floodpath

Mapping a Flood...Before it Happens

U.S. Geological Survey
Washington Water Science Center

Contact: Joseph L Jones jljones@usgs.gov

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Traditional flood forecast

IOWA CITY, Iowa (AP) – The National Weather Service has predicted the river will crest by early Tuesday at University City at 33 feet.

What does “crest at 33 feet” mean to your home or business?

This?

Or this?

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A FLOODPATH Forecast can tell you that…and more

- National Weather Service (NWS) River Forecast for a particular location fed to hydraulic model
- Model results for a flood event processed with a Geographic Information System (GIS)
- GIS generated flood maps and graphs served to the internet soon after forecast issued
  - Arrival times of first floodwaters
  - Peak water depths and extent of flooding
  - Arrival times of peak water depths
  - Water depth over time at all locations
- Forecast/maps updated every 6 hours

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Required Elements for a FLOODPATH forecast

- NWS River Forecast at a point upstream of the area of interest
- High accuracy/high resolution elevation data (LiDAR) for the area
- Calibrated dynamic hydraulic model of the river and floodplain
- Web Mapping Service

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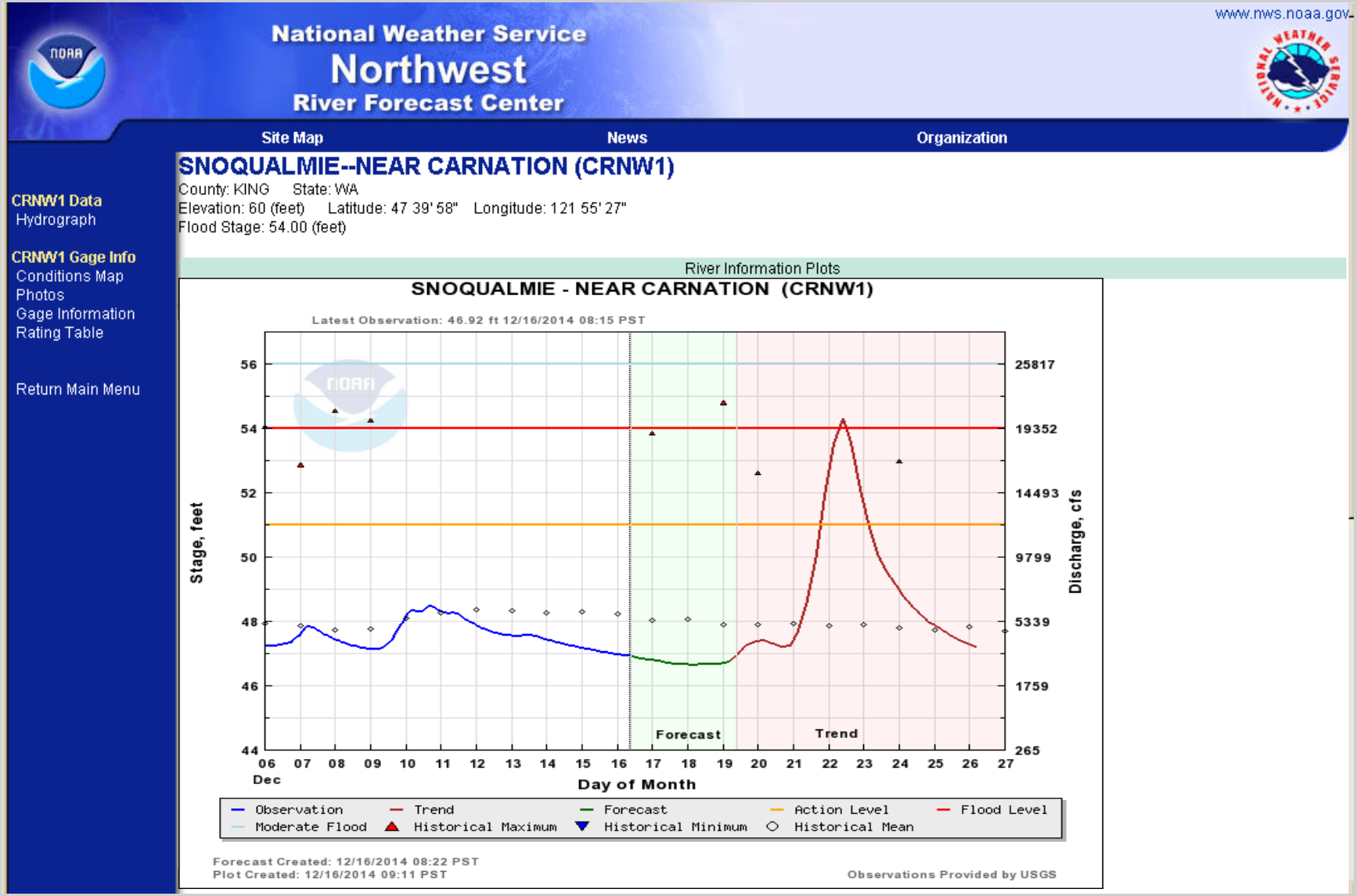
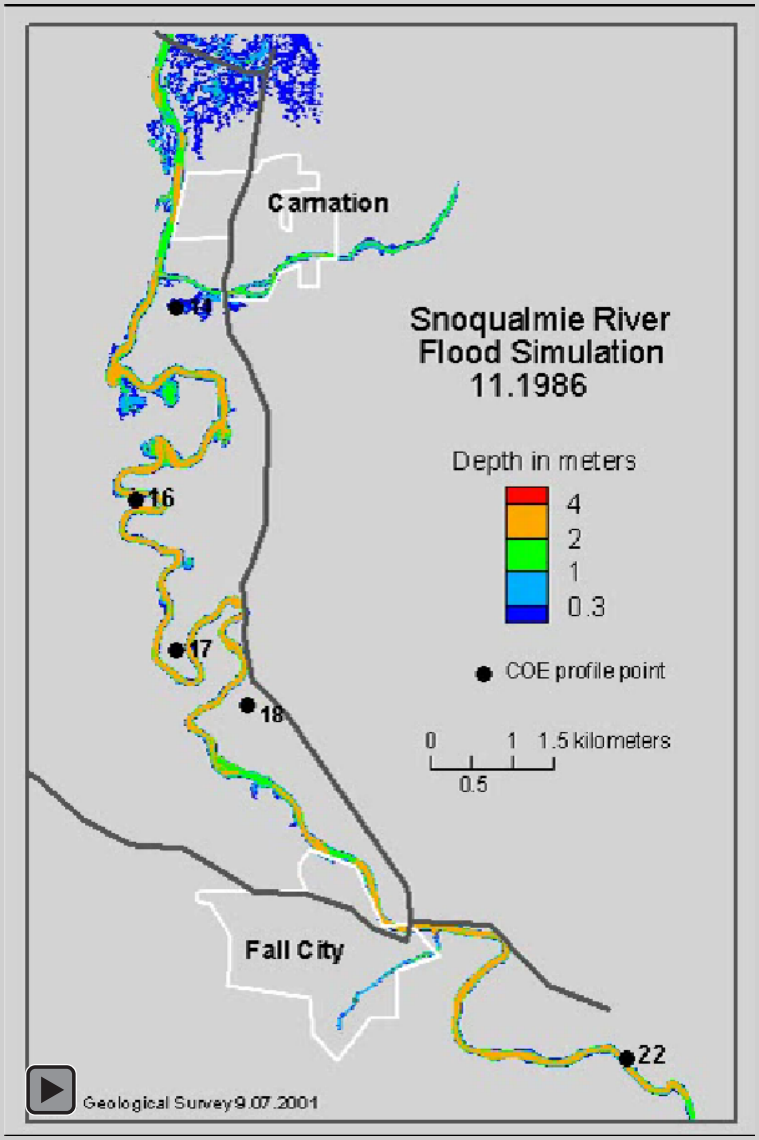
NWS River Forecast

