

# Soil Moisture Mapping of Drought in Travis County, TX

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Johnny Sullivan

GIS in Water Resources

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# Project Summary

- Goal – **Drought analysis** in Travis County as a function of **soil moisture** content
- Method - Combination of data from:



**SSURGO**

*Soil Survey Geographic Database*



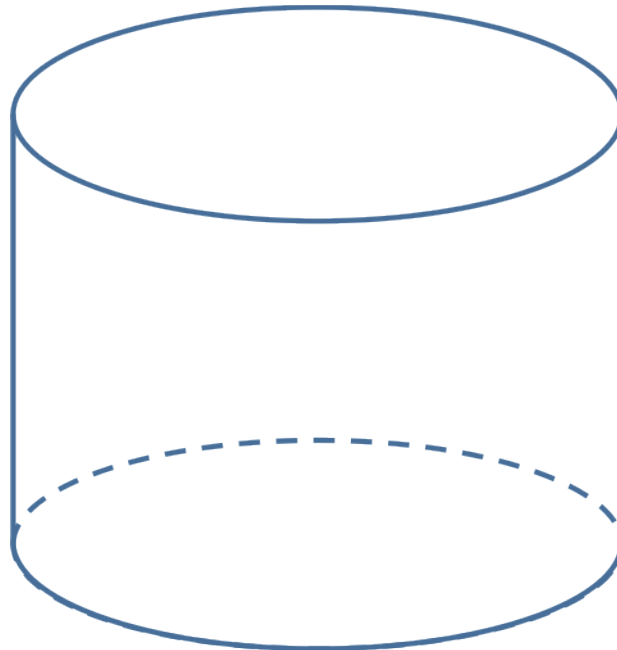
**NLDAS**

*North American Land Data  
Assimilation System*

# SSURGO

- Data available by county
- Many polygons
- Soil type and available water storage (**AWS**)

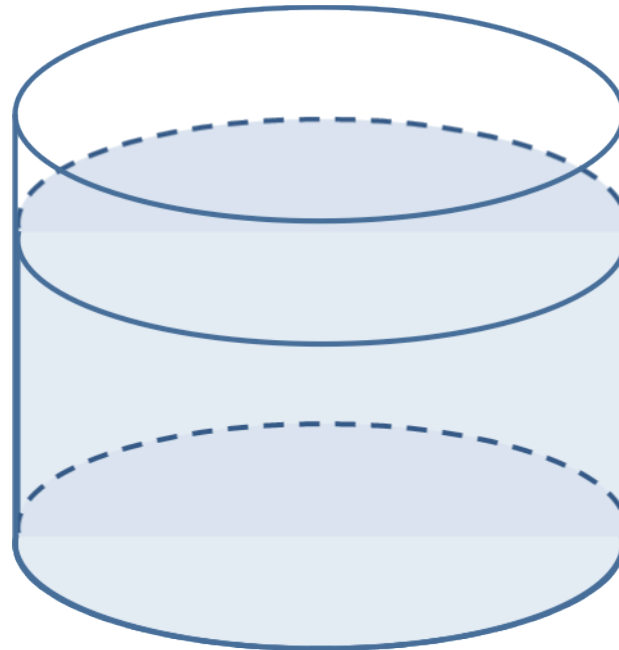
How much  
water can the  
bucket hold?

