Land Subsidence along the Delta-Mendota Canal and Neighboring Areas in the Northern Part of the San Joaquin Valley, California

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Summary

- 1,200 mi2 area subsided ½-11 inches/year during 2008-10; data indicate these rates have continued through 2013
- Adversely affecting water conveyances and other infrastructure
  - Reduced conveyance capacity and freeboard, panel damage; water surface and liner misalignment; erosion/deposition in unlined channels
- Subsidence is largely permanent
  - Reduced aquifer-system storage capacity also is permanent
- Subsidence occurred when groundwater levels declined to historically low levels as a result of pumping
- Recent subsidence has shifted about 25 mi northeast from historical (1926-70) maximum
- Long-term monitoring of water levels and subsidence is needed to detect and track groundwater conditions for decision support

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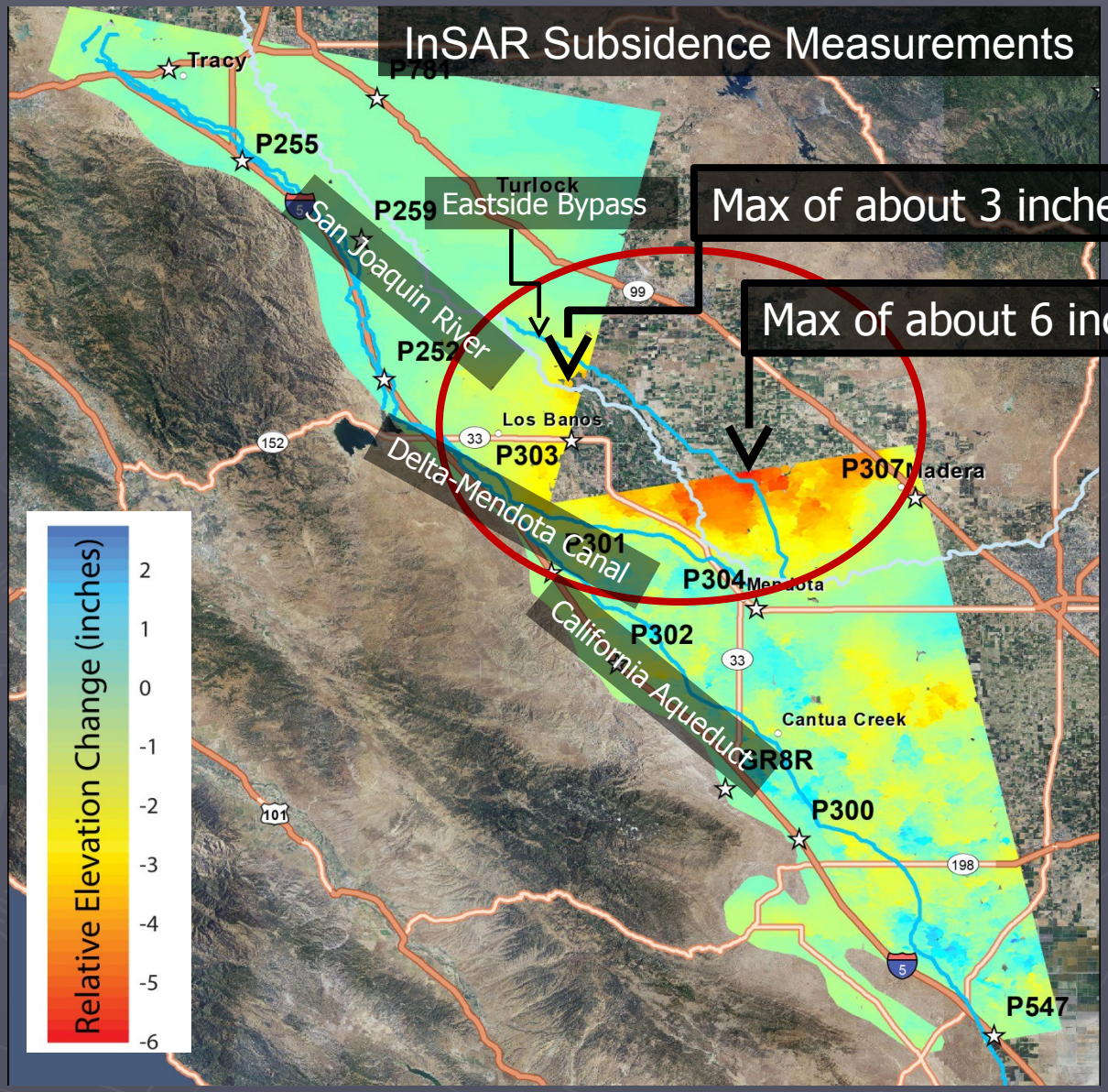
Subsidence along the DMC



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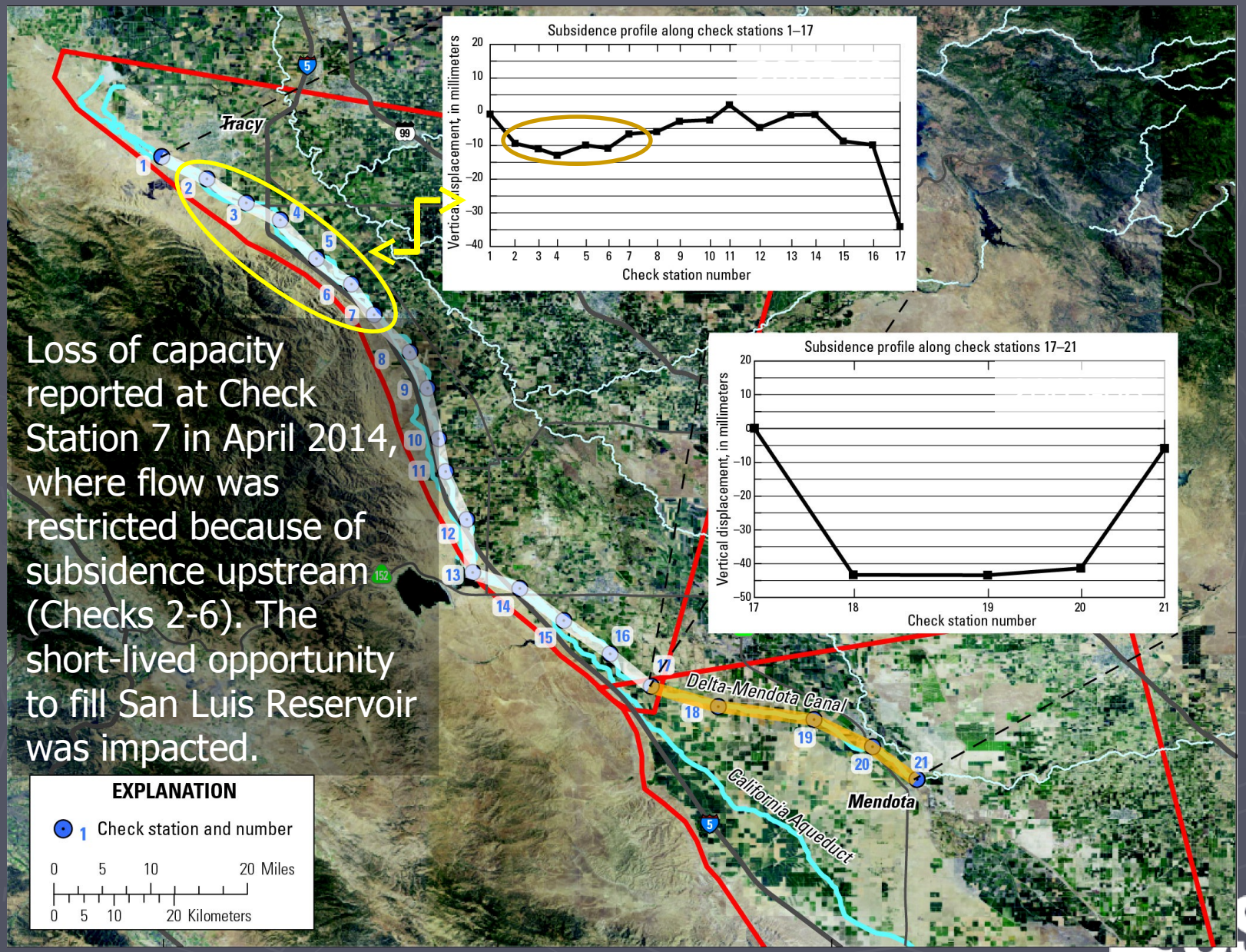
Subsidence along the DMC



