Flood Risk Management Newsletter

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Focusing on – Asset Management

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SWIMS Fast Forecasting of Hurricane Inundation for Oahu

Jane Smith, CHL

Surge and Wave Island Modeling Studies (SWIMS), a project under the Coastal Field Data Collection Program, recently delivered a fast forecasting tool for hurricane inundation for the island of Oahu in Hawaii. Island coasts and populations are extremely vulnerable to tropical storms. Pacific islands in deep water tend to have steep bathymetry slopes, very large incident storm waves, and fringing coral reefs, thus presenting different challenges to researchers.

The SWIMS fast forecasting tool employs high-resolution, high-fidelity wave and surge models to simulate hundreds of hurricanes for Oahu. The simulations are run on the ERDC High-Performance Computers and results are stored in a database of storm response. The database is then used to forecast potential waves, surge and inundation very quickly when a storm is approaching Hawaii. The hurricanes are characterized by five parameters: landfall location, angle of approach, central pressure, forward speed and radius of maximum winds (Figure 1). The range of parameters was selected based on input from the National Weather Service (NWS)/Central Pacific Hurricane Center. The fast forecasting system can produce the storm response for a deterministic assessment (defined by the five input parameters) or a probabilistic assessment based on the error cone of possible tracks and error characteristics of NWS forecasts. The probabilistic output includes still water levels, runup, and wave heights with a specified probability of exceedence, the probability that the values exceed a specified threshold. Figure 2 shows a comparison of the envelope of maximum significant wave height predicted by the high-fidelity simulation to the simple surrogate model result for the same hurricane parameters. The high-fidelity simulation requires a few thousand computational hours while the surrogate model requires only a couple of seconds for the deterministic calculation.

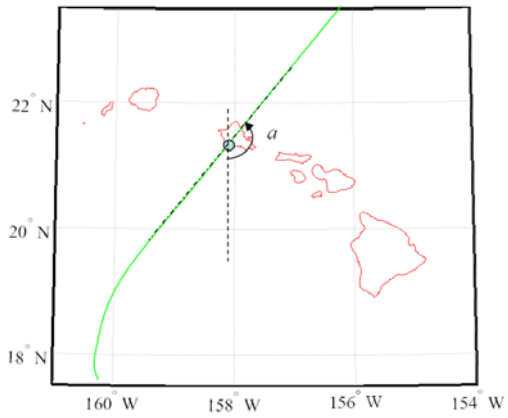


Figure 1. Track and angle specification for a hypothetical hurricane on Oahu, Hawaii

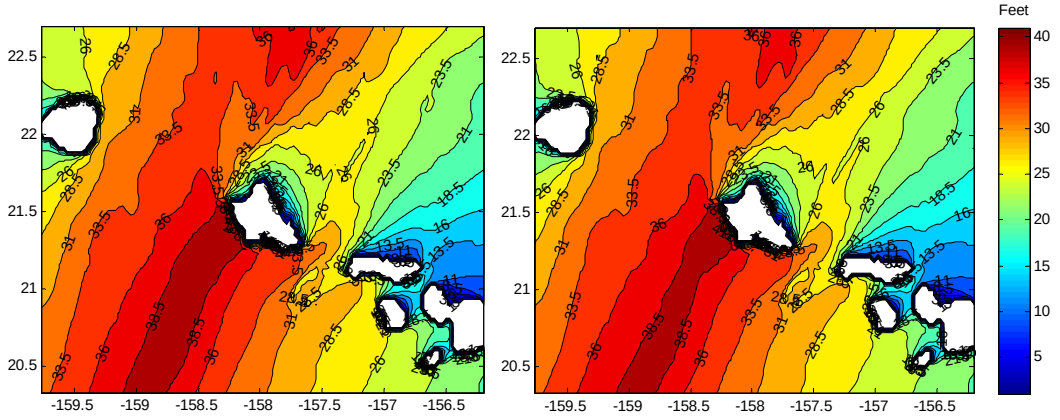


Figure 2. The left plot shows the envelope of maximum significant wave height predicted by the high-fidelity simulation. The right plot is the simple surrogate model result for the same hurricane parameters.

The fast forecasting tool presently runs in a simple graphical user interface and outputs plots as well as shape files that can be imported to emergency management Geographic Information Systems. This forecast tool is being integrated into the Mass Management System (an emergency management dashboard used by the Department of Emergency Management for the City and County of Honolulu). The fast forecast tool has also been delivered to the Pacific Disaster Center and the National Weather Service. Work continues in FY11 to expand the tool to include Kauai, the Big Island, and Maui County. More information on SWIMS is available at: http://chl.erdc.usace.army.mil/swims. POC: Jane Smith, Jane.M.Smith@usace.army.mil

Long-term wave height and storms observations at the FRF

Bill Birkemeier, CHL

The ERDC/CHL Field Research Facility (FRF) in Duck, NC now has 29+ years of high-quality continuous observations, a sufficient period to begin looking for climatic trends. Are mid-Atlantic wave heights getting bigger, are storms more frequent or intense? This article describes a preliminary examination of the FRF's wave and storm record using the wave observations collected with a Datawell® Waverider Buoy located in ~17.4 m water depth. This location is deep enough to be outside surf zone breaking, even during the most significant storm in the record (Hurricane Isabel, 2003). Figure 1 shows the raw data along with a 30-day (monthly_ average) in red, and a simple regression trend line, in blue. The trend line is flat, indicating no increase or decrease in wave height over the period of 1980-2009.