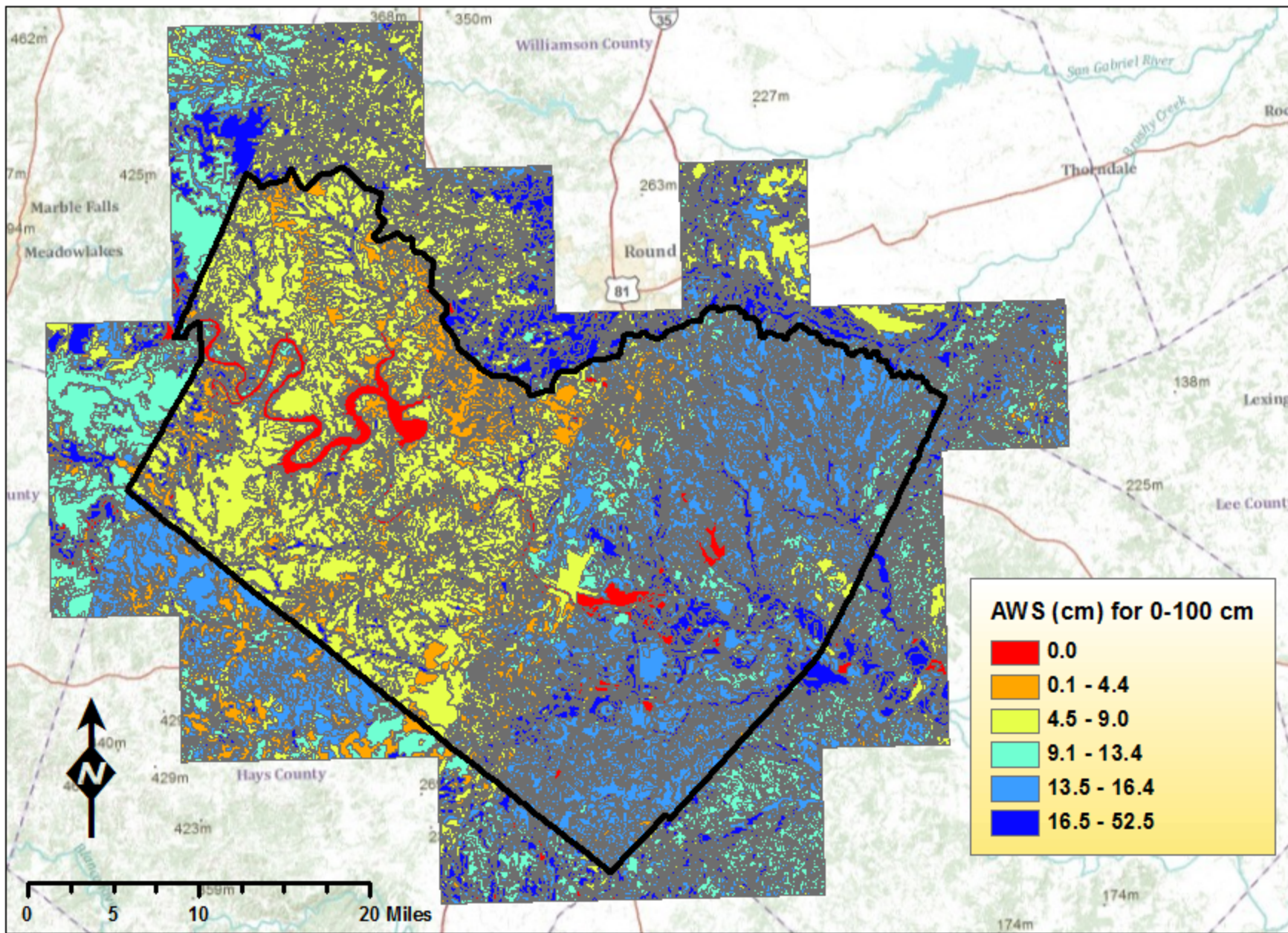


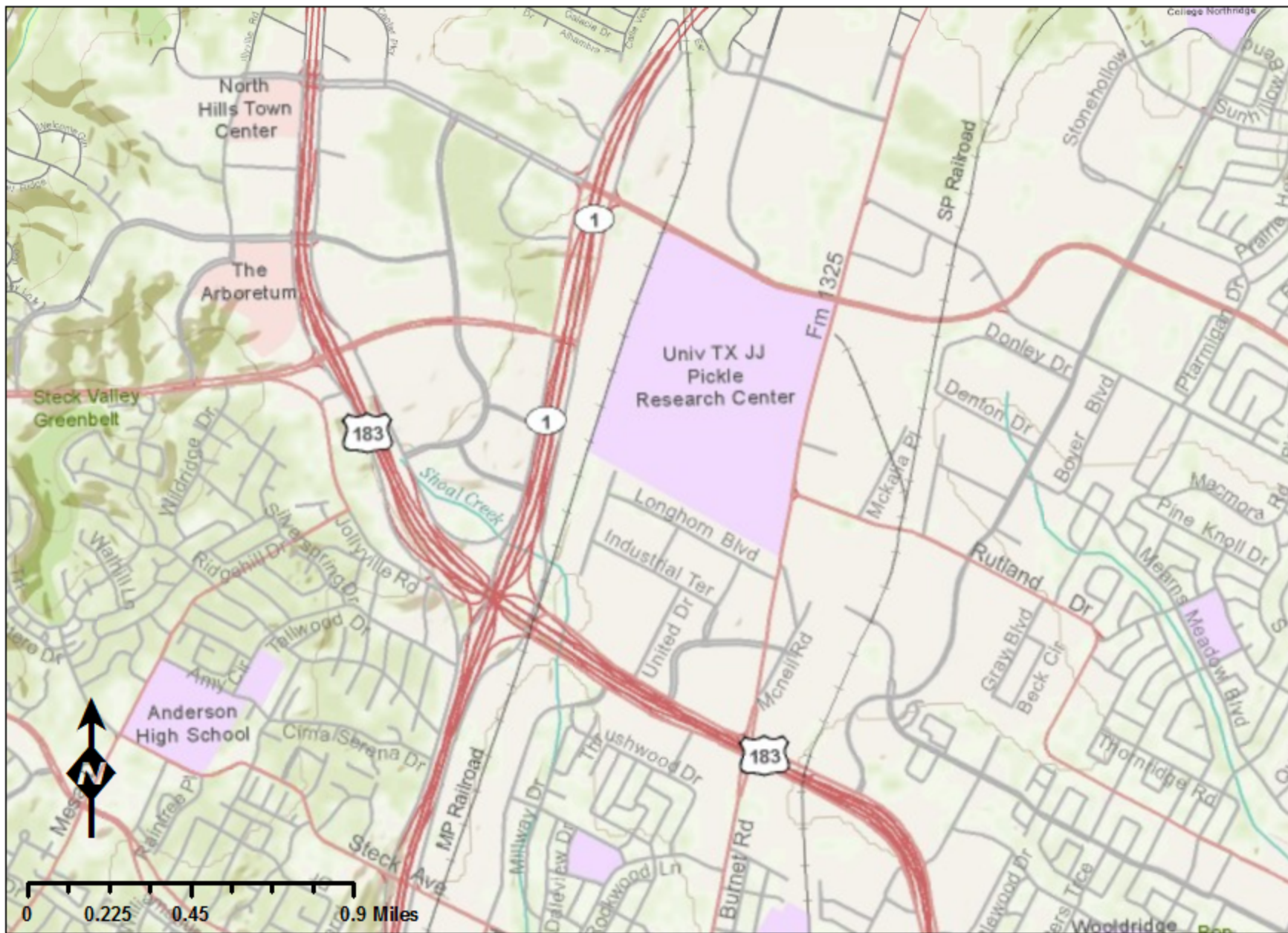
