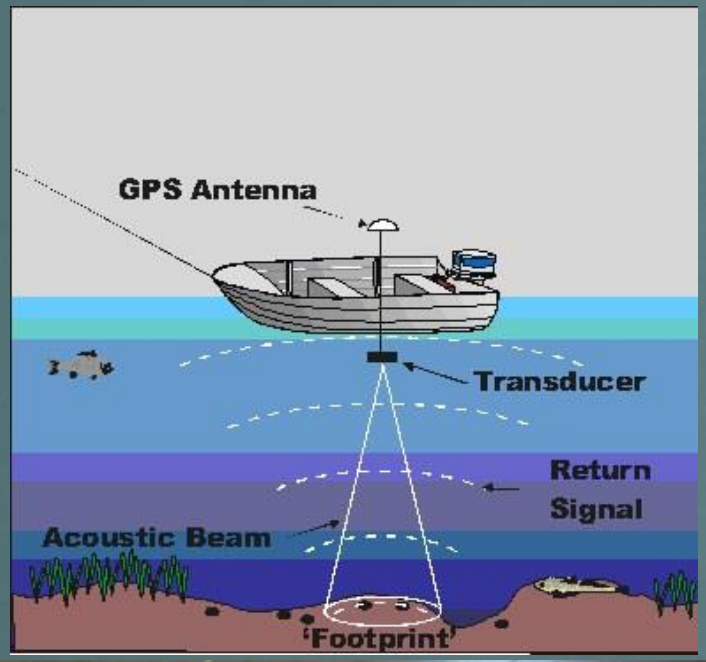
Bathymetry and FIMP

- Bathymetry at Carr Creek and Buckhorn Lakes – COE
- Bathymetry on Lower Green – 149 miles
- Bathymetry on Lower Wabash – 94 miles
- Bathymetry on Kentucky River at Frankfort – 8 miles
- Bathymetry on Lower Great Miami – 26 miles
- Bathymetry around McAlpine Locks and Dam
- Flood Inundation Mapping Project – Hopkinsville –FY12
- Flood Inundation Mapping Project – Frankfort – FY13