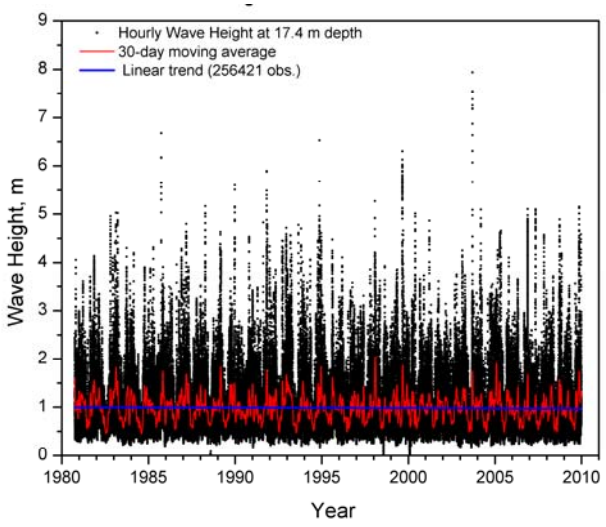


Figure 1. Wave height record from the FRF

To examine the storm climate, a storm event time series was computed by defining a storm as the period of time that the wave height first exceeds 3 m until it drops below 2.23 m. These criteria are based on the overall mean and standard deviation of the record. Changing these arbitrary thresholds will increase or decrease the number of storm events and their magnitude. For each wave observation the wave power is computed and for each event, the area under the wave power curve is computed. Figure 2 plots the 181 events that met the criteria. A slight,

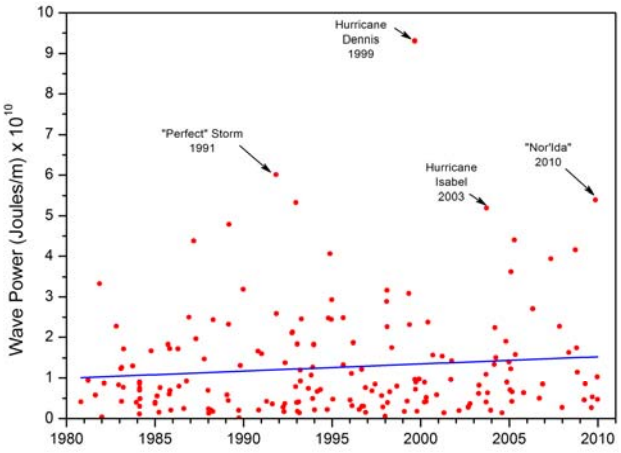


Figure 2. Storm record based on storms' integrated wave power

but insignificant trend, blue line, is also plotted. What is apparent is the infrequent occurrence of major events. With so few major events, a much longer record will be needed to detect a storm event trend.

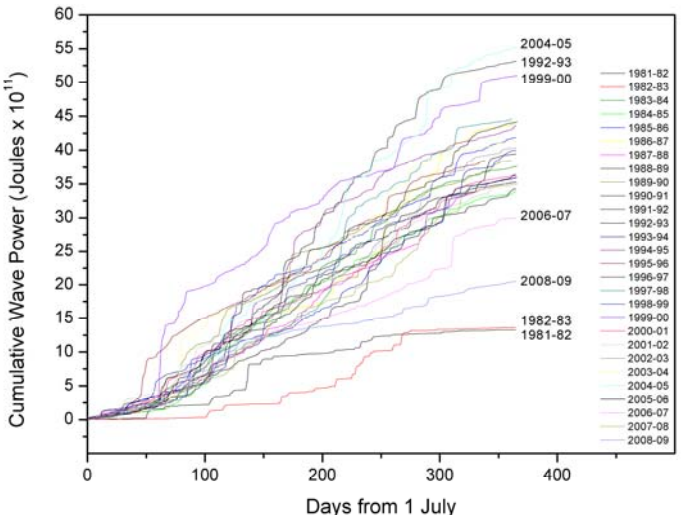


Figure 3. Cumulative wave power by storm season

Another way to look at changes in wave climate is a technique being used by Heidi Moritz, Portland District, that looks at the cumulative wave power over each storm season. This is plotted in Figure 3, where each storm year is defined to begin July 1. While most data fall in a central diagonal, there are both high and low years. Storm events, with high waves and short duration, cause vertical jumps in the data which can push a year out of the center. For example, Hurricane Dennis, in the fall of 1999, lifts the 1999-2000 line, while the general lack of events in 1981-82 and 1982-83 drops those years down. Figure 3 could be useful in comparing different years for sediment budget or dredging activities.

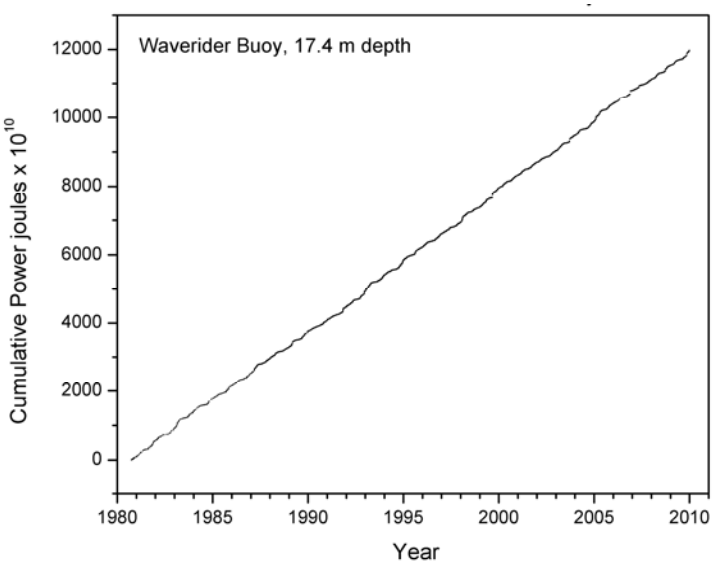


Figure 4. Cumulative wave power, 1980-2009

Figure 4 is another look at the FRF wave climate; similar to Figure 3, but here the cumulative wave power over the full record is plotted. At this scale, a surprisingly strong, to this author anyway, linear trend dominates, obscuring the extreme events.

More work needs to be done, as we are just beginning to explore this long, interesting data set. For additional information, please contact William.Birkemeier@usace.army.mil

National Shoreline Management Study

Katherine Trott, IWR

The National Shoreline Management Study, NSMS, was begun in response to the Water Resources Development Act of 1999 (WRDA99), which authorized the U.S. Army Corps of Engineers (Corps) to study and prepare a report for Congress on the condition of the shores of

the United States. WRDA99 defined key areas of research to be included in this report, specifically "a description of the systematic movement of sand along the shore of the United States" and "recommendations regarding – use of a systems approach to sand management." Two draft studies were completed in FY10. One is an overview of the Great Lakes, the North Atlantic, the South Atlantic and the Gulf of Mexico. The second report, the North Atlantic Regional Pilot Study, provides detailed information for the North Atlantic shoreline region, from the Canada/Maine border to the mouth of Chesapeake Bay. This report demonstrates the level of detail that will be required for all U.S. regions to adequately provide a national assessment of the shorelines. The NSMS will be the first comprehensive report on the Nation's coastline in over thirty years.

