West Center, and others. Women and men working at all levels will identify existing and needed resources, capacities, and strategies as we move toward implementation of gender-fair policies and practices in all aspects of disaster risk reduction and management. Information will soon be posted to the conference Web site at www.ssri.hawaii.edu/. Conference planners, Cheryl Anderson and Elaine Enarson, can be contacted at genderdisaster@yahoo.com.

- Hawai`i State Civil Defense has officially approved the DMA2000 hazard mitigation plans for the Counties of Hawai`i and Kauai and for the City and County of Honolulu and transmitted them to FEMA Region IX for review and approval. The County of Maui's plan is in final draft form and was reviewed by Hawai`i State Civil Defense during the last week of December. Hawai`i State Civil Defense anticipates the plan to be approved and sent to FEMA by mid-January. Hawai`i State Civil Defense also anticipates that a draft of the state plan will be completed by be end of January, leaving plenty of time for review prior to a projected date of the end of April 2004 for submittal to FEMA. For more information contact Larry Kanda, Hawai`i State Civil Defense, at lkanda@scd.hawaii.gov.

- In December 2003, Deputy Scientist-in-Charge Arnold Okamura retired after 39 years at the U.S. Geological Survey Hawaiian Volcano Observatory (HVO). Okamura has been replaced by Steve Brantley, who has worked at HVO for seven years. Also of note is the retirement of Bob Tilling and the death of Don Peterson, both former HVO scientists-in-charge.

CONTACT US

If you have any items of interest you would like to include in the next activity report, or if you have any questions or comments, please do not hesitate to contact John Marra, PSC/PSGS Coastal Hazards Specialist by e-mail at John.Marra@noaa.gov, or by phone at (808) 532-3206.

About the FHMPPI

About the NOAA Pacific Services Center

Climate Risk Management

- Pacific Islands Global Climate Observing System (PI-GCOS) Update. Since the first regional GCOS workshop was held in Apia, Samoa, in August 2000, considerable progress has been made in furthering the goals of GCOS in the region. A regional grassroots effort to develop some solid planning has resulted in an action plan for the region; this document serves as the strategic plan for GCOS and was followed up by the development of a more detailed implementation plan that delineates 31 prioritized and specific projects totaling $24 million (US) over the next five years.

  The group that developed these plans was known as the Pacific Islands Regional GCOS Implementation Team (PIRGIT). Since development of the plans, the concept of evolving the more ad hoc PIRGIT into a sustainable body to help foster GCOS in the region has been discussed. As such, in April 2003, the GCOS Steering Committee (based at the GCOS Secretariat in Geneva) endorsed the concept of a PI-GCOS Steering Committee for the region to be used as a model for other regions. The regional steering committee was established in August 2003, and will hold its first meeting in Suva, Fiji, February 4 to 6, 2004. Members of the steering committee come from Australia, the Cook Islands, Fiji, New Zealand, and the U.S, and represent climate-observing domains from the atmospheric, oceanographic, and terrestrial communities across the region.

  This first meeting in February is particularly important because the region now has a full-time PI-GCOS coordinator, Dr. Mark Morrissey, who will be located at the South Pacific Regional Environment Programme (SPREP) offices in Apia. This first meeting will give Dr. Morrissey an opportunity to develop and discuss his work plan for the 2004–2005 timeframe. The region is thrilled to have Mark on-board to help shepherd and oversee GCOS activities in the region. Mark has a long history of working with climate observing in the region and will be on leave from the University of Oklahoma for three years to get the program moving. Mark begins work on January 14, 2004. More information on PI-GCOS can be found at the new Pacific Data Portal at pi-gcos.org**.** The site is currently under construction but once fully functional, it will serve as a cornerstone for a greater Pacific Climate Information System infrastructure that is beginning to come together from various institutions around the region. These include the East-West Center in Honolulu, SPREP, the South Pacific Applied Geoscience Commission (SOPAC), the National Institute for Water and Atmospheric Research in New Zealand, the Australian Bureau of Meteorology, the various National Meteorological and Hydrological Services in the region, the Commonwealth Scientific and Industrial Research Organization in Australia, and NOAA.