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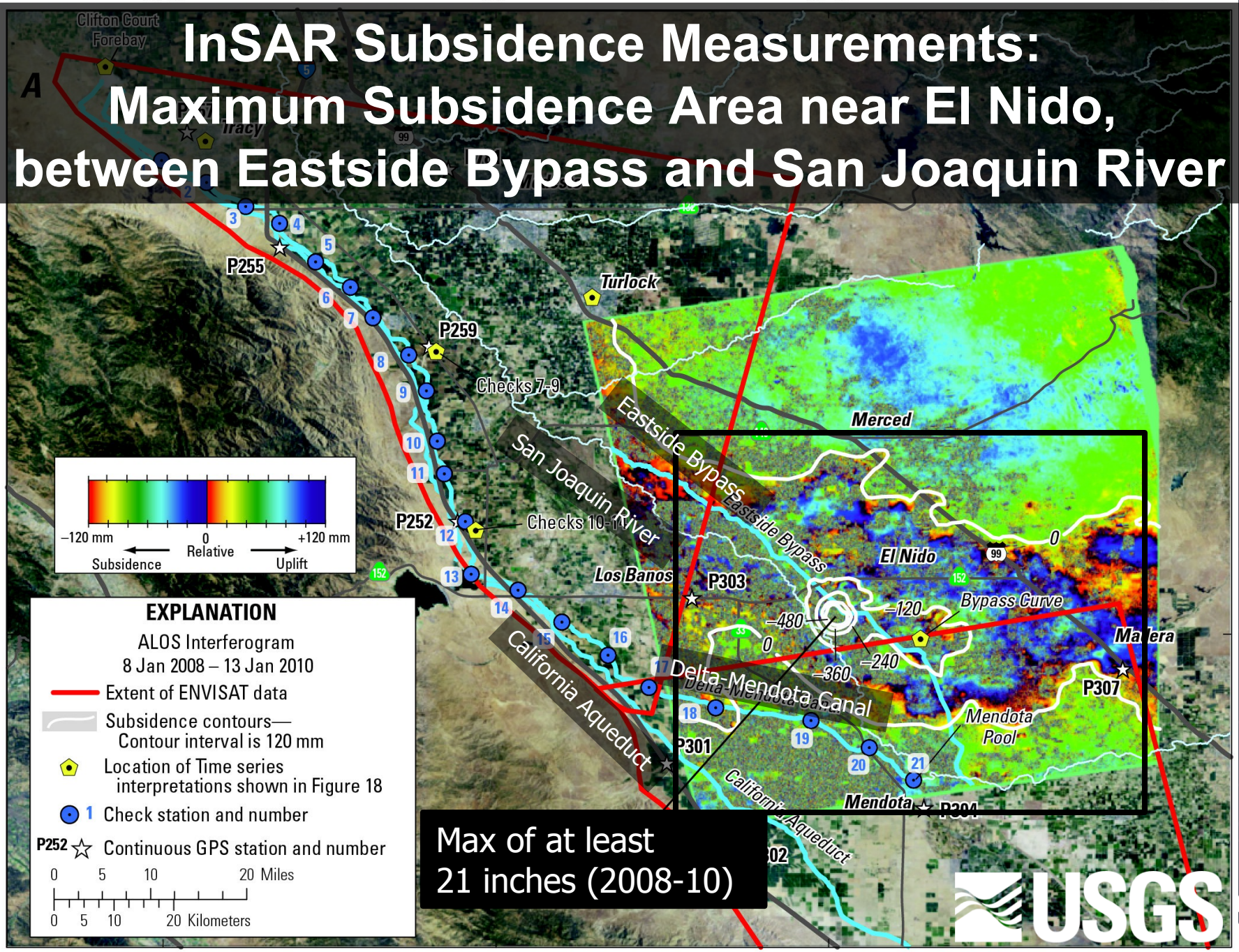
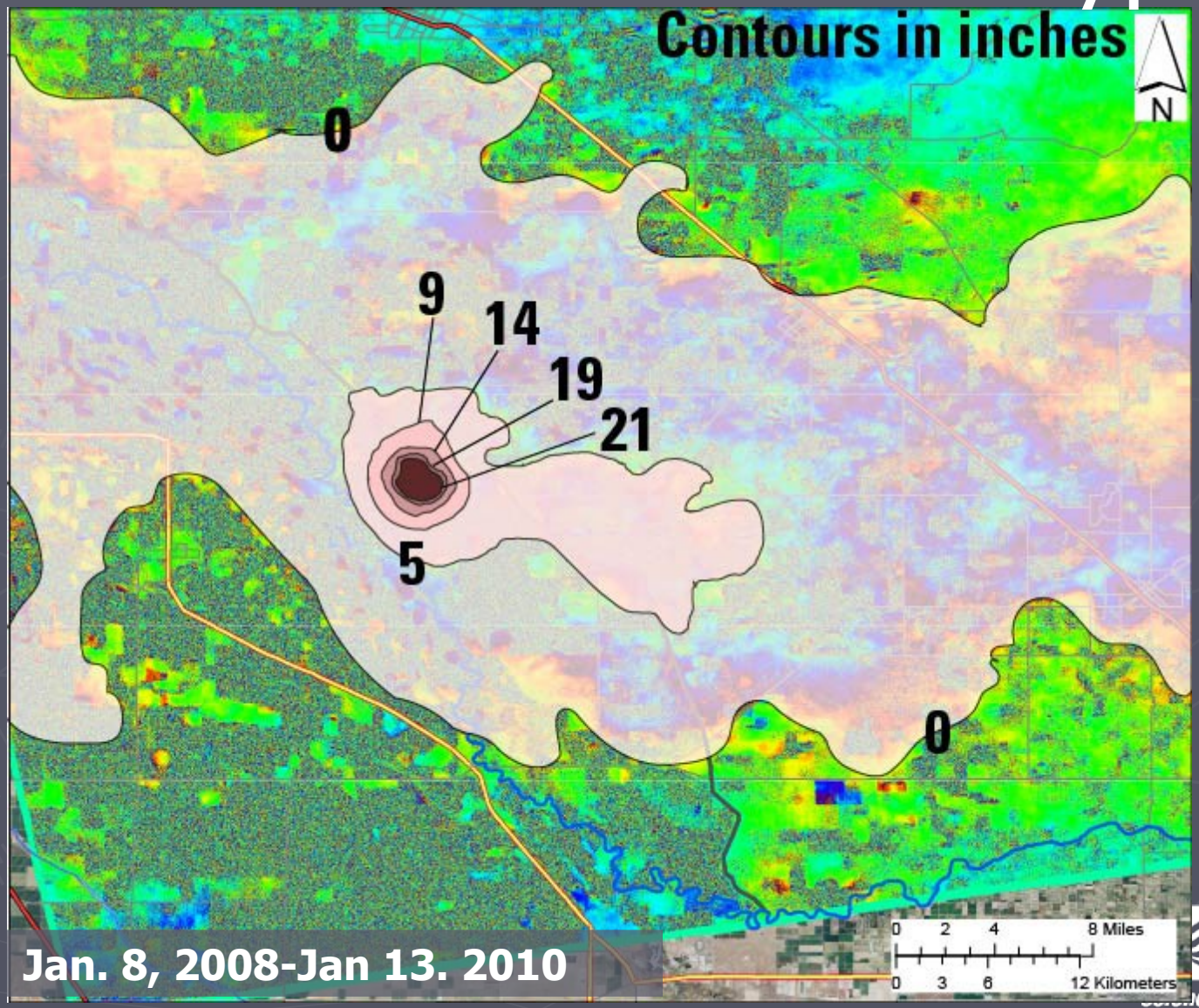
InSAR Subsidence Measurements: Maximum Subsidence Area near El Nido, between Eastside Bypass and San Joaquin River



Highest Impact: Adjacent to San Joaquin River and Eastside Bypass



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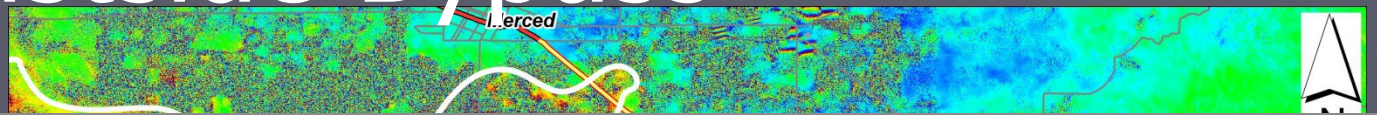
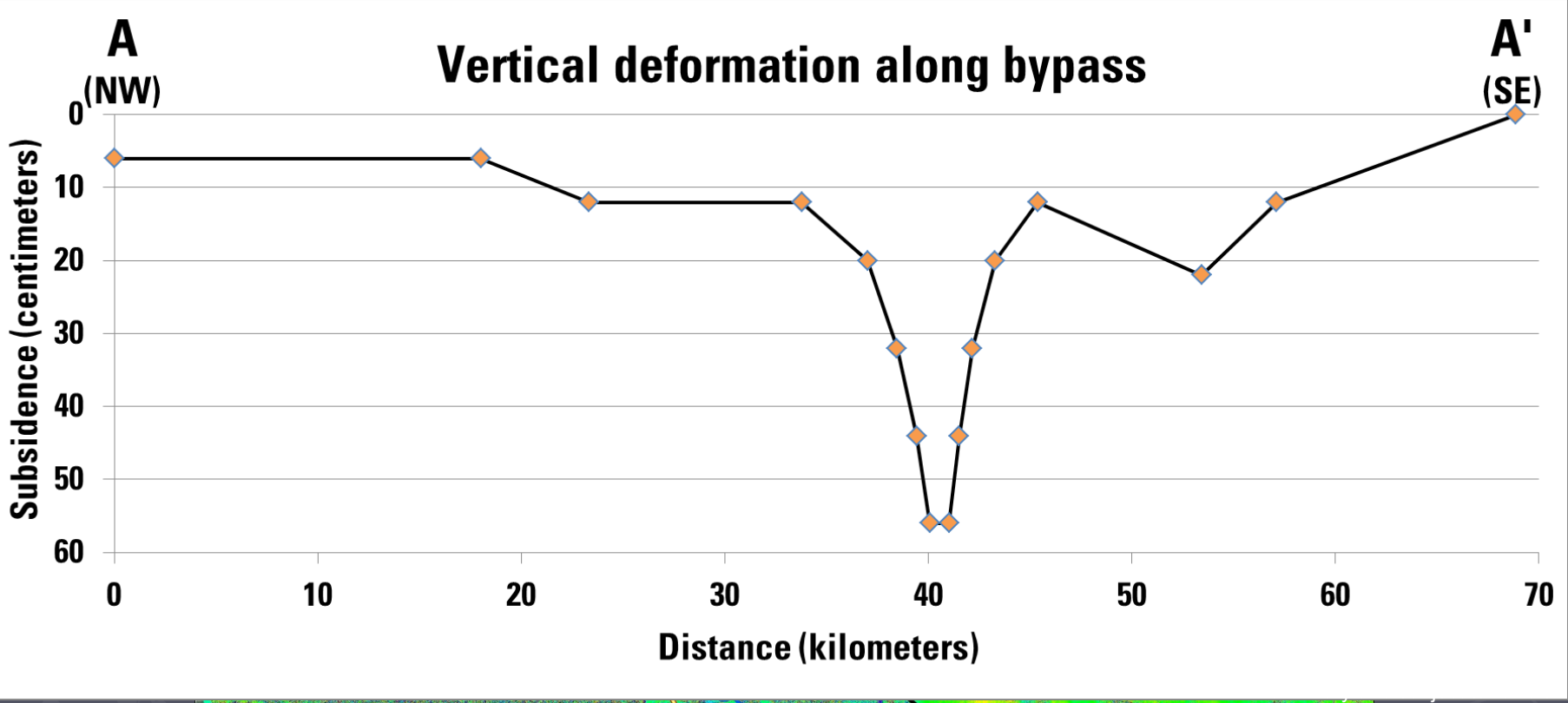
Subsidence along the Eastside Bypass