Congressional hearings held in the 1960's recognized that the shores of the U.S. were being threatened by erosion and that this concern must be addressed to prevent further endangerment. Through the 1968 River and Harbors Act, Congress gave the Corps the responsibility of studying, investigating, and appraising the nation's shorelines. The Corps was charged to develop suitable framework for managing, protecting, restoring, and minimizing erosion-induced damages to the nation's coasts. In 1971, the Corps published the National Shoreline Study with the intended purpose to define shoreline problems through separate reports on the topics of shore erosion, shore protection, and shore management.

A review of the present and future status of U.S. shorelines is needed due to continual disruption of natural sediment processes, chief causes of undesired erosion and accretion. Potential sea level rise and other climate change effects may further exacerbate current problems. The NSMS will provide information to aid in the development of recommendations for improved shoreline and sand management, including an identification of roles for Federal and non-Federal entities. These studies use existing data and information from both Corps and non-Corps ecosystem restoration, navigation, shoreline protection, beach re-nourishment projects, and other knowledgeable sources.

These studies will be of great interest to Federal, State, and local flood risk managers as they identify impacts of shoreline erosion on the functioning of hurricane shore protection projects, and as they develop flood mitigation measures to address these impacts. Between 1900 and 2000 there were 81 major hurricanes resulting in over 14,000 deaths in the United States, with accompanying property damages of approximately $70 billion. In response to these storms, Congress has authorized 71 specifically authorized shore protection projects that protect 285 miles of the Nation's shorelines.

Managing flood risk is a shared responsibility between Federal, State, and local governments. As a result, improved coordination of information like the NSMS with data provided by the National Weather Service and the National Oceanic and Atmospheric Administration will enable improved mitigation action in the Nation's coastal areas to effectively address coastal flood hazards.

In FY11, an overview study of the four western areas will be completed, along with detailed assessments of the Great Lakes and California. The studies will be available on the IWR website. POC: Katherine Trott, Katherine.L.Trott@usace.army.mil

SWWRP

Steve Ashby, PhD, SWWRP Program Manager

The System-Wide Water Resources Program (SWWRP) has delivered 25 major tools for system-wide assessments of the Nation's water resources. These tools were built in collaboration with other research and development (R&D) programs and have been adopted by several academic institutes, indicating peer acceptance. SWWRP tools are being utilized in ecosystem restoration, flood risk reduction, navigation, asset management, emergency management and homeland security applications.

The tools were tested and demonstrated, and are being applied, in more than 35 Corps of Engineers Districts. Demonstrations and applications include watershed assessments; quantification of nutrient and sediment loading; dam break and levee analyses; multi-dimensional modeling of sediment and nutrient transport in rivers, reservoirs, and estuaries; and habitat analyses for ecosystem restoration. Other applications include planning studies, operations' assessments, engineering design, geospatial assessments, regional measurements of environmental conditions, wave modeling, and barrier island morphometry modeling.

In addition, SWWRP has developed tools for assessing and simulating estuarine and coastal physical, chemical, and biological processes. These tools are built on a limited suite of multi-dimensional hydrodynamic codes such as the Adaptive Hydraulics model (ADH) and the Advanced Circulation model (ADCIRC). Development of regional assessment technologies such as integrating hyperspectral imagery with lidar and ground truth data has resulted in new capabilities for vulnerability assessments and critical resource risk-based evaluations. Integrating technologies such as hydrodynamic mesh conversion, computational modeling toolkit, and visualization with Google Earth technology, has enabled model coupling at critical boundaries (e.g., river and estuary, and estuary and open ocean), and increased computational efficiency and visualization of complex simulations.

SWWRP has collaborated with other Civil Works Research & Development Programs and engaged the Corps' Technical Committees and Planning Centers of Expertise to solicit technical input and provide support across business lines. Integration of technologies developed in SWWRP, and with other R&D programs, has been demonstrated with numerous collaborations such as multi-disciplinary workshops for planners, operations, regulatory, and hydrology/hydraulics in engineering and field demonstrations.

The overarching goal of SWWRP is to provide the Corps, its partners and stakeholders the framework and analytical tools to balance human development activities with natural system requirements in a sustainable manner through regional utilization, restoration, and management of the Nation's water resources. SWWRP is designed to meet the systemic Science and Technology needs of the Corps' Civil Works Business Lines of Navigation, Flood and Coastal Storm Damage Reduction, and Environment, while at the same time supplementing the Emergency Management, Water Supply, Regulatory, and Recreation-oriented R&D carried out by other R&D programs. The Program supports the Corps of Engineers' Environmental Operating Principles and Civil Works Strategic Plan through creation of standardized

frameworks for the assessment, management, and forecasting of water, sediment and their constituents in the context of system-wide ecological responses.

A complete list of SWWRP's products, tools, and publications as well as additional information on the program can be found on the Water Resources Depot at: https://swwrp.usace.army.mil/
POC: Steve Ashby, Steven.L.Ashby@usace.army.mil

Training Resources for USACE Flood Risk Managers

Judy Soutiere, NFRMP Communication Team

Questions often arise about training available for a district or division flood risk manager. Highlighted below are some training opportunities. The complete list can be found at http://www.nfrmp.us. Many courses provide flood risk managers with an understanding of other federal agency programs and local perspectives on flood risk management. They also provide preparation for taking the Association of State Floodplain Manager's Certified Floodplain Manager's (CFM) license test. CFM license is important in relationships with local, state and other federal agencies. It signifies licensees have an understanding of the requirements and the actions for managing activities in the flood plain that are consistent with the work of other federal and non-federal partners flood risk managers.

One valuable training resource is FEMA, which provides training through the Emergency Management Institute (EMI) http://training.fema.gov/. One recommended course is Managing Floodplain Development through the National Flood Insurance Program (NFIP) (E273). This course provides a good overview and understanding of the NFIP program and insight into local floodplain managers' responsibilities for managing activities in the floodplain.