# NLDAS

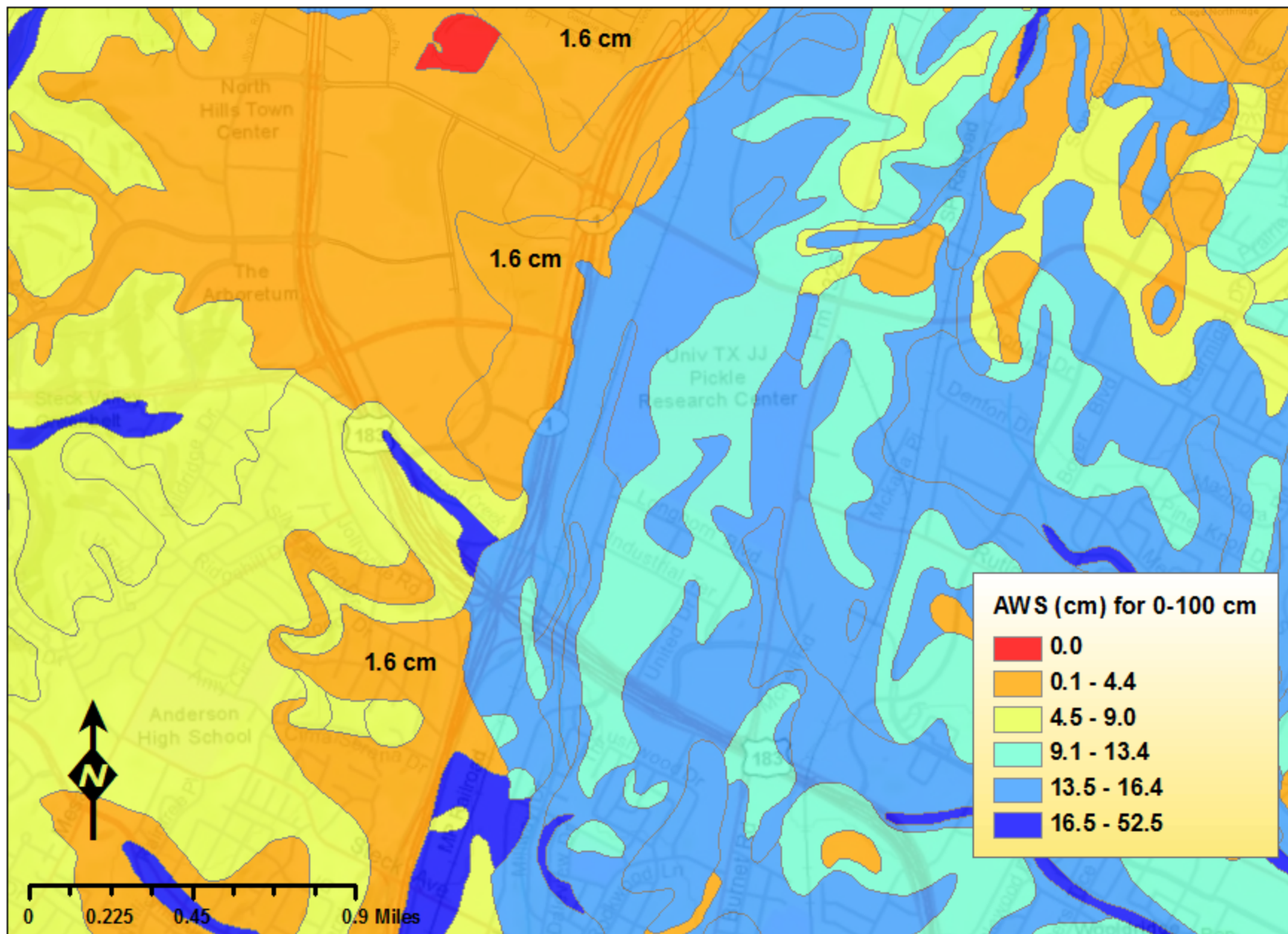
- $1/8^{\text{th}}$  degree quads
- **Current water content** of soil to various depths
- Focused on **0-100 cm**