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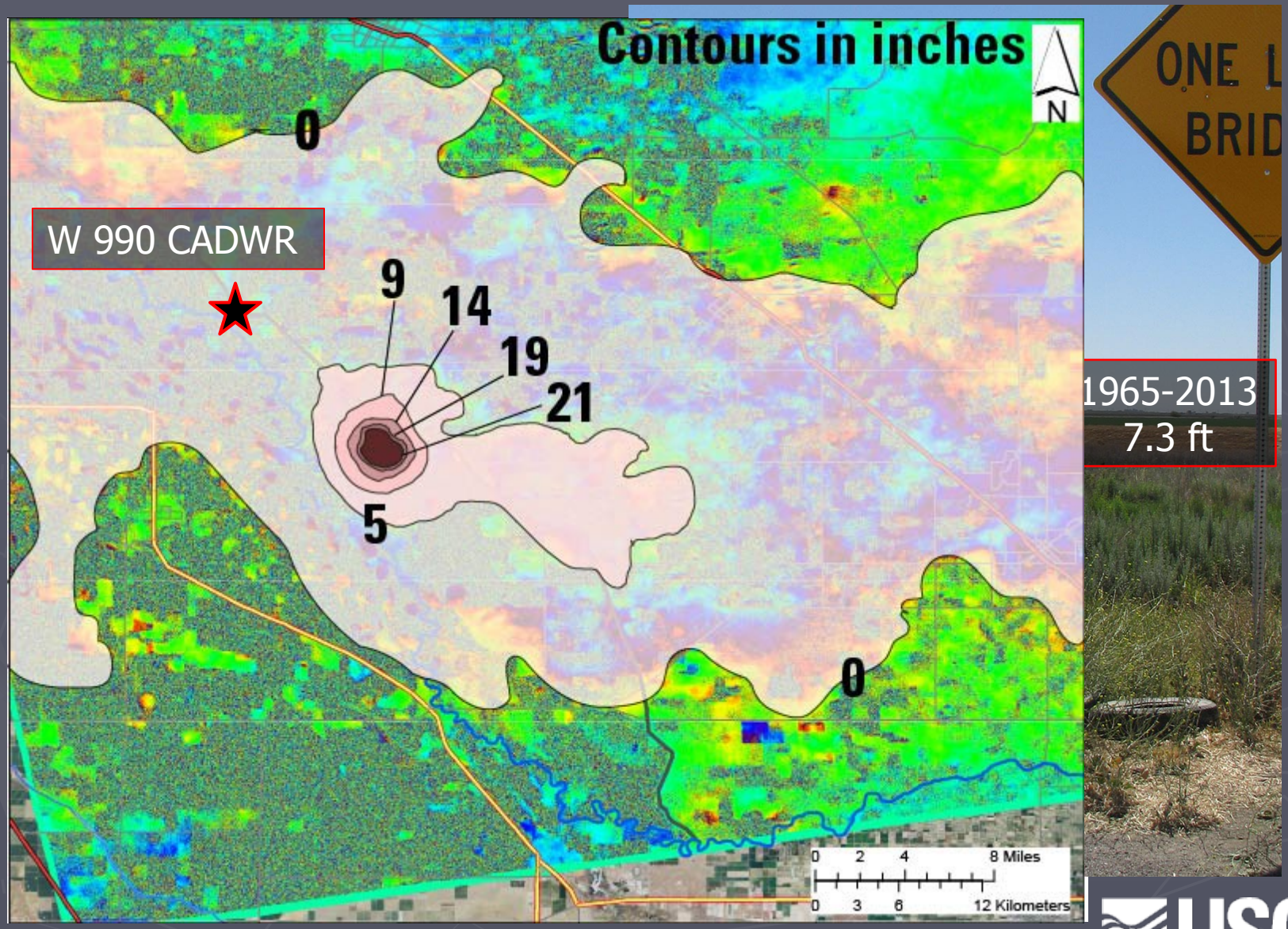
Elevation Comparisons



Data from National Geodetic Survey and Bureau of Reclamation

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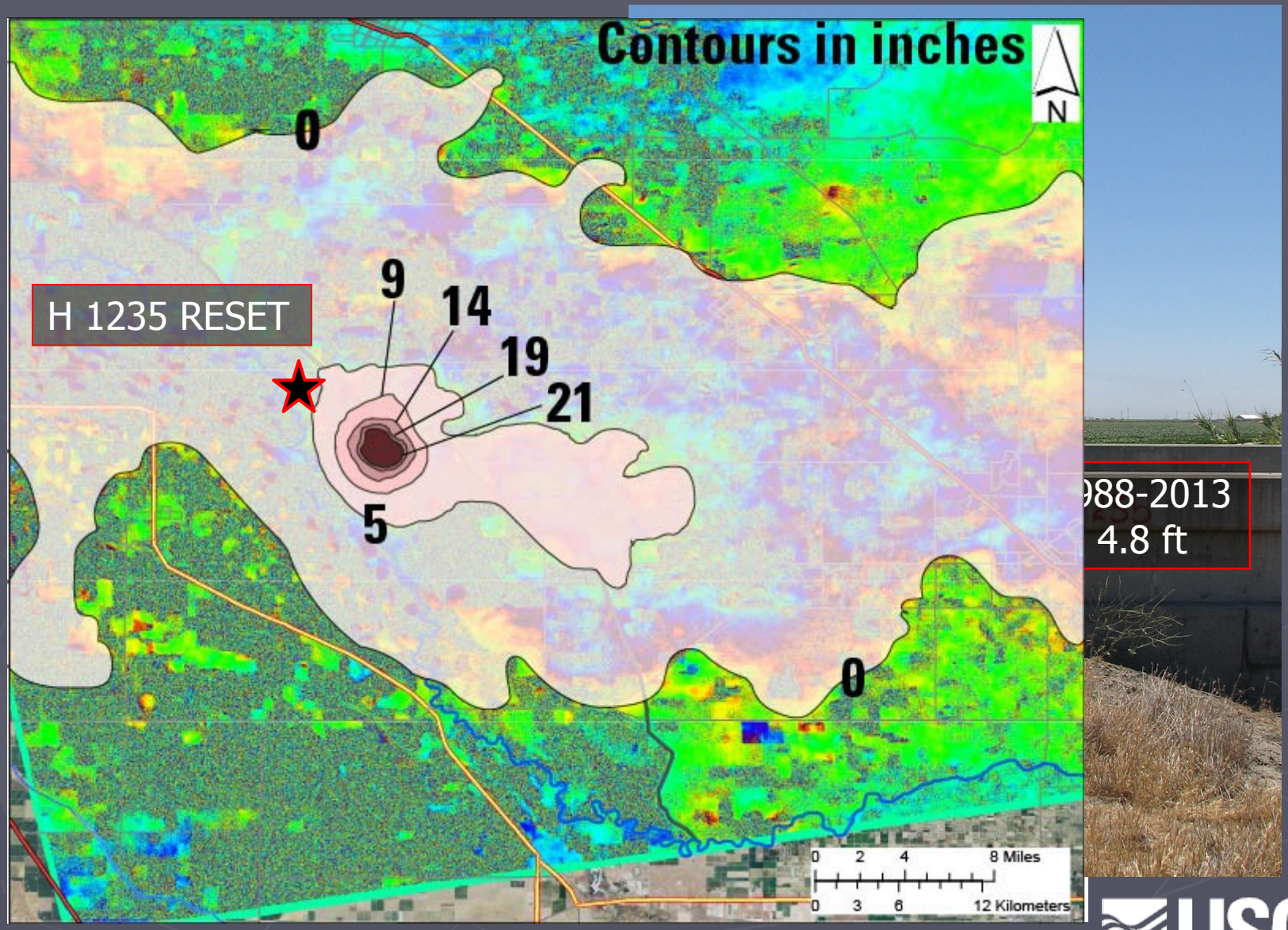

Data from National Geodetic Survey, Department of Water Resources, and Bureau of Reclamation

