

2D or not 2D – PART 2



FMA's 2D Initiative

How did we get to this point?

**2011 Retreat – Concept to add
Significant Topic Symposium's to
Conference Agenda's explored**

**Dec BOD meeting 2011 – Kathy
Schaefer's Call...**

**2012 – FMA Formation of Modeling and
Mapping Committee to assemble 2D
Modeling Symposium**



FMA's 2D Initiative

The Premise (Retroactive) :

Recent advancements in computer modeling and mapping capabilities have raised questions and demonstrated numerous new issues.

While proponents support the increased precision in results, it has been difficult to convey these results to the public and regulatory authorities and gain their confidence in these studies.



•FMA's 2D Initiative

From our Modeling and Mapping Committee:

- 1) It would be helpful to assemble experts and users of these new technologies, to gain a better understanding of the issues.
- 2) It would be helpful to get an understanding of the state of the art capabilities of the industry
- 3) It would be helpful to review the current state of the marriage between “modeler and software”



1-Day of 2-D Symposium (2012)

- ***SYMPOSIUM OBJECTIVE: To discuss issues and identify needed FEMA policy and technical guidance for local communities regarding the use of 2-Dimensional hydraulic models for flood hazard delineation in steady state riverine flood analysis.***



1-Day of 2-D Symposium (2012)

- **Prior to the Symposium, FMA issued a set of challenge models.**
- **The morning session included presentations on software capabilities and their numeric solutions, as well as other issues from experiences and case studies.**
 - **The discussions were “lively and sometimes contentious”.**

