



Innovative Uses of UDFCD's Flood Warning Services

2017 UDFCD Annual Seminar



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Flood Warning & Information Services

Historical Context



A Federal/Regional/Local Early Warning Partnership



Urban Drainage & Flood Control District Flood Warning Program



Big Thompson Canyon
1976



*Serving the greater Denver/Boulder metropolitan area since 1979
in cooperation with NOAA's National Weather Service*



Flood Warning Program Primary Mission



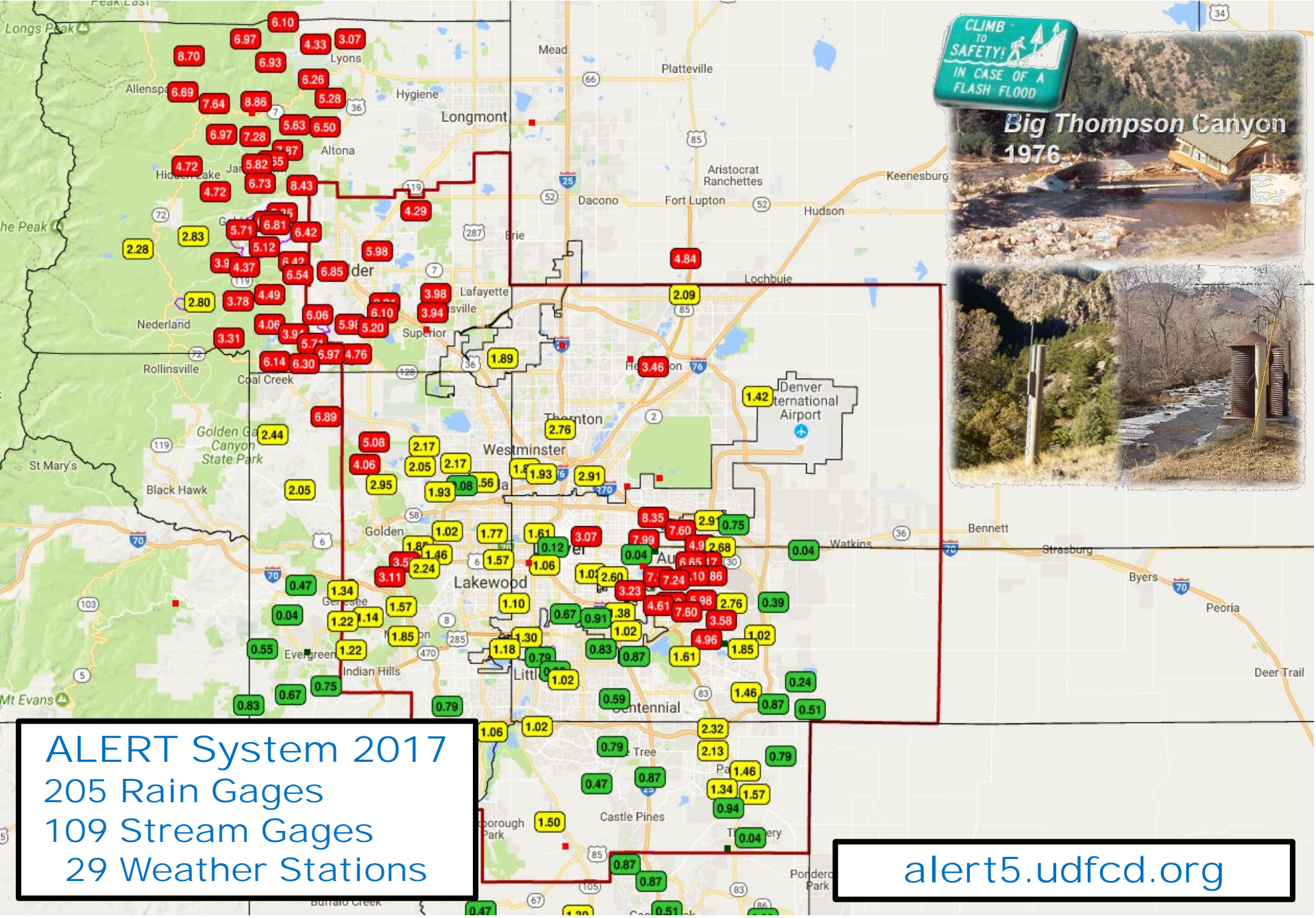
Provide local governments with early notifications of potential and imminent flood threats (*primarily flash flood threats*) in time to take appropriate defensive actions...