  This information was provided by Howard Diamond, U.S. GCOS program manager. For further information, contact Howard at Howard.Diamond@noaa.gov**.**

- The University of the South Pacific (USP), the East-West Center (EWC), and the New Zealand National Institute of Water and Atmospheric Research (NIWA) will convene a two-week Pacific Island Training Institute on Climate and Extreme Events June 15 to 28,

2004, at the Suva campus of the University of the South Pacific. The Asia-Pacific Network for Global Change Research (APN) and NOAA are sponsoring the training institute with additional contributions from USP, EWC, and NIWA.

The overarching goal of the training institute is to enhance the regional network of scientists, forecasters, disaster management officials, and resource managers skilled in the development and use of climate information to enhance the resilience of Pacific island nations in the face of current and future patterns of climate variability and climate-related extreme events. Through an intensive, two-week program of lectures, small group sessions, and collaborative research activities, the training institute has been designed to achieve the following learning objectives:

- Increased understanding of the consequences of climate variability and change on communities, businesses, and natural resources in the Pacific islands, with a specific emphasis on climate-related extreme events such as droughts, floods, tropical cyclones, and high temperatures;
- Increased awareness of and familiarity with climate forecasting and assessment tools and information services, including forecasts of the El Niño-Southern Oscillation (ENSO) cycle;
- Enhanced understanding of current and potential applications of these tools to reduce climate vulnerability in key sectors, including disaster management, water resources, public health, agriculture, tourism, fisheries, and coastal resource management; and
- Exploration of the challenges and opportunities associated with the integration of climate information to support economic development and community planning in the Pacific.

Participation in the institute will be determined through a competitive process. Funding is available to support the participation of 20 qualified individuals from Pacific Island jurisdictions. Complete application materials must be received by the Pacific Centre for Environment and Sustainable Development (PACE-SD) at the University of the South Pacific in Suva, Fiji, by March 12, 2004, in order to be considered. Any questions related to the June 15 to 28, 2004, Pacific Island Training Institute on Climate and Extreme Events should be addressed to

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- The East-West Center has received an initial grant of $143,773 from the National Oceanic and Atmospheric Administration (NOAA) for a project entitled “Managing Climate Risks in the Pacific: A Pacific Islands Regional Integrated Sciences and Assessments (Pacific RISA) Program.” The grant authorizes total federal funding of $509,795 over the three-year life of the project. The project represents a joint commitment by NOAA’s Office of Global Programs and the East-West Center to support a sustained program of

research and dialogue designed to enable scientists, governments, business, and community leaders in Hawai`i and throughout the Pacific to reduce vulnerability to climate-related extreme events such as droughts, floods, and hurricanes.

The project represents a significant step towards the creation of a new program of climate information services designed to meet the needs of decision makers and policy officials in the U.S. flag Pacific Islands (Hawai`i, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands) and the U.S.-affiliated Pacific Islands (the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau). Understanding and effectively responding to changes in climate are critical elements of planning and economic development in Hawai`i and other Pacific Islands since these economies are dependent on climate-sensitive sectors like agriculture, tourism, and fisheries, and since the region is home to some of the world's most valuable marine resources, such as coral reefs. Coastal communities and businesses in Hawai`i and throughout the Pacific are already addressing significant impacts associated with year-to-year climate variability associated with El Niño and are consistently identified as among the most vulnerable to projected long-term changes in climate associated with the release of greenhouse gases. With the funding provided by this grant, the East-West Center will work with NOAA, the University of Hawai`i, the National Center for Atmospheric Research (in Boulder, Colorado), and a broad suite of partners throughout the region.

For more information on the Pacific RISA program, contact Eileen Shea, Climate Project Coordinator for the East-West Center, via e-mail at SheaE@EastWestCenter.org, or by phone in Honolulu, Hawai`i at (808) 944-7253.

- The NOAA National Weather Service (NWS) Regional Climate Workshop was held in Honolulu, Hawai`i, on November 12 to 14, 2003. For more information about this workshop, contact James.Weyman@noaa.gov.

- The East-West Center is undertaking a review of the initial years of operation of the Pacific ENSO Applications Center (PEAC). PEAC represents a partnership among NOAA, the University of Hawai`i, the University of Guam, and the Pacific Basin Development Council. Since its inception in 1994, PEAC has provided forecasts of year-to-year climate variability for the U.S. flag Pacific Islands (Hawai`i, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands) and the U.S-affiliated Pacific Islands (the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau); additional information about PEAC can be found at lumahai.soest.hawaii.edu/Enso. The findings and recommendations developed through the PEAC review project will help guide the future operations of PEAC and other elements of climate research, forecasting, assessment, and information services to be undertaken by NOAA and other PEAC partners.