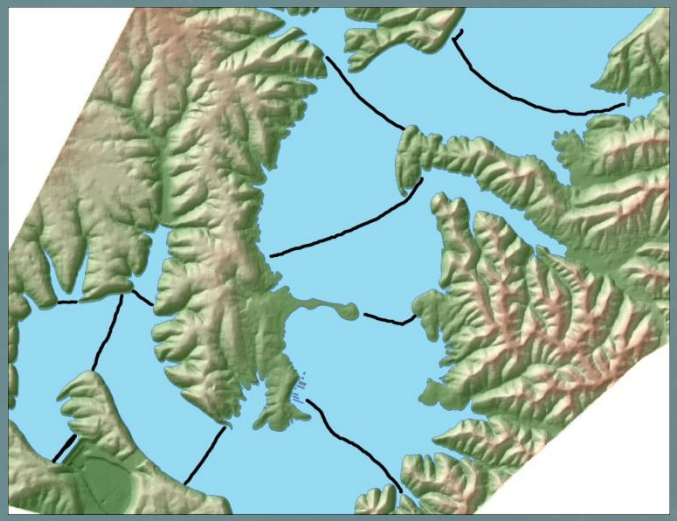
USGS

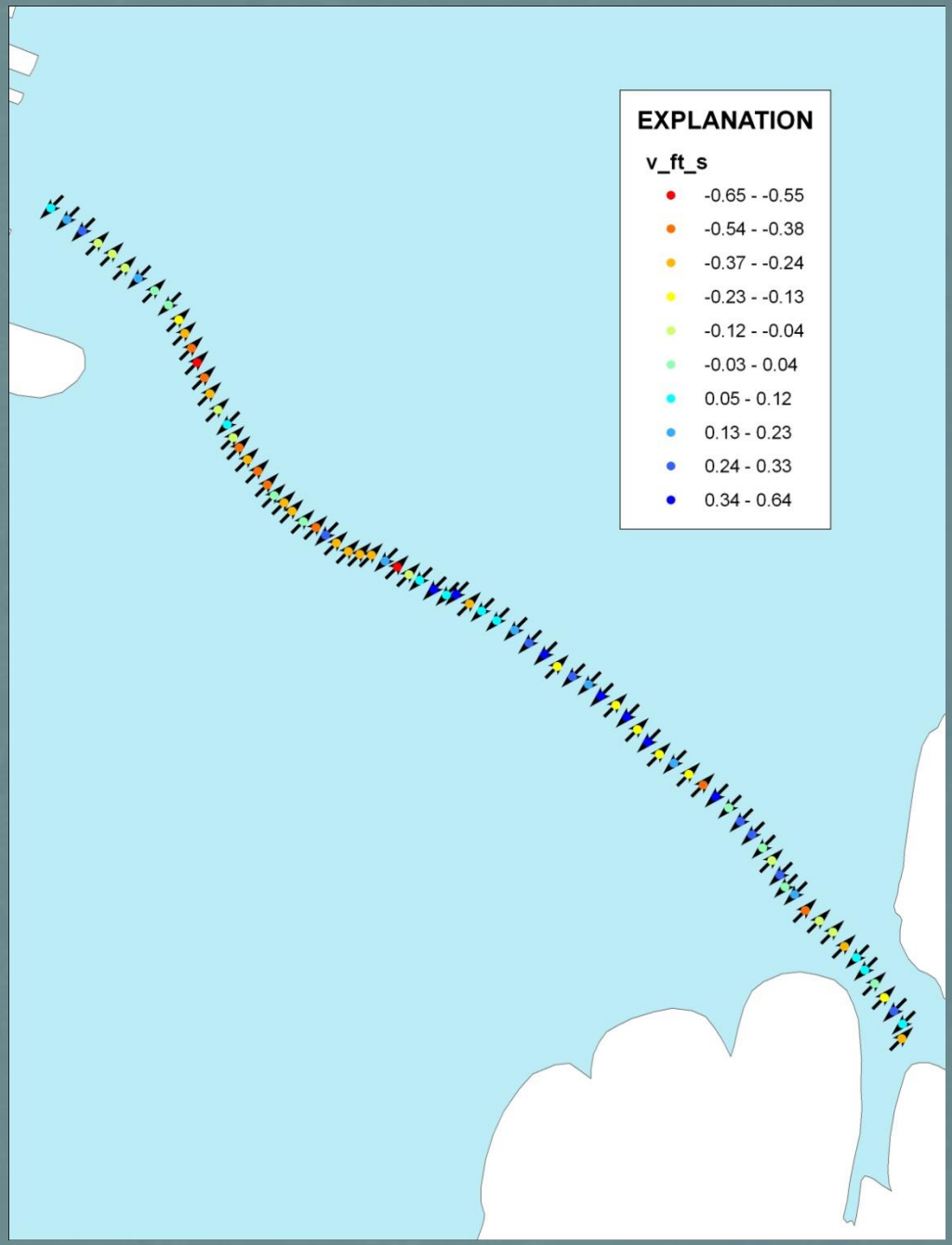
Single Beam Bathymetry



Example ADCP Velocity profile

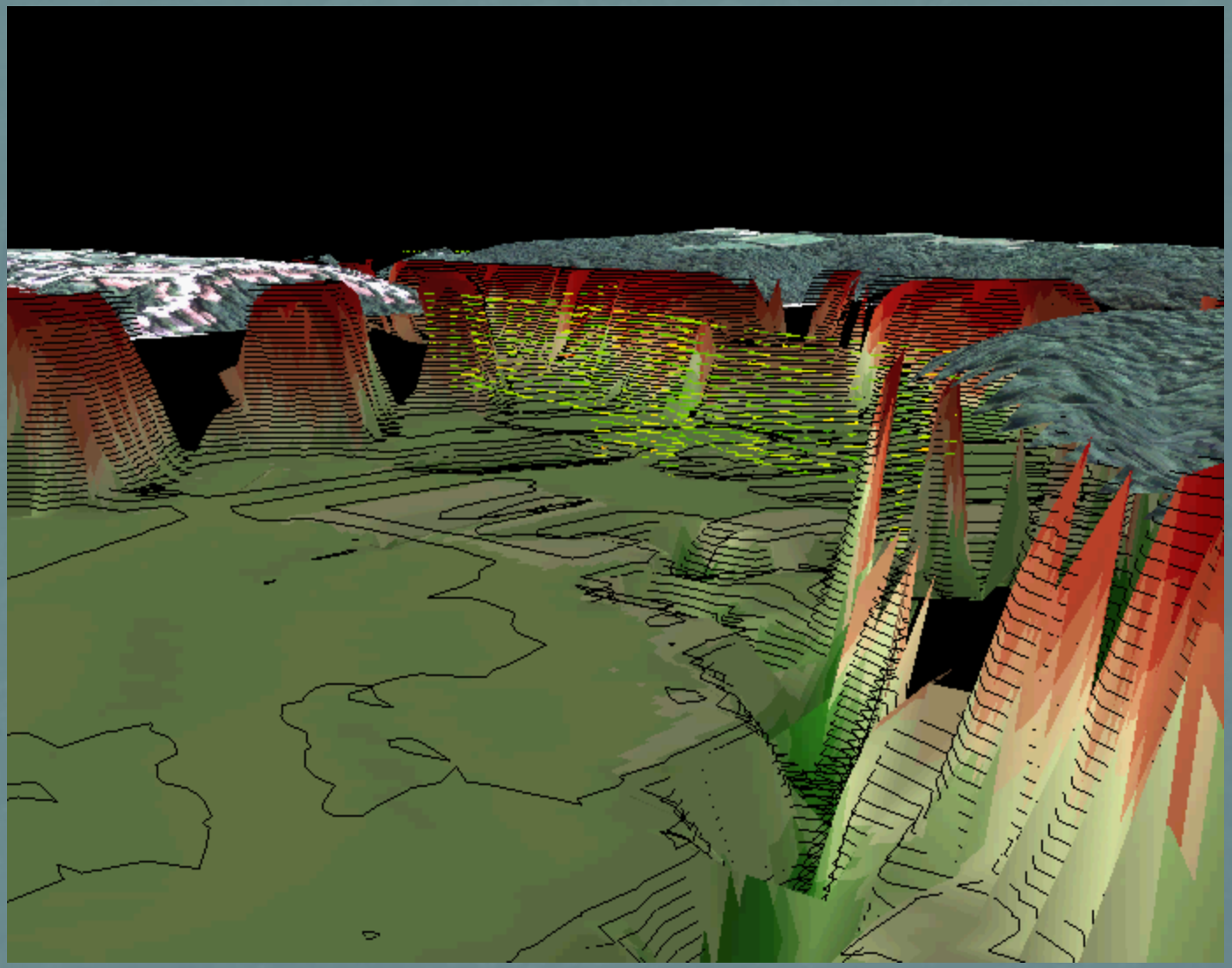
ADCP Transect 004





USGS

Example ADCP Velocity Profile



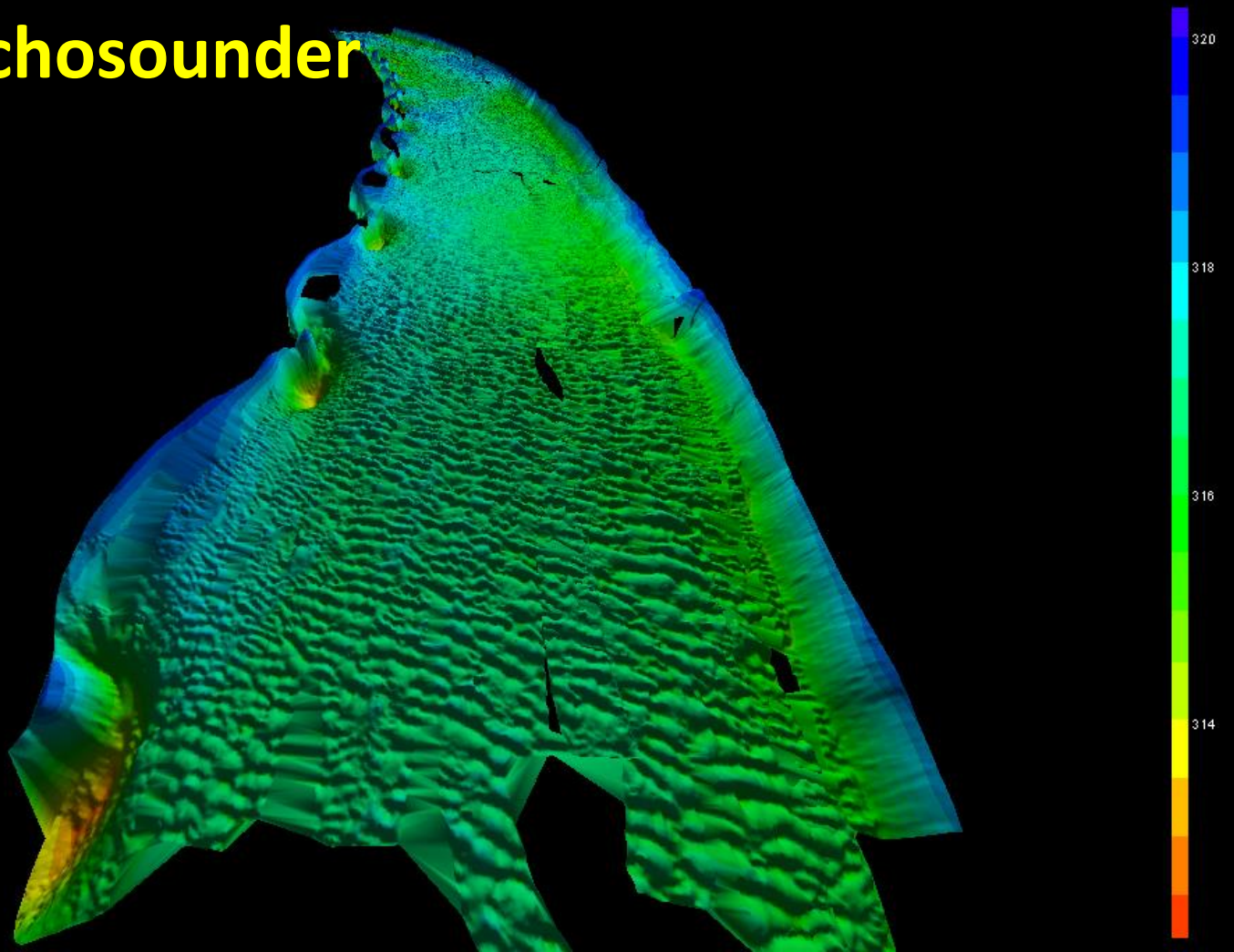
USGS

USGS
science for a changing world

Bathymetric and Velocity survey of the Wabash River near New Harmony, Indiana

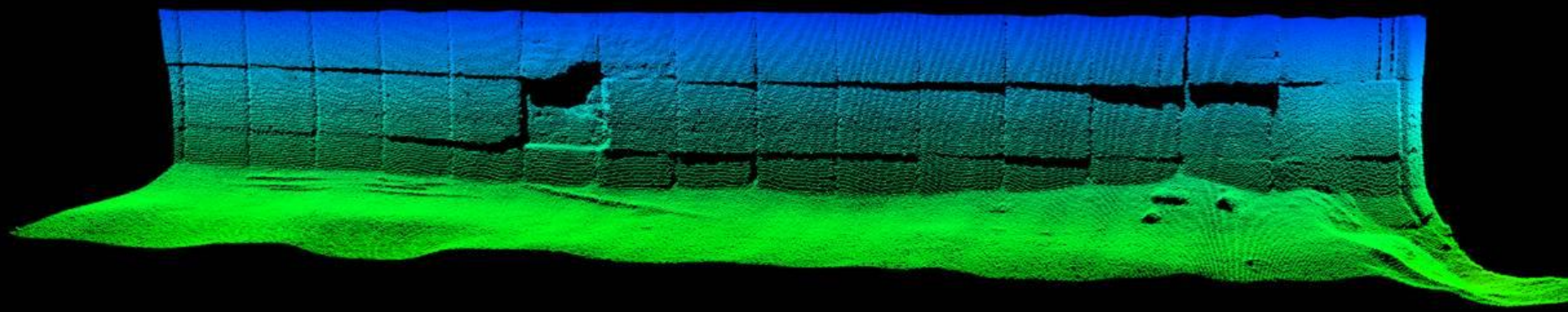
