Floods

Reading
• Today: Ch 6
• Wednesday: Ch 7
• Next Monday: Ch 8

Classes of Floods: Regional
Mississippi-Missouri Summer 1993
48 deaths, total damages $20 billion

Major 20th Century Floods in the US

Summer 1993 WI Damages: $287.5 million

- Damaged Acreage (by county)
- Agricultural Damage (by county)
- Residential Damage (by county)
Classes of Floods: Flash Floods

Big Thompson Canyon, CO
July 31, 1976

Human Toll
• 139 dead
• 88 injured
• 7 missing

Destroyed
• 315 homes
• 45 mobile homes
• 52 businesses

Costs: $39 million

Classes of Floods: Ice Jams

Klondike River, Alaska
Yukon River, Alaska

Classes of Floods: Ice Jams

Reported Ice Jams 1999

CRREL Ice Jam Database

Classes of Floods: Dam Failure

Buffalo Creek WV 1972
125 dead, $60 million

Teton Dam Idaho 1976
11 dead, $400 million
Classes of Floods: Landslides and Volcanic Mudflows

- Landslide dam in New Zealand
- Mudflow (Lahar) damage near Mount St. Helens

Factors Flood Severity:
- Channel Morphology
- Size of Drainage Basin
- Degree of Development
Estimating Flood Frequency

1. Rank peak annual flows
   \( M = 1 \) highest flow
   \( M = N \) lowest flow

2. Calculate Recurrence Interval \( R \)
   \[ R = \frac{(N+1)}{M} \]

Discharge with 1% probability is the “100-year flood”

Reducing Flood Hazards: Floodplain Mapping

Reducing Flood Hazards: Restrictive Zoning

Reducing Flood Hazards: Relocating Structures

Soldiers Grove WI

Darlington WI
Reducing Flood Hazards:
Retention Ponds and Diversion Channels

Reducing Flood Hazards: Channelization

Reducing Flood Hazards: Levees

Reducing Flood Hazards: Flood Control Dams