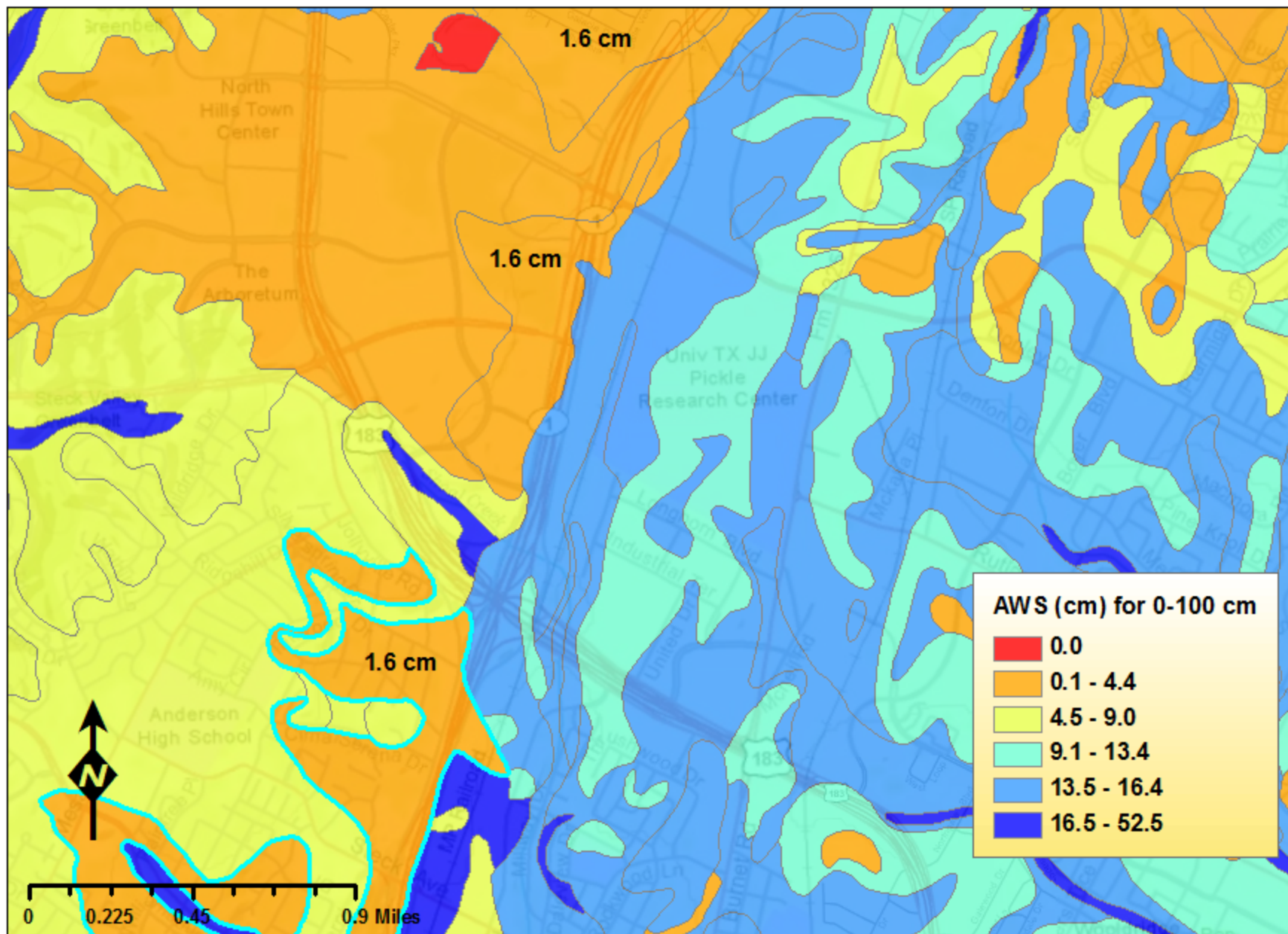
How much  
water is in  
the bucket?



