

Meeting Summary

Focus Group Meeting (#3)

Sea-Level Rise and Floodplain Management

June 18th, 2015
AECOM Office, Oakland California

This was the third (and final) meeting in a series of meetings convening a Focus Group to guide the proposed outputs and products of a NOAA-funded project aimed at incorporating new sea-level rise and zone of flooding information into coastal planning. This project is being led by the Department of Water Resources (DWR) with support from Scripps Institution of Oceanography (SIO) and the California Ocean Science Trust (OST). The Focus Group includes local floodplain managers, city and county planners, coastal flooding and hazard mitigation program coordinators, environmental engineers, and other subject matter experts.

Meeting Goals

- Present on status of tiered product series – Quick Guide Supplement, Comprehensive Report, and Technical Methods Manual – and plans for finalizing these products
- Finalize plans for dissemination and uptake of proposed products

Welcome and Introductions

Lauma Jurkevics, DWR

Lauma Jurkevics (DWR) began the meeting by welcoming participants, leading a round of introductions (in the room and on the phone) and presenting the meeting's goals. Lauma emphasized that this would be the third and final Focus Group meeting and that the project is on task to produce a set of three products, presented in Focus Group Meeting 2, that will address sea-level rise within the context of the National Flood Insurance Program (NFIP), and informing broader planning efforts of coastal planners and floodplain managers.

The concept of the three tiered products was introduced at the second Focus Group meeting and reiterated. These products were being developed to fulfill the scope of the grant, while incorporating feedback from the Focus Group and Needs Assessment. Lauma introduced the three speakers who would be providing updates on the development of the Quick Guide Coastal Supplement (Steve Cowdin, Ford Consulting), Technical Methods Manual (Bob Battalio, Environmental Science Associates), and the Comprehensive Report (Aaron McGregor, OST).

Project Evaluation

Marisa Villarreal, Ocean Science Trust

Marisa Villarreal from Ocean Science Trust proposed a process for project evaluation. Marisa re-emphasized the purpose for evaluation, which is to determine how closely the project objectives and outcomes are being met. The concept of “end-to-end evaluation” was explained where the project has built-in mechanisms to track progress and incorporate feedback via the Needs Assessment, Focus Group meetings and the final products.

The proposed process had 3 components: A survey for Focus Group and Needs Assessment participants, a process for gathering feedback from workshops/trainings on the products, and development of evaluation metrics. A survey will be distributed sometime in the fall, after the final products are completed. This survey will determine how the project has benefited Focus Group participants and gather general feedback on the project’s process and outcomes. A separate but similar survey will be sent out to Needs Assessment participants since these two groups serve different roles with respect to the project. Additionally, feedback forms could be distributed by DWR in their outreach/training activities to get a sense of the effectiveness of the trainings. To evaluate the project quantitatively, Marisa introduced potential evaluation metrics that measure attendance at trainings/workshops, hits and downloads of products on websites, and the number of organizations that were involved.

All these evaluation phases/activities are scheduled to take place from September 2015 through December 2015. (See Appendix D for a table of venues and online channels for each product).

Discussion Highlights:

Project success can be dependent on how products are disseminated and used. The concern was raised that evaluating project ‘success’ is dependent on how effectively the final products are disseminated to their intended audiences, and how they are utilizing these products. Currently there are avenues in which this project intends to perform outreach, including: Shore and Beach Future Conditions Conference presentation, Floodplain Management Association Conference session, and 2 DWR-led workshops in Southern and Northern California targeting floodplain managers. The NFIP and DWR’s involvement with the program is another opportunity to disseminate these products through DWR’s Community Assistance Visits and similar venues. FEMA also mentioned that they are currently forming a Climate Change Working Group that will integrate climate-science in other FEMA efforts (i.e., response, recovery, national preparedness), and one of the proposed meetings of this Working Group will address sea-level rise.

Potential avenues for tracking project success. Opportunities to track project impacts and instances where they are being used in existing planning and regulatory frameworks were suggested as a potential way to track project effectiveness. For example, implementation/use within the California Coastal Commission’s Local Coastal Programs where California coastal communities could potentially use the guidance from this project in the

hazard areas they are considering/studying. Another example could be providing the products as resources for complying with FEMA's CRS 412D regulation, which calls for anticipating sea-level rise by 2100 incorporating future conditions hydrology into a study that will produce higher Base Flood Elevations, and tracking whether the products are being used. Finally, presenting this project and its products through the 2015 FMA Conference, and returning the following year to inquire with participants on how they/their communities are using the products, was suggested as an additional avenue to track success. It was also noted that tracking product application and use in this way would be challenging after the grant has been completed, and that focusing on evaluating project outcomes that fall within the timeframe of the grant might be prioritized.