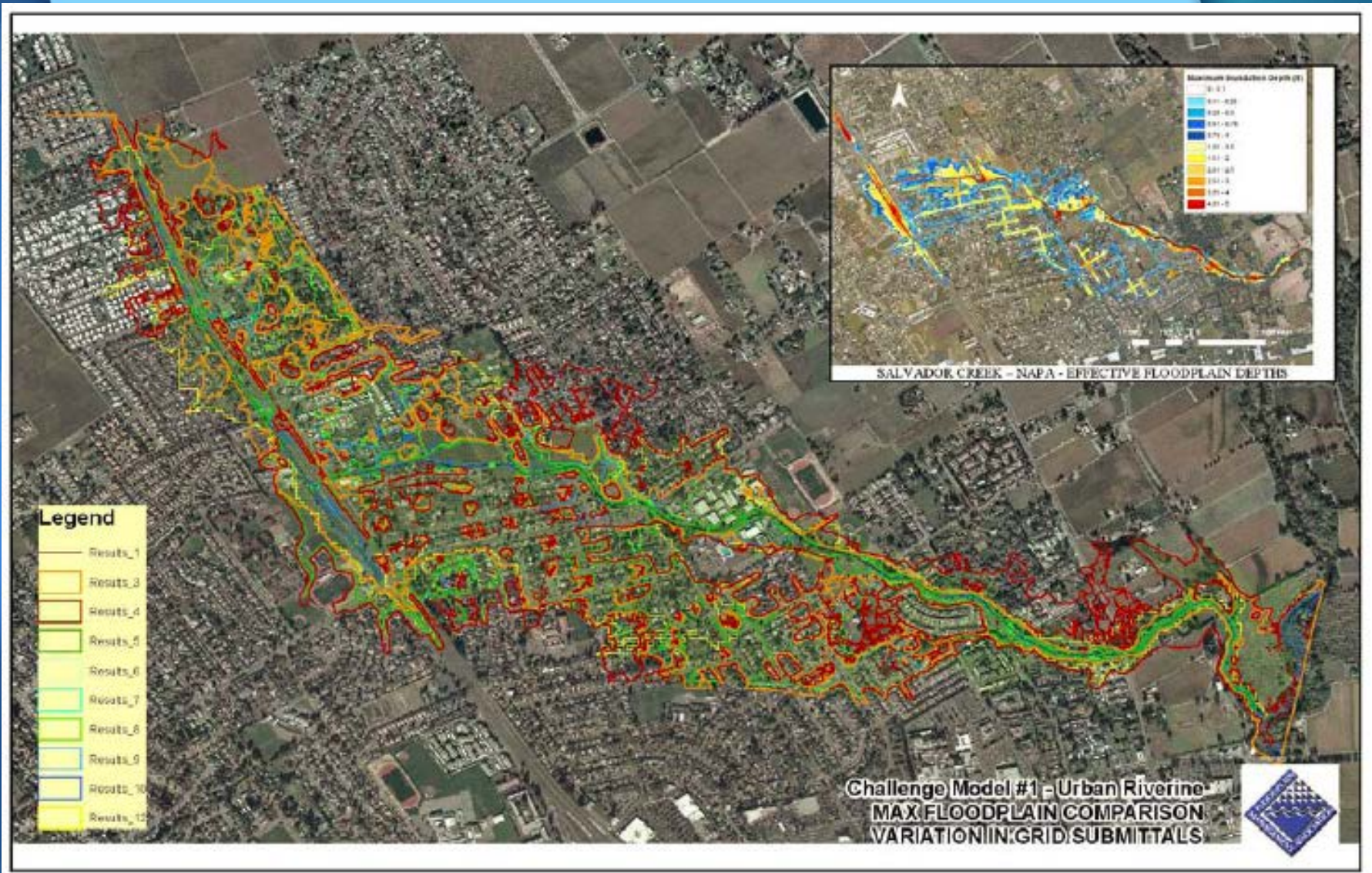


1-Day of 2-D Symposium (2012)

- **The afternoon started with a review of the Challenge Modeling Results:**
 - It was reported that there was a wide variation in the results on each of the three challenge problems issued.
 - While there were attempts to identify differences in the software solutions in the results, these differences were not discernible compared to differences in data interpretation of stated problem factors into the assumed input values for the software.
 - We did not grade the participants or software on their solution of the problem, rather we simply noted the variation in results for the stated problem sets.



1-Day of 2-D Symposium (2012)



1-Day of 2-D Symposium (2012)

- The afternoon ended with roundtable discussions of issues, and breakout sessions of issue identification.



1-Day of 2-D Symposium (2012)

- (Rick Sacbibt FEMA HQ)

“From a program perspective, I appreciate the challenge. I'm curious... The problem posed to you guys is that you'll arrive at an answer when posed with a question, but how would you control the variables. What data should we recycle? If we're going to spend time/money to store this data, we need to know what data pieces we should keep for these standards. Funding, level of expertise of modeler, and what it will be used for are all issues for how to develop the model.

From FEMA perspective, it's about how we're communicating risk. I don't want to choose between neighbor A and B, so I'm going to paint with broad brush. These are the things I'm thinking about b/c they are conversations we're having at HQ. But how do we communicate this appropriately? What's the data they need so they can understand it? Do I need to spend \$5 million dollars if they can understand risk based on hand-drawn on back of napkin. Am I looking for model? No; I'm looking for an approach.

Timeframe for standards recreation is about 3 years. So, what would you want to see in 3 years?

I can relate to a number of the challenges you all deal with. I'm interested in hearing more from you all.”

- Session 7 – Facilitated Q&A Notes



FMA Products:



FMA Products:



1- Day of 2-D Highlights

2-D MODELING SYMPOSIUM INTERACTIVE DISCUSSION OUTLINE

Sacramento, California * September 4, 2012

Kathy Schaefer, Symposium Chair, FEMA Region 9

SYMPOSIUM OBJECTIVE: To discuss issues and identify needed FEMA policy and technical guidance for local communities regarding the use of 2-Dimensional hydraulic models for flood hazard delineation in steady state riverine flood analysis.

3 Page Summary Document



FMA Products:



1- Day of 2-D Highlights

2-D MODELING SYMPOSIUM INTERACTIVE DISCUSSION OUTLINE

Sacramento, California * September 4, 2012



1- Day of 2-D: Summary of Proceedings

2-D MODELING SYMPOSIUM INTERACTIVE DISCUSSION

Sacramento, California * September 4, 2012

38 pages: FMA Identified 126 distinct Issues Identified in the roundtable discussions.



FMA Products:



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FMA – 2D Challenge Models 2012

**Summary of the Participation in the 2D Modeling Challenges for 2012
Results of Challenge Models initially were presented at the 1-Day of 2D
Symposium September 4, 2012**

15 Page Document summarizing the results of the various Challenge Models and identifying the variety of software products employed.

Differences in methodology between the Challenge models and UKEA Benchmarking were discussed in the Symposium.



1-Day of 2-D Day One

- **Original Goal**

- Develop a consolidated list of issues associated with the use of 2-D modeling for flood studies.
- Bring together the best minds to discuss the issues and to collect input.

- **Success!!**

- Based on input from the “Dream Team” we developed a list of 46 issues along with a matrix of recommended methods for addressing the issues.