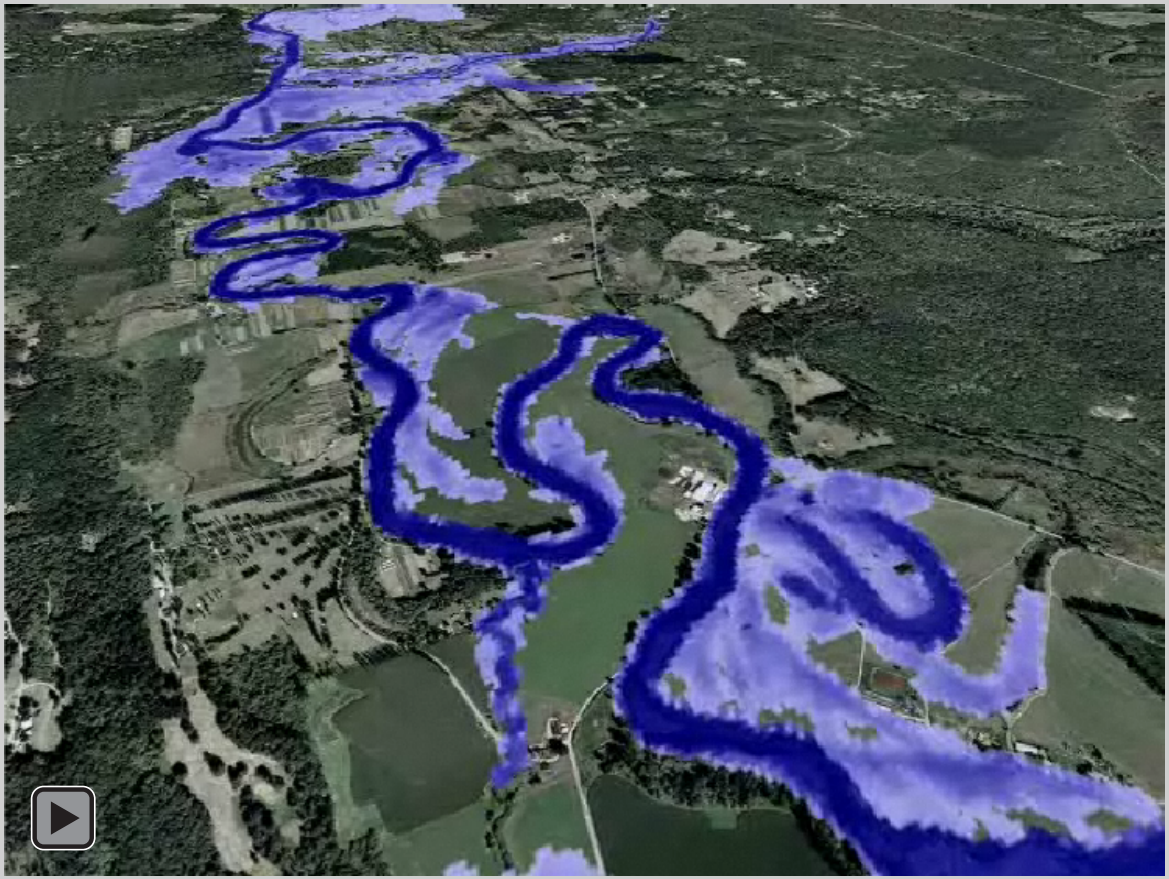


Calibrated dynamic hydraulic model



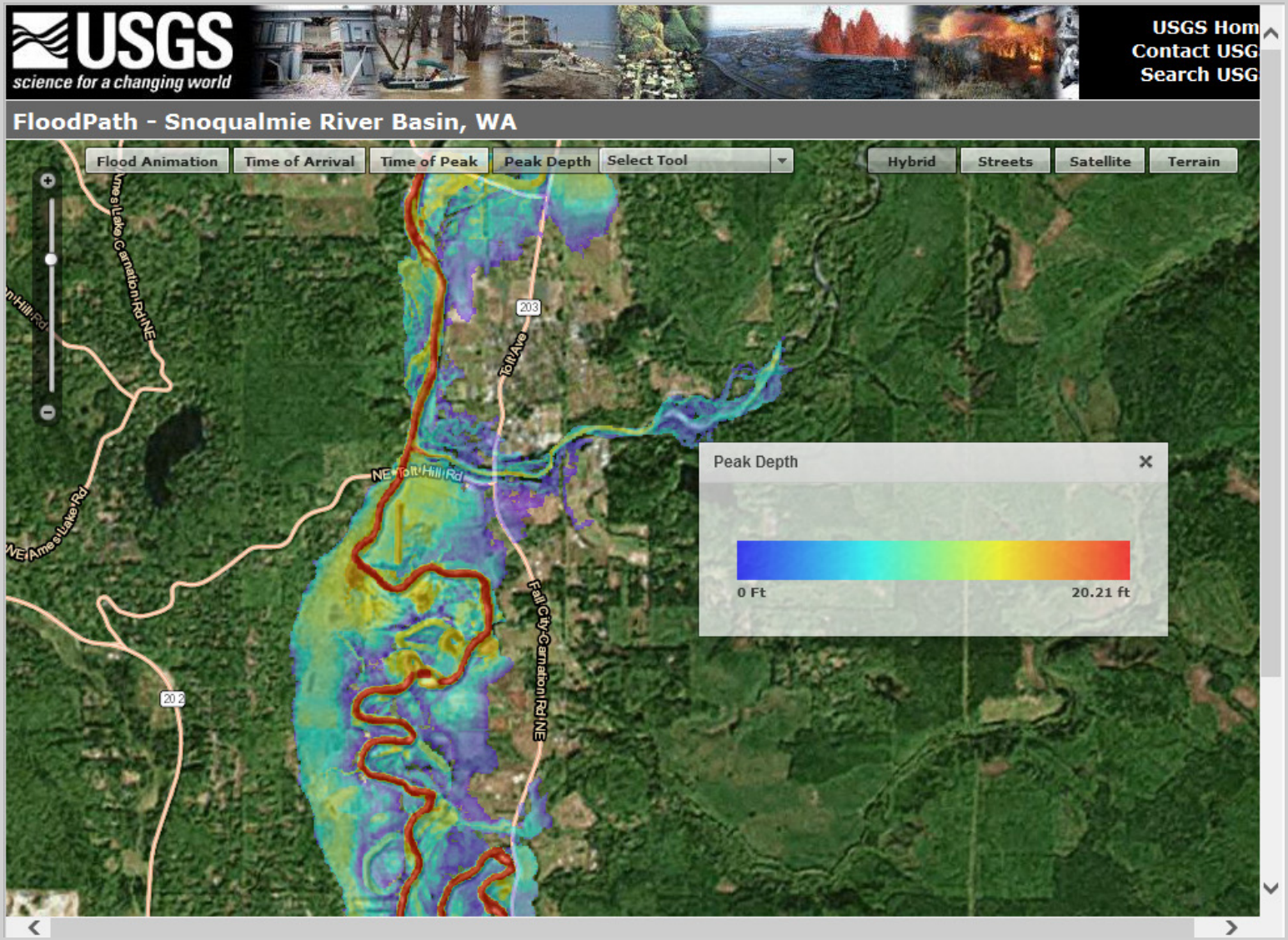