The Association of State Flood Plain Managers (ASFPM) maintains a list of training courses associated with floodplain management on their website, http://www.floods.org/. They also offer online training supported by ASFPM; this training is available for a fee. ASFPM's website also offers a library for outreach materials and other documents.

Participation in local chapters of ASFPM, NASFMA (National Association of Flood and Stormwater Management Agencies) and other flood risk management-related organizations can yield training opportunities. For example, the ASFPM local chapter conferences provide a wide variety of training, sharing of experiences, and showcasing of new technologies. Additionally, these organizations' national conferences provide good opportunities for learning.

During the USACE June 2010 Flood Risk Management Workshop, training sessions were conducted on Hazard Mitigation- FEMA Programs for Hazard Mitigation Planning for Communities; Introduction to Facilitative Leadership; Introduction to the National Levee Database; and Incorporation of Nonstructural Solutions that Support Beneficial Uses of the Floodplain. Training materials from this workshop can be found on the NFRMP website under presentations. Training sessions will again be provided during the Flood Risk Management workshop, scheduled for August 2011.

The Flood Risk Management website, http://www.nfrmp.us, contains links to all the mentioned training. Please notify Judy Soutiere with other suggestions. POC: Judy.M.Soutiere@usace.army.mil.

NFIP Levee System Evaluation EC

Walter Pierce, HQ

The U.S. Army Corps of Engineers (USACE) recently published consolidated guidance covering how it conducts levee system evaluations for the National Flood Insurance Program (NFIP). Engineer Circular (EC) 1110-2-6067, *USACE Process for the National Flood Insurance Program (NFIP) Levee System Evaluation*, supplements and clarifies existing policy, procedures and technical guidance and applies only to USACE. It is not intended as design guidance.

With the release of this EC, USACE will begin using "NFIP levee system evaluation" as opposed to "levee certification" to describe the process it uses to evaluate a levee system for NFIP mapping purposes. Terminology was changed because "NFIP levee system evaluation" emphasizes the true purpose of evaluating the complete levee system's status with regard to requirements of both 44 CFR 65.10 and USACE guidelines. This choice better supports FEMA's definition of "certification" defined in 44 CFR 65.2(b), which focuses on certification of analysis and data and is not meant to imply a warranty or guarantee. This change does not affect FEMA's requirements for mapping areas behind levee systems. The change, however, better describes the purpose and emphasis that "certification" does not mean a guarantee of safety from flooding.

The purpose of a NFIP levee system evaluation is to determine how flood hazard areas behind levees are mapped on FEMA Flood Insurance Rate Maps (FIRMs). The resultant maps are used to determine flood insurance rates; federal, state, and local floodplain management requirements; and other floodplain management decisions. If a positive finding is made in an NFIP levee system evaluation, FEMA will use this information to determine how the floodplain behind the levee system is mapped.

A NFIP levee system evaluation determination is a technical finding by a registered professional engineer that, for the floodplain in question, there is, or is not, a reasonable assurance that the levee system will exclude the 1 percent annual chance exceedance flood from the leveed area. A 'there is' answer leads to a positive finding and support for accreditation. An 'is not' answer means a negative finding for NFIP levee system evaluation thus, accreditation is not supported.

Key points in the new EC follow.

- "Levee Certification" is commonly used to describe the submittal of all required data to FEMA to demonstrate the levee meets requirements in 44 CFR 65.10.
- Inspection of a levee, as related to USACE's Levee Safety Program, is a visual inspection conducted to verify the levee system is being properly operated and maintained. The result of this inspection does not equate to a "levee certification" or "NFIP levee system evaluation." Other criteria for a NFIP levee system evaluation, not covered by a USACE levee inspection, include levee height determination, interior drainage and seepage, embankment stability, and settlement analyses.

- Accreditation means FEMA has verified that all the documentation to demonstrate that a levee system meets 44 CFR 65.10 has been submitted and has shown the levee on the Flood Insurance Rate Map (FIRM) as providing reasonable assurance of excluding the 1 percent annual chance exceedance flood (or base flood).
- The EC consolidates and summarizes existing policy and guidance previously distributed among various related USACE documents and provides policy and guidance about topics not previously covered in relation to "levee certifications", such as,
  - Requiring submittal to FEMA of an evaluation report, as opposed to issuing only a "certification" letter.
  - Clarifying technical areas to include earthen closures, ice, seismic criteria, channels, and flood fight activities.
  - Requiring a minimum of two feet of freeboard to match FEMA's minimum requirement.
  - Revisiting situations in which FEMA used USACE documentation to accredit a levee system to ensure it meets requirements in the EC.

Responsibilities are also defined. Since the local community is responsible for administering the requirements of the NFIP and maintaining the levee, providing the documentation to meet 44 CFR 65.10 is a local project/system sponsor responsibility. In some cases, USACE Levee Safety Program activities will help inform and support the local sponsors' efforts. There are two conditions when USACE will budget for and conduct these evaluations when requested by the local sponsor: (1) USACE operates or maintains the levee system (such as the Mississippi River & Tributaries levees) or (2) USACE has an active levee design/construction project underway.

USACE may perform this evaluation using funds provided by non-Federal sponsors, provided that it can be demonstrated that USACE is uniquely equipped to do so and that such services are not reasonably and quickly available through ordinary business channels (Thomas Amendment).

Flood risk management is dynamic and constantly changes as we learn more about floods, storms and subsidence; the performance of our aging infrastructure; the engineering profession and the effects of increasing development behind flood and storm damage reduction systems. USACE is constantly working to improve its understanding of the loading on levee systems, how they respond to floods, and to advance the state-of-the-art of design and construction. USACE anticipates there will be periodic updates and improvements to the EC as advances are made in the engineering profession in relation to flood and hurricane storm damage reduction systems. The Levee Safety Program website is http://www.usace.army.mil/leveesafety/pages/main.aspx. POC: Walter Pierce, Walter.E.Pierce@usace.army.mil .