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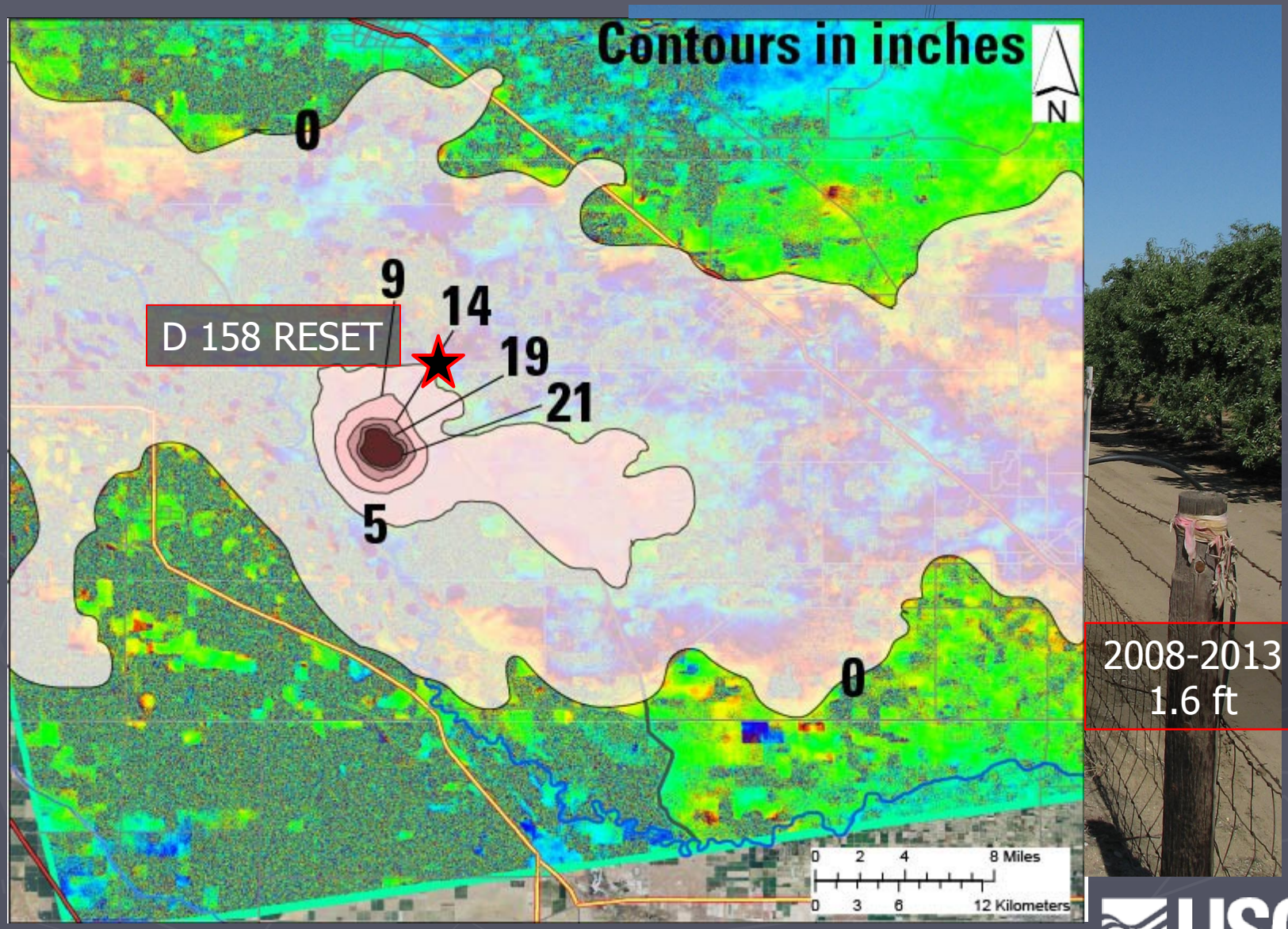

Data from Department of Water Resources and and Bureau of Reclamation

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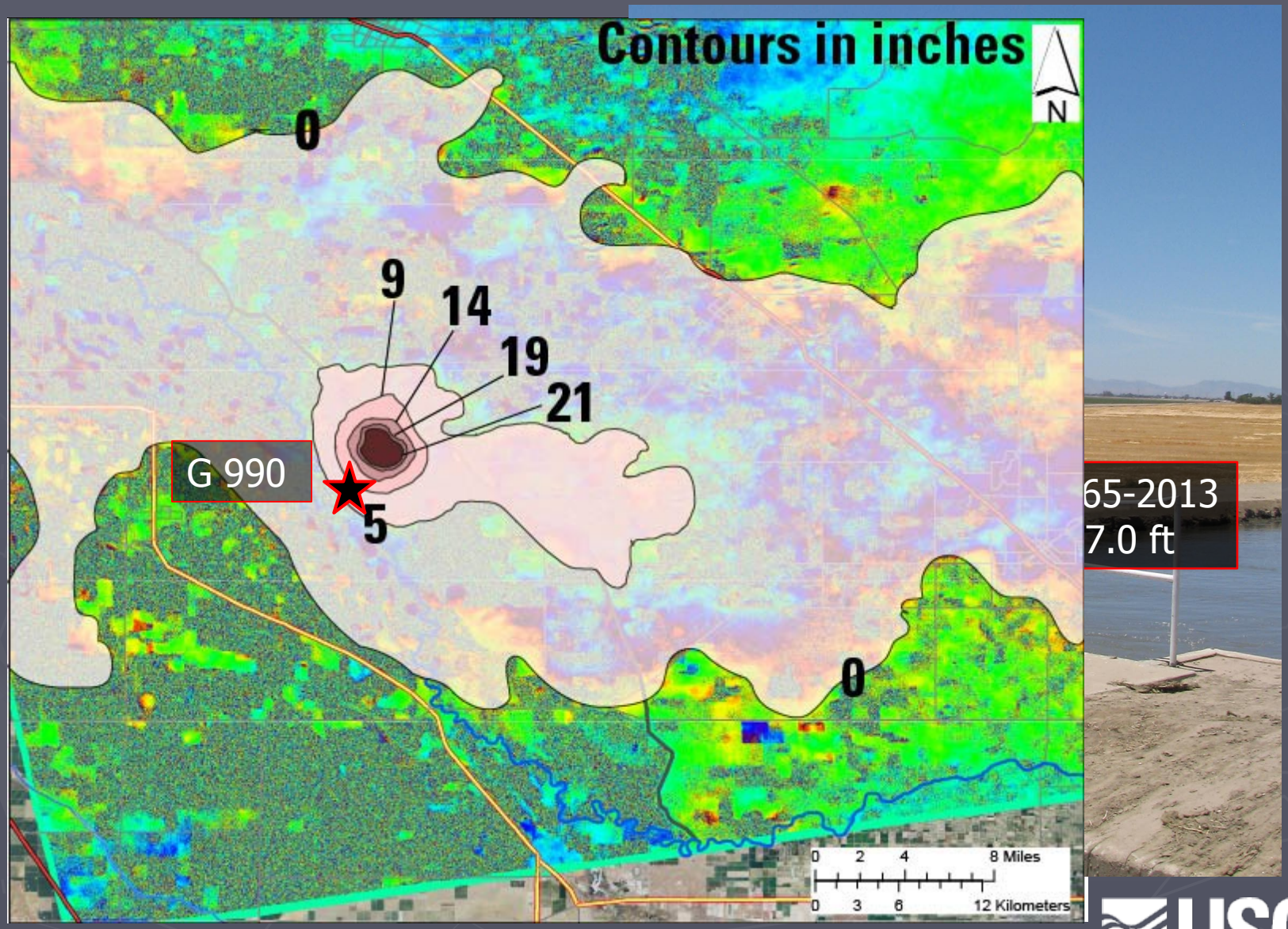

Data from National Geodetic Survey, Central California Irrigation District, and Bureau of Reclamation

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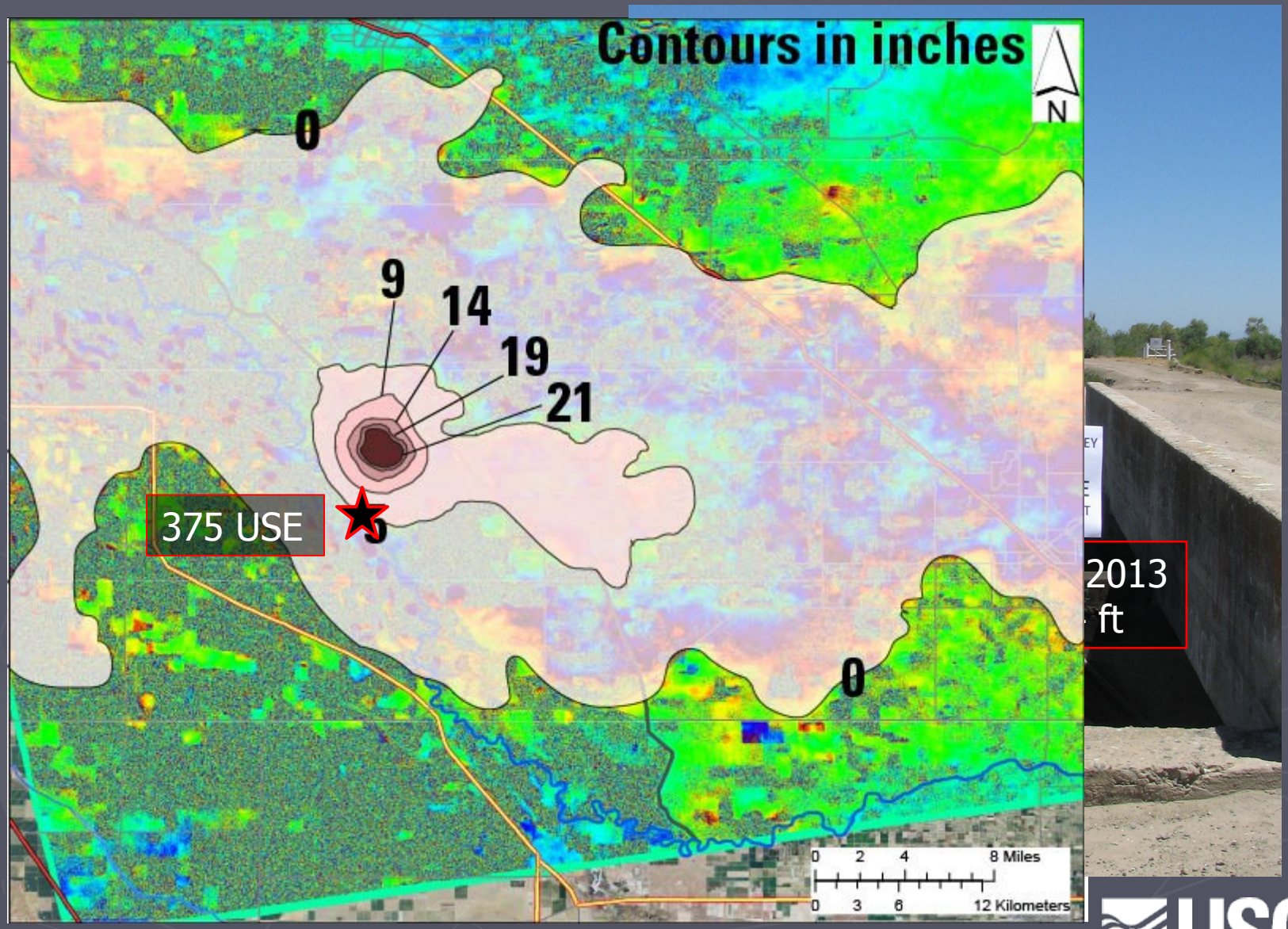

