Damcat DB

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Old Damcat deficiencies

- Bad Values
- Limited/Poor database design
  - Cannot accommodate multiple scenarios
  - Cannot accommodate multiple downstream locations
  - Cannot store/use cross section information
  - Cannot account for multiple sources, WFO, RFC
- Cannot interactively rerun dambreak model on the fly
- Cannot quickly and directly issue a forecast product

New Damcat – Initial Goals

- Address deficiencies of old DAMCAT
- Search feature to quickly locate the dam
- Display a realistic pre-computed forecast and be able to quickly send it out over the WAN
- On-screen edit capabilities of the critical inputs
- Rerun dambreak model and send on new Forecast values

New Damcat Database Schema

- Old Damcat: 1 Database Table
- New Damcat: 6 Database Tables
  - Table 1 - damcat_dams Static information about dam
  - Table 2 - damcat_down Downstream forecast points (many)
  - Table 3 - damcat_in Input model information (many)
  - Table 4 - damcat_pair Cross section elevation/top widths
  - Table 5 - damcat_out Output model information (many)
  - Table 6 – damcat_elev Elevation-storage curve

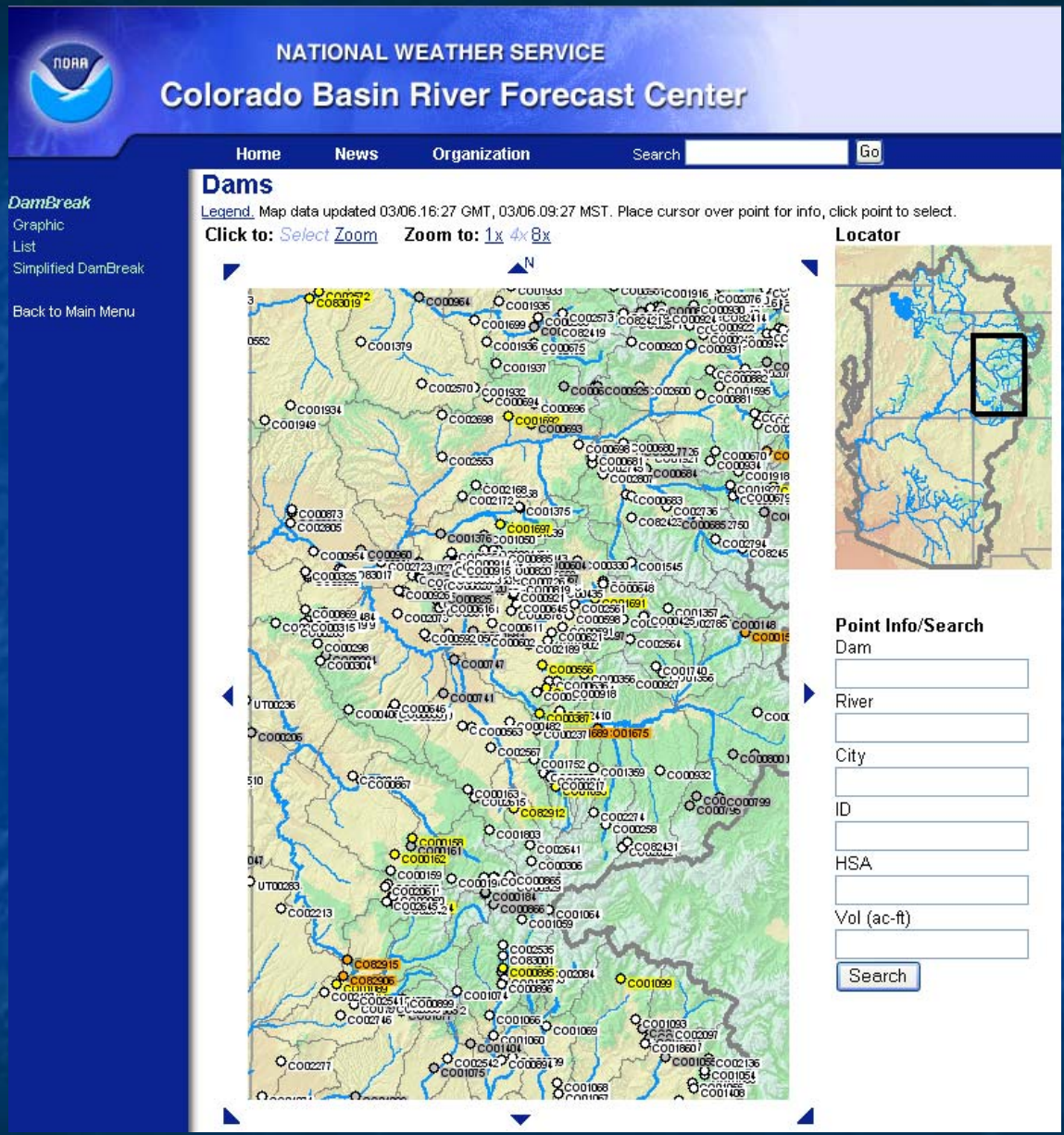
Dambreak Scenarios

- In the dambreak model, the two major factors that determine wave height are depth of water and speed of dam failure
- 9 Scenarios
  - **HF, HN, HS, MF, MN, MS, LF, LN, LS**
    - First letter = starting water height prior to failure
    - Second letter = speed at which dam fails