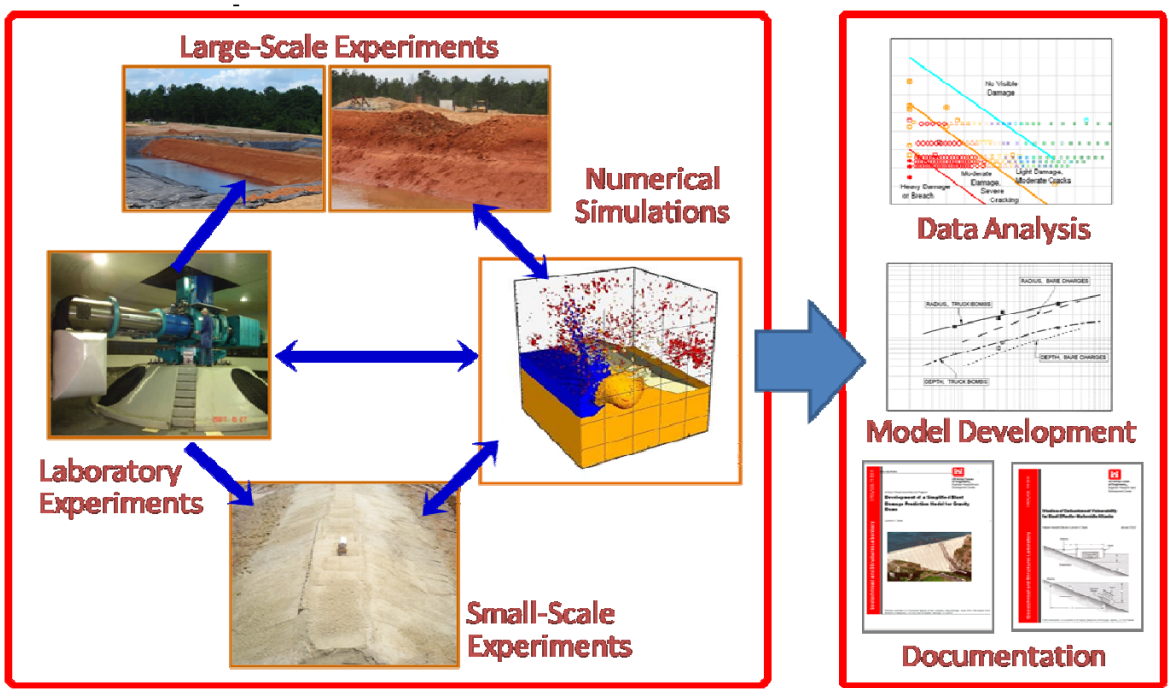
Critical Infrastructure Protection and Resilience R&D at ERDC

Michael K. Sharp, GSL

The Engineer Research and Development Center (ERDC) is executing various research projects in support of the U.S. Army Corps of Engineers (USACE) Critical Infrastructure Protection & Resilience (CIPR) Program. The goal of the CIPR program is to achieve a more secure and more resilient civil works critical infrastructure by enhancing protection in order to prevent, deter, or

mitigate the effects of manmade incidents and improve preparedness, response, and rapid recovery in the event of an attack, natural disaster, and other emergencies. The objectives of the CIPR program include developing and implementing a portfolio-wide risk assessment framework. This requires the development of blast damage estimation tools to support the assessment of critical components on dams, locks, and levees as part of the overall risk evaluation process. ERDC is conducting this research for various components, or types of dams, that make up the majority of dams in the U.S. inventory.

Research efforts systematically focus on a single type of dam component and include both scale-model experiments and physics-based numerical analyses that generate data on the response of the component to the applied blast loads. This data is then analyzed by a team, which develops simplified damage estimation models. The damage estimation models are specifically tailored for each dam component and type of attack. The models include analytical approaches such as Single-Degree-of-Freedom (SDOF) systems designed to simulate response to the loading produced by a specific explosive charge detonation, or response surface models that use the



factors that most influence damage to the dam component. The above figure illustrates the process of data development and analysis that results in damage estimation models for a dam. Embankment dams, concrete gravity dams, powerhouse dams, navigation lock walls and gates, and spillway gates have all been studied using this process.

ERDC possesses unique capabilities to conduct scale model testing, from full scale to laboratory scale, and to conduct complex numerical modeling. Large-scale experiments allow the building of sections of dams using realistic construction techniques, and are generally large enough to allow the placement of instrumentation that provides a basis to validate numerical models. Smaller scale testing, such as that performed in the geotechnical centrifuge, allows for the construction of small models placed in an increased gravitational field such that all lithostatic

loads are the same as those on full-scale structures. These models allow for accurate depiction of response to a given load but at a scale small enough that multiple models can be efficiently tested. All physical modeling is accompanied by detailed numerical modeling to provide a comprehensive understanding of the phenomena under study.

Progress has been made in understanding and predicting damage from explosive attacks. Taking embankment dams as an example, research is currently focused on efforts to understand the effect of compaction, the damage zone below the visible crater, and the effect of the phreatic surface. Methods to mitigate damage are to either prevent access to a critical location, or to harden the dam in a way that limits the severity of damage. Work focusing on this challenge includes field experiments to evaluate concepts to harden embankment dams and levees.

The vulnerability of dams to blast-induced damage is a complex problem which is further complicated by the wide variety of sizes, designs, and characteristics of dams and levees across the Nation. Research conducted at ERDC has been effective in developing an improved understanding of risk and blast mitigation of dams. POC: Yazmin Seda-Sanabria, Yazmin.Seda-Sanabria@usace.army.mil.

Full-Scale Levee Breach Test Facility Constructed at the Waterways Experiment Station

Dr. Jimmy Fowler, CHL

In October, 2010, the Coastal and Hydraulics Laboratory (CHL) completed construction of an impressive new full-scale facility for studying levees and new methods being developed to assist in flood fighting efforts connected with breached levees. The facility is located on the Engineer Research and Development Center's (ERDC) Waterways Experiment Station (WES) in Vicksburg, MS. It is now the featured component of the Rapid Repair of Levee Breaches (RRLB) program, which began in 2007 and is jointly funded and sponsored by the Department of Homeland Security, Advanced Research Projects Agency (HSARPA) & the ERDC.