USGS
science for a changing world

Hydrographic Surveying using a High Resolution Multibeam Echosounder



Hydrographic Surveying - Purposes

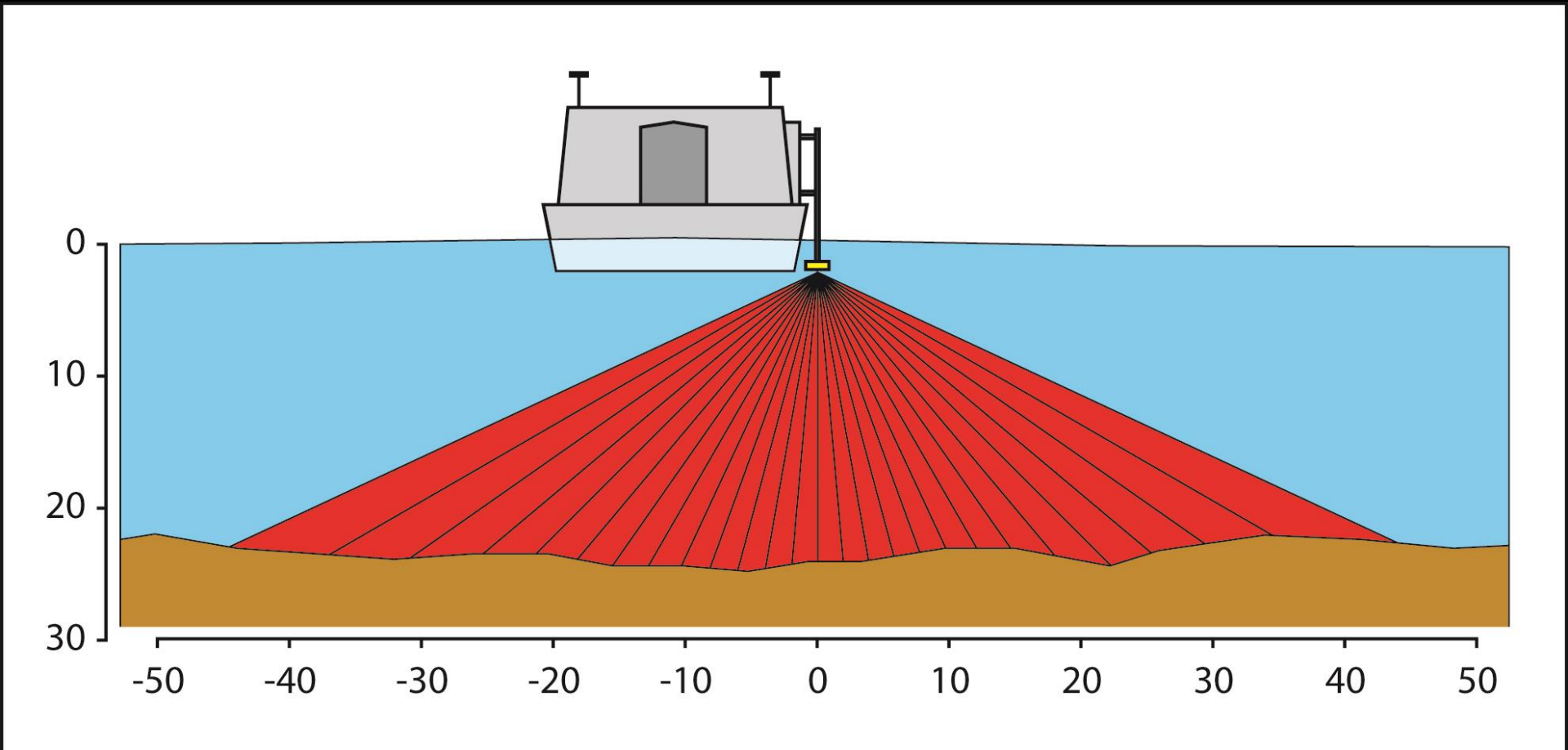
- Navigational aide
- Quantity surveys
- Inspections of dams, bridges, and water control structures
- Habitat assessments
- Hydrodynamic and sediment-transport models
- Geomorphic assessments



USGS

Multibeam Hydrographic Surveying