  As part of the PEAC review, a survey is being made available to past, present, and potential users of PEAC products and services, including government officials, community leaders, businesses, climate scientists, national meteorological service

forecasters, and nongovernmental organizations throughout the Pacific. The deadline for submission of surveys is March 31, 2004.

If you have any questions about the survey or the PEAC review project, please do not hesitate to contact Eileen Shea, climate project coordinator for the East-West Center, via e-mail at SheaE@EastWestCenter.org or by phone in Honolulu, Hawai`i at (808) 944-7253.

Seismic and Volcanic Risk Management

- During fiscal year 2003, using funds from the National Tsunami Hazard Mitigation Program (NTHMP), the U.S. Geological Survey made available in real-time earthquake information where CREST stations had been deployed in Alaska, the West Coast, and Hawai`i (quake.wr.usgs.gov/waveforms/crest). The earthquake display project will provide emergency responders and agencies with seismic display software to facilitate response after an earthquake. Customized maps will be developed for California, Oregon, Washington, Alaska, Hawai`i, Puerto Rico, Guam, and the west coasts of Canada, the U.S., and Mexico.

- The Hawai`i State Earthquake Advisory Committee (HSEAC) has finished the production of informational HAZUS loss estimation brochures for earthquake scenarios in Hawai`i and Maui Counties, and will be publishing them in the next quarter. For more information, contact Brian Yanagi, Hawai`i State Civil Defense, at byanagi@scd.state.hi.us.

Tsunami Risk Management

- The National Tsunami Hazard Mitigation Program Steering Committee met on November 6 and 7, 2003, to discuss progress during the previous year and to identify projects for funding in FY 2004. The next meeting will be held May 18 to 20, 2004, in Anchorage, Alaska.

- A tsunami coordination meeting will be held March 2 to 4, 2004, in Honolulu, Hawai`i, to discuss tsunami warning operational procedures. The meeting will bring together staff from the Pacific Tsunami Warning Center, the West Coast/Alaska Tsunami Warning Centers (WC/ATWC), Warning Coordination Meteorologists from the National Weather Service Alaska, Western, and Hawai`i Regions, and state emergency managers to discuss and identify ways to better coordinate the dissemination of and response to tsunami warnings.

- FEMA and NOAA, through the NTHMP, have begun the development of tsunami-resistant design and construction guidance. The project will involve the review of relevant research and use of actual inundation mapping data and state-of-the-art technologies to develop design requirements for structures that would allow for vertical evacuations. The document will supersede FEMA's Coastal Construction Manual (FEMA-55), which does not address seismic loads for coastal structures and does not present a seismic response factor for pile-supported construction. The final guidance document is expected in FY 2005.

- During FY 2003, the National Weather Service's National Data Buoy Center took over operation and maintenance of the six-station DART (Deep-Ocean Assessment and Reporting of Tsunamis) tsunami detection buoys. On November 17, 2003, a tsunami was recorded by the DART buoy from the Mw7.7 Rat Islands, Aleutian earthquake. The data were received and analyzed in time to provide guidance to the WC/ATWC in canceling its tsunami warning for the region, and to PTWC to not upgrade Hawai`i to a tsunami-warning status.

Coastal and Ocean Processes and Observations

- The ASLO/TOS 2004 Ocean Research Conference will be held on February 15 to 20, in Honolulu, Hawai`i. This inaugural meeting, cosponsored by the American Society of Limnology and Oceanography and The Oceanography Society (ASLO/TOS), will provide a forum for researchers to highlight recent advances with an emphasis on the integration of aquatic sciences. The breadth of ocean research will be featured including engineering, industrial, public policy, and marine research. More information about the ASLO/TOS 2004 Ocean Research Conference can be found at aslo.org/honolulu2004/.