Following a fast-paced study of numerous concepts for rapid responses to breached levees, a good foundation for a new method to accomplish such repairs was laid. The new facility was constructed to provide a venue for testing the featured component of the RRLB program – the Portable Lightweight Ubiquitous Gasket (PLUG) in a controlled full-scale environment. The PLUG is essentially a large sausage-shaped tube made of high-strength fabric. It is designed to be rapidly filled by a high-volume pump using local flood waters. Optimally, the PLUG is filled with water to about 70 percent of its total capacity and uses a quantity of air inside to keep the tube from sinking and to facilitate maneuvering. The PLUG and all support equipment would be delivered by helicopter and positioned upstream of a breach. The PLUG would be filled there and then positioned such that flood currents would pull it toward and into the breach. The incompressible nature of water and the unyielding fabric combine to form a nearly rigid plug that conforms to the breach and seals it. This concept was thoroughly tested at small scale using existing facilities at WES and mid-scale facilities at the U.S. Department of Agriculture's Agricultural Research Service Hydraulic Engineering Unit in Stillwater, Oklahoma.

To further develop the PLUG and other components of the RRLB Program, it was necessary to conduct full scale tests in a controlled environment. Since no such facility previously existed within the US, an 11 acre levee breach test facility was designed and constructed. The construction schedule was quite aggressive, with initial ground breaking in June 2010 and first acceptance tests conducted in October 2010. The photographs and table below provide an overview of the new facility.

Table 1. RRLB Full Scale Test Facility Facts
- Present levee breach width is 40 ft at base of breach
- Max flow rate of 2000 cfs through the levee breach
- Three tiered gravity fed system; Source Basin, Test Basin and Catch Basin
- Source Basin is 94 ft x 94 ft at the base and has a capacity of 2.2 million gallons
- Source Basin has maximum water depth of 20 ft
- Test Basin is 120 ft wide x 150 ft at the base and has a capacity of 1.6 million gallons
- Test Basin maximum water depth is 9.5 ft with collapsible weir in place
- Catch Basin has a capacity exceeding 4 million gallons of water
- Flow between basins is controlled high speed gates
- Facility covers 11 acres and initial full scale tests were conducted during October 2010
- Facility designed by ERDC, DHS, and Oceaneering International, Inc.

Figure 1. Aerial photograph of RRLB full scale facility.

Figure 2. PLUG successfully employed to seal breach in RRLB Full Scale Test Facility.

Since completion of acceptance tests, numerous tests have been conducted using a full scale PLUG that measures 104 feet in length, has diameter of 15 ft, and was fabricated by Kepner Plastics Fabricators. The PLUG tested was fabricated using heavy duty vinyl coated polyester base fabric with 1,250 lb per inch tensile strength, 275 lb tear strength and a total weight of 47 ounces per square yard. It has treated polyester longitudinal and circumferential webbing straps rated at 20,000 lb and 15,000 lb breaking strength, respectively. Each end has a towing bridle.
The full scale PLUG has been used to successfully seal the breached levee in the new facility in 20 tests in which percent water fill, distance of PLUG from breach opening, and water depth were variables under investigation. Other important aspects of the RRLB program that were studied during these initial tests include optimal methods for filling and maneuvering the PLUG, resilience of the PLUG, and development of preliminary methodologies for delivery and

deployment of the system. The photograph in Figure 2 shows the PLUG working exceedingly well in its final position within the test breach during a recent test in November, 2010.

On 15 December 2010, the RRLB Program held a very successful demonstration of two of the new technologies developed as part of this effort, the near full scale Portable Lightweight Ubiquitous Gasket (PLUG) and a 1:8 scaled Arch Shaped Rapidly Emplaced Cofferdam Hydro-dam (ARCH). The demonstration drew approximately 100 attendees representing DHS; USACE divisions and districts; other federal agencies; state and regional levee districts; various state emergency operations organizations; academia; and private industry. For more information, and program history, visit http://chl.erdc.usace.army.mil/rrlb/. POC: Dr. Donald T. Resio, Donald.T.Resio@usace.army.mil or Stanley Boc, Stanley.J.Boc@usace.army .

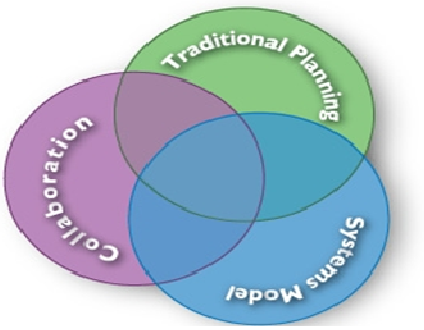
Conflict Resolution and Public Participation Center Celebrates 2nd Birthday

The Corps' Conflict Resolution and Public Participation Center (CPC) celebrated its second birthday on 18 November 2010. Designated a Center of Expertise and Directory of Expertise by MG Riley, CPCs mission is to help Corps staff anticipate, prevent, and manage water conflicts, ensuring that the interests of the public are addressed in Corps decision making. CPC has made a significant impact since it was established two years ago. During this past fiscal year, the Center provided technical assistance to Districts and Divisions on collaborative processes, completed a baseline assessment of USACE collaborative capacity, released several reports on environmental conflict resolution and collaborative processes, and launched a Public Participation and Risk Communication Community of Practice (CoP).

The Center serves the Corps through training, consultation services, and reference materials to assist Corps HQ and field offices to manage conflicts and implement collaborative approaches.

Training. Training modules available include facilitation, team building, convening, communication, public involvement, collaborative leadership, and "Shared Vision Planning," a participatory process that merges stakeholder collaboration with interactive computer modeling and software.

Consultation Services. The center provides information, offers advice and short-term assistance, and connects Corps personnel with conflict resolution and public participation experts. The Center's network of experts consists of a Corps Facilitator Network, a Federal Facilitator Network, an MOU with the U.S. Institute for Environmental Conflict Resolution, and a soon-to-be-established contract to rapidly access external experts in conflict resolution and public participation.



Shared Vision Planning

Reference Materials. CPC's website includes a plethora of informative literature on alternative dispute resolution and public involvement. These resources include primers, guides, workbooks, case studies, pamphlets, and research reports.
Further information, see CPC's website: http://www.iwr.usace.army.mil/CPC orCOP sharepoint: https://kme.usace.army.mil/CoPs/PPRC/default.aspx. POCs: Hal Cardwell, hal.e.cardwell@usace.army.mil or Maria Placht, maria.t.placht@usace.army.mil.