- Wide yet narrow swath perpendicular to the boat direction
- Multiple beams in just one ping
- ***SURVEYS the ENTIRE RIVER or LAKE BED***

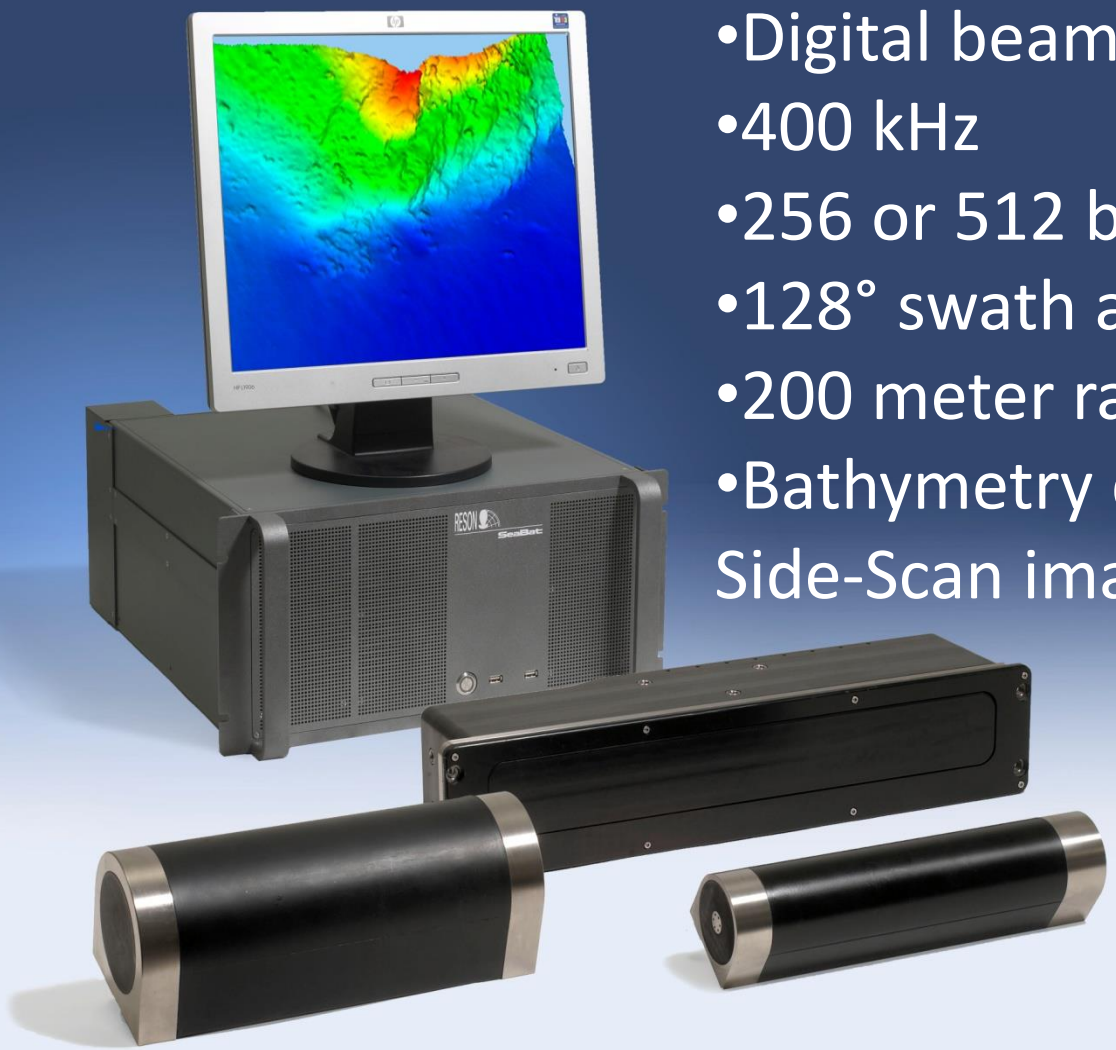


Shallow Water Multibeam Hydrographic Surveying

- Minimum depth is 1 meter
- Swath angle 128° or width-to-depth ratio 3.5 to 1
- Rotation of the transducer for surveying horizontal features
- Use Single and Multibeam Echosounders, together
- Flat keel boat
- Obstructions