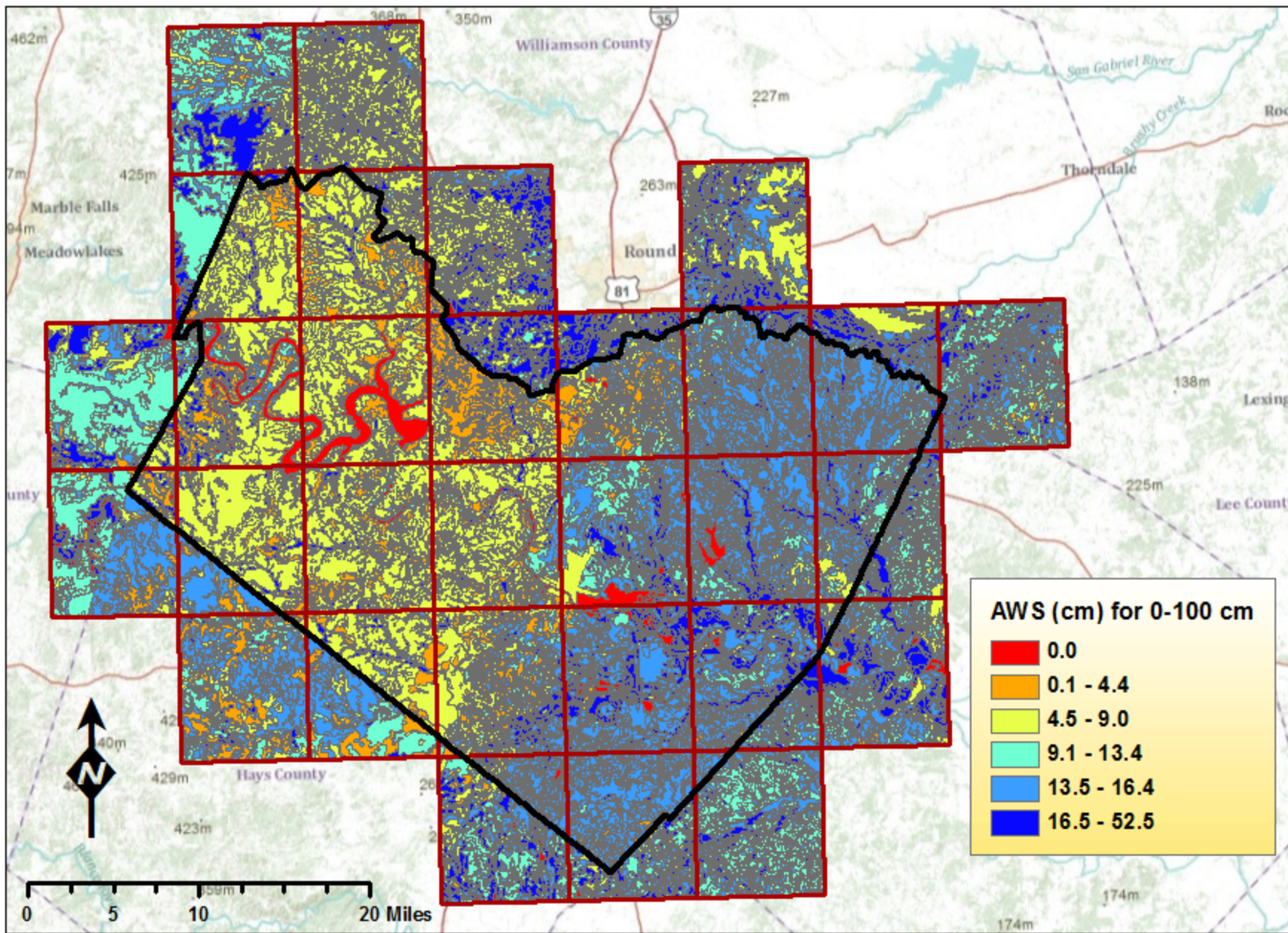