“DREAM TEAM”:



(Speakers at the Symposium and participants in the Challenge Models were awarded special “Geek” glasses by Kath

2013 – ANOTHER DAY OF 2D

▪ Follow On Activities

- Retained the services of the UC Davis to examine the issues.
- Assemble Blue Ribbon Panel of Experts to discuss the issues, and provide guidance

▪ Project Objectives

- Contribute to the general understanding of the assumptions, limitations, and capabilities of 2-D models for the determination of floodplain areas, thereby improving the quality of the application of 2-D models.
- Improve existing FEMA guidelines and specifications associated with the use of 2-D models.
- Produce written guidelines that address limitations and capabilities of 2-D models to help practitioners, decision and policy makers make effective use of 2-D models.

1-Day of 2-D Day One

- **Blue Ribbon Committee**
 - BPAMM – Best Practices and Advancements in Mapping and Modeling.
- **Fabian Bombardelli**
- **Shaymal Chowdhury**
- **Dhillon Devinder**
- **Bill Fleenor**
- **Brad Hall**
- **M D Haque**
- **Zhida Song-James**
- **Thomas Plummer**
- **Gary Brunner**
- **Kathleen Schaefer**

QUESTIONS FOR UC DAVIS TEAM:

Verification of the Software Models UC Davis Team

- **Can we build a open catalog of data and models for verification and how might that change in the future?**
- **Can we build a standard set of tests for validating the software?**

HOW DID THE BRP WORK:

Human Factors in Modeling and Mapping

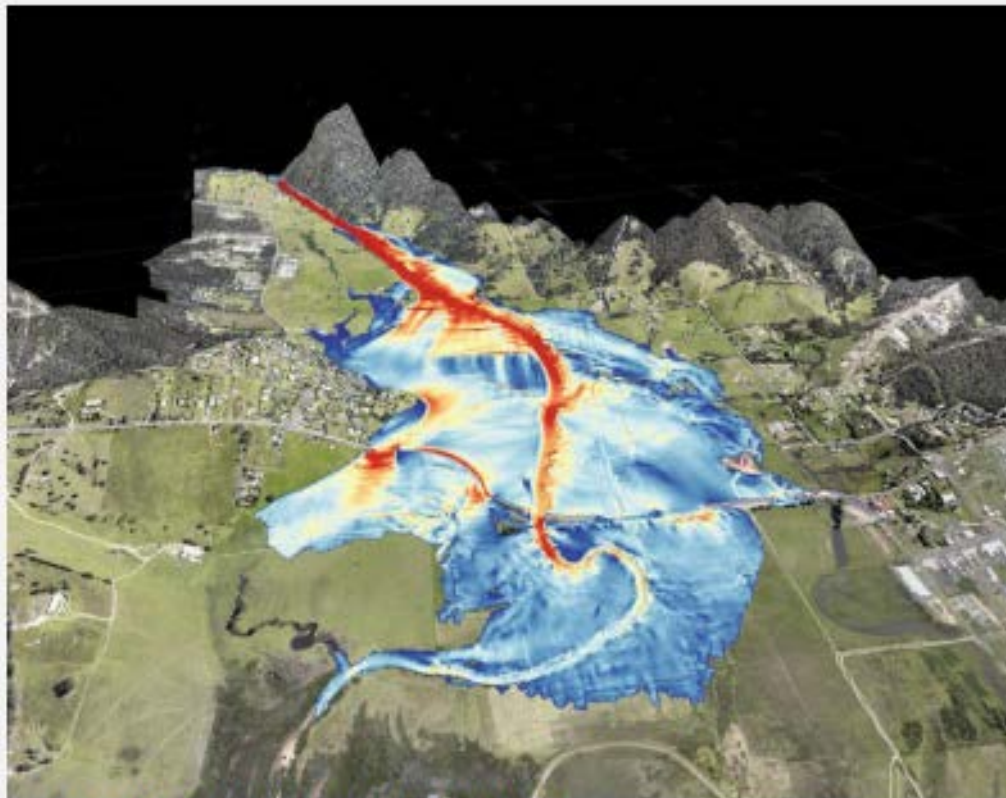
You can't take the modeler out of the equation.

Gary Brunner

RESULTS OF BRP EFFORT:

On the issues associated with 2-D modeling
for flood mapping purposes

Devinder S. Dhillon, Fabián A. Bombardelli, Wm. E. Fleenor and Kaveh
Zamani



Source: <http://www.confusionflood.com/applications>



RESULTS OF BRP EFFORT:

- FMA COMPANION DOCUMENT:



MORE RECENT EFFORTS:

- **Our Champion** with FEMA for this initiative has moved on from her position there.
- Through channels – FMA was asked to “carry the torch forward” and has done so by continuing to provide several sessions at our conferences.
- We’ve also continued our **informal** dialogues with BRP members, software vendors, modelers, and FEMA on these issues.
- We’ve started an initiative to collect Standards, Guidelines and Best Management Practices from around the world on these issues.