protecting lives and property

OBJECTIVES: situational awareness...common operating picture...leaning forward...plain language...build relationships





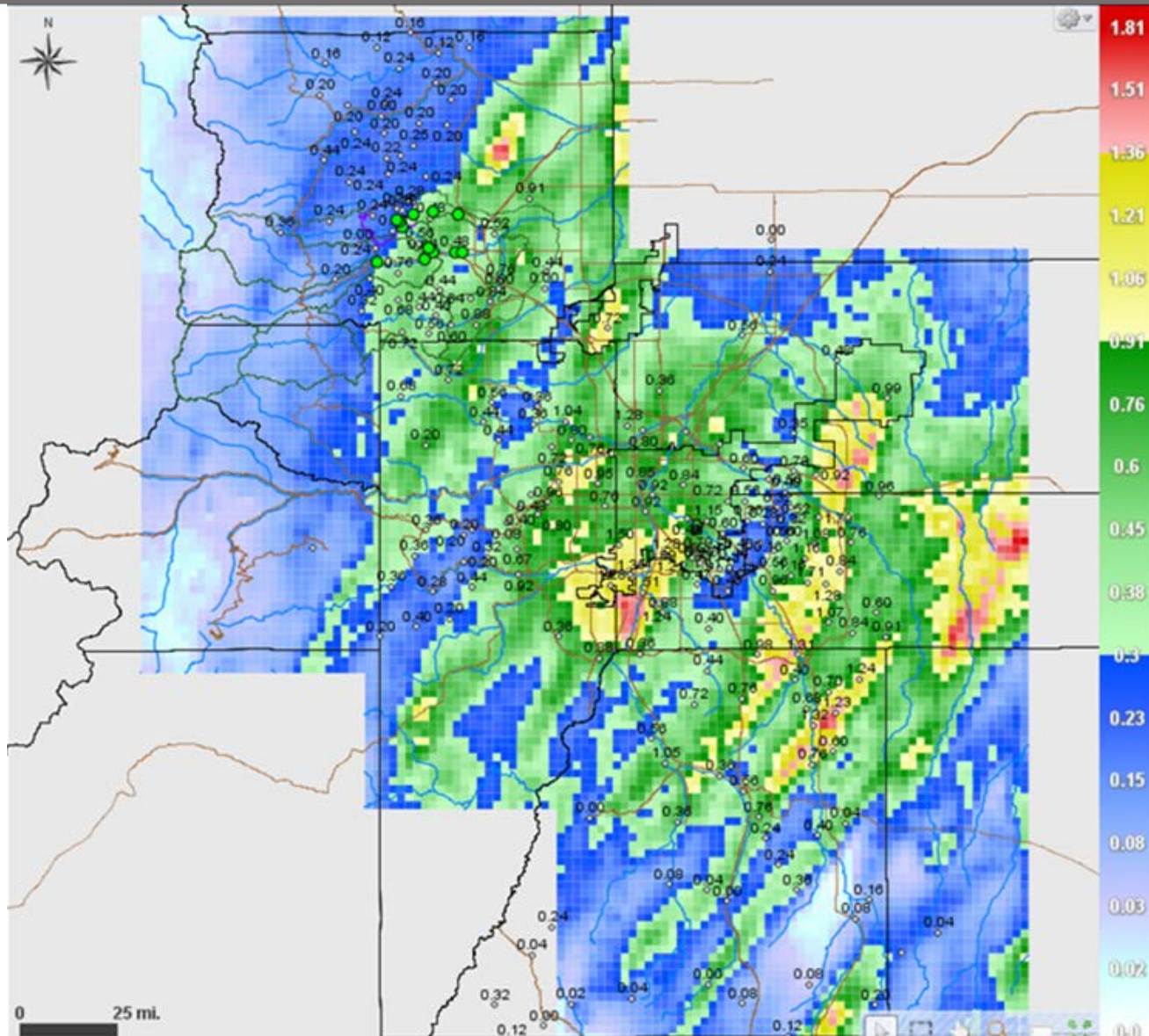
**Big Thompson Canyon
1976**



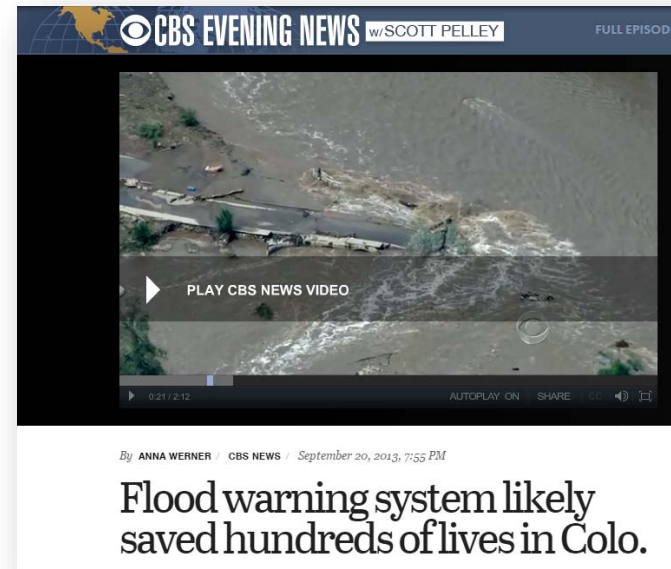
ALERT System 2017
 205 Rain Gages
 109 Stream Gages
 29 Weather Stations

alert5.udfcd.org

Radar Precip & Other Products



Positive News Coverage



The 2013 Colorado Floods

Public response is predictable...right?



-
- Conventional**
 - &**
 - Unconventional**

Some Innovative Uses...

by many creative individuals over the years.



REAL-TIME FLOOD DETECTION & FORECASTS



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This website was developed for our flood warning program partners. Public users should be directed to the [Contrail®](#) website supported by [OneRain](#).



Water Conservation *by Aurora*

July 1989

JUL 31 1989
NEWS AURORA F.C.D.

A Newsletter
for Aurorans

New Technology Saves Water

Aurora's Parks Division is using a state-of-the-art computerized irrigation control system, connecting eleven parks to a single command center. The system can be operated by just one employee. In addition to saving labor costs, this computerized system helps the Parks Division conserve water.

Water is becoming more expensive for the City. In 1988 the Parks Division paid \$438,000 for almost a quarter of a billion gallons of water to irrigate landscaped areas. The new irrigation control system is expected to save about 12.5 percent of irrigation costs a year. It is installed on a microcomputer at central facilities and electronically connected to timing devices and radiophones in the parks. It constantly monitors water usage in parks and will help prevent overwatering. In the past it was too expensive to send an

employee out to turn sprinklers off when it started to rain. Now, one employee can re-program the whole system from a remote location. The operator can program watering patterns station by station and adjust the duration of watering. The system even has the ability to sense a higher-than-average rate of flow and warn the operator of breaks in the lines. When a water main breaks, the typical irrigation system can lose 4,000 gallons of water a minute.