Quick Guide Supplement Status Update

Steve Cowdin, David Ford Consulting (on behalf of DWR)

DWR is providing funds for David Ford Consulting to assist the project with developing the coastal supplement to the CA Quick Guide. Steve Cowdin from David Ford Consulting began his presentation on the Quick Guide Supplement with a brief explanation on the background of the Quick Guide. The original CA Quick Guide was published by DWR in 2007 summarizing the NFIP requirements in California, and of its 70 pages, only three mentioned coastal concerns, which had more of a riverine environment focus. In order to integrate more recent scientific information, specifically regarding sea-level rise, a coastal supplement was tasked to be created with the objective of making it a high level, broad discussion of sea-level rise in California.

Steve proceeded to present a page-by-page overview of the content of the draft document, which included the following topics:

- **Why consider sea-level rise in coastal flood management?** – Provides a brief discussion of the implications of sea-level rise on the coastal environment, including exacerbated frequency of flooding, increased extent of coastal flood hazard further inland, accelerated shoreline erosion, and increased coastal stream flooding.
- **How does FEMA map existing coastal flood hazards?** – A recap of information found in the 2007 Quick Guide summarizing the coastal zones in California.
- **How will FEMA map future coastal flood hazards?** – Distinguishes mapping for non-regulatory versus regulatory planning purposes with regard to FEMA mapping. This section provides examples of communities that have mapped future conditions within their planning documents.
- **What is sea-level rise and what contributes to it?** – A definition of sea-level rise is provided, along with patterns of past California high sea levels and the primary factors contributing to sea-level rise (both global and regional). Additionally, definitions and figures describing storm surge, wave runup, and total water level are provided.

- **Why should communities plan for future sea-level rise?** – This section was included to focus on providing information relevant to community planners and describes the implications of sea-level rise and storm surge on coastal planning and development.
- **How can a community plan for sea-level rise?** – Reference to the Russell and Griggs approach to planning and adapting to sea-level rise is provided, which includes three steps: Assess, Plan, and Implement.
- **How can a community assess which areas might be affected by future sea-level rise?** – Three methods are provided for communities to assess areas vulnerable to sea-level rise impacts: using the *State of California Sea-Level Rise Guidance Document* (2013) projections to be consistent with state policy and guidance on sea-level rise, analyzing increased flooding scenarios (from FEMA) to be consistent with state policy and guidance on sea-level rise, and applying climate informed science to model and map sea-level rise. These methods are consistent with guidance from the presidential Executive Order 13690. Accompanying examples of each method throughout California are also provided.
- **What resources are available to help communities plan for future sea-level rise?** – A list of state guidance, as well as examples of models, tools, and other resources for communities to use in planning for sea-level rise.

Discussion Highlights:

Clarifying non-regulatory versus regulatory mapping. A brief discussion took place to clarify the differences between non-regulatory and regulatory maps. It was pointed out that the Quick Guide Supplement specifically references FEMA policies and the NFIP. As such, it is a non-regulatory, informational resource, as sea-level rise is not a requirement within current NFIP policies. The group was in agreement that it's important to clearly articulate the non-regulatory nature of any products generated from this project, while also acknowledging that communities can adopt regulatory policies that account for future conditions at their own discretion.

Expanding on the factors contributing to sea levels and storm surge. It was highlighted that the highest California sea levels have occurred under the influence of high astronomical tides within a few stormy years and that this is key for communities to understand (i.e., it's not just about sea-level rise but a combination of factors). Another key concept that could be addressed in the Quick Guide is that low sea-level pressure can contribute significantly to storm surge, in addition to wind. It was also suggested to include the effect of El Nino and the effects of other flooding scenarios within the figure on page 7 of the draft Quick Guide Supplement. Specific feedback and modifications to figures were collected and further coordination with Ford Consulting, ESA, and the Coastal Commission was arranged to ensure the information in both the Quick Guide Supplement and the Technical Methods Manual were consistent with the guidelines the Coastal Commission staff is preparing .

Figures and references to include for sea-level rise planning. . A discussion was held on the types of resources and tools available to planners and managers, and how they should be referenced and presented in the Quick

Guide. . This included a discussion of how to represent State and Federal guidance and resources in the document. Furthermore, caution was given in using figures that only depict the bathtub model and a suggestion was made that perhaps more dynamic models should be used (i.e., Our Coast Our Future, USGS, etc.). Using examples of both open coast and sheltered waters was also recommended.