Click on picture to animate

Oblique view of dynamic hydraulic model results

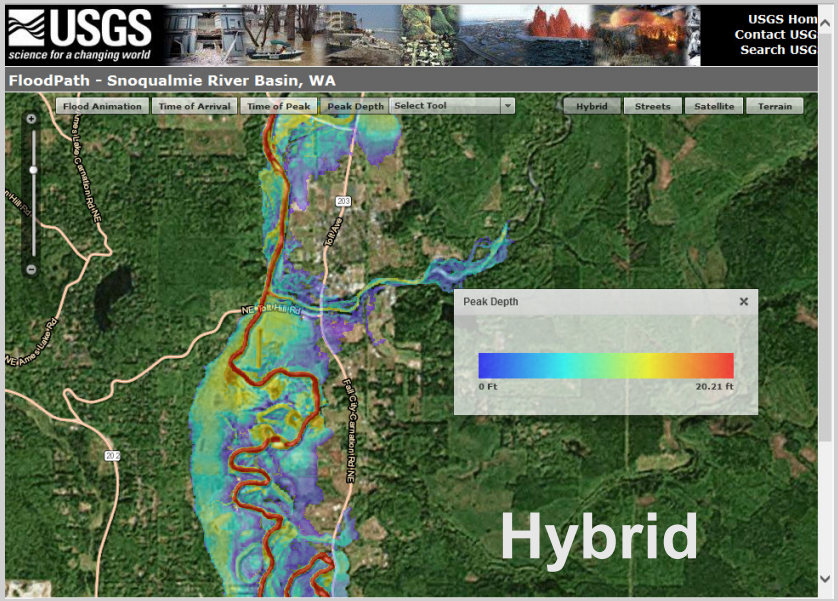


