

Earthquake Hazards:

The Structural

Engineering Perspective

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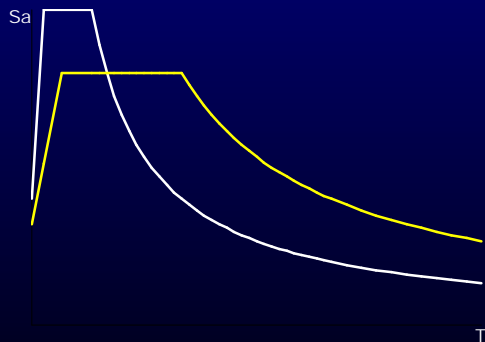
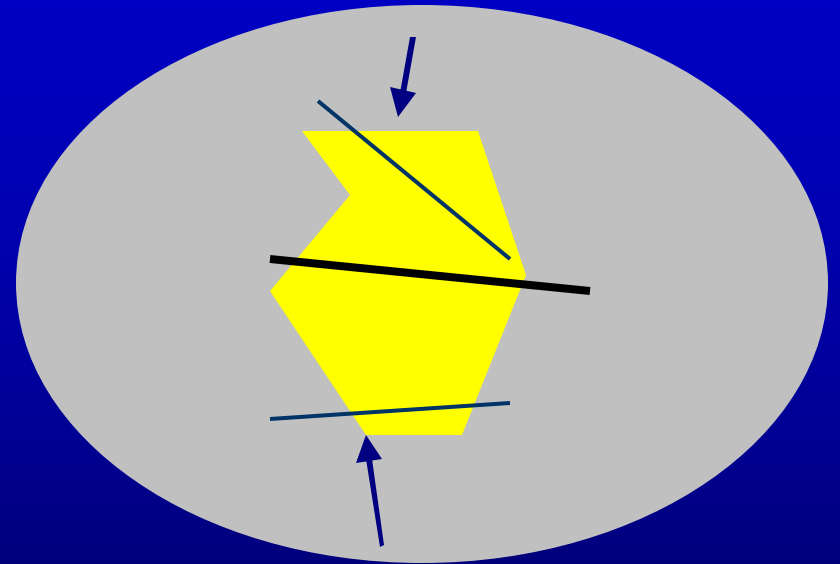
Types of Issues

- Source characterization
- Proximity or path
- Possible “new” design considerations
- Application of USGS research



Source Characterization

- Sources
 - Background seismicity
 - Smearred seismicity
 - Specific faults
 - GPS slip estimates
- Multiple controlling events



Proximity or Path

- Near source effects
 - Velocity or displacement pulses
- Directivity
 - Fault normal v. fault parallel
- Basin effects
 - Amplitude, duration



“New” Design Considerations

- Long period motions (attenuation)
- Vertical ground motion
- Local site conditions
 - Regionally
 - By Lat-Long
- Uncertainty
- Various recurrence intervals
 - Explicit (~500,000 pts)
 - v. approximate (3 or 5 regions)