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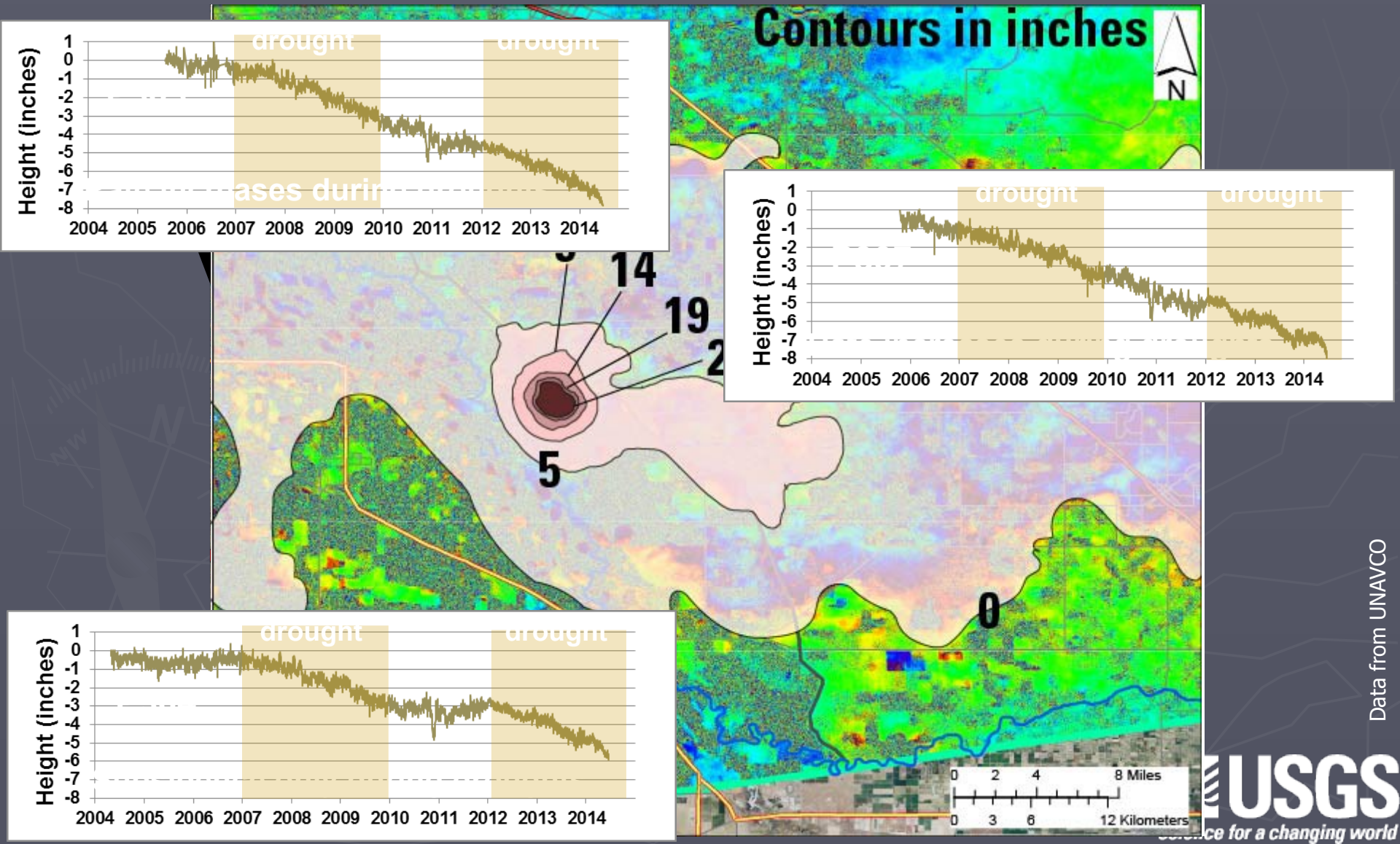
GPS Subsidence Measurements



Data from UNAVCO

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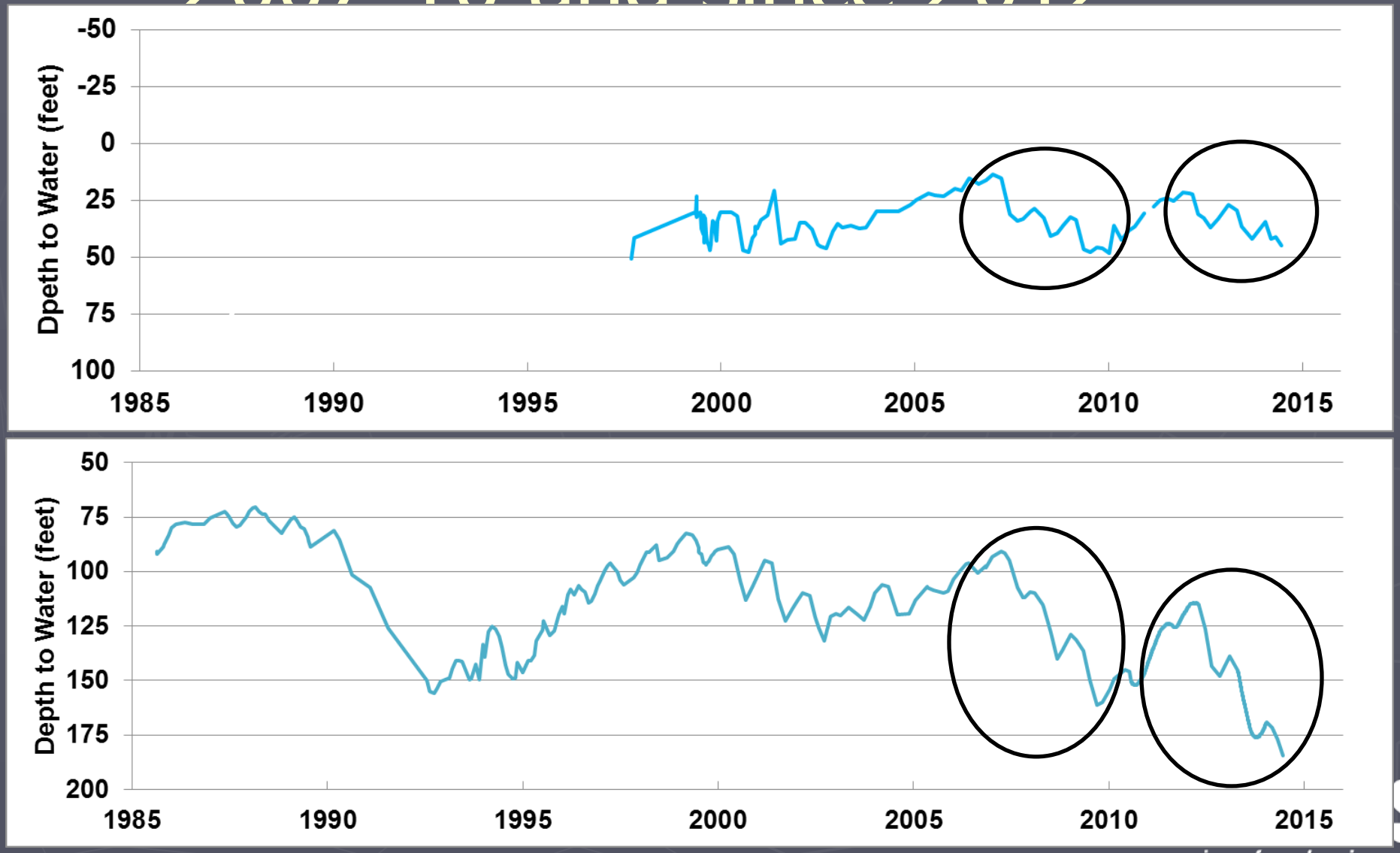
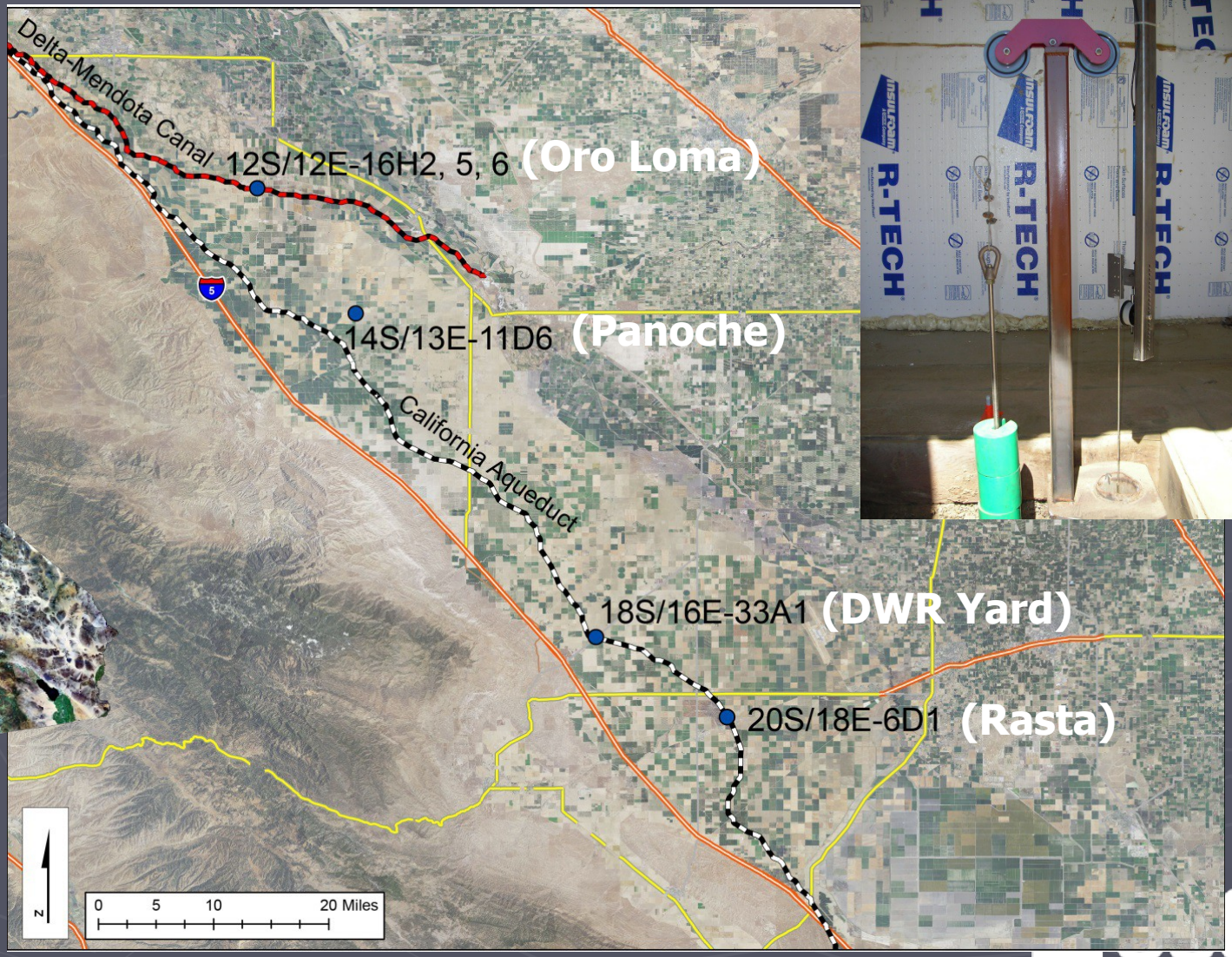
Groundwater Levels Declined 2007-10 and since 2012