Sea-level rise adaptation planning. With regard to the steps to take when adapting to sea-level rise, the Coastal Commission spoke about their approach to giving communities adaptation direction, which includes a “step zero” that first has the community evaluate whether they need to be considering sea-level rise in their planning.

Comprehensive Report Status Update

Aaron McGregor, Ocean Science Trust

Aaron McGregor from the Ocean Science Trust provided an overview of the development of the Comprehensive Report, which summarizes the other products of this project (the Quick Guide Supplement and Technical Methods Manual) and provides additional context and information to the broad audiences of the project. Aaron gave a preview of the contents of the Comprehensive Report, which includes project background, an NFIP section (detailing future conditions mapping, Executive Order 13690, CRS, etc.), the science behind sea-level rise and coastal related processes, and a detailed section of guidance documents and other resources developed in large part with help from the Coastal Commission’s comprehensive list of resources in their Sea-Level Rise Guidance. The section on guidance documents and resources provides several tables of existing information and tools, including the following:

- Sea Level Rise Mapping Tools
- Examples of SLR Guidance Documents, Vulnerability Assessments, and Adaptation Plans in CA
- Additional Case Studies
- CA State Agency Climate Change Resources
- Local and Regional Plans to Leverage Sea-Level Rise
- Additional Grant Programs
- Project Implementation Funds

Aaron requested particular feedback from the group on case studies where communities are integrating future conditions considerations into coastal planning. Having these case studies would add value to this document by providing real life examples. (See Appendix C for a detailed outline of the Comprehensive Report contents).

Technical Methods Manual Status Update

Bob Battalio, Environmental Science Associates (on behalf of DWR and OST)

DWR and OST are providing funds to Environmental Science Associates to further assist them in completing the project by adding another product to help fulfill the intent of the project. Bob Battalio from Environmental Science Associates provided a presentation on the progress that has been made thus far on the Technical Methods Manual (TMM) and the work to be performed going forward. The TMM scope is intended to 1) enable communities that overlap with the Scripps modeling sites to mainstream their results into map products; 2) provide technical guidance that will guide replication of the Scripps methodology for communities whose geography does not overlap with the six pilot sites; 3) develop guidance on how to relate Scripps model outputs to existing FEMA flood maps and estimate future coastal flood potential that accounts for sea-level rise and; 4) determine if other future conditions hazard projections could be used to prorate FEMA existing conditions flood hazard maps.

Bob proceeded to provide an overview of the Scripps work, which includes producing an index of Total Water Levels using IPCC 4th Assessment global greenhouse gas emission scenarios, as well as non-tidal residuals using the 5th Assessment scenarios. It was highlighted that beach/shore slope is a key parameter in the height of wave runup. Additionally, an explanation of the effects of wave set up was provided; wave set up is key in determining total water levels (TWLs), which are what FEMA uses as the elevation for their V-Zones was emphasized.

Details were provided on what climate scenarios were selected for wave runup modeling at the 6 pilot study sites; all scenarios from the NRC 2012 report for Newport (Oregon), San Francisco, and Los Angeles were used. The outline of the TMM was then presented before the Focus Group and contains the following sections:

- **Introduction** – Relates the Scripps future conditions coastal flood level work to FEMA's existing conditions coastal flood maps. Other future flood hazard projections will be tied to FEMA maps, as well, in general terms. Bob made the point that there is a range of levels of application in which future conditions hazards could be related to FEMA Hazard Maps, which require different levels of effort, information, and capability. These levels include: 1) simple comparison, 2) adjusting the V-Zones (easiest way to relate Scripps to FEMA), 3) addressing other hazard zones, such as the A-Zones, which entail more geomorphic processes or, 4) taking future TWLs and waves and substituting them into historical levels that FEMA has used.
- **FEMA Flood Insurance Studies (FIS) and Flood Insurance Rate Maps (FIRMs)** – Bob made clear that, in finalizing the TMM, access to new FEMA mapping will not be available. It will be unlikely that there will be access to the FEMA Pilot Study report and Future Conditions Mapping review documents, and

information from the Technical Mapping Advisory Council will not be available, as well. This project is on a different timetable than other concurrent projects being managed by the federal agencies.