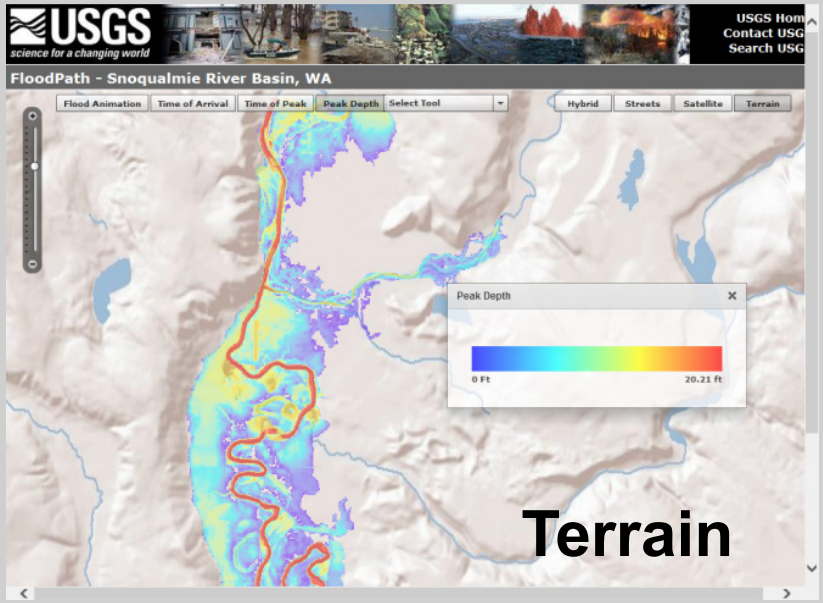
Click on picture to animate

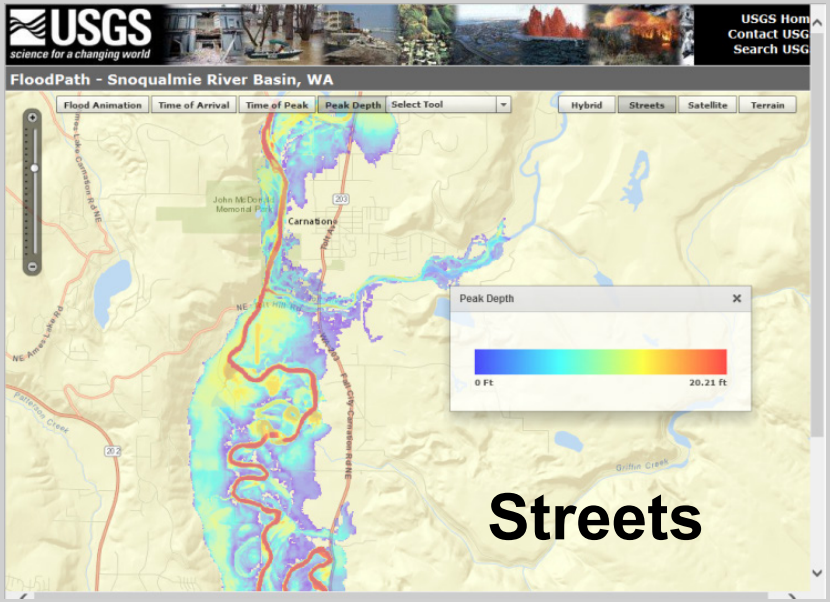
Web mapping of results

