Real-Time Inundation Modeling (RTIM) Tool – Developed for Inundation Forecasting in the Central Valley Floodplains

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Presentation Overview

1. Motivation
2. RTIM Overview
3. February 2019 Storm Events
4. Current Status / Planned Efforts
Motivation
What happens if the levee fails?
RTIM Overview

- GUI connecting multiple platforms:
  - CNRFC
  - HEC-RAS
  - FERIX
- Creates detailed inundation animations
- Easily share results
RTIM Design
HEC-RAS Model

- CVFED Baseline RAS
  Sacramento River System
  - 670 river miles of channel
  - Cross Sections, 4,071
  - 2D floodplain – 2,353 sq-mi
  - Simulation under 1 hour
    - 1D/2D unsteady state
HEC-RAS Model

- CVFED Baseline RAS
  - San Joaquin River System
    - 698 river miles of channel
    - Cross Sections, 5,393
    - 2D floodplain – 2,019 sq-mi
    - Simulation under 2 hour
      - 1D/2D unsteady state
CNRFC Rivers/Reservoirs

- Daily Forecast
  - 100 Forecasts Pts
  - 149 Other Pts
  - Ensemble
RTIM Interface
Gauge Comparisons Tab
FERIX Publisher Tab

Scenario Flood Information

Base Model: San Joaquin River System - Forecast - Notings
Simulation Period: 2019/08/07 08:00 to 2019/08/17 05:00
Levee Breach: Old River 00R 2_13_02416
Max Flow (CFS): 8,748.33
Max Depth (ft): 29.51
Total Volume (Acre-ft): 19,308.64

Publish Options:
Resolution (ft per pixel): 100
Time Step Increments: 0 HOUR
Total Time Steps: 80

Publish Close
Publish Results - FERIX
Real-Time Storm Events

February Storms

- **Cache Creek**
  - 14th – 21,225 cfs
  - 27th – 27,162 cfs
Real-Time Storm Events
February 27 Results

Observe overtopping

High Water Marks
Hypothetical Breach
Current/Planned Efforts

- Operational (in-use since this water year)
- Refining Graphical User Interface
- Incorporate future HEC-RAS features
- Train staff
- Outreach
Questions

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GEI Consultants
Scenario Builder Tab

**File Network Viewer**

- Navigate and modify components of a scenario
- View and modify a boundary condition
Scenario Builder Tab

Model Network Viewer

- See the model features
- Click and view feature graphics
Scenario Builder Tab

Context Editor

- Display and edit plots and table
  - Levee breach
  - BC Hydrographs
Scenario Builder Tab

**Scenario Name Viewer**

- Display the plan title, the plan descriptions, and HEC-RAS files associated with the plan
Post Flood Comparison

- **1997 Levee Breach, Sutter Bypass**
Post Flood Comparison

- 1997 Levee Breach, Feather River
RTIM Applications