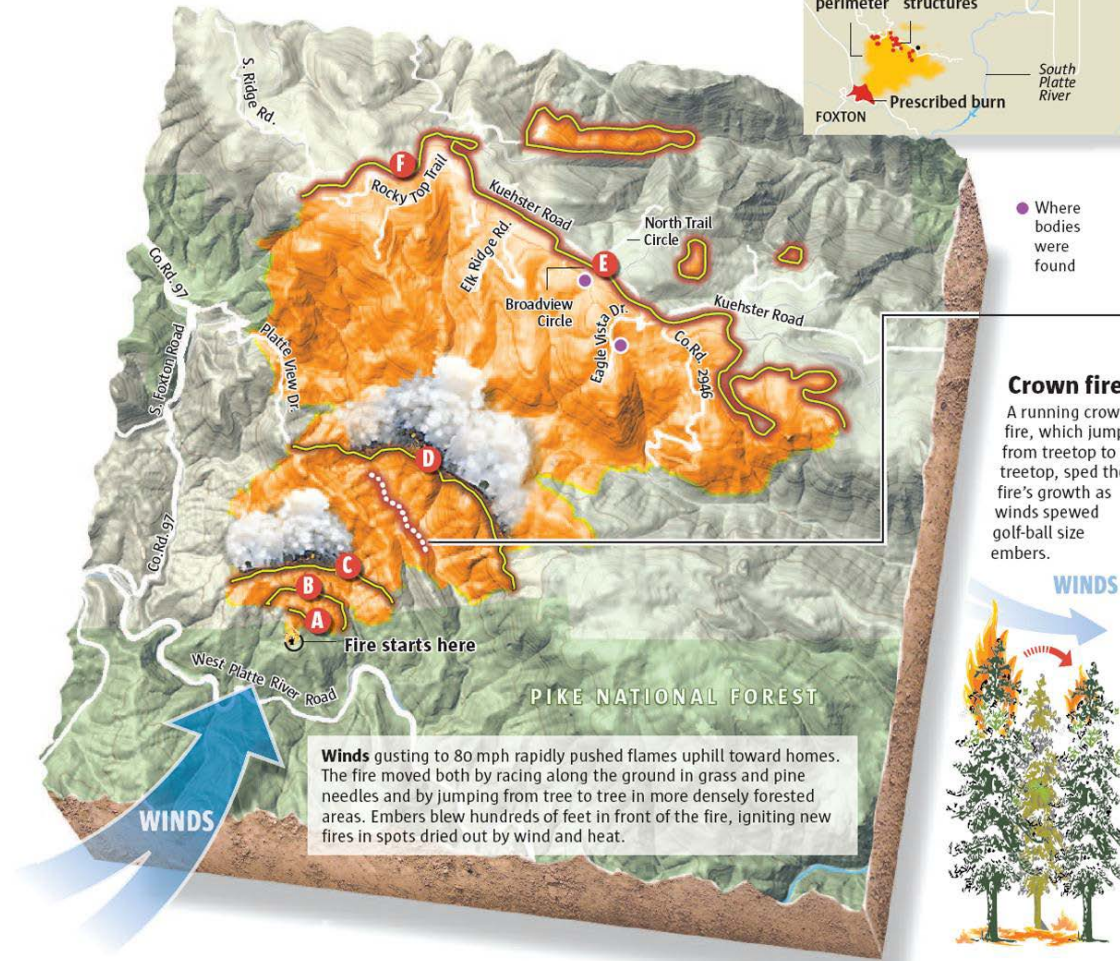
Soon the City's computer will be linked to the Urban Drainage Flood Control System at Westerly Creek and Tollgate Creek drainage basins. This hook-up will deliver up-to-the-minute rainfall data, including the evaporative transpiration rate. Armed with more precise information, our system can save even more water. Eventually each park will have a weather indicator that directly connects to the irrigation system, allowing even more sensitive control of water usage.

- Conventional
- Unconventional

Fire Fighting & Mitigation

Getting out of hand

As the Lower North Fork fire erupted March 26, officials repeatedly underestimated the severity of the fire. Residents say that gave them a false sense of security. By the time the order to evacuate came, it was only minutes before flames roared up to their homes.



- Conventional
- Unconventional

Fire Behavior/Prediction

2003 email excerpt from the NWS Forecast Office in Boulder:

"Just wanted to let you know that the ALERT mesonet data was very valuable for our support of the wildfires on October 29. The Button Rock, Calwood Ranch, and Sugarloaf stations were perfectly located to cover the fire near Jamestown and were used heavily, while the Highlands Ranch and Castle Rock stations aided our knowledge of the weather conditions in that area. There was a lot of variability of humidity and wind in both time and space on that day, but your network made the conditions at the fires perfectly clear. Those of us on shift that day were very glad to have the data!"