- Dr. Roger Lukas (University of Hawai`i, Manoa), Dr. Bruce Howe (University of Washington/Applied Physics Laboratory), and Dr. Emmanuel Boss (University of Massachusetts—Dartmouth) have recently been awarded a National Science Foundation grant, funded through the Sensors and Sensor Networks program. The purpose of the grant is to build a cabled, moored profiler to be installed at Station ALOHA 100 km north of Kahuku Point, O`ahu. This mooring will be cabled to a seafloor junction box that will provide power and two-way communications between shore and instruments that are incorporated in the mooring. The seafloor junction box is under construction funded by a National Science Foundation grant to Drs. Duennebier, Lukas, and Karl (all at UH). The junction box is scheduled for installation in August 2005. An abandoned fiber optic telecommunications cable will be retrieved and cut, and the junction box will be attached and lowered to the seafloor. The profiler will measure various water column properties including pressure, velocity, temperature, salinity, dissolved oxygen, and optical characteristics from the seafloor at 5,000 m to within 200 m of the surface. Fixed instrumentation will also be installed at 200 m and at the seafloor. Software will be developed to analyze signals from the mooring in near real-time and to command the profiling as appropriate. For more information about this project, contact Roger Lukas, Professor of Oceanography, University of Hawai`i, at rlukas@soest.hawaii.edu.

Data Management

- The Hawai`i Geographic Information Coordinating Council (HIGICC) is sponsoring the GIS Mapping in Asia and the Pacific (GISMAP) 2004 conference. GISMAP 2004 will be held June 7 to 9 at the Waikiki Beach Marriott Resort in Honolulu, Hawai`i. The theme for the conference is "Protecting and Strengthening Communities in the Pacific." More information can be found at www.higicc.org/gismap.asp.

- In 2003, NOAA contracted with EarthData International to collect Light Detection and Ranging (LIDAR) data for the island of Oahu. The data collection will produce a 4-meter elevation grid for the island with a vertical accuracy less than 30 centimeters. The data

will be made available to the public and can support flood plain mapping, homeland security, and other private and public projects. EarthData began data collection in October 2003. Because of weather delays and mechanical requirements of the aircraft, data collection has been postponed until spring of 2004. If you are interested in the data collection efforts, please contact Darcee Killpack, PSC Spatial Technology Coordinator, at Darcee.Killpack@noaa.gov.

- The 30th International Symposium on Remote Sensing of the Environment (ISRSE) was held in Honolulu, Hawai`i on November 10 to 14, 2003. The symposium brought together the knowledge and experience of experts in remote sensing of the environment from around the world. Specific themes featured in the technical program were hazards and disasters, global change, natural resources, and technology and infrastructure. More information on the 30th ISRSE can be found at isrse.pdc.org/.

Data Analysis and Decision-Support Tools and Training

- The Federal Emergency Management Agency (FEMA) Region IX sponsored a Basic HAZUS-MH training in Honolulu, Hawai`i, on January 5 to 7. Approximately 25 students, including local, state, and regional officials, were introduced to the earthquake, flood, and hurricane modules through presentation by GIS professionals and the model's developers. The earthquake module, with assistance from the Hawai`i State Earthquake Advisory Committee, has been customized and the databases upgraded to Level III. In contrast, the wind module, while developed for island topography in Hawai`i, has only recently been developed and has not been validated by Hawai`i users. The next service release of HAZUS-MH is thought to be in late spring 2004. For more information about the Hawai`i HAZUS-MH training, contact jamie@jamiecaplan.com. For more information about HAZUS-MH, see the Project and Activity Spotlight.

- A Hawai`i HAZUS User Group (HIHUG) kick-off meeting was held at Hawai`i State Civil Defense in Honolulu, Hawai`i, on January 8. The HIHUG is a public-private partnership made up of volunteer organizations and individuals to effectively coordinate risk management activities and involve all relevant stakeholder groups. This meeting was sponsored by FEMA Region IX, Hawai`i State Civil Defense, University of Hawai`i, and the Pacific Disaster Center. For more information about HIHUG, contact Brian Yanagi, Hawai`i State Civil Defense, at byanagi@scd.state.hi.us.

- In March FEMA Region IX is sponsoring workshops in Hawai`i on the regulatory responsibilities of the National Flood Insurance Program (NFIP) in coastal construction. Topics to be covered include methodology of developing coastal base flood elevations, construction of buildings in AE/VE zones, and construction of comfort stations in V zones and coastal AE zones. FEMA headquarters is sending staff from its underwriting department to discuss the financial details. The workshop will also cover an optional form within the Flood Insurance Rating Manual for rating V zone structures that takes into consideration construction practices beyond elevation. The form examines site and environmental considerations, building support system and design details, obstructions and enclosures, and other items pertaining to the design of the V zone building. The form requires about eight hours of an engineer's time if completed post-construction, but if a

structure is built to receive the highest points available, it is eligible for significant discounts off the cost of flood insurance. Some builders on the East Coast of the U.S. have begun to take advantage of the potential by designing structures with the higher standards and cost savings in mind and have even flown to Washington, D.C., to have drawings reviewed by the underwriting staff.