USGS

RESON Seabat 7125
Multibeam Echosounder System



- Digital beam-former
- 400 kHz
- 256 or 512 beams
- 128° swath angle
- 200 meter range
- Bathymetry data and Side-Scan imagery

Multibeam Echosounder Components

Projector Array

Receiver Array

Sound Velocity Probe

USGS

Multibeam Echosounder Components

Real-Time Kinematic Global Positioning System (RTKGPS) or Differential Global Positioning System (DGPS)

Inertial Measurement Unit (IMU)

Sonar display

Navigation computer

Position and Orientation Solution (POS-MV) motion control unit

7-P sonar signal processor

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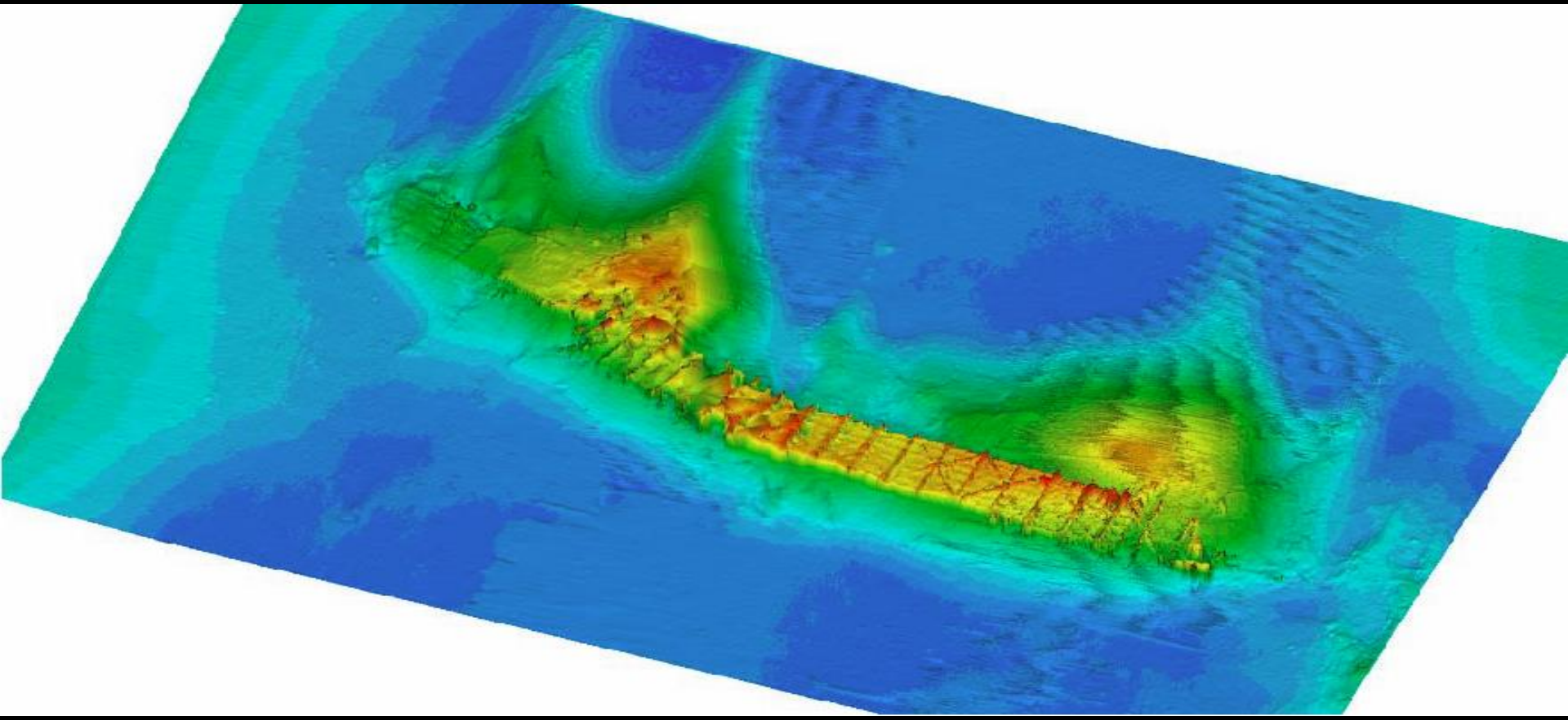
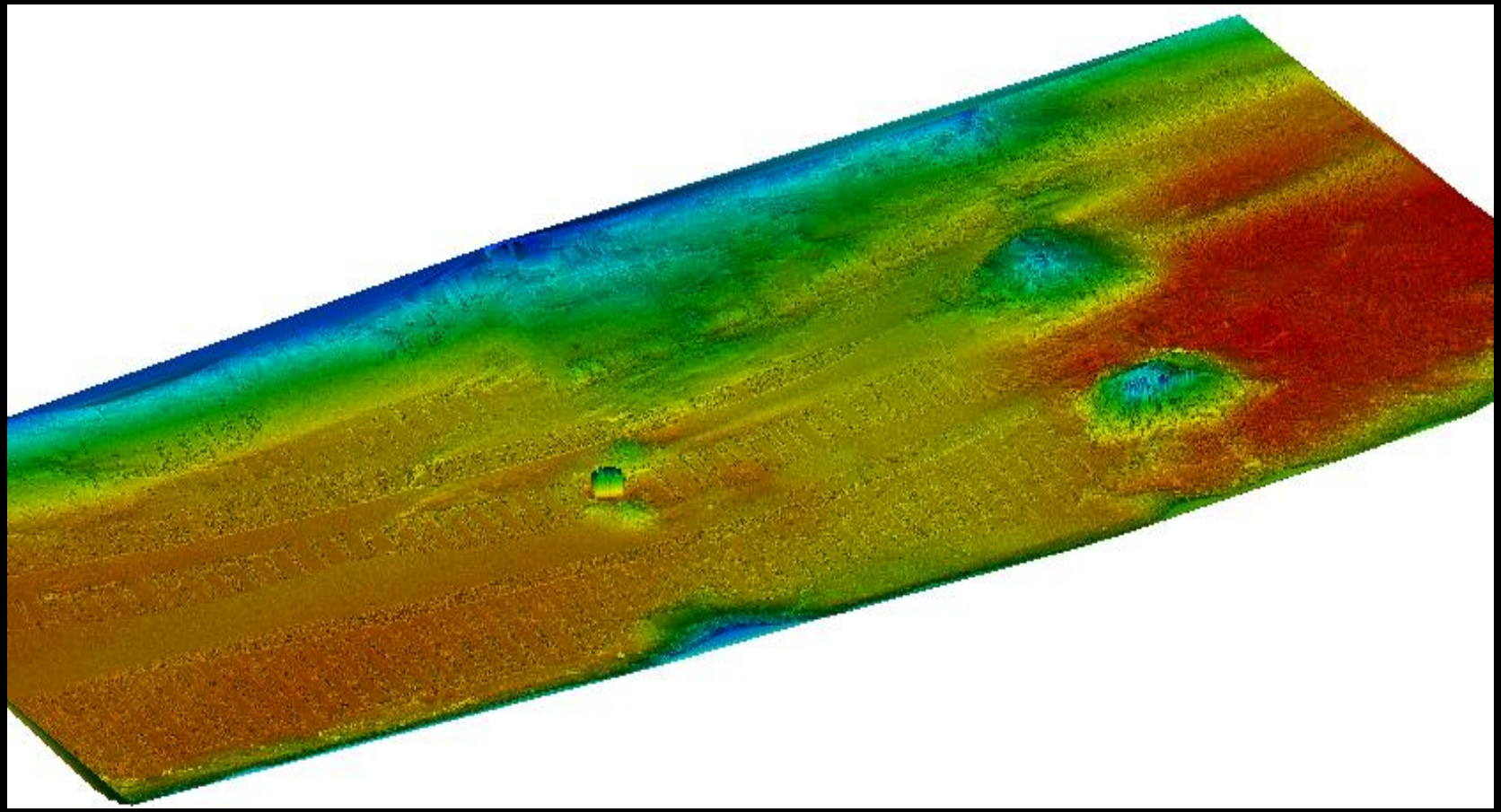
Collapsed Historical Bridge Deck near Warsaw, Missouri