Extensometers

Hourly measurements of aquifer-system compaction and groundwater levels



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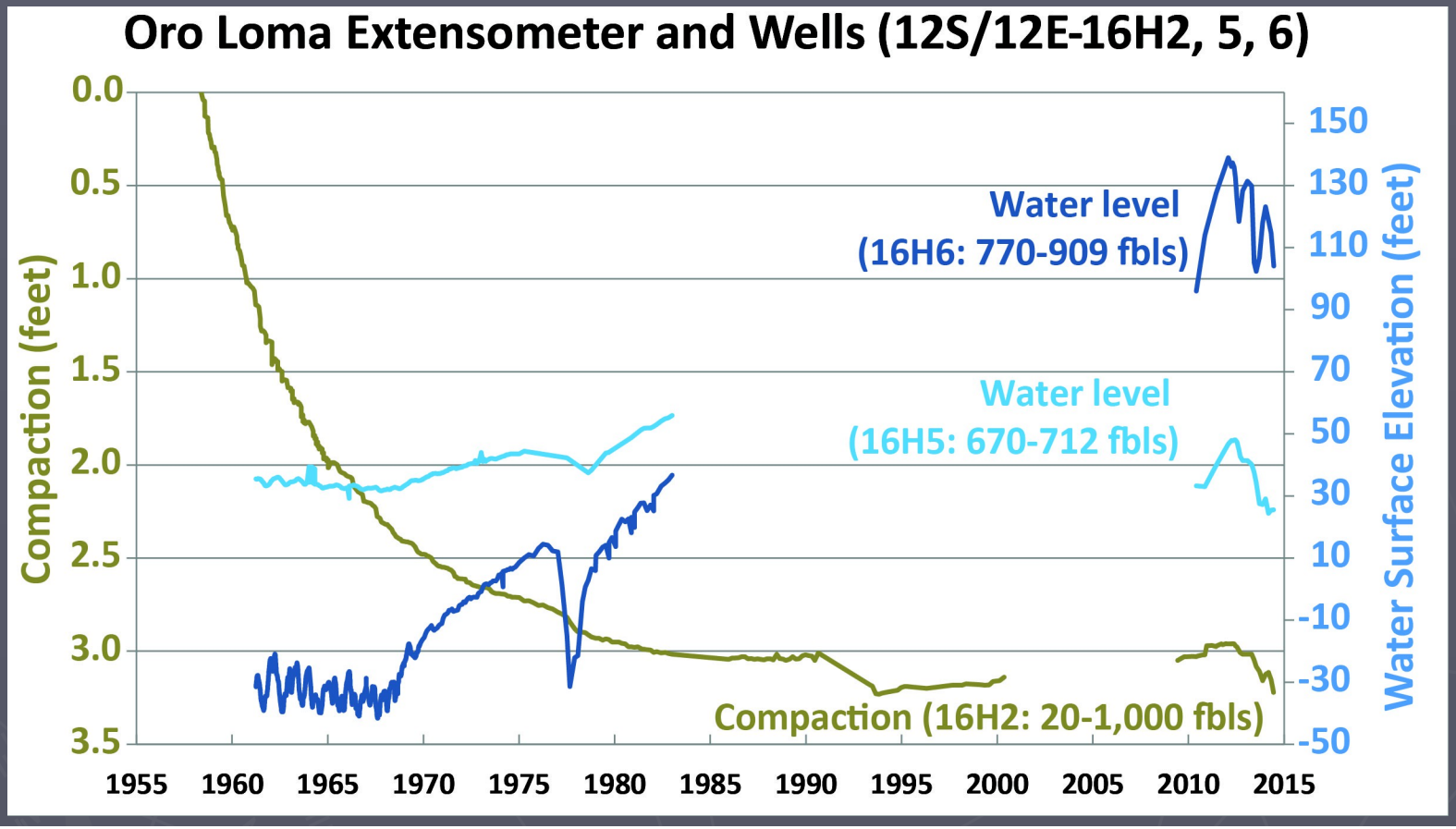

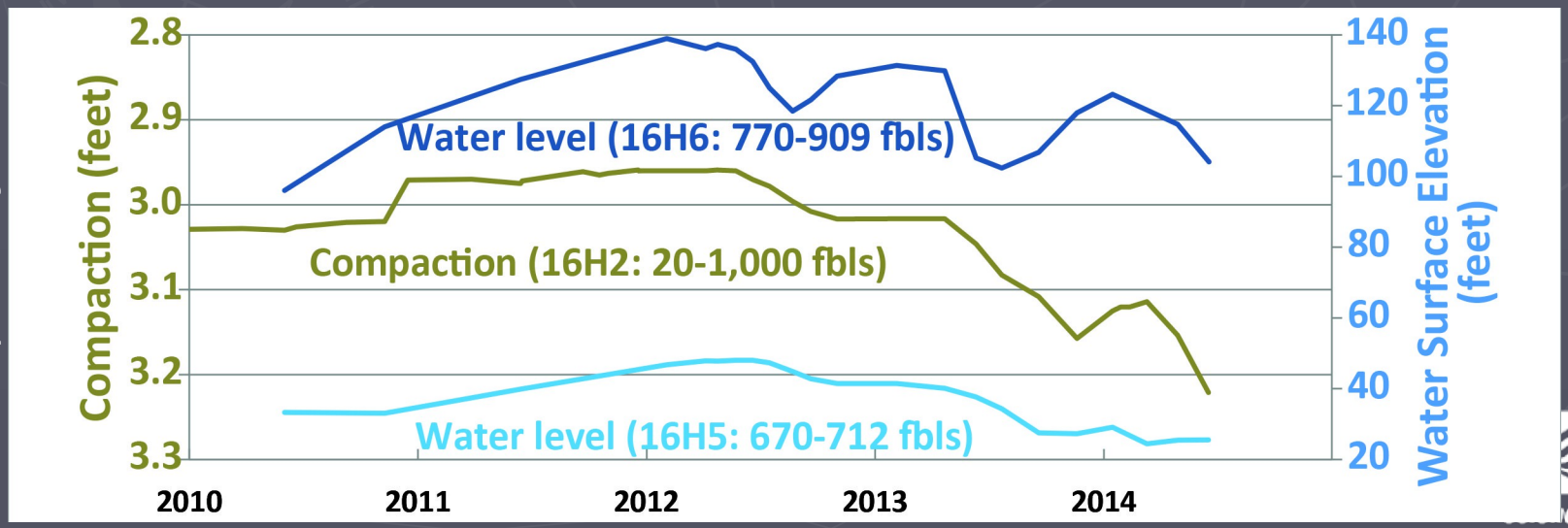

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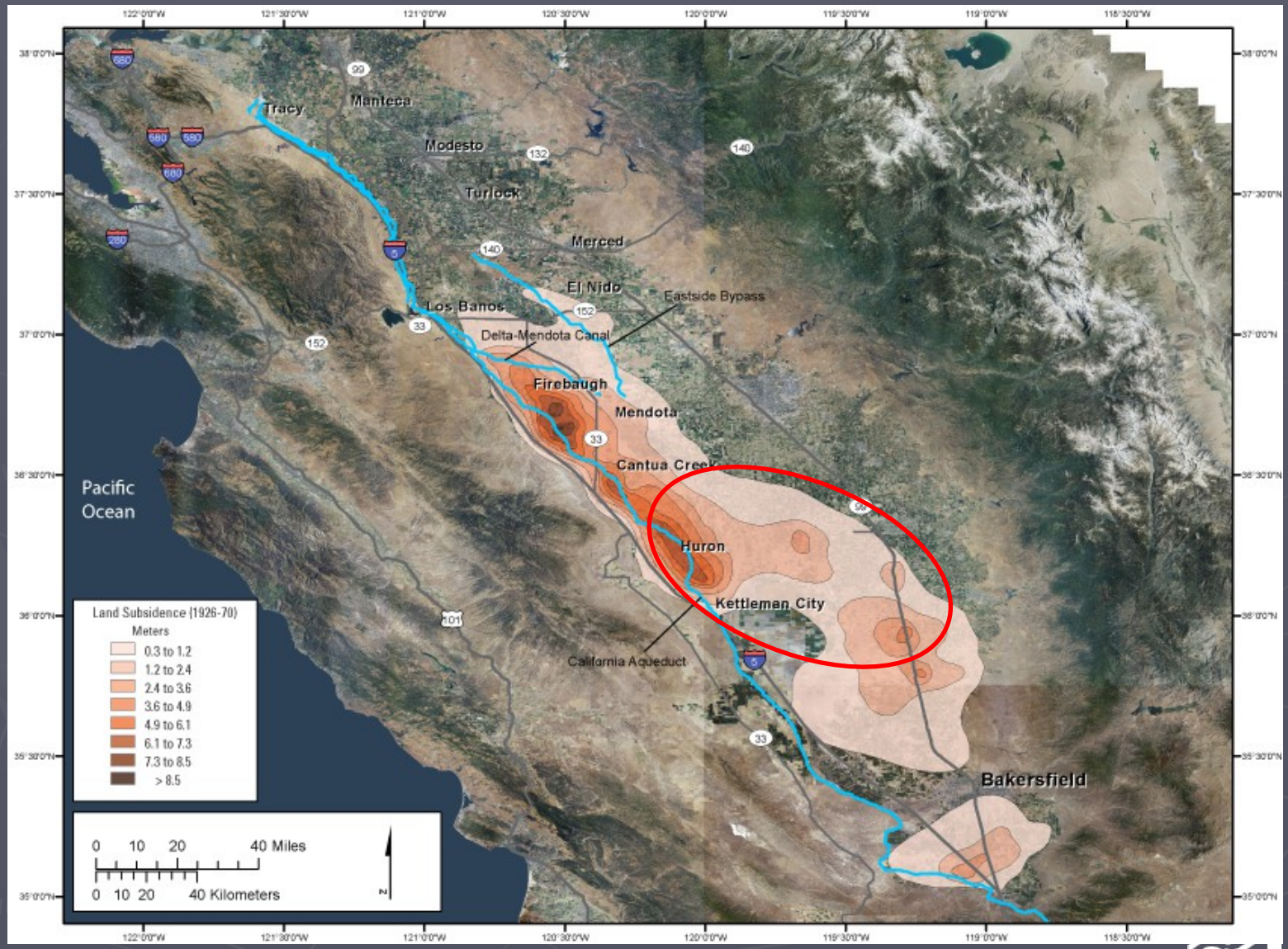
Historical Subsidence