Dates and locations for the coastal construction workshops are

- Tuesday, March 9 – Honolulu
- Thursday, March 11 – Kaua`i
- Friday, March 12 – Maui
- Monday, March 15 – Kona

For more information about the Hawai`i coastal construction workshops, contact Cynthia.McKenzie@dhs.gov.

- The U.S. Agency for International Development (USAID) is requesting proposals for funding from qualified U.S. and non-U.S. nonprofit or not-for-profit nongovernmental organizations (NGOs), public international organizations (PIOs or IOs), and other qualified non-USG organizations to assist specific Pacific Island countries from 2004 to 2007 to further develop, manage, and sustain national disaster training programs and to build regional, national, and community-level disaster management plans. USAID plans to award up to $1.65 million (U.S.) to support the Disaster Training Program in the Pacific Islands for four years. See USAID Funding Opportunity Number OFDA-FY04-004.

- NOAA Coastal Services Center staff has been working on a second version of the Historical Hurricane Tracks tool. This tool was originally delivered on May 19, 2002, in conjunction with National Hurricane Awareness Week. A joint venture between the Center and the NOAA National Weather Service Tropical Prediction Center/National Hurricane Center, this tool has developed into a high-profile, widely used and referred to on-line resource that researchers, emergency preparedness officials, and the general public use to learn more about past tropical cyclones in areas located throughout the Atlantic Basin (Gulf of Mexico, Caribbean Sea, and North Atlantic Ocean). Based on myriad comments, questions, and concerns garnered from users, colleagues, fellow Center employees, and others, many improvements have been made to Version 2.0. including the following: updates to all data sets to include 2002 events; inclusion of East/Central North Pacific tropical cyclone data; expanded climatology options (e.g., search all storms for all years and/or all months for all areas; select your own region of interest); ability to download individual storm tracks, in addition to the entire record; and complete redesign of the supporting Web site. For more information, contact William Brooks with the historical hurricanes project team at William.Brooks@noaa.gov.

- The NOAA National Coastal Data Development Center (NCDDC) is working to complete a Vulnerability Assessment Extension built for Environmental Systems Research Institute's (ESRI) ArcMap 8.x environment designed to complement the vulnerability assessment process within the Coastal Risk Atlas (CRA) project. The Vulnerability Assessment Extension is comprised of the Demographic Vulnerability Assessment Tool (DVAT), which uses 2000 census data to assess ten distinct societal factors; the Multi-

Hazard Vulnerability Assessment Tool (MHVAT), which focuses on five specific storm occurrences (storm surge, wind speed, flooding, toxic release, and tornadoes) and uses data from numerous sources (National Weather Service, Army Corps of Engineers, Federal Emergency Management Agency, etc.); and a join tool, which handles the process of joining a table with a shapefile and extends the functionality of the ESRI out-of-the-box join tool by creating a new shapefile with the joined tables in a single step.

The Coastal Risk Atlas can be found online at www.ncddc.noaa.gov/cra.
For more information about the Vulnerability Assessment Extension, contact Jason Stradtner with the NOAA National Coastal Data Development Center at Jason.Stradtner@noaa.gov.

- The NOAA Pacific Services Center (PSC) continues to support the Pacific Islands Assistantship (PIA) by matching qualified applicants with hosts from the four Pacific Island coastal resource management organizations of American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and Hawai`i. New assistants are placed every two years for two-year terms. The focus of each assistant depends on the needs of the programs and partners. The previous assistants focused on integrating spatial technology tools, such as geographic information systems (GIS), remote sensing, and the Global Positioning System, into Pacific Island coastal program management. The current assistants will focus on similar needs, with greater emphasis on land-use planning and application development. The selection process for the 2004–2006 assistants has been completed and orientation training was held in Honolulu, Hawai`i, on January 12 to 16. Please contact Darcee Killpack, PSC Spatial Technology Coordinator, at Darcee.Killpack@noaa.gov, or visit www.csc.noaa.gov/cms/fellows/pacific-island.html for additional information.