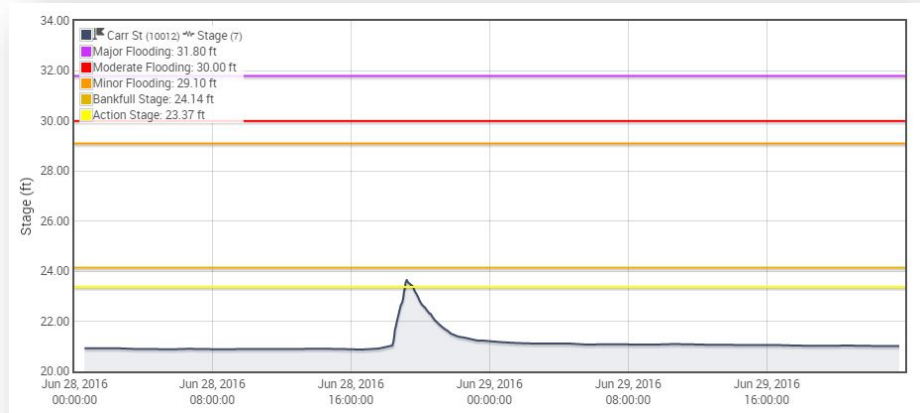
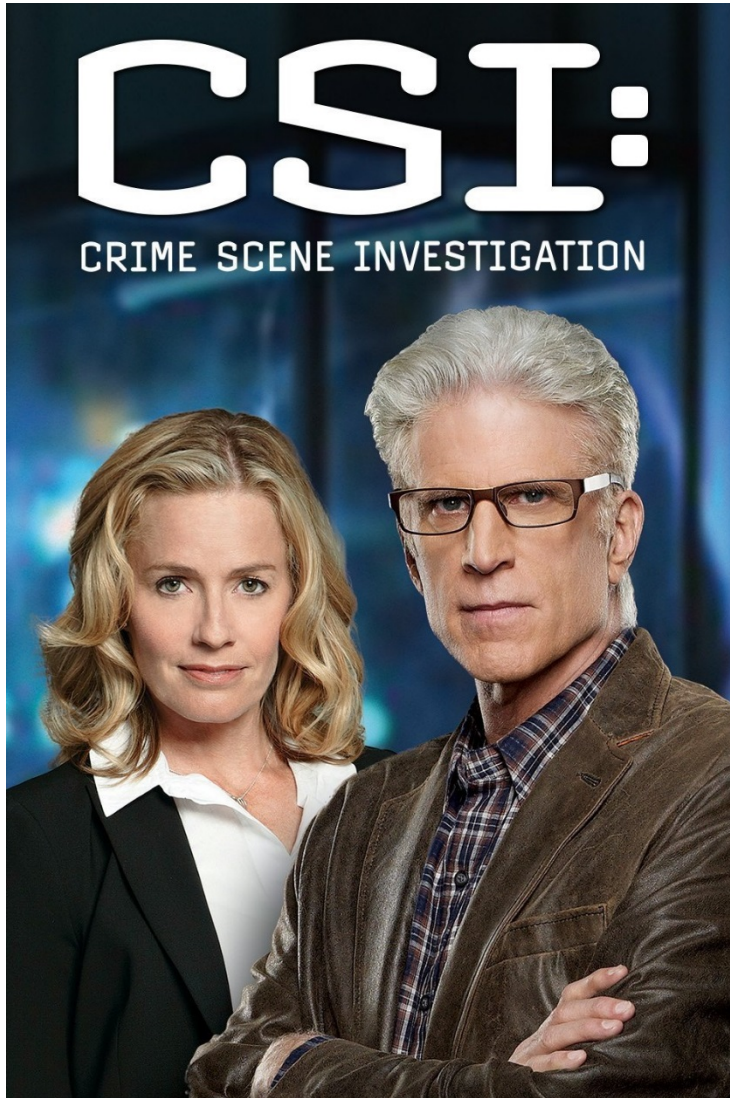
- Conventional
- Unconventional