- **Technical Methods** – Bob then described the three options to prorate FEMA existing condition flood values using Scripps future flood values and presented the following three equations to do so:

1) Prorate through multiplication → $[\text{Existing Hazard}_{(FEMA)}] * \frac{\text{Future Hazard (SIO)}}{\text{Existing Hazard (SIO)}}$

2) Prorate through addition → $\text{Existing Hazard (FEMA)} + [\text{Future Hazard}_{(SIO)} - \text{Existing Hazard}_{(SIO)}]$

3) Adding sea-level rise and multiply relative increase in wave runup →

$$TWL_{future} = SWL_{FEMA} + [RWL_{future} - RWL_{existing}] + R_{FEMA} * \left[\frac{R_{future}}{R_{existing}} \right]$$

- The third equation was deemed as the most logical but requires the availability of more data that might not be accessible. Bob is currently working out options to get around this issue and welcomes feedback.

Discussion Highlights:

Ensuring cohesiveness between the three products. It was stressed that linking the Quick Guide Supplement to the TMM more explicitly would be very beneficial to those who will be going through each document.

Erosion and geomorphic change. Bob suggested that the Focus Group consider evaluating erosion and geomorphic change within the TMM as well. The method of Event-Based (Storm) Erosion was introduced for short-term erosion scenarios where cliff retreat would be added using estimates of 100-year erosion amounts. This could be accomplished using historical data, or by developing approximate projections of erosion from current positions. Similar methods were proposed for long-term erosion planning by taking historical rates of erosion and multiplying by time to obtain future erosion. Because erosion occurrences have the tendency of being highly episodic rather than gradual, it was suggested that for long-term planning, using annual rates of erosion would not be the most accurate. Caution was also posed in distinguishing among beach erosion, seasonal erosion, long-term erosion, and cliff erosion. Flooding conditions will predominantly be driven by low-land beach and seasonal erosion; the characterization becomes more complex when considering these differences. It was proposed that referencing other documents that recognize these parameters, such as the FEMA Guidelines or Coastal Commission draft guidelines, would be beneficial.

Extreme Water Levels: 2000-2100

Peter Bromirski & Dan Cayan, Scripps Institution of Oceanography

Peter Bromirski from Scripps Institution of Oceanography (SIO) led a presentation on the findings and model outputs that will be represented in the Technical Methods Manual. Based on collaboration and discussion in the

TMM Committee meeting, four high-emission climate models with 100 years of data were selected to compute sea level projections. It was observed that the range of sea level projections, including the extremes, is primarily driven by tidal influences. Additionally, according to the model, there should be no effective increase in the mean wave heights projecting into 2100 (meaning wave conditions in the future are projected to reflect historical wave conditions [not considering sea-level rise]). Runup height projections were also modeled for a two percent beach slope using the previously mentioned wave height conditions and followed a similar pattern to the waves; no significant upward trend was seen in the mean runup heights into 2100 (still not considering sea-level rise).

When superimposing sea-level rise onto these projections (wave conditions and runup heights), an upward trending curve in annual sea level is produced. It was emphasized that beach slope is a critical factor in determining the elevation the TWL reaches.

Peter then explained the methodology behind the outputs Scripps will be providing for the TMM by first providing definitions of the base water level and total water level used. Mean heights of the top one percent of water levels in each winter were used for computation for the decade centered at 2050, as well as over the winters during the decade prior to 2100 for two percent and ten percent beach slopes.

Discussion Highlights:

Calculation of future levels of runup. A brief discussion took place on the parameters necessary to consider when calculating future runup values. It was clarified that the runup calculation is based on more than determining mean water level changes and superimposing that onto current runup heights. Beach slope, geometry, and potential obstructions along the beach play a significant role in the runup height. How the shore is treated, whether it is assumed to be fixed or moving, will have implications on the runup calculations as well.

Planned Steps to Secure Feedback, Finalize, and Share Project Outputs

Aaron McGregor, OST and Lauma Jurkevics, DWR

- **Technical Methods Manual:** Bob Battalio (ESA) will coordinate a second Technical Methods Manual Committee call/webcast to discuss the issues brought up in the Focus Group meeting. Bob will also coordinate with Peter on what figures/data/information will be needed for incorporation into the TMM.
- **Project Evaluation:** Following the Focus Group meeting, Ocean Science Trust will distribute a questionnaire, which will ultimately be integrated into a report that will potentially include a section for continued evaluation, if feasible.
- **Quick Guide Coastal Supplement:** Steve Cowdin (Ford Consulting) will incorporate feedback into the Quick Guide Supplement and distribute a revised draft of it to the Focus Group for targeted feedback and review.