Urban Flood Damage Reduction and Channel Restoration Development and Demonstration Program for Arid and Semi-Arid Regions

Cary Talbot, CHL

The arid and semi-arid regions of the southwestern United States have unique and severe flooding and river restoration problems. These areas are rapidly developing population centers with complex watershed management issues. They also have the challenges in sedimentation, restoration, and flood damage reduction presented by rivers in the urban areas of the southwestern United States. Defining a middle ground between ecosystem restoration, flood control, and water supply is difficult, especially in populated areas where human life and property are at stake. A US Army Corps of Engineers (USACE) demonstration program that focuses on urban flood damage reduction and channel restoration in the arid and semi-arid regions of the southwestern United States seeks to develop and demonstrate innovative technologies to address these regional problems.

Since its beginnings in 2003, the Urban Flood Damage Reduction and Channel Restoration Development and Demonstration Program for Arid and Semi-Arid Regions (UFDP) has funded work projects undertaken by the U.S. Army Engineer Research and Development Center (ERDC) in collaboration with the Desert Research Institute (DRI), part of the Nevada system of higher education. To date, study areas have focused on the Truckee River (NV), Las Vegas Wash (NV), Rio Salado (AZ), and the Middle Rio Grande (NM). Stakeholders include USACE District personnel, other federal agencies, state and local governments, and flood-control districts.

The program combines the national expertise of the USACE with the expertise of academic institutions through DRI and stakeholders. The program demonstrates the application to arid and semi-arid regions of new and innovative techniques, models, and methods. Work focuses on the special problems of the arid southwest, including but not limited to:

- techniques to improve urban flood forecasting in arid regions;
- demonstration and evaluation of river restoration techniques;
- improved design guidance for supercritical flood channels;
- improved design guidance for streambank stabilization and grade control;
- integrated water resources management to achieve local/regional goals;
- improved modeling of water and sediment transport in arid regions;
- improved modeling of hydrologic processes using state-of-the-art, physics-based distributed hydrologic modeling and GIS-based tools;
- improved optimization and parameter estimation for hydrologic models; and
- investigation of implications of climate change on arid regions.

Research topics are selected and pursued each year with input and collaboration from DRI, Corps field personnel, and state and local stakeholders. The input and expertise from all interested parties are an integral part of the program. The UFDP welcomes opportunities to coordinate activities with other ongoing efforts. POC: Cary Talbot, Cary.A.Talbot@usace.army.mil .

2011 USACE Infrastructure Systems Conference

The U.S. Army Corps of Engineers (USACE) is holding its 2011 Infrastructure Systems Conference (ISC) in Atlanta, Georgia, from 13-17 June 2011. The theme of the 2011 ISC is "Quality Design and Construction for a Stronger Future." Engineering and construction competency is and will always be the heart of USACE. The ISC web site, https://www.team-psa.com/USACE_ISC/home.asp, has information on the agenda, schedule, abstract submittal, on-line registration, and hotel. To submit an abstract for consideration as a presentation topic, please visit the ISC web site and complete the 'Call for Abstracts' form. Abstracts are due 25 February 2011. Formal papers are not required, since proceedings will not be published. However, after the conference, presentations will be posted on the ISC website.

The ISC is open to all interested parties including Federal agencies, the private sector and academia. The goal is to stimulate wide interest and inquiry into the scientific, technical, and professional issues relevant to the mission of USACE. The ISC will consist of a plenary session and technical breakout sessions including: construction, dam and levee safety, electrical engineering, geospatial, geotechnical engineering, hydrology and hydraulics, survey and mapping, materials engineering, mechanical engineering and structural engineering. Additional topics such as security engineering, energy, sustainable design and construction, standards and criteria, cost engineering, and other inter-disciplinary topics will also be included. The ISC is vital to maintaining USACE professional technical competency and presents attendees with an excellent opportunity to exchange ideas, knowledge and experiences within the Engineering and Construction (E&C) Community internal and external to USACE.

PROSPECT Courses FY 2011

No.	Title	Dates	Location
11	Coastal Project Planning	11-15 Apr 2011 13-17 Jun 2011	Duck, NC Duck, NC
28	Dam Safety	7-10 Mar 2011 4-7 Apr 2011 2-5 May 2011 20-23 Jun 2011 18-21 Jul 2011	Grenada, MS
98	Reservoir Systems Analysis with HEC-RESSIM	24-28 Jan 2011	Davis, CA
158	Flood Control & Coastal Emergencies	TBA	TBA

No.	Title	Dates	Location
263	Coastal Ecology	13-17 Jun 2011	Newport, OR
282	Slope Stability Analysis	6-10 Jun 2011	Huntsville, AL
285	Streambank Erosion & Protection	21-25 Mar 2011	Vicksburg, MS
320	H&H For Dam Safety Studies	7-11 Mar 2011	Davis, CA

Additional Information: *http://pdsc.usace.army.mil/downloads/PurpleBook2010.pdf*

Of Interest

The November 2011 "Planning Ahead" article, "A Journey to a Better Water Future," might be of interest. See http://www.usace.army.mil/CECW/PlanningCOP/Pages/pa_news.aspx

Conferences

This listing is for information only and is not a complete list of FRM-related meetings. These meetings are not endorsed by the Corps of Engineers unless specifically stated. If we have failed to list a conference/meeting/symposium that would be of interest to the Flood Risk Management community, please forward us the conference details.