Recent Subsidence



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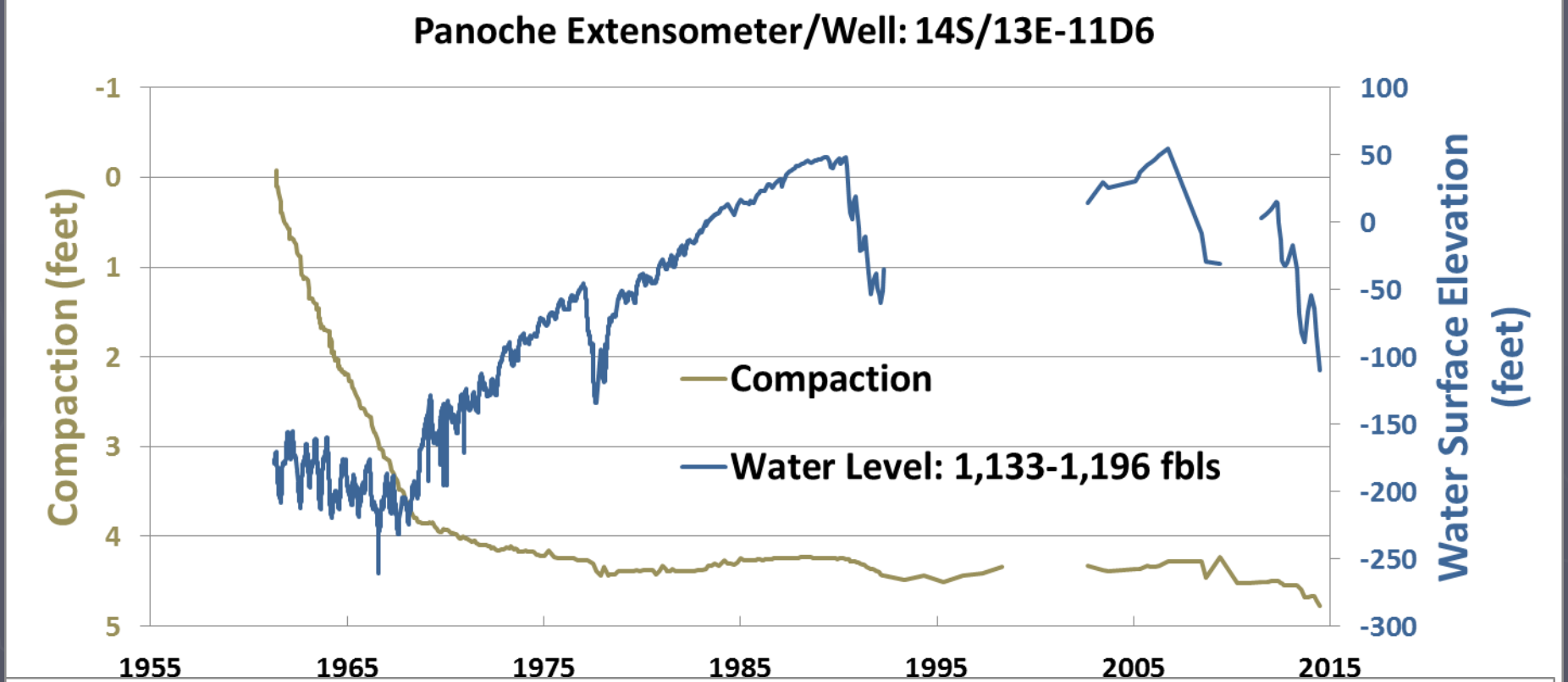
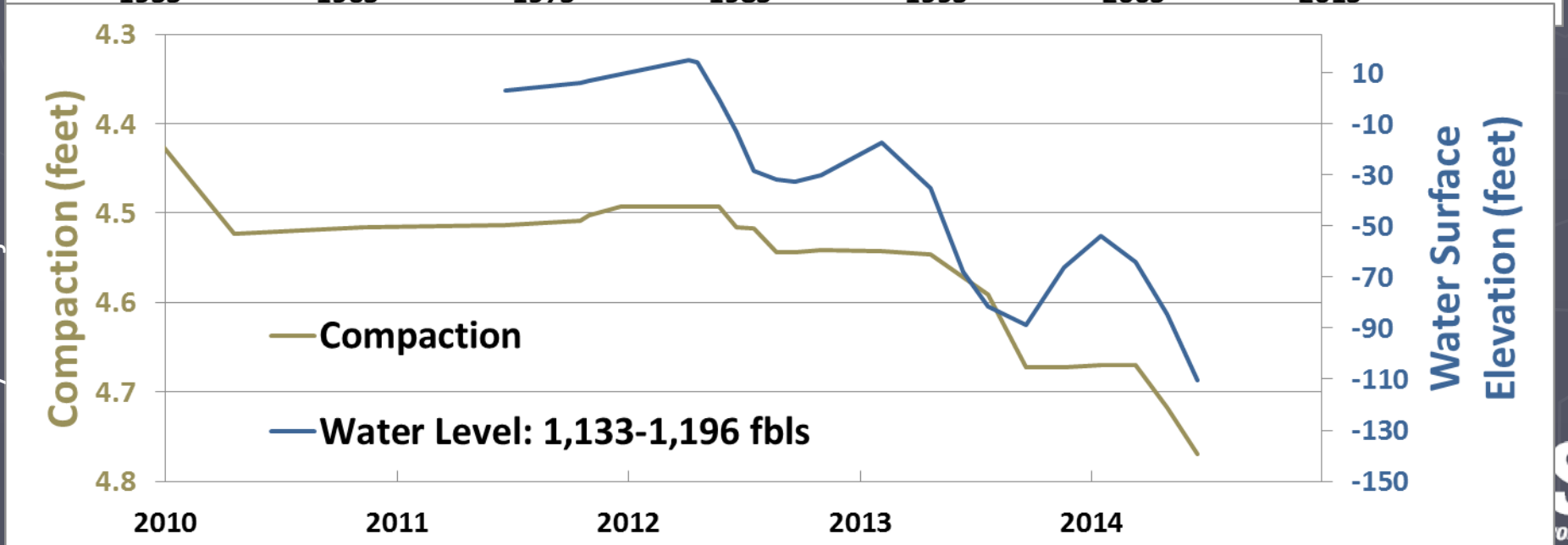
For more information:

http://ca.water.usgs.gov/projects/central-valley/index.html





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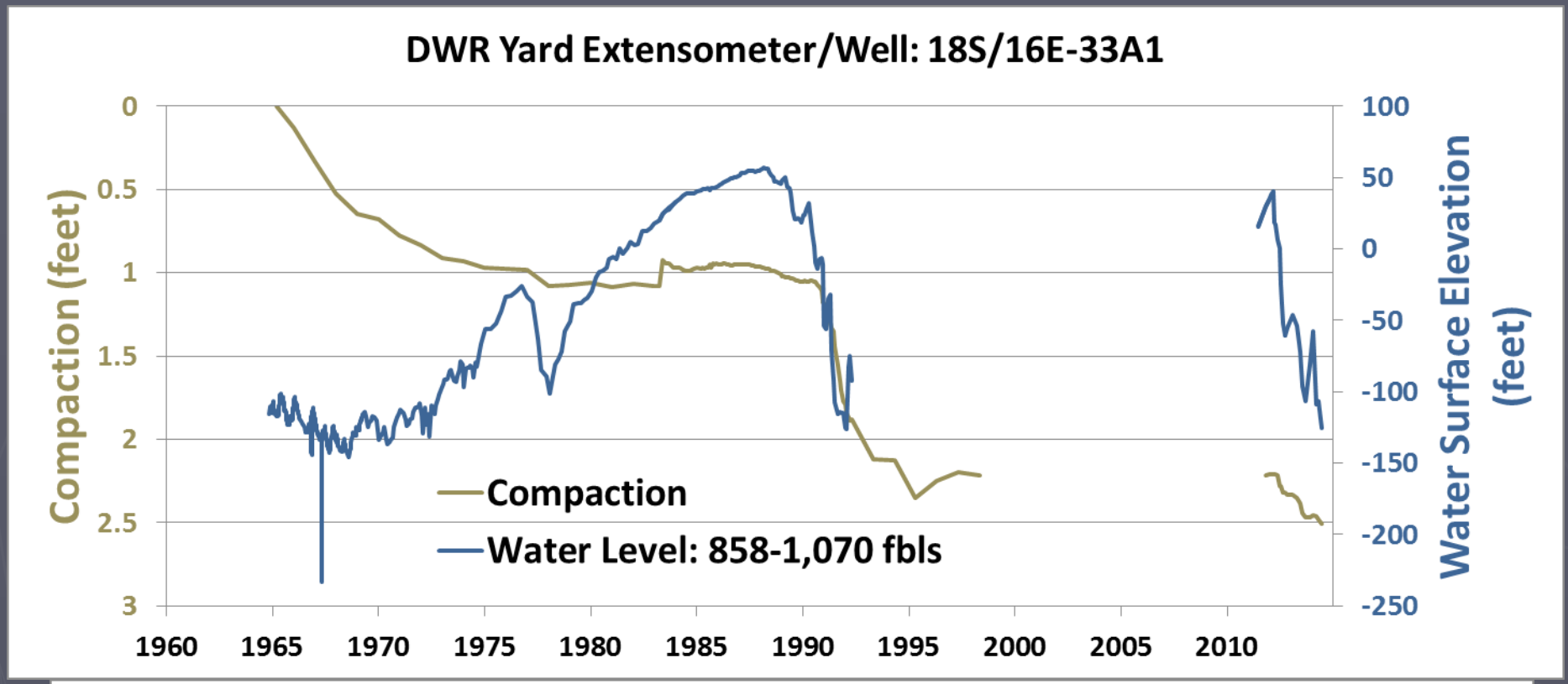