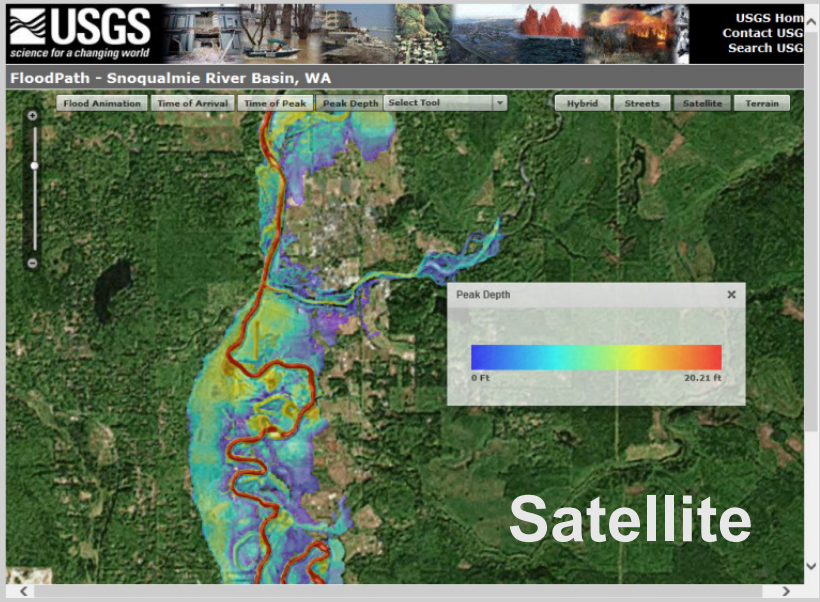


Choice of views

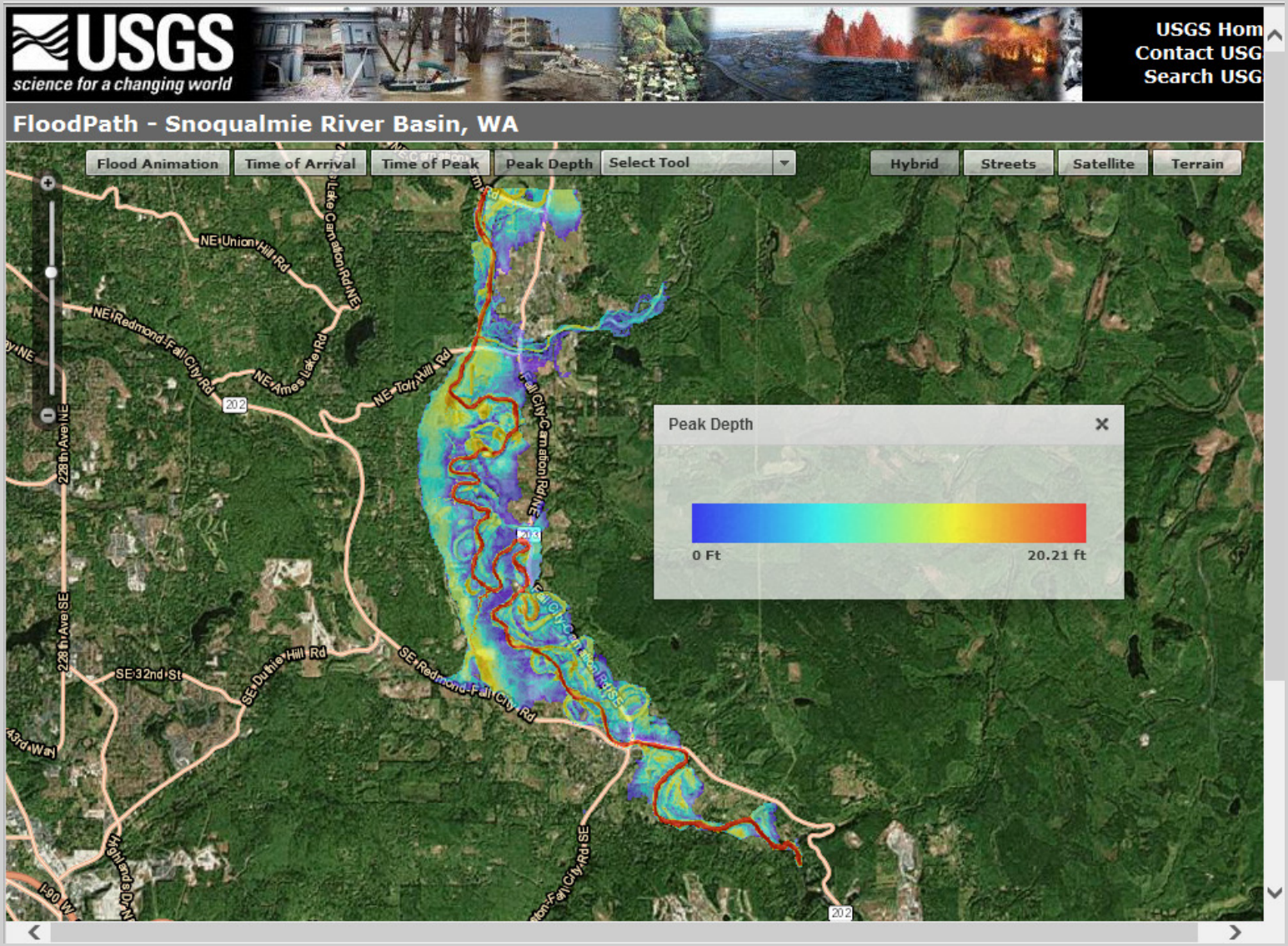




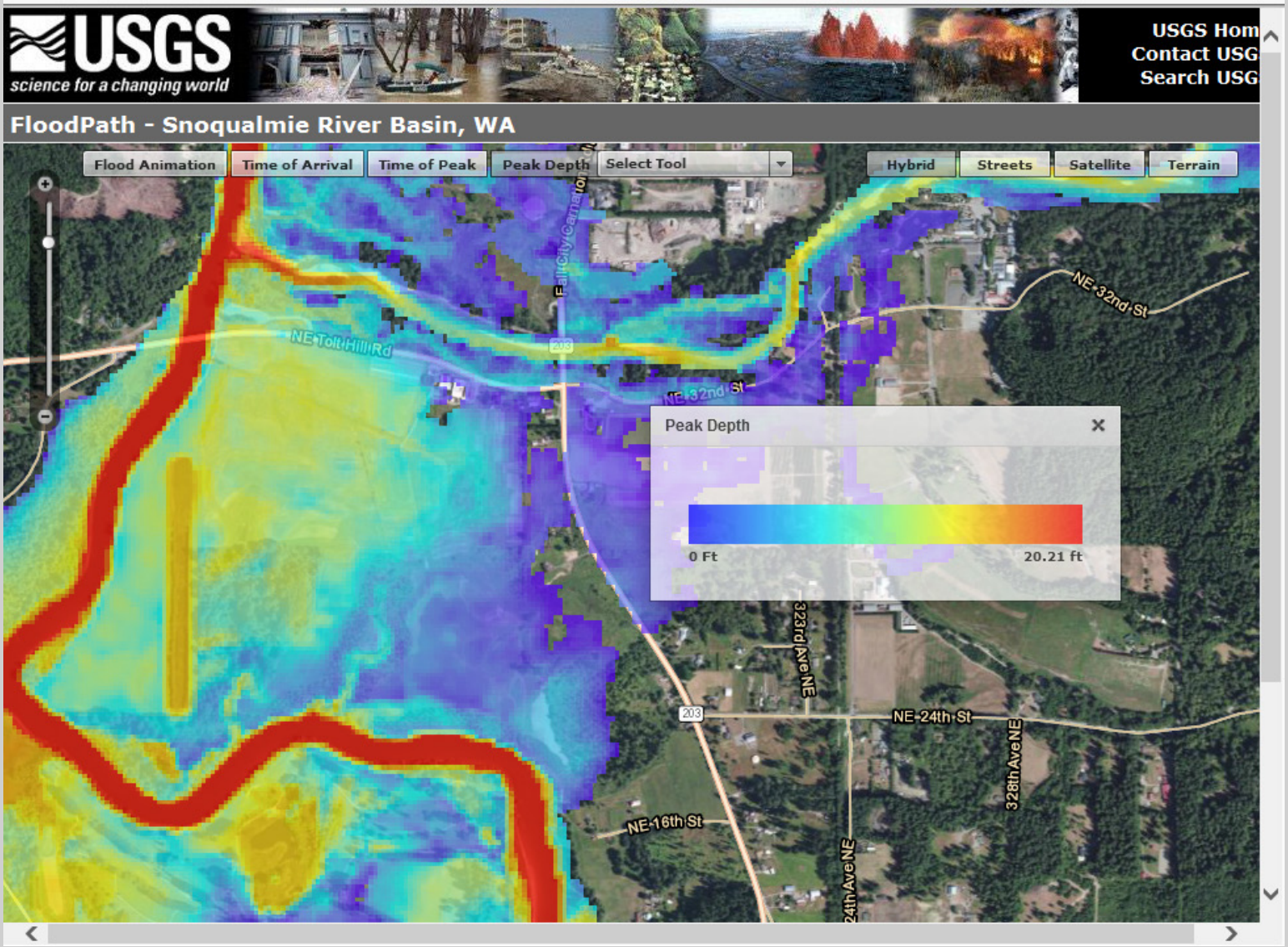