20-21 January 2011 – Introduction to Detention Pond Design: Parking Lots and Urban Drainage – San Antonio, TX – http://asce.org

3-5 February 2011 – Implementing the Human Right to Water in the West – Salem, OR – http://www.willamette.edu/wucl/news/2010/spring/water_conf_papers.php

9-11 February 2011 – National Conference on Beach Preservation Technology – Jacksonville, FL – http://fsbpa.com/conferences.html

24-25 February 2011 – International Conference on Stormwater and Urban Water Systems Modeling – Toronto, Ontario – http://asce.org

1-3 March 2011 – ASBPA Coastal Summit 2011 – Washington, DC – http://asbpa.org/conferences/sum_11.htm

7-8 March 2011 – International Conference On Water Resources Engineering & Management 2011 – Lahore, Punjab, Pakistan – http://www.uet.edu.pk/Conferences/icwrem2011/

14-17 March 2011 – Annual International Conference on Soils, Sediments, Water and Energy – San Diego, CA – http://www.aehsfoundation.org

6 – 7 April 2011 – CIWEM's (Chartered Institution of Water and Environmental Management) Annual Conference, Water and Environment – London, United Kingdom - http://www.coastms.co.uk/conferences/438

11 -13 April 2011 – International Conference on Vulnerability and Risk Analysis and Management (ICVRAM) and USUMA Fifth International Symposium on Uncertainty and Analysis – Hyattsville, MD - http://content.asce.org/conferences/icvram2011/index.html

11-13 April 2011 – Georgia Water Resources Conference – Athens, GA - http://www.gawrc.org/conference_info.html

11-15 April 2011 – United States Society on Dams, 2011 Annual Meeting and Conference – San Diego, CA – http://www.ussdams.org/2011conf.html

13-15 April 2011 – ECOSUD 2011 – 8th International Conference on Ecosystems and Sustainable Development – Alicante, Spain – http://www.wessex.ac.uk/11-conferences/ecosud-2011.html

27-29 April 2011 – Coastal Processes 2011, 2nd International Conference on Physical Coastal Processes, Management and Engineering – Naples, Italy – http://www.wessex.ac.uk/11-conferences/coastalprocesses-2011.html

2-6 May 2011 – Coastal Sediments 2011 – Miami, FL – coastalsediments.cas.usf.edu

9-14 May 2011 – 11th International Coastal Symposium – Szczecin, Poland – http://www.ics2011.pl/

15-20 May 2011 – ASFPM Conference – Louisville, KY – http://www.floods.org

22-26 May 2011 – World Environmental and Water Resources Congress – Palm Springs, CA – http://content.asce.org/conferences/ewri2011/index.html

23-25 May 2011 – Water Resources Management 2011 – 6th International Conference on Sustainable Water Resources Management, Riverside, CA – http://www.wessex.ac.uk/11-conferences/waterresourcesmanagement-2011.html

25-27 May 2011 – River Basin Management 2011, 6th International Conference on River Basin Management – Riverside, CA – http://www.wessex.ac.uk/11-conferences/riverbasinmanagement-2011.html

6 – 9 June 2011 – 5th International Short Conference on Applied Coastal Research – Aachen, Germany – http://www.iww.rwth-aachen.de/scacr

13-17 June 2011 – USACE Infrastructure Systems Conference (ISC), "Quality Design & Construction for a Stronger Future" – Atlanta, GA – https://www.team-psa.com/USACE_ISC/home.asp

25-29 June 2011 – Solutions to Coastal Disasters – Anchorage, AK – http://content.asce.org/conferences/cd2011/index.html

26-29 June 2011 – Solutions to Coastal Disasters Conference – Anchorage, AK – http://content.asce.org/conferences/cd2011/index.html

17-21 July 2011 – Coastal Zone 2011 – Winds of Change: Great Lakes, Great Oceans, Great Communities, Chicago, IL – http://www.doi.gov/initiatives/CZ11/index.htm

1-5 August 2011 – NCER – 4th National Conference on Ecosystem Restoration – Baltimore, MD – http://conference.ifas.ufl.edu/NCER2011/

15-19 August 2011 –2nd USACE Flood Risk Management and Silver Jackets Workshop – Nashville, TN – stay tuned

21- 24 August 2011 – COPRI-ASCE Conference on Coastal Engineering Practice – San Diego, CA - http://content.asce.org/conferences/copricoastal2011/index.html

6-9 September 2011 – Floodplain Management Association Annual Conference – San Diego, CA – http://www.floodplain.org/

13-15 September 2011 – Lake Sustainability 2011 – 1st International Conference on Lake Sustainability, New Forest, UK – http://www.wessex.ac.uk/11-conferences/lakesustainability-2011.html

13-16 September 2011 – Smart Rivers 2010 - Discover the Keys to Inland Navigation's Sustainable Future Around the World – New Orleans, LA - http://smart11.pianc.us/

14-16 September 2011 – FSBPA Annual Conference – Miami Beach, FL - http://fsbpa.com/conferences.html

19-23 September 2011 – First International Conference on Sustainable Watershed Management – Istanbul, Turkey – http://igemportal.org/?Dil=1&SID=689

25-29 September 2011 – Association of State Dam Safety Officials – Annual National Conference – Washington, DC – http://www.damsafety.org/

27-29 September 2011 – 5th International Conference on Flood Management ($ICFM_5$) – Tsukuba, JAPAN - http://www.ifi-home.info/ICFM.html

19-21 October 2011 – ASBPA National Coastal Conference – New Orleans, LA – http://asbpa.org/

1-3 November 2011 – NAFSMA Conference – TBA – http://www.NAFSMA.org

15-16 November 2011 – Coastal Management 2011: Innovative Coastal Zone Management: Sustainable Engineering for a Dynamic Coast – Belfast, United Kingdom – http://www.ice-coastalmanagement.com/

17-19 November 2011 – USACE R&D Conference – New Orleans, LA – no website yet

23-25 November 2011- ICCCGW 2011 – International Conference on Climate Change and Global Warming – Venice, Italy – www.waset.org/events.php

28 November – 9 December 2011 - 2011 United Nations Climate Change Conference – South Africa - http://www.ourglocal.com/?c=19%2C4060

5 – 7 December 2011 – Water and Society 2011 – First International Conference on Water and Society – Las Vegas, NV – http://www.wessex.ac.uk/watsoc11rem1.html

Fall 2012 – Dredging 2012 PIANC-COPRI-ASCE Conference – San Diego, CA

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We would love your input – recommended article length is ½ to 1 page. Articles should be submitted to Doyle L. Jones, Canvassing Editor, Doyle.L.Jones@usace.army.mil.

Also, we would appreciate your feedback. Contact Dinah McComas, Managing Editor, Dinah.N.McComas@usace.army.mil or Doyle Jones.

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