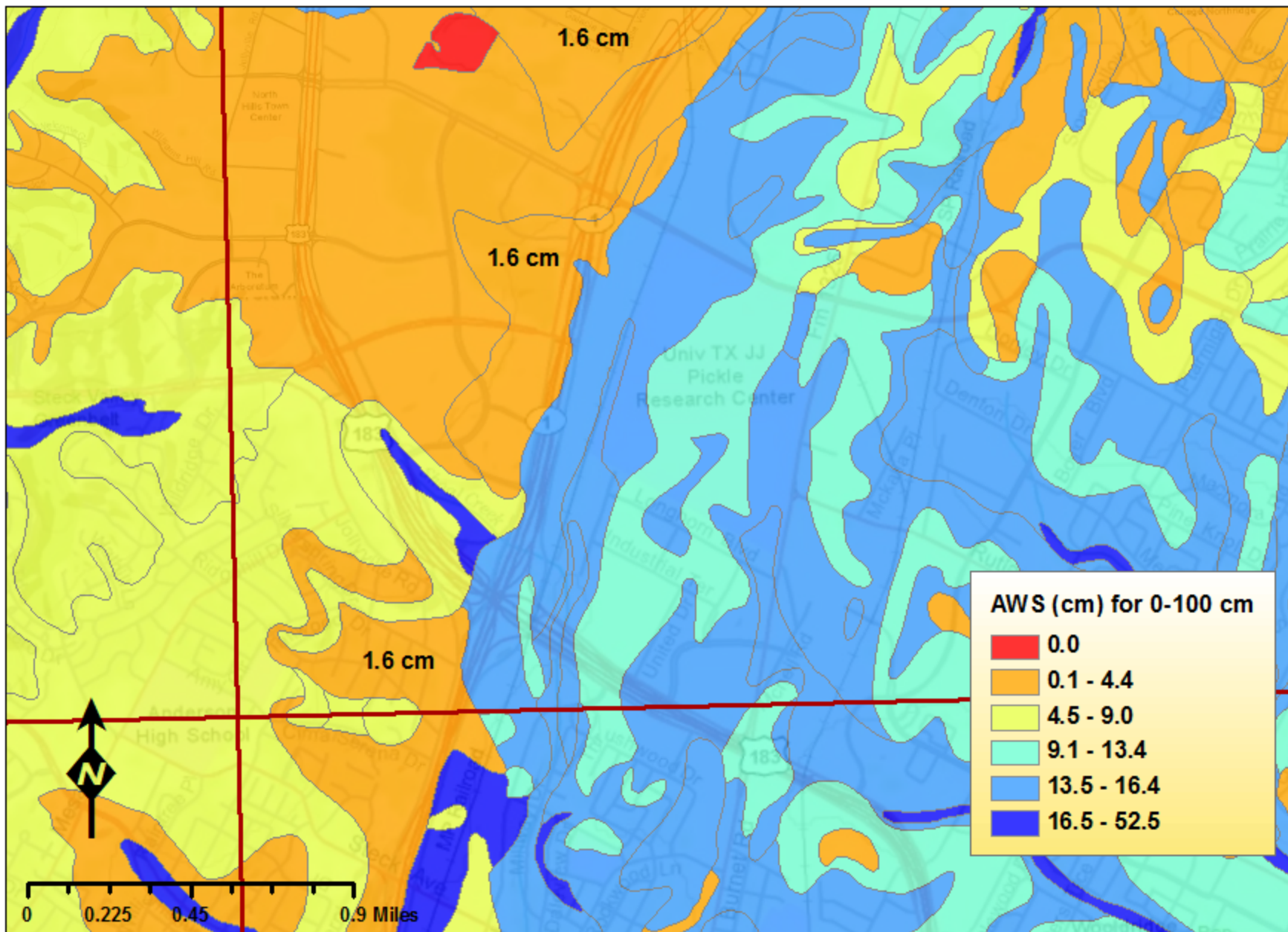