H = high	**F = fast**
M = medium	**N = normal**
L = low	**S = slow**

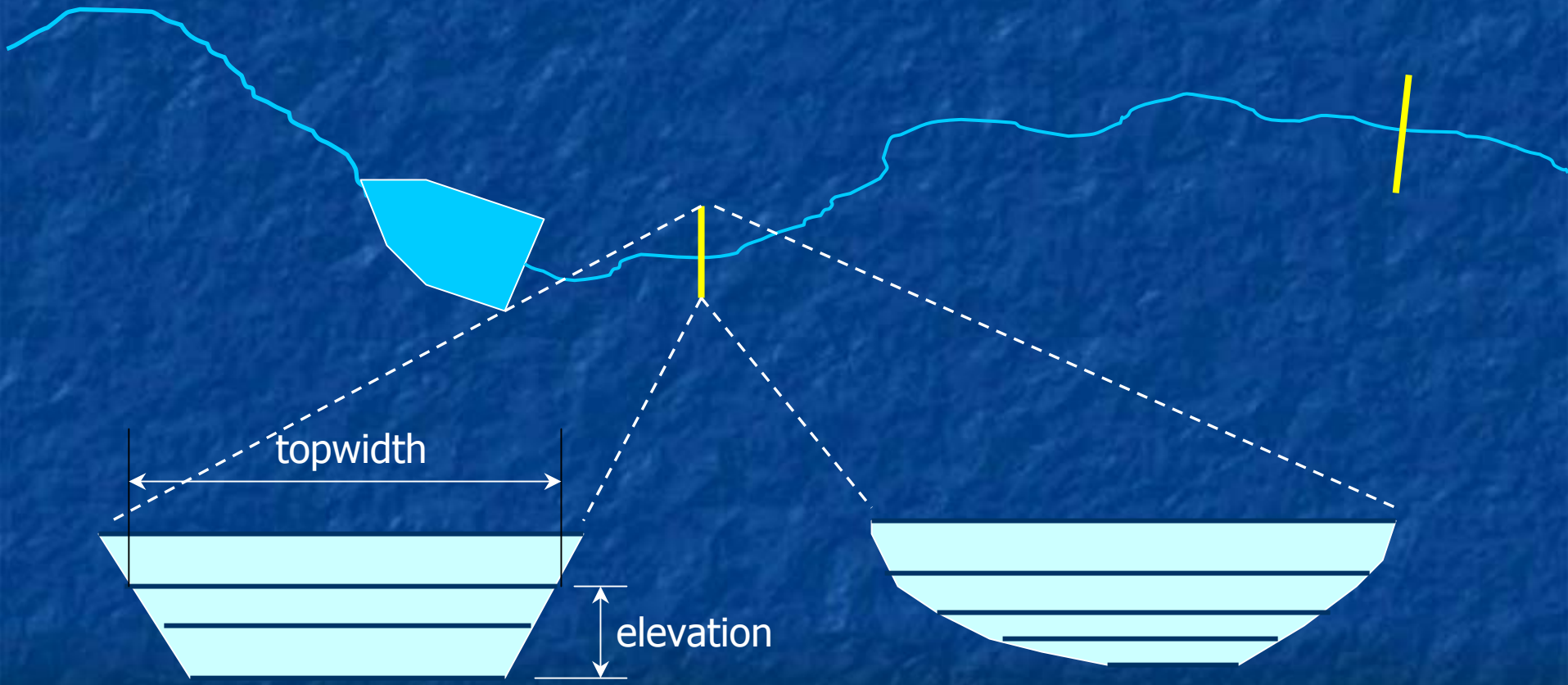
Damcat User Interface

- Facilitates user orientation
- Easy searches for dams especially when only partial data is known



Damcat DB

downstream points & cross-sections



Damcat User Interface cont.

damcat_in	starting model values
nidid	nid identifier
src	office running model
scenario	breach scenario
hde	starting water surface
bme	bottom of breach width
vol	starting volume
sa	starting surface area
tfm	time of failure
qo	additional flow to add in
bw	final breach width
comment	

Damcat User Interface cont.

damcat_down	downstream info
nidid	nid identifier
src	office running model
down_num	sequence number
xsec_type	origin of xsection
name	
longitude	
latitude	
elevation	
distance from dam	
flood flow	est. flow at flood stg.
flood_depth	est. flood stage
flood_width	est. width at flood stg.
mann_oc	
update	datetime

Damcat DB

- For input to each dambreak run, there can be a combination of many sources (e.g. OHD, local office) and scenarios (i.e. HF (high-fast), MN (middle-normal), etc.)
- For each source-scenario combination, there can be many downstream points (forecast points) which may have multiple cross-section types

Damcat DB cont.

- For each downstream point & cross-section type, there can be many elevation-topwidth pairs
- For each downstream point & cross-section type, there can be many outputs from different scenarios

Damcat DB cont.

- For each dam, there can be many elevation-storage pairs
- For each dam, there can be many height-discharge pairs (spillway)

damcat_dams	static data
nidid	nid identifier