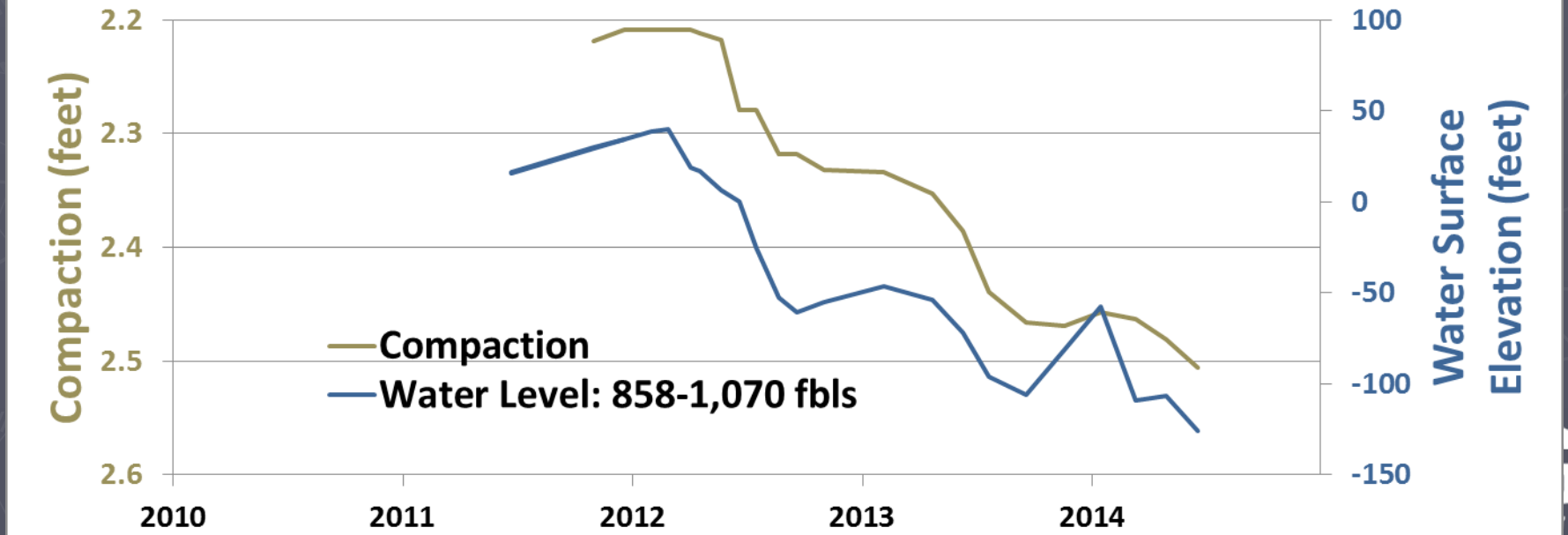

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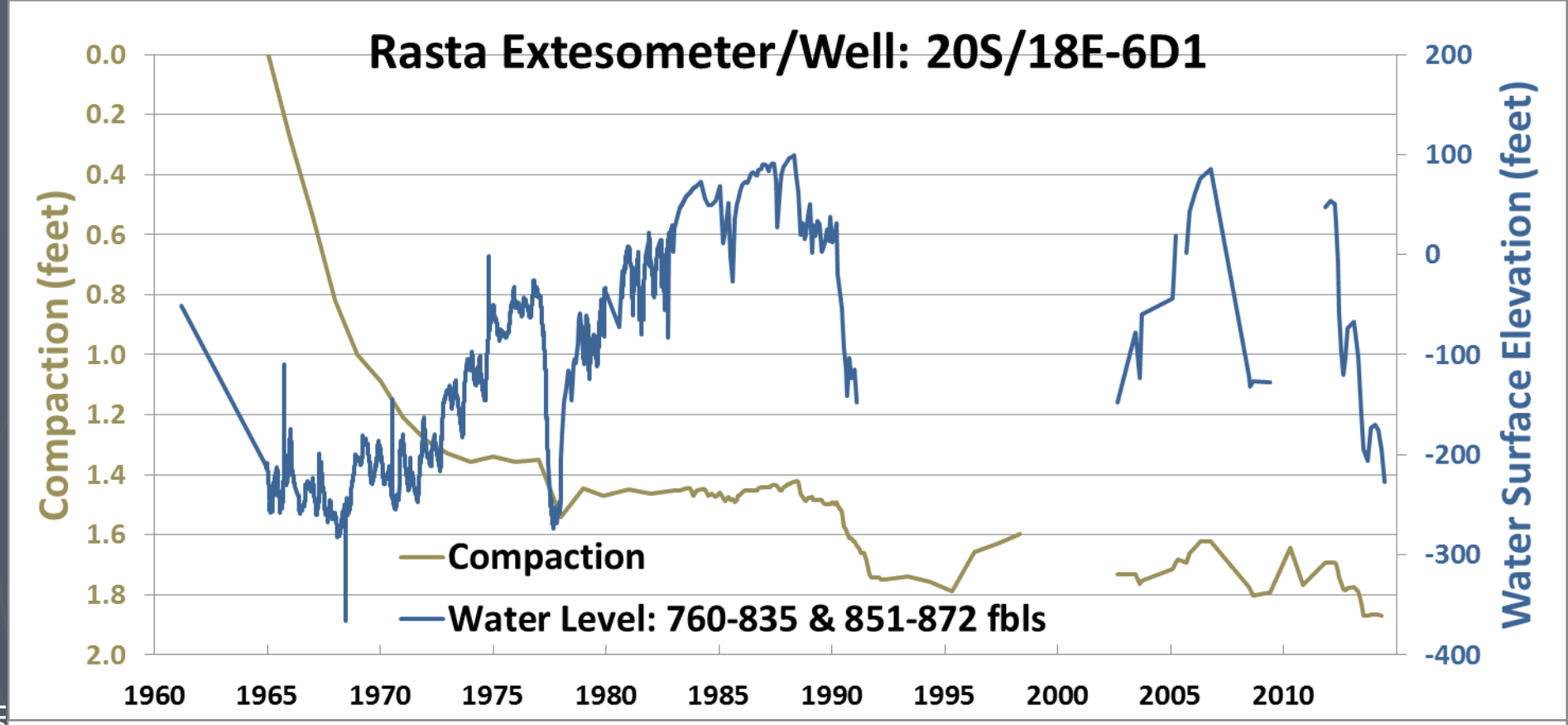

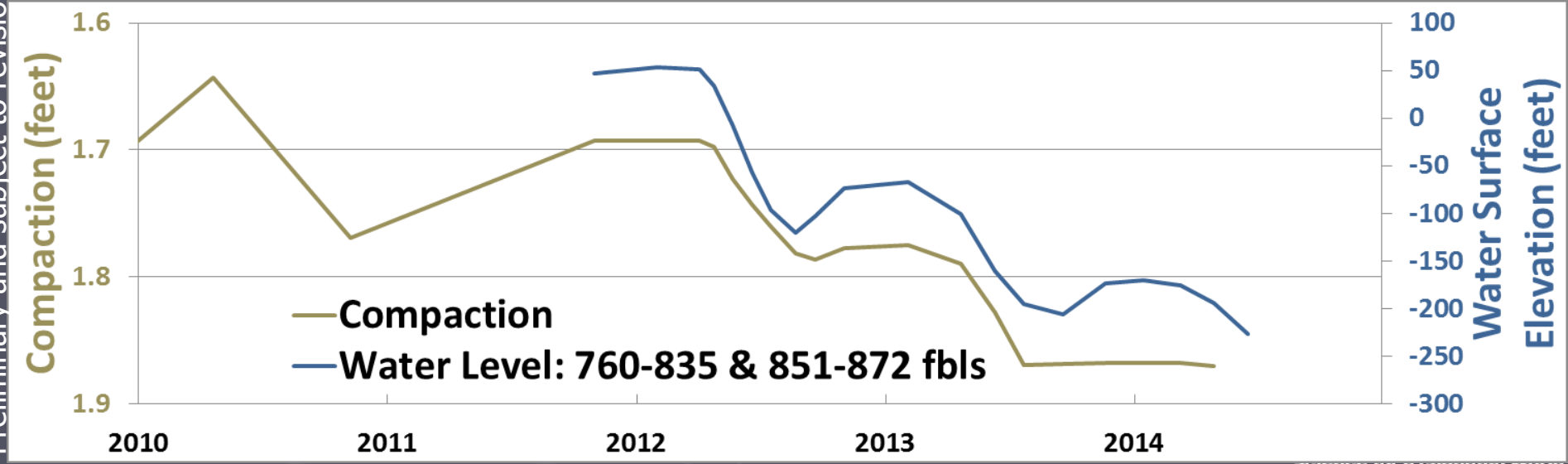

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