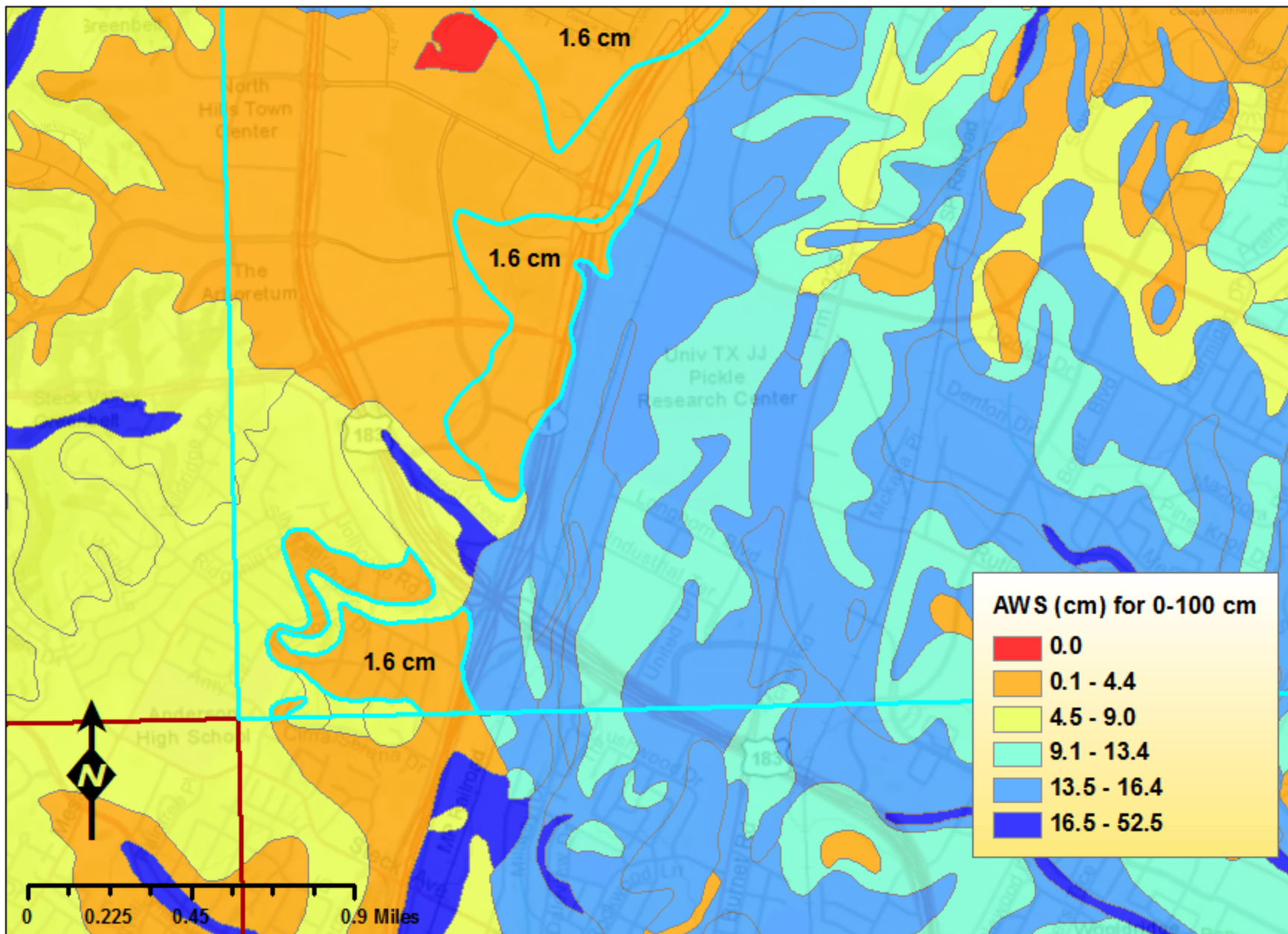