Construction Management



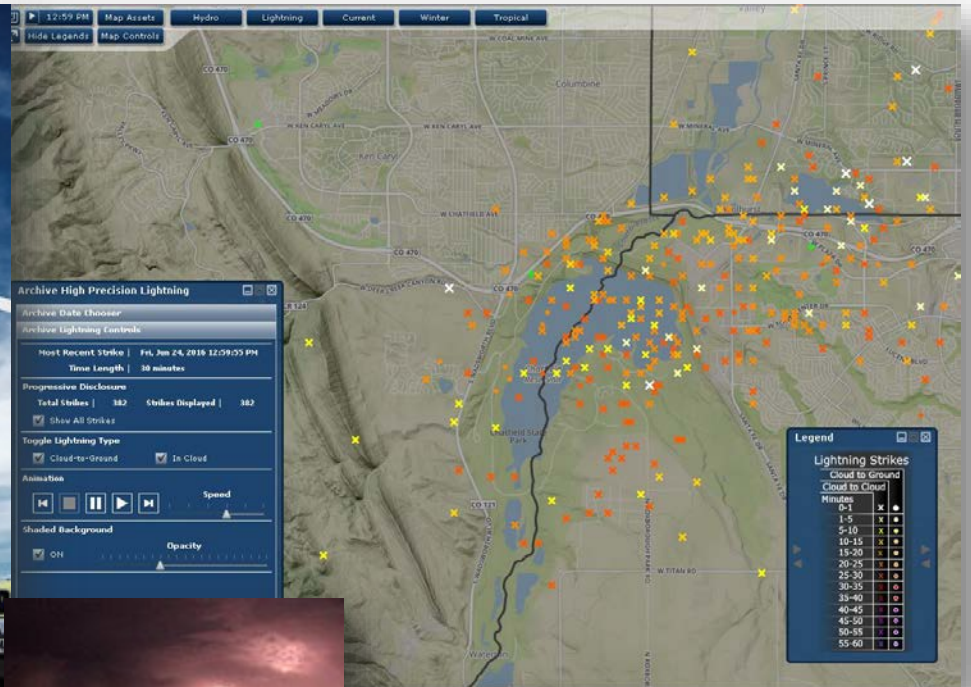
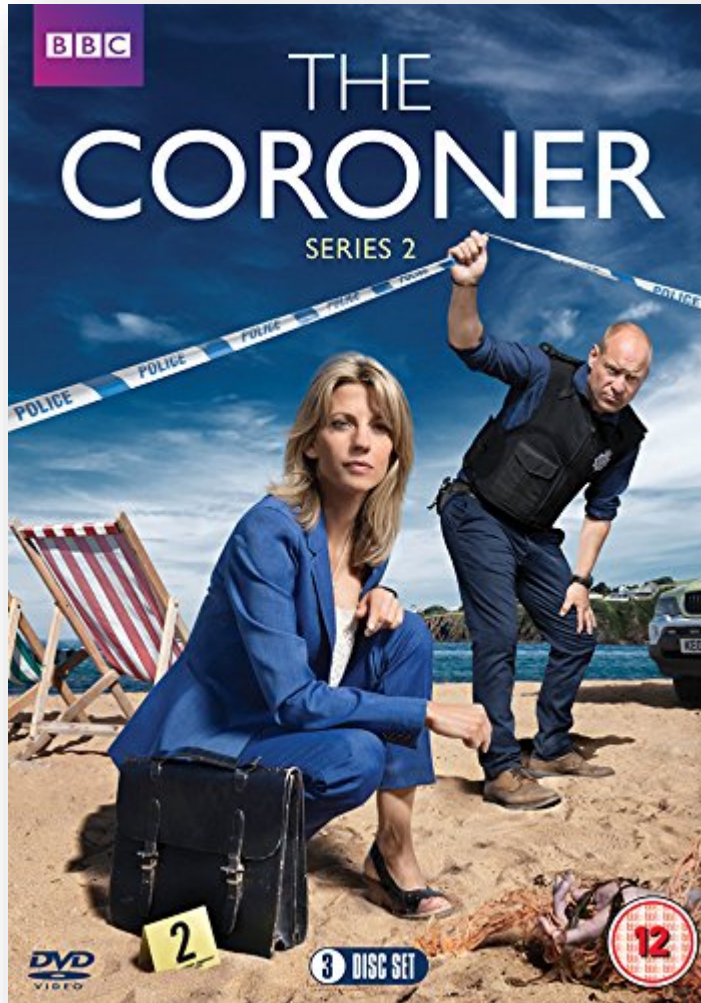
- Conventional
- Unconventional