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Urban Areas

Size

OUT IN

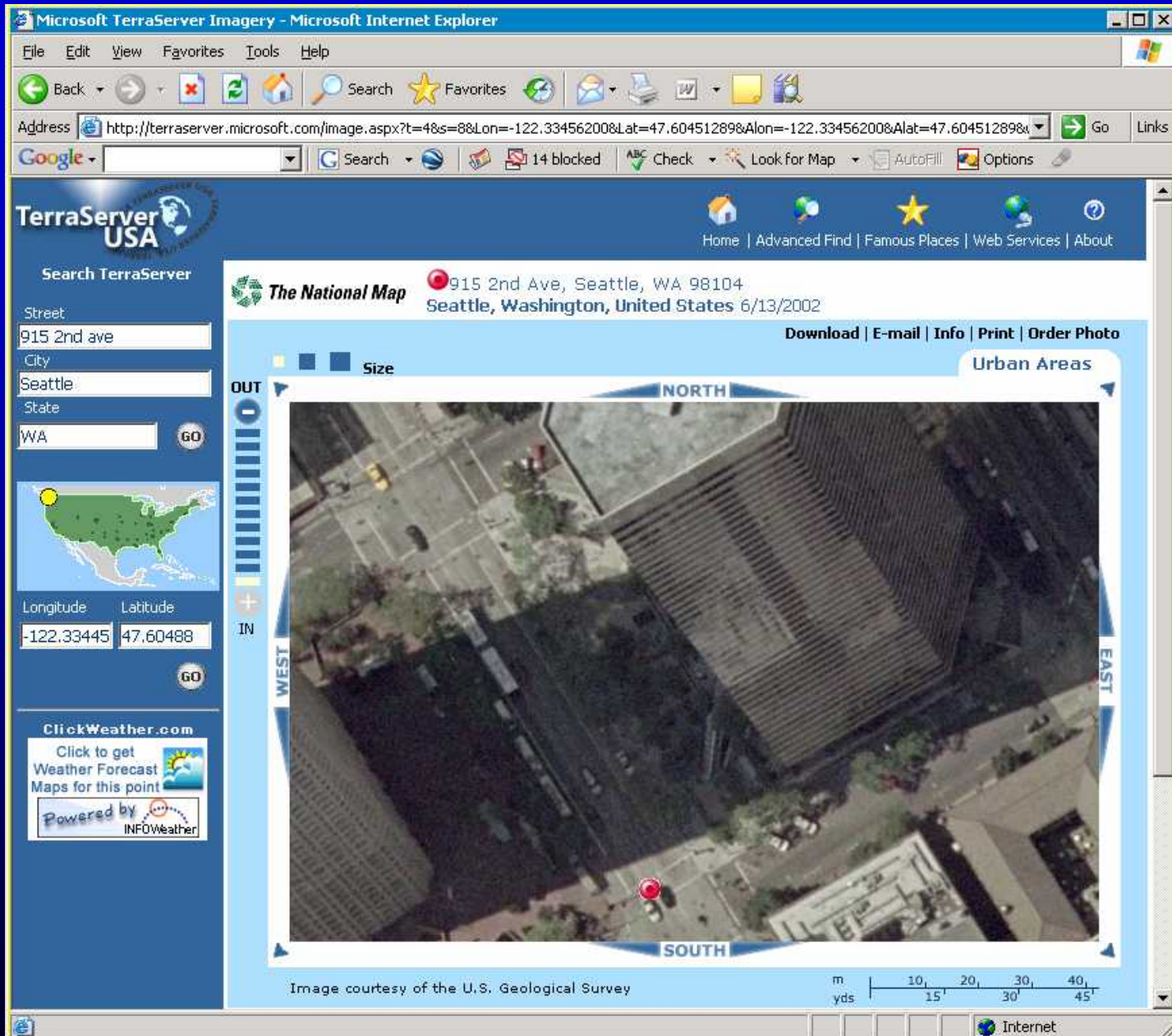
WEST EAST

NORTH SOUTH

Image courtesy of the U.S. Geological Survey

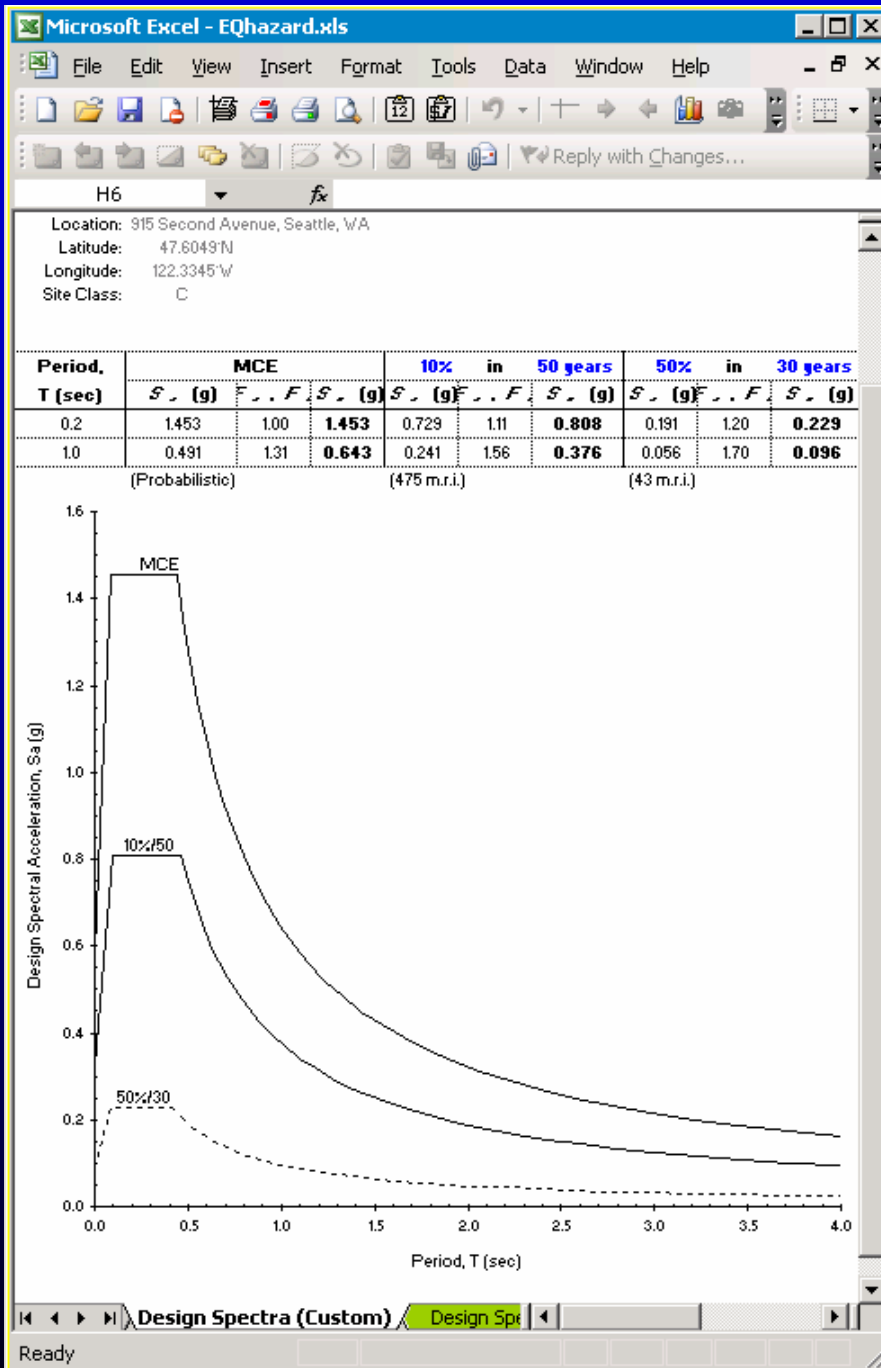
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- Hazard interpolation



Application

- Maturity of included research
 - Consensus or Inclusive
- Seismic slip budget
- Stability of design maps
- Presentation/availability of data
 - Interpolation of hazard data (provide at <http://earthquake.usgs.gov/research/hazmaps>)
 - Lat-long, not zip code (thank you)
 - Search engine (thank you)