- A beach safety analysis of Oahu and Maui is being conducted for the Hawai`i Life Guarding Association under a collaboration between the University of Hawai`i Coastal Geology Group and Dr. Andy Short, a coastal geologist at the University of Sydney. Dr. Short is responsible for constructing the water safety program for the lifeguards of Australia. His system of analysis yields a "Beach Safety Rating" based on a combination of wave dynamics and beach geomorphic state. The University of Hawai`i Coastal Geology Group is constructing an on-line GIS system tied to the shoreline, with over 50 separate attribute layers. Attributes include rips, surf breaks, emergency vehicle routes, medical centers, shoreline access, parking, beach usage, longshore currents, nearshore bathymetry (LIDAR), wave hazards, and beach geomorphology. The Hawai`i Coastal Imagery and Data link at www.soest.hawaii.edu/coasts/cgg_main.html will be the eventual location of the GIS database as it is constructed over the winter and spring of 2004. Oblique and vertical aerial photographs, ground level photos, LIDAR data, and other coastal data and images (and metadata) are available at the site. For further information about this project, contact Dr. Chip Fletcher, Director of the University of Hawai`i Coastal Geology Group, at fletcher@soest.hawaii.edu.

- Recognizing that natural disasters are predominantly localized issues, often with national, regional, or even global impacts, the Pacific Disaster Center (PDC) developed and

deployed the Asia Pacific Natural Hazards and Vulnerabilities Atlas located at atlas.pdc.org. The hazards atlas provides a dynamic geospatial framework through which information may be accessed and viewed over the Internet by the disaster management and humanitarian assistance communities. A principal objective of the hazards atlas is to provide decision makers with greater awareness of the risks of natural hazards in their areas of concern. The atlas will provide a venue for exploring regional and national issues related to risk and vulnerability and for assessing impacts of natural hazard events.

The hazards atlas allows decision makers to answer operational questions such as

- What hazards are likely to occur in this region, and with what frequency and intensity?
- Where are current hazard events and what are their extents?
- How many people can be affected?
- What are the potential impacts on the infrastructure and on the social and economic fabric of the region?

PDC will use the hazards atlas as a foundation for a planned collaborative project with the Asian Disaster Preparedness Center (ADPC) in Bangkok, Thailand, to develop an interactive atlas to support training and operational needs of disaster managers in Southeast Asia later this year. For more information about the PDC's Asia Pacific Natural Hazards and Vulnerabilities Atlas, contact cchiesa@pdc.org.

Communications Infrastructure and Information Dissemination

- A direct outgrowth of the 2003 Roundtable of Federal Hazard Mitigation Partners in the Pacific Islands was an effort to review the status of the Emergency Managers Weather Information Network (EMWIN) in Pacific Island countries, to introduce RANET (information technology for rural communications using radio and the Internet) concepts and methods, and to generally examine meteorological communication needs in the Pacific region. It resulted in the "Exploratory Workshop on Pacific Collection and Dissemination of Environmental and Related Information for Development of Remote Communities," which was held jointly in Honolulu, Hawai`i, July 8 to 10, 2003, by the NOAA National Weather Service Pacific Region, the NOAA Office of Global Programs' Climate Information Access Program (CIP), and the NOAA National Environmental Satellite, Data, and Information Service GCOS Secretariat. Some 42 people representing a wide cross section of agencies interested in promoting cooperation and development of remote communities in the Pacific region participated. The University of Hawai`i PEACESAT project was also a cosponsor.

  An outcome from that workshop was the formation of a Pacific Communications Development Steering Committee (PCDSC) consisting of the following individuals:

  US NOAA/NWS – Edward Young, Chairperson
  US NOAA/OGP/RANET – Kelly Sponberg
  PI-GCOS – Garry Clarke/Howard Diamond
  SPREP – Kim Nitschke

SOPAC – Atu Kaloumaira
WMO/RA V – Arona Ngari
EMWIN – Colin Schulz
UH/PEACESAT – Christina Higa/Bruce Best
RESEARCH COMMUNITY – Dr.Mark Morrissey, SPREP PI-GCOS Coordinator

Members of the PCDSC attended the 9th SPREP Regional Meteorological Services Directors Meeting (9RMSD) in Vava'u, Tonga, held from August 19 to 21, 2003. A brief presentation was made on the outcome of the Exploratory Workshop on Pacific Collection and Dissemination of Environmental and Related Information for Development of Remote Communities. The 9RMSD meeting endorsed the workshop's recommendations. A one-day EMWIN/RANET/ISCS workshop was held in Vava'u, Tonga, on August 22, 2003, which provided an opportunity to go into more depth about such communication mediums as RANET, EMWIN, and WAFS/ISCS, and to solicit input from the small Pacific Island nations on how these concepts could be implemented within their islands. The goal of these efforts is to improve Pacific Island communications by increasing access to and use of health, environment, education, and other vital information.