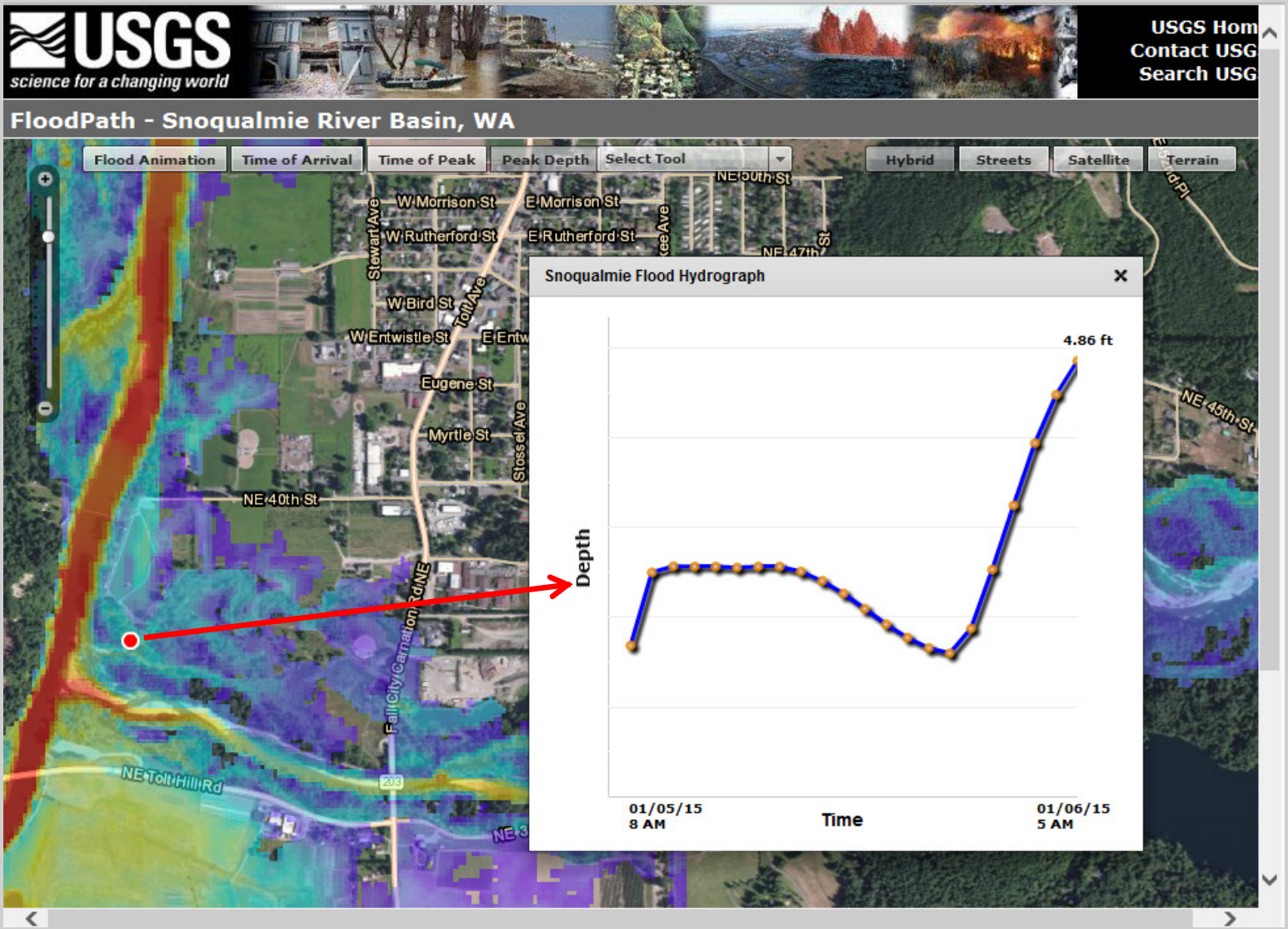
Peak depth of floodwaters



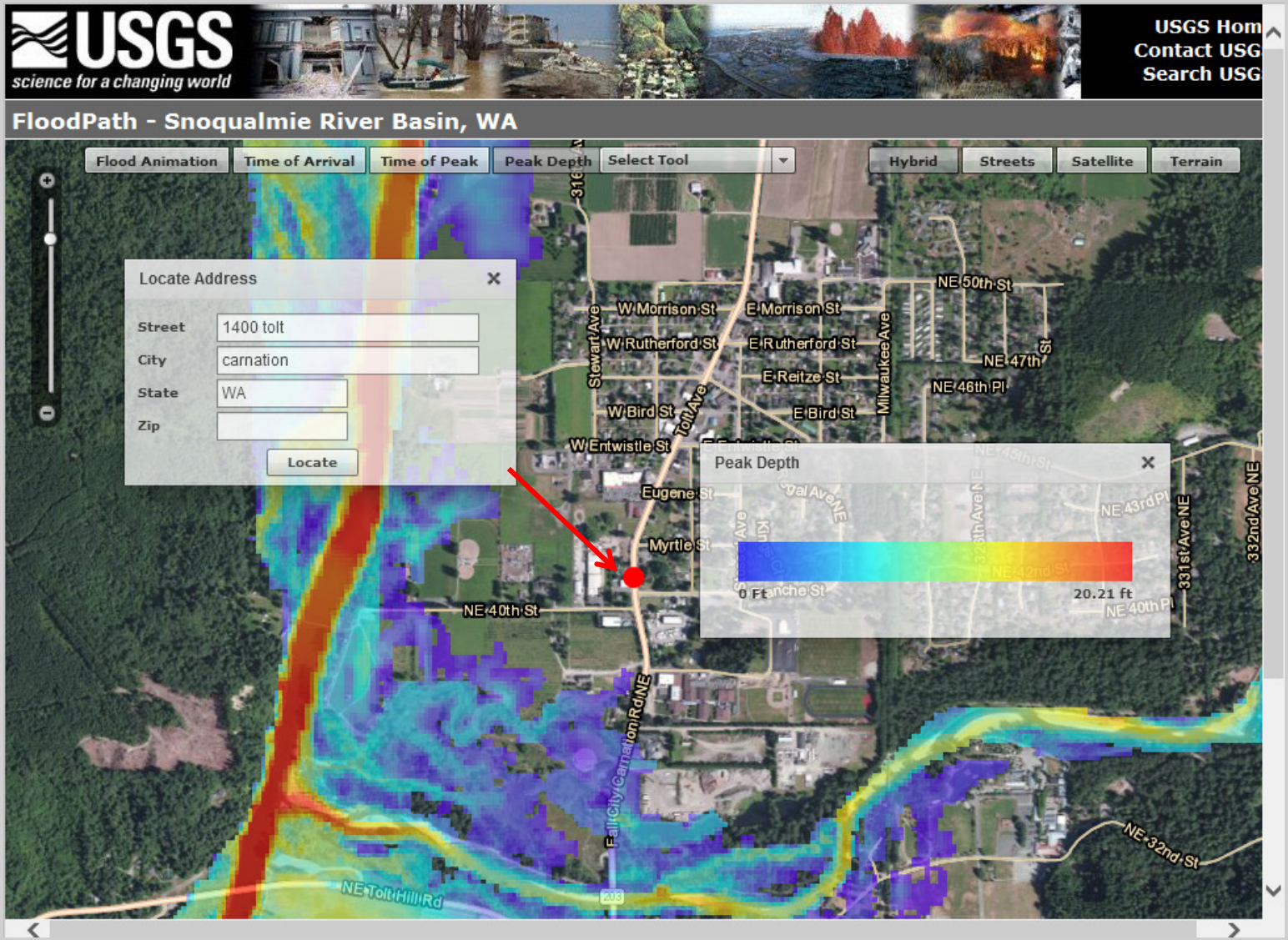
