Droughts: Are Floodplain Managers Needed If There Are No Floods?

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Overview

• Climate Change: Droughts & Floods
• Impacts on Floodplain Management
• Integrated Approach to Drought and Flood Management
• What’s next?
Climate Change: Droughts and Floods
Historic Climate Trends

Global Temperature Difference (°C)

Graph by: NASA Earth Observatory

Sea level rise since 1993

Rate of change = 3.2±0.4 mm/year

Graph by: Merrifield, et. al, *State of the Climate in 2011*, BAMS, 93 (7)
The Climate Is Changing

- Sea Level Rise
- Changing hurricane intensity and frequency
- Precipitation changes
  - Heavy downpours ("rain bombs")
  - Drought
- Temperature changes
  - Heat waves
  - Extreme heat
  - New lows
- Changes in winter storm frequency and intensity
Understanding Drought

Impacts

• Declining water supplies
• Reduced agricultural yields
• Health impacts in cities due to heat
• Increased wildfire
• Insect outbreaks
Impacts on Floodplain Management
Disaster Declarations by Flood (2010-2014)

Flooding disaster
No flooding disaster
Floods After Droughts

• Flash flood near Jamestown Colorado Cutoff Off (9/12/2013)

• Unlike other major springtime floods – early fall event during one of the driest months of the year
If your reality is this… How do you get people to think about this?

Flooding after Severe Drought
They just don’t understand, but Floodplain Managers can help
Flood Mitigation and Water Management: An Integrated Approach
Differences Between Flood and Drought Management

Flood Management
- Quick onset of impacts and short term needs
- **Surface water is inherently the managed resource**
- Requires one-time change from isolated individuals via floodplain buyout or flood mitigation
- Moderately impacted by Climate change
- Land use management is a cost effective approach

Drought Management
- Delayed and sustaining impacts
- **Groundwater is often the managed resource**
- Requires sustained behavioral change from the public at large via conservation
- Acutely impacted by climate change
- Technology and engineering can play a significant role

Source: ARRA, 2013
Traditional Approaches to Manage Drought

**Structural**
- Construction of Dams, levees, retention ponds

**Nonstructural**
- Public education and outreach
- Water conservation
- Alternative water sources
Consequences of Traditional Approaches

• Limited carrying capacity and catastrophic consequences when it fails
• Environmental degradation
• Lower water quality
Integrated Approach to Floodplain Management & Drought Mitigation

Wider Floodplains Meet Both Goals
Beyond California…

U.S. Drought Monitor

May 19, 2015

U.S. Drought Monitor

May 22, 2012

Intensity:
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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Beyond America…

Population Growth

Water Scarcity
What does this mean to you?

1. Learn to talk about Climate Change
2. Know that floods and droughts are not mutually exclusive
3. Look for ways to approach water storage and use and floodplain management holistically

Image Credit: California Department of Water Resources
Thank You