Several members of the PCDSC attended a meeting of the implementation-coordination meeting of the Global Telecommunications System and Information Systems and Services in the World Meteorological Organization's Region V (Southwest Pacific), held in Wellington, New Zealand, December 8 to 12, 2004. The establishment of RANET capabilities within Region V was endorsed by the meeting, as well as the need to plan to replace EMWIN systems placed throughout the region as a critical component to the timely receipt of meteorological bulletins. The meeting noted with satisfaction the plans for establishment of two-way VSAT communications by the NWS and FAA.

PCDSC Steering Committee members Colin Schulz and Garry Clarke traveled through parts of the central and western Pacific to conduct tests of the reception of RANET broadcasts in the Pacific Islands. RANET donated equipment to establish community radio stations for Yap, Wolei (already installed), Vanutau, and the Cook Islands (installed on Niue) to support national meteorological services. Other proposals for expanding partnerships, such as getting RANET content on the EMWIN re-broadcast on GOES-7, are also under development.

The PCDSC Steering Committee will meet on March 15, 2004 in Honolulu, Hawai'i. For more information about the workshop and its follow-on activities, contact Ed Young, Deputy Director of the NWS Pacific Region Headquarters, at Edward.Young@noaa.gov.

Post-Disaster Evaluation and Performance Indicators

- The NOAA Pacific Services Center, in partnership with NOAA's Office of Response and Restoration and NOAA's Coral Reef Conservation Program, is hosting an introductory training course covering the science of oil spills as well as vessel grounding damage assessment and salvage. Representatives from the U.S. Coast Guard (USCG), U.S.

Pacific Territories response and natural resource agencies, and Freely Associated States will attend. The general topics covered in this course will include but are not limited to an environmental overview of oil impacts to living resources, the physical oceanographic processes that affect pollutant movement, an overview of seafood contamination issues, spill response clean-up countermeasures and the environmental trade-offs of these actions, natural resource damage assessment following vessel groundings, and vessel salvage assessment planning and implementation. The course will be held March 8 to 11, 2004, in Guam and will be tailored to the unique environment and resources of the Pacific Islands. On March 12, immediately following the course, the Guam USCG will host an optional spill drill tabletop and field exercise for the training course participants. For more information, contact Jill.Meyer@noaa.gov.

- In a project supported by the NOAA Pacific Services Center, Gary Chock of Martin & Chock Inc. Structural Engineers has developed residential building wind-damage curves for American Samoa. This work is based on earlier work by Chock that led to the development of residential building damage curves that permit a wide variety of endemic Hawai`i and Guam building types to be evaluated as a function of peak gust windspeed and construction features. Chock's work in American Samoa involved field investigations of typical residences, interviews with building officials and inspectors, and the review of historical and current census information. The American Samoa risk relativity ratings and damage curves are recommended for use in damage assessment (loss) calculations. For more information about this work contact Gary Chock at structures@martinchock.com, or John Marra, PSC coastal hazards specialist, at John.Marra@noaa.gov.

Education and Outreach

- The U.S. Environmental Protection Agency recently released the first issue of *Beach Currents*, a periodic newsletter promoting communication among state, tribal, and local public health officials about their efforts to protect our beaches. The first edition features the experiences of Maine, Rhode Island, and Wisconsin in developing their beach monitoring programs. *Beach Currents* is available on-line at www.epa.gov/waterscience/beaches/currents/. For more information, contact Beth LeaMond at (202) 566-0444.

Traditional Knowledge and Practices

- "Seasons in Samoa," an article by Penehuro Lefale, outlines research to examine traditional knowledge of weather and climate in Samoa. The article appears in *Water & Atmosphere*, a publication of New Zealand's National Institute of Water and Atmospheric Research. You can read or download the article at www.niwa.co.nz/pubs/wa/11-2/samoa. Another article by Lefale, "Indigenous Knowledge in the Pacific," appears in *Tiempo*, at www.cru.uea.ac.uk/tiempo/floor0/recent/issue49/t49a1.htm.

- Indigenous Weather Knowledge, a Web site located at www.bom.gov.au/iwk/, documents seasonal weather calendars of indigenous peoples in Australia. The site is hosted by the Commonwealth Bureau of Meteorology.