Peak depths, zoomed in



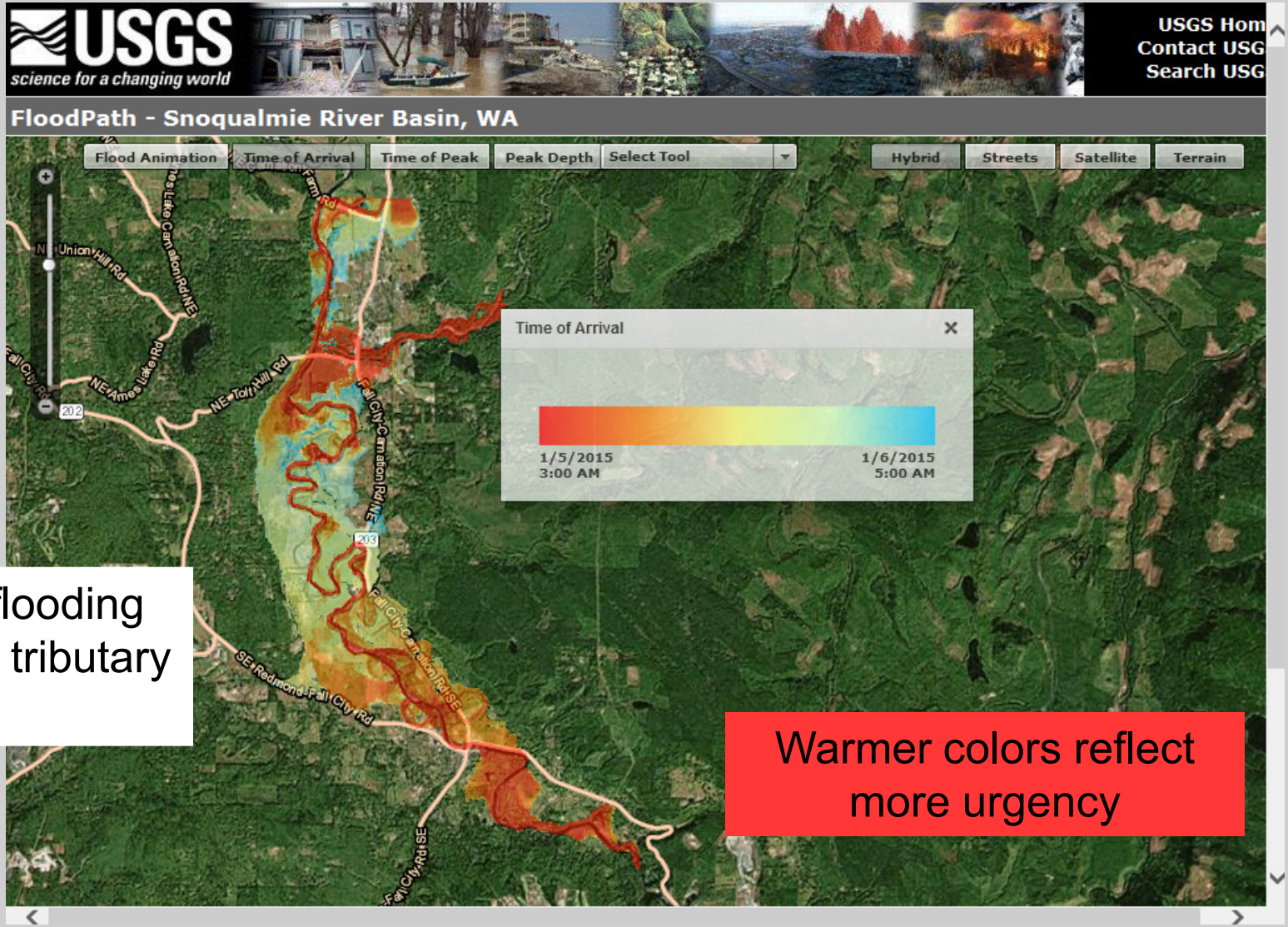
Click on any location for graph of depth over time