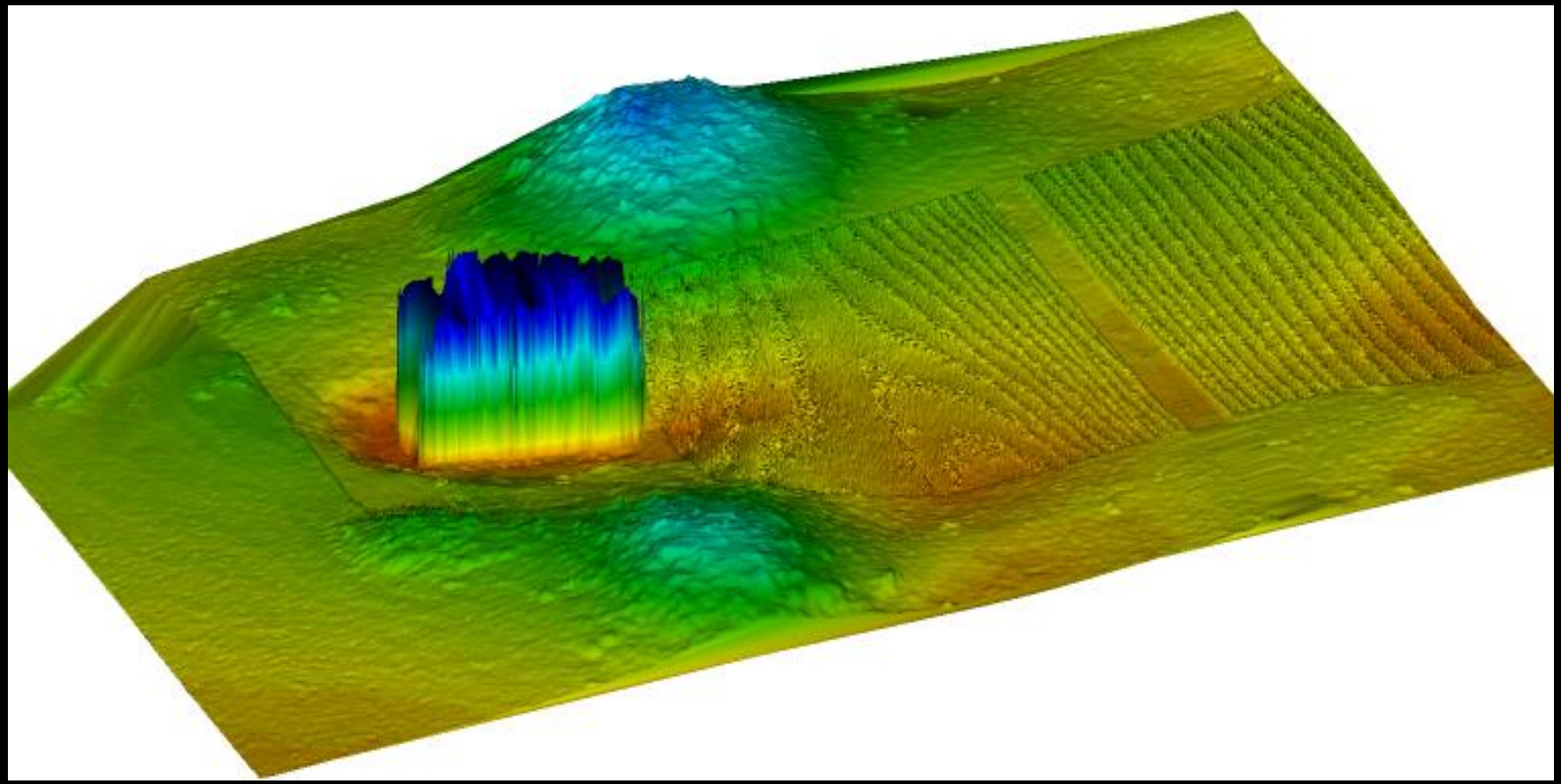
USGS

Bridge Piers near Warsaw, Missouri

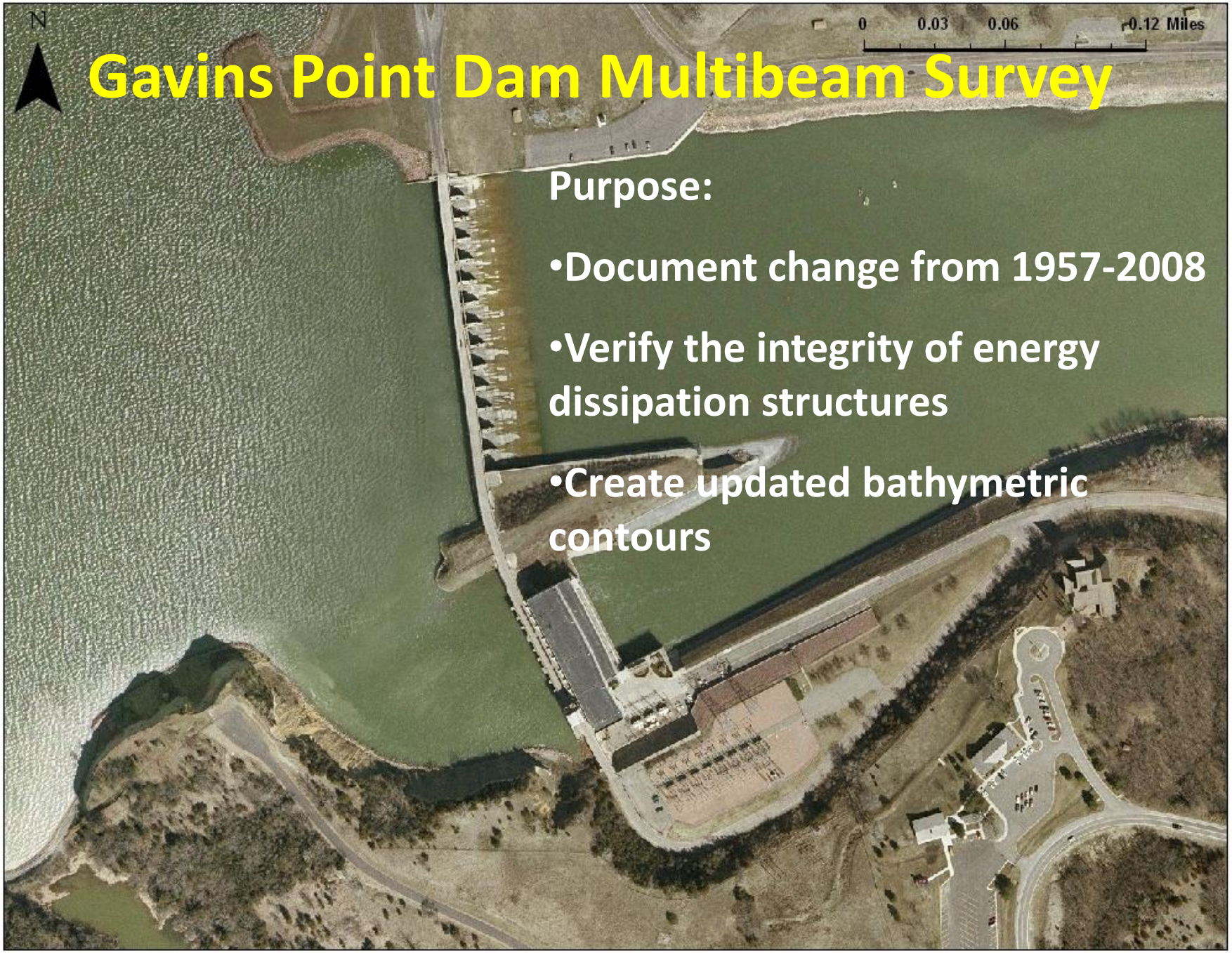


USGS

Bridge Pier near Warsaw, Missouri



USGS

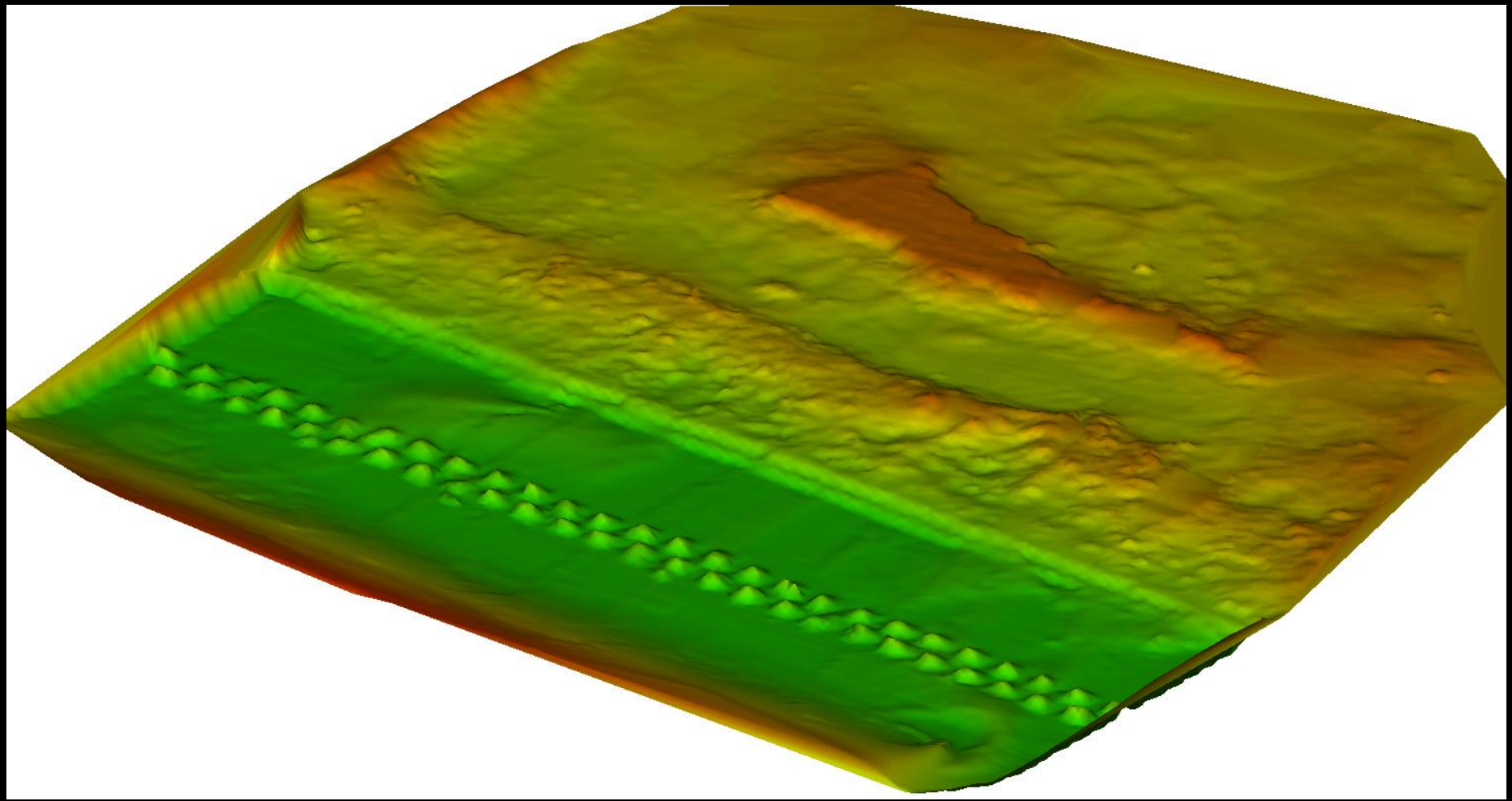


Gavins Point Dam Multibeam Survey

Purpose:

- Document change from 1957-2008
- Verify the integrity of energy dissipation structures
- Create updated bathymetric contours