PROJECT AND ACTIVITY SPOTLIGHT

FEMA Introduces New Software to Help Mitigate Risks from Earthquakes, Hurricane Winds, and Floods

by Deepa Srinivasan, AICP, CFM

When it comes to being prepared to face hazards, communities need straight answers to complex questions: Which buildings may be damaged and how great could the damage be? Which roads and bridges may be shut down? Which areas may be affected if utilities go down? What could be the impact on businesses and how long would they be interrupted?

HAZUS-MH, An Invaluable Tool

In answer to these questions and many others, FEMA introduces HAZUS-MH (Multi-Hazard), a GIS-based multi-hazard risk assessment and loss estimation software program. This program can be used in preparing for, responding to, estimating potential losses from, and recovering from hurricane winds, floods, and earthquakes. The program allows us to determine the economic and social consequences of a hazard event by performing three basic steps. It (1) assesses the physical hazard in a community; (2) determines the amount of damage from a specific event; and (3) calculates the economic losses and social impacts.

Although the software has been developed with public sector planners and emergency managers in mind, it can be used effectively by the private sector as well. Private entities have an interest in the capabilities of HAZUS-MH. For example: financial institutions (banks and insurance companies) to assess their exposure to disasters; academic institutions for applied research; and transportation and utility agencies to assess the functionality of their systems.

Loss estimates produced by HAZUS-MH are based on current scientific and engineering knowledge of the effects of hurricane winds, floods, and earthquakes. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing hazard mitigation plans and policies, emergency preparedness, and response and recovery planning.

How HAZUS Addresses Multi-Hazards

The MH version of HAZUS can be used by communities for various hazards, either separately or in conjunction with one another. HAZUS-MH consists of an updated earthquake module and introduces new modules for floods and hurricane wind hazards.

The HAZUS-MH Earthquake Module (updated from the 1999 version) provides estimates of damage and loss to buildings, essential facilities, transportation lifelines, utility lifelines, and population based on scenario or probabilistic earthquakes. The model addresses debris generation, fire following a disaster, casualties, and shelter requirements.

In the HAZUS-MH Flood Module, flood hazard is determined by nationwide data sets through broad analyses of possible flooding based on hydrologic information. This module allows users to characterize flooding and then estimate the expected levels of damage to buildings and infrastructure.

The HAZUS-MH Hurricane Wind Module allows users to identify hurricane winds and estimate potential damage and economic losses to residential, commercial, and industrial buildings in states along the Atlantic and Gulf of Mexico coast states and Hawai`i. This module is used to estimate direct economic loss, post-storm shelter requirements, and building and tree debris. Additional capability will be added to this module in the future versions to estimate hurricane storm surge, indirect economic losses, impacts to lifelines, and expand coverage to island territories.

HAZUS-MH will also include specific links to technological hazard models that can be used to assess manmade disasters. These models can estimate damage to people and property from dam failures and hazardous materials releases.

Recent Successes with HAZUS Modules

The HAZUS-MH Hurricane Wind Module was used to develop loss estimates based on the projected track and intensity of Hurricane Isabel (September 2003). The storm was tracked daily and the potential economic losses for North Carolina were estimated as early as a week before the hurricane made landfall. Hurricane scenarios were built based on the National Hurricane Center hurricane advisories. The exercise concluded that predicting landfall losses from a hurricane less than 3 days prior to landfall can provide valuable information to Federal, state, and local emergency managers such as a sense of magnitude of the impending event and where damages may likely be caused. This information could be used to determine the required emergency response and to begin making preparations at the state or regional level.

In order to improve their loss reduction strategy, Pasadena, California, conducted a HAZUS analysis. The results of this study indicated that the city is extremely vulnerable to seismic shaking as a result of an earthquake along any of the three active faults closest to the city. Many of the city's older buildings, including commercial, industrial, and critical facilities, are not expected to perform adequately, with a resultant high number of casualties. Based on these findings, the city adopted a policy that requires all hazardous structures to be identified and will prepare a plan for the structural retrofit of these buildings.

The HAZUS-MH software will be available soon to communities at no charge. For more information on obtaining and using HAZUS-MH, visit www.fema.gov/hazus or e-mail hazus@fema.gov. For a schedule of HAZUS_MH training, contact Ms. Lillian Virgil at (301) 447-1490 or visit www.fema.gov/hazus/tr_main.shtm for information on national training, as well as training in your area.

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