Flood depth at a specific address



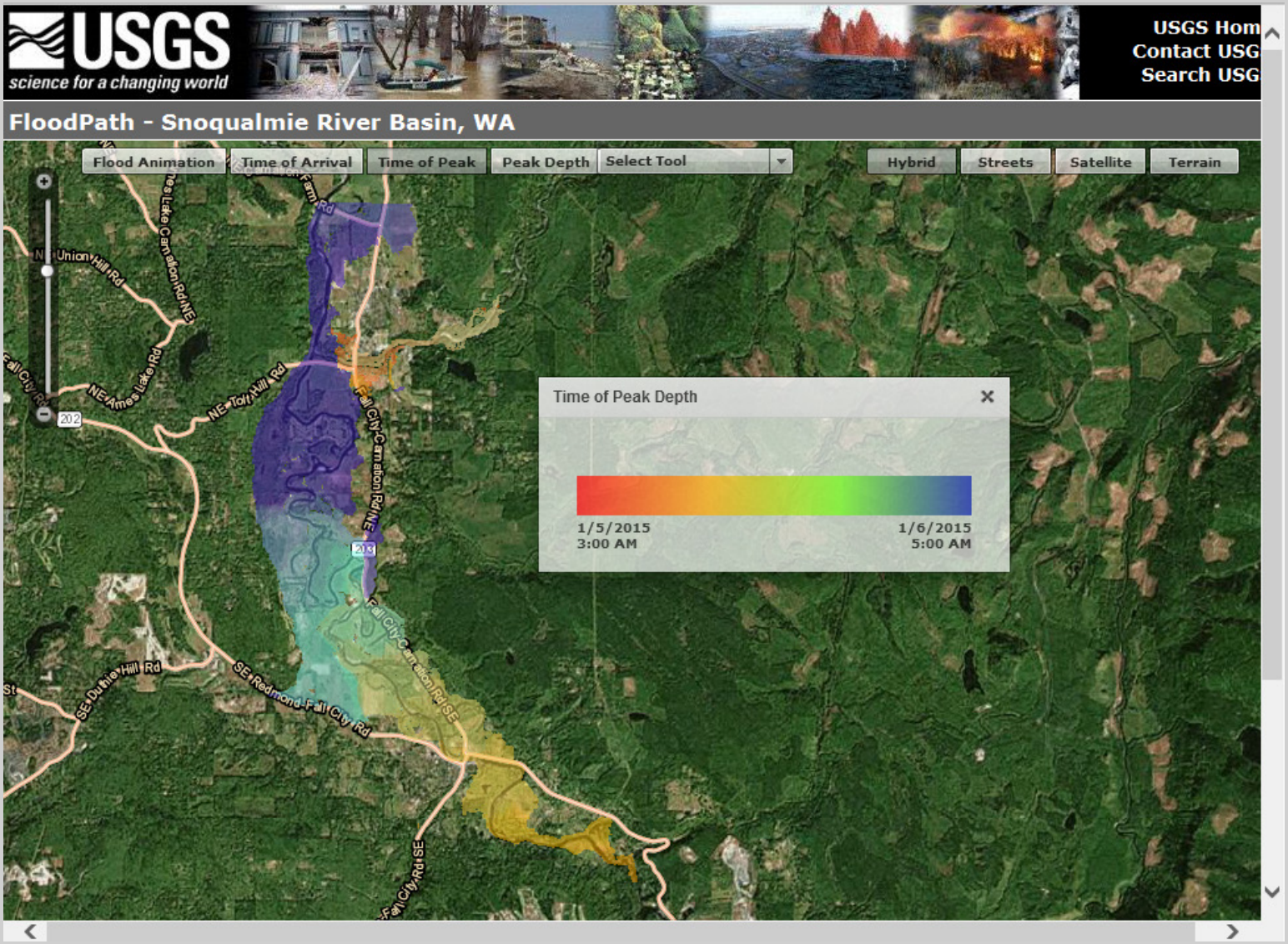
Time of flood arrival



Early flooding due to tributary inflow

Warmer colors reflect more urgency

Time to peak depth



FLOODPATH advantages

- Actual forecast flood is mapped
- Provides times of
  - flood arrival
  - flood peaks
  - flood recession
- Can provide flow velocities, directions, and estimates of destructive force

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FLOODPATH benefits

- Provides detailed information to emergency responders on where to
  - Position equipment
  - Evacuate those in harms way
- Help convince people they REALLY DO need to evacuate, and when and how
  - Timing and depth of flooding at specific locations
  - Passable evacuation routes
- Facilitates timely emergency declaration
  - Can provide real-time estimates of the magnitude of damage in dollars and at risk population

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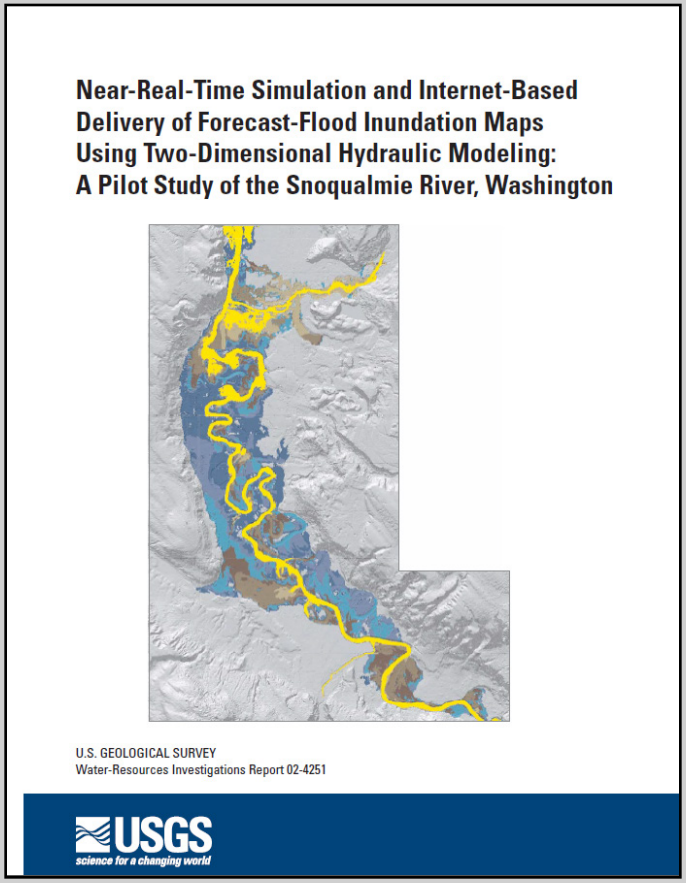
FLOODPATH contacts

USGS Washington Water Science Center

http://wa.water.usgs.gov/

- **Joseph Jones**
  - jljones@usgs.gov
  - 253.552.1684
- **Sue Kahle**
  - sckahle@usgs.gov
  - 253.552.1616
- **John Clemens**
  - jclemens@usgs.gov
  - 253.552.1635



http://pubs.usgs.gov/wri/wri024251/