Gavins Point Dam Spillway

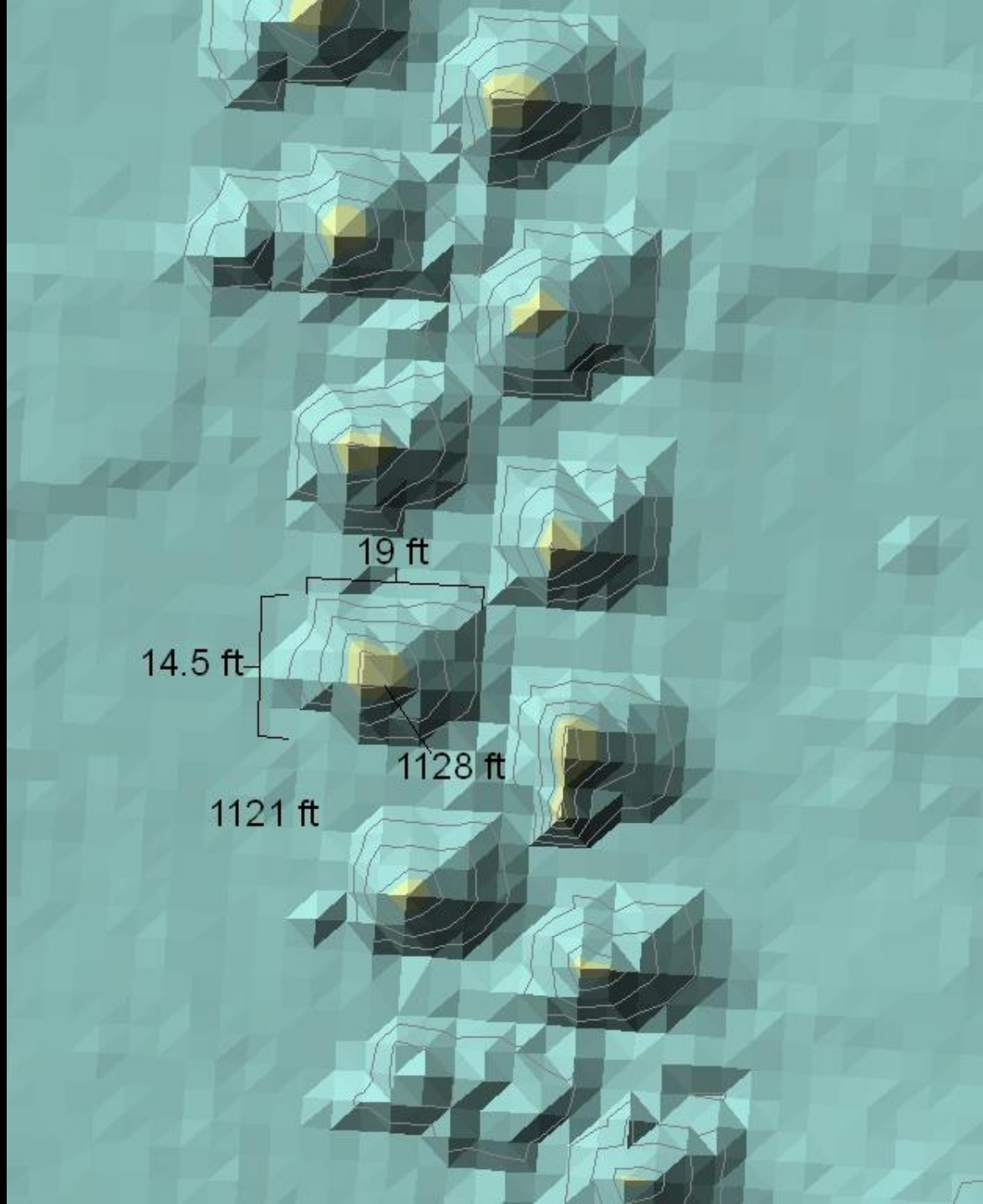


USGS

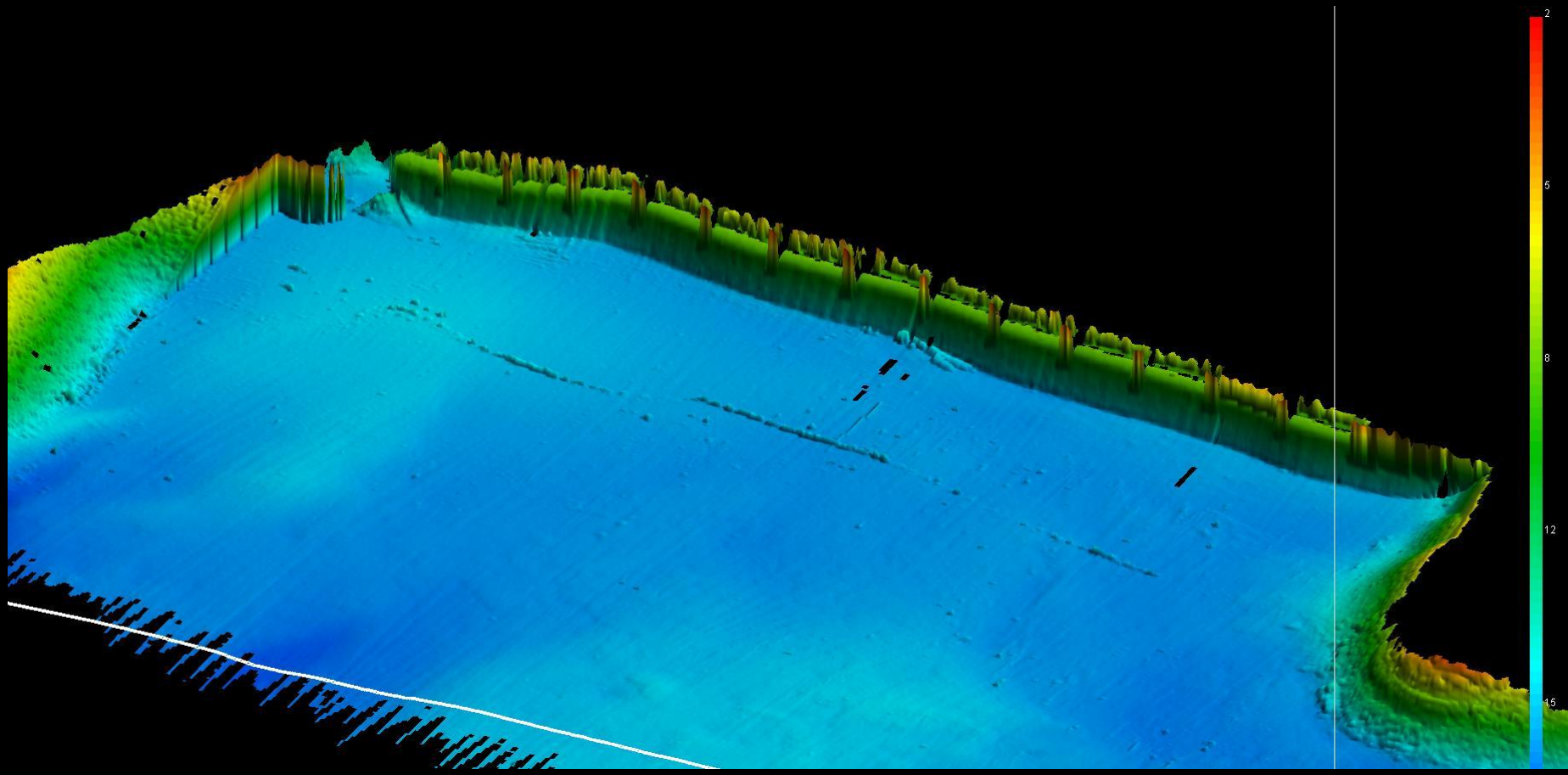
Energy Dissipation Structures

- Determined the structural integrity
- Divers were not needed, eliminating a safety hazard
- Measured change to 0.1 M