Appendix A: Agenda

Sea Level Rise and Floodplain Management Project

Focus Group Meeting #3 Draft Agenda

June 18, 2015, 10:00 am – 2:00 pm

2101 Webster Street, 18th Floor, Oakland, CA 94612

Room: AECOM Conference Room

Meeting Goals:

- Present on status of tiered product series – Quick Guide Supplement, Comprehensive Report and Technical Methods Manual – and plans for finalizing these products
- Finalize plans for dissemination and uptake of proposed products

- 10:00** **Welcome & Introductions** (*Lauma Jurkevics, Department of Water Resources*)
Recap of last meeting
Project Timeline
Meeting goals
- 10:15** **Project Evaluation** (*Marisa Villarreal, Ocean Science Trust*)
Present approach and timeline to define and measure success
- 10:30** **Quick Guide Supplement Status Update** (*David Ford Consulting & DWR*)
Presentation of Quick Guide Supplement Draft
Secure feedback and identify other relevant references and illustrations for consideration
Discuss timeline for finalizing product and strategy for sharing and distributing with partners
- 11:30** **Comprehensive Report Status Update** (*Aaron McGregor, Ocean Science Trust*)
Review revised outline and identify additional case studies and resources for consideration
Discuss timeline for finalizing product and strategy for sharing and distributing with partners
- 12:00** **Working Lunch break** (*lunch provided*)
- 12:15** **Technical Modeling and Methods Manual Status Update**
(*Bob Battalio, Environmental Science & Assoc.; Dan Cayan and Peter Bromirski, Scripps*)
Selection of climate scenarios and time scales
Presentation on developments of conceptual framework and translation to the Manual
Discuss timeline for finalizing product and strategy for sharing and distributing with partners
- 1:45** **Planned Steps to Secure Feedback, Finalize and Share Project Outputs**
(*Aaron McGregor, Ocean Science Trust and Lauma Jurkevics, Department of Water Resources*)
Recap of plans for releasing final products
Identify any additional key audiences and venues/pathways for distribution
- 2:00** **Meeting Adjourn**

Appendix B – Descriptive table of tiered product series

	Comprehensive Report	Technical Methods Manual	Quick Guide Supplement
Function	To provide a more comprehensive narrative or summary of the project components and incorporate key information needs identified in the Needs Assessment and Focus Group meetings.	To provide a guide for local communities (planners and technical practitioners) that connects SIO modeling outputs to FEMA hazard mapping guidelines. Also presents SIO modeling methodology in a way that allows replication in additional sites/geographies.	To provide a high level overview on sea-level rise and floodplain management in the context of the NFIP.
Content	In addition to providing information on local floodplain management in the context of the NFIP and other future conditions mapping initiatives, it would also provide information on related coastal processes, a summary of needs assessment findings, SIO modeling efforts, and reference additional resources for sea-level rise planning and management. <i>(~15 pages in length)</i>	Will detail SIO methods and present them in a way that allows city/county planners and technical practitioners to reproduce analyses in other regions. It will also discuss modeling in the context of FEMA open coast mapping guidelines, and include an evaluation of approaches to relate SIO modeling (and potentially other models) to existing FEMA flood maps to estimate future flood conditions. <i>(~ 30 pages in length)</i>	It will include an explanation of current conditions mapping and future conditions mapping as it relates to the NFIP, an explanation of FEMA Flood Insurance Rate Maps (FIRMs), a brief discussion of the ways in which other sea-level rise planning tools and resources could support future condition mapping in the context of the NFIP, informational resources and conceptual diagrams of coastal erosion and shoreline change and how these processes relate to coastal flooding from sea-level rise. <i>(~ 5 pages in length)</i>
Audience	Local floodplain managers, city and county planners, coastal flooding and hazard mitigation program coordinators, policy and decision-makers within the state and beyond	Local (municipal) planners, environmental managers, the technical practitioners (i.e. consultants) that help implement their work.	Floodplain managers (high-level), city administrators, property owners

Appendix C – Sea-Level Rise and Floodplain Management Comprehensive Report Outline [Draft]

1. Report goals

2. Background

- 2.1. Decision context
- 2.2. Needs Assessment purpose and findings
- 2.3. Complimentary products summary
 - 2.3.1.Quick Guide supplement
 - 2.3.2.Technical Methods Manual