dam_nam	name of dam
other_dam_name	
dam_former_name	
stateid	
section_t_r	township & range
county	
river	
owner_name	

damcat_elev	spillway or storage
nidid	nid identifier
type	spillway or capacity
elevation	of water surface
stordis	storage or discharge
surface	area if storage

damcat_in	starting model values
nidid	nid identifier
src	office running model
scenario	breach scenario
hde	starting water surface
bme	bottom of breach width
vol	starting volume
sa	starting surface area
tfm	time of failure
qo	additional flow to add in
bw	final breach width
comment	

damcat_down	downstream info
nidid	nid identifier
src	office running model
down_num	sequence number
xsec_type	origin of xsection
name	
longitude	
latitude	
elevation	
distance from dam	
flood flow	est. flow at flood stg.
flood_depth	est. flood stage
flood_width	est. width at flood stg.
mann_oc	
update	datetime

damcat_pair	Xsec elev./top width pairs
nidid	nid identifier
src	office running model
down_num	sequence no.
xsec_type	origin of xsec
pair_num	elev-topwidth pair no.
elev	of pair
tw	top width of pair
mann_n	mannings n for pair
inactive_width	of pair

damcat_out	model outputs
nidid	nid identifier
src	office running model
down_num	sequence no.
xsec_type	origin of xsec
scenario	breach scenario
slope	
max_flow	
max_depth	
time_max_depth	
time_flood	
time_deflood	
comment	
update	

Damcat DB summary

- The new damcat database structure allows great flexibility for various types of inputs
- Understanding the database structure is key to understanding the software
- www.cbrfc.noaa.gov -> projects -> damcat/dambreak
- This presentation at www.cbrfc.noaa.gov -> presentations -> 2003