USGS



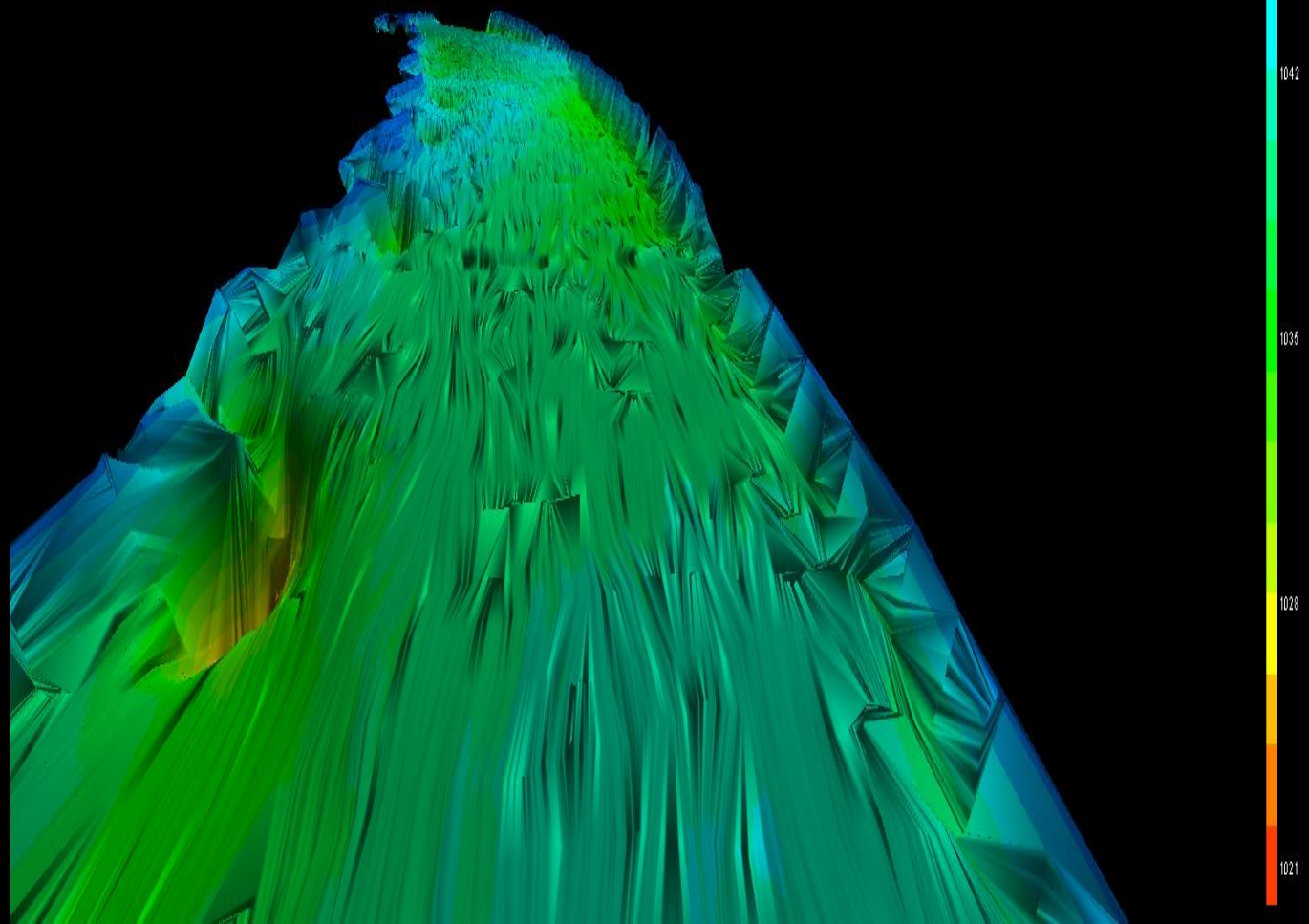
Gavins Point Dam - Spillway Intake



USGS

Hydrographic Surveys of Glovers Bend

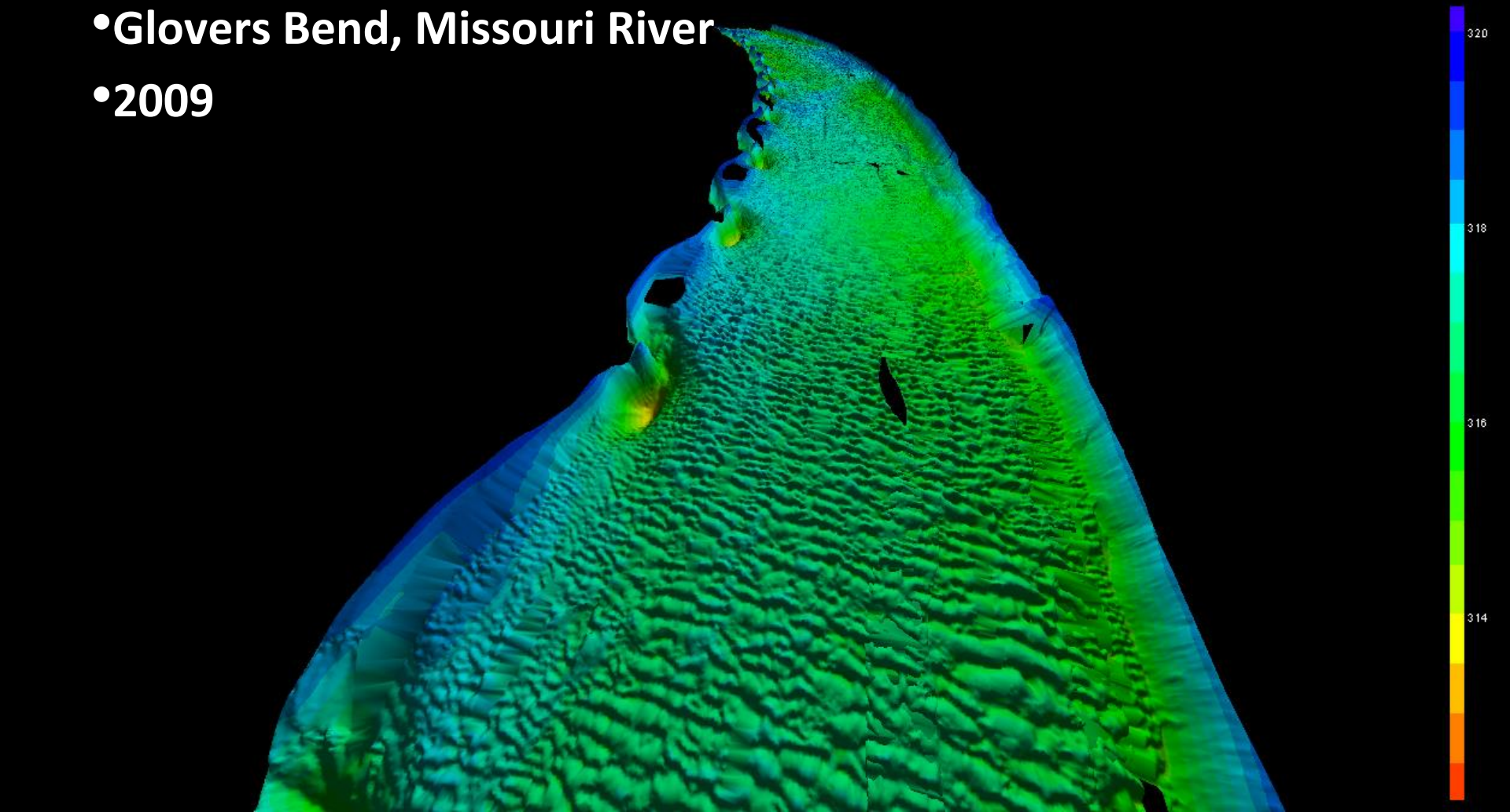
- Single-beam echosounder
- Glovers Bend, Missouri River
- 2007



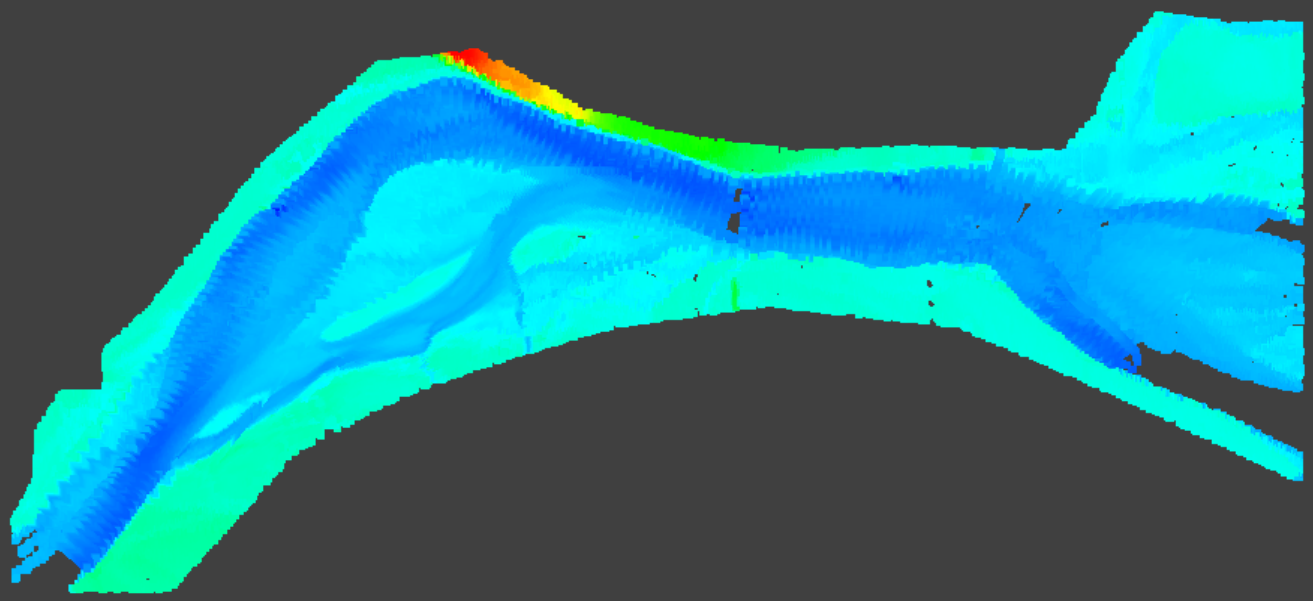
USGS

Hydrographic Surveys of Glovers Bend

- Multibeam echosounder
- Glovers Bend, Missouri River
- 2009



Hydrodynamic Modeling of the Missouri River using MD_SWMS



Untitled* - Riv2D

File View Data Grid/Mesh Preprocessing FaSTMECH STORM Network 1D-Flow Sediment Transport Verification Help

Create Centerline/Grid | Grid | Time Step Tools | Ancillary Tools | GIC Coverage Tools

3D Solution Cross-section Tools | Probe Line Tools | Network Tools

Control Bar

- Data Objects
  - Raw Data
    - Scatter Sets
      - Elevation
    - TINs
      - Elevation
  - Grid and Input Conditions
  - Solutions
  - Probe
  - LineProbe
  - Channel Network
- Data Legend
  - Data Legend
  - Data Legend
  - Data Legend
  - Data Legend

transY transX

Zoom 45.0 Dolly

x: 628979.086 y: 4747131.463 z: 0.000 Sclr: Vx: Vy: Vz:

XOffset = 628979.085598
YOffset = 4747131.462530

For Help, press F1