CSI – Denver



- Conventional
- Unconventional

Sudden/Violent/Unexplained Deaths



- Conventional
- Unconventional

Insurance Fraud Prevention



- Conventional
- Unconventional

Law Enforcement



- Conventional
- Unconventional

Aviation

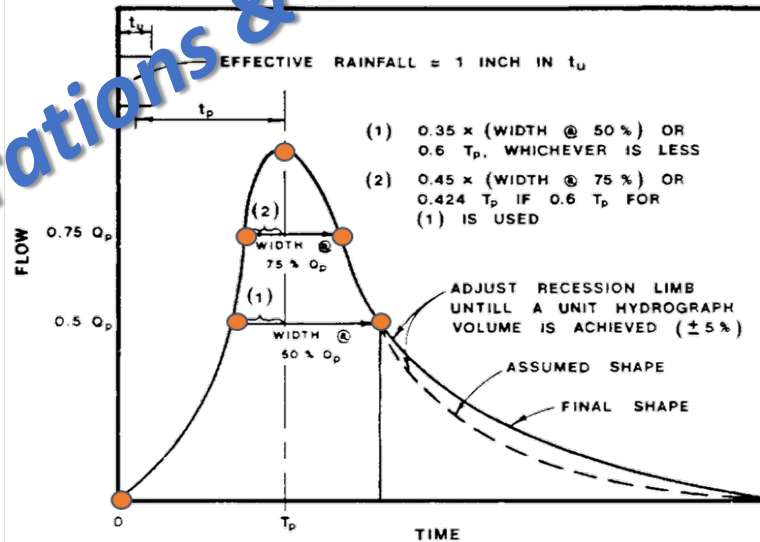
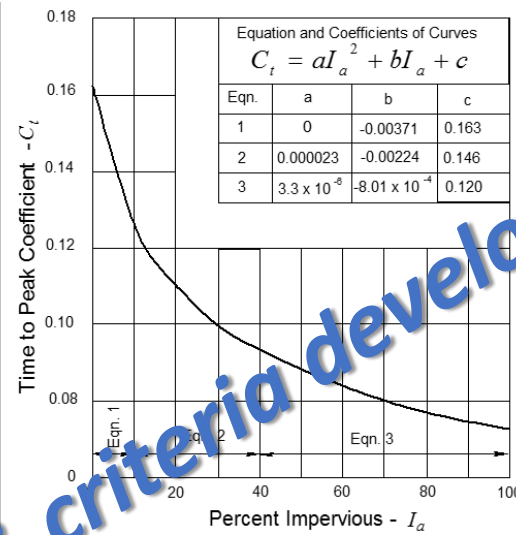
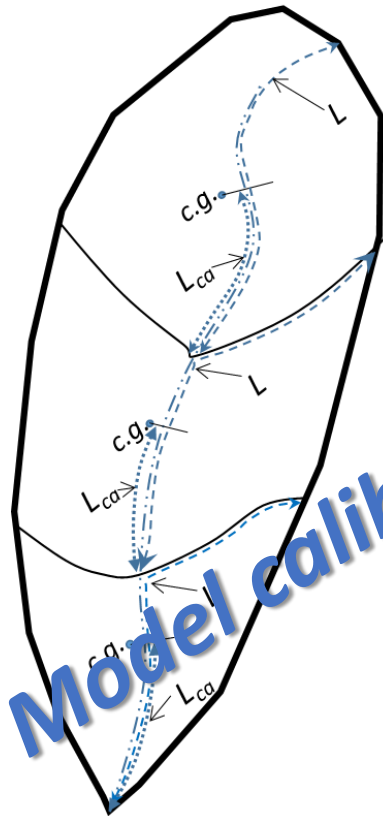


Water Recreation



Hydrologic Engineering Design

Rainfall/Runoff



Model calibrations & criteria development

- Conventional
- Unconventional

A few more examples:

- ✓ Water control design for channel construction projects
- ✓ Triggering routine maintenance, e.g. debris & trash pickup
- ✓ Dam safety & emergency operations
- ✓ Tracking larger storm events to take action
(Rich Borchardt, UDFCD)
- ✓ NPDES WQ sampling
- ✓ Hazmat incidents
- ✓ Inform design practices, e.g. learn how channel forming flows & flow durations impact stream stability
(Barb Chongtoua, UDFCD)
- ✓ Understanding extremes
- ✓ OSHA accident investigations
- ✓ Being first on scene
- ✓ Local News reporting
- ✓ Litigation

- Conventional
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Time for Crowdsourcing

YOUR TURN



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