3. National Flood Insurance Program

3.1. FEMA Flood Insurance Rate Maps

- FEMA maps coastal flood hazards on FIRMs based on existing conditions
- FIRMs show areas of high flood hazard (base or 1% annual chance flood) called Special Flood Hazard Areas (SFHAs)
- Coastal SFHAs include:
 - Zone VE: flood hazard includes wave heights equal to or greater than 3 feet and high velocity wave action
 - Zone AE: flood hazard includes wave heights less than 3 feet
 - Coastal AE: flood hazard includes wave heights between 1.5 and 3 feet, delineated by a Limit of Moderate Wave Action (LiMWA) boundary
- FIRMs are regulatory products
- FIRMs do NOT show changes in SFHAs attributable to future condition sea level rise
- A community may be eligible for NFIP Community Rating System credit if it provides information about areas that are projected to be susceptible to flooding in the future because of climate change or sea level rise which are not currently mapped on the FIRM

3.2. Future conditions mapping

3.2.1.Regulatory and non-regulatory products (overview of RiskMap)

3.2.2.Mapping future conditions on FIRMs

- See Georgia Quick Guide update

3.2.3.Riverine and other land use examples

- City of Roseville and Charlotte-Mecklenburg

3.2.4.Technical Mapping Advisory Committee Overview

- FEMA San Francisco Pilot

3.2.5.Executive Order 13690

3.2.6.Climate change and the Community Rating System

- Coastal communities that prepare for future flood hazards caused by sea level rise may have properties eligible for reduced flood insurance premiums because of NFIP CRS credit earned from specified activities, including :
 - Implementing public information and outreach programs
 - Mapping the future flood hazards
 - Adopting regulatory standards that exceed NFIP minimum requirements
 - Implementing appropriate flood damage reduction (mitigation) activities

- Implementing appropriate flood warning programs

4. Science of sea level rise and related coastal processes

- Sea level rise is an increase in the mean (average) level of the ocean.
- Sea level rise is affected by global as well as regional and local factors.
- Major global factors affecting sea level rise include:
 - Heating and expansion of ocean water
 - Melting of the world's ice sheets, ice caps and glaciers
- Major regional and local factors affecting sea level rise include:
 - Changes in ocean and atmospheric patterns (e.g., El Nino)
 - Vertical land movement caused by tectonic forces
 - Changes in hydrologic cycles (e.g., river flows)
- During the 20th century, sea level has risen by about 7 inches along California's coastline
- In addition, sea levels will also be affected by storm surges and wave runup, especially during severe storms
- Extreme and rare events can raise sea level much faster than long-term changes in mean sea levels, including temporary changes caused by earthquake-induced tsunamis and immediate and permanent changes in land subsidence and/or uplift caused by a great earthquake

5. California sea level rise resources

5.1. Guidance Documents

- CO-CAT SLR Guidance
- WCGA Guidance (Barnard)
- San Francisco Capital Improvement
- Other examples relevant to other states

5.2. Mapping products and tools

- NOAA SLR Viewer
- CoSMoS
- RiskMap

5.3. Other efforts to address SLR

- Regional (SD, LA, Humboldt)

5.4. Incentive programs, funding sources and other resources

5.4.1. Hazard mitigation grants

- Monterey

5.4.2. Planning (required vs. optional, timing of plan updates, i.e., General Plan)

- Santa Cruz County floodplain update
- Marin County LCP

5.5. Other

Appendix D - Audiences for tiered products

Product	Venues	Websites	Other Considerations
<i>Quick Guide Supplement</i>	<ul style="list-style-type: none"> Product release workshops, one in Southern California, one in Northern California for local floodplain managers. To be hosted by DWR NFIP community assistance visits Floodplain Management Association Annual Meeting in September in Palm Springs Flood Preparedness week 	<ul style="list-style-type: none"> Department of Water Resources Ocean Science Trust Floodplain Management Association FEMA CAL OES 	
<i>Comprehensive Report</i>	<ul style="list-style-type: none"> Product release workshops, one in Southern California, one in Northern California for local floodplain managers. To be hosted by DWR NFIP community assistance visits Floodplain Management Association Annual Meeting in September in Palm Springs 	<ul style="list-style-type: none"> Department of Water Resources Ocean Science Trust Floodplain Management Association FEMA CAL OES California Climate Change Portal, Department of Natural Resources 	
<i>Technical Methods Manual</i>	<ul style="list-style-type: none"> Floodplain Management Association Annual Meeting in September in Palm Springs 	<ul style="list-style-type: none"> Department of Water Resources Ocean Science Trust Floodplain Management Association FEMA CAL OES 	<ul style="list-style-type: none"> Applied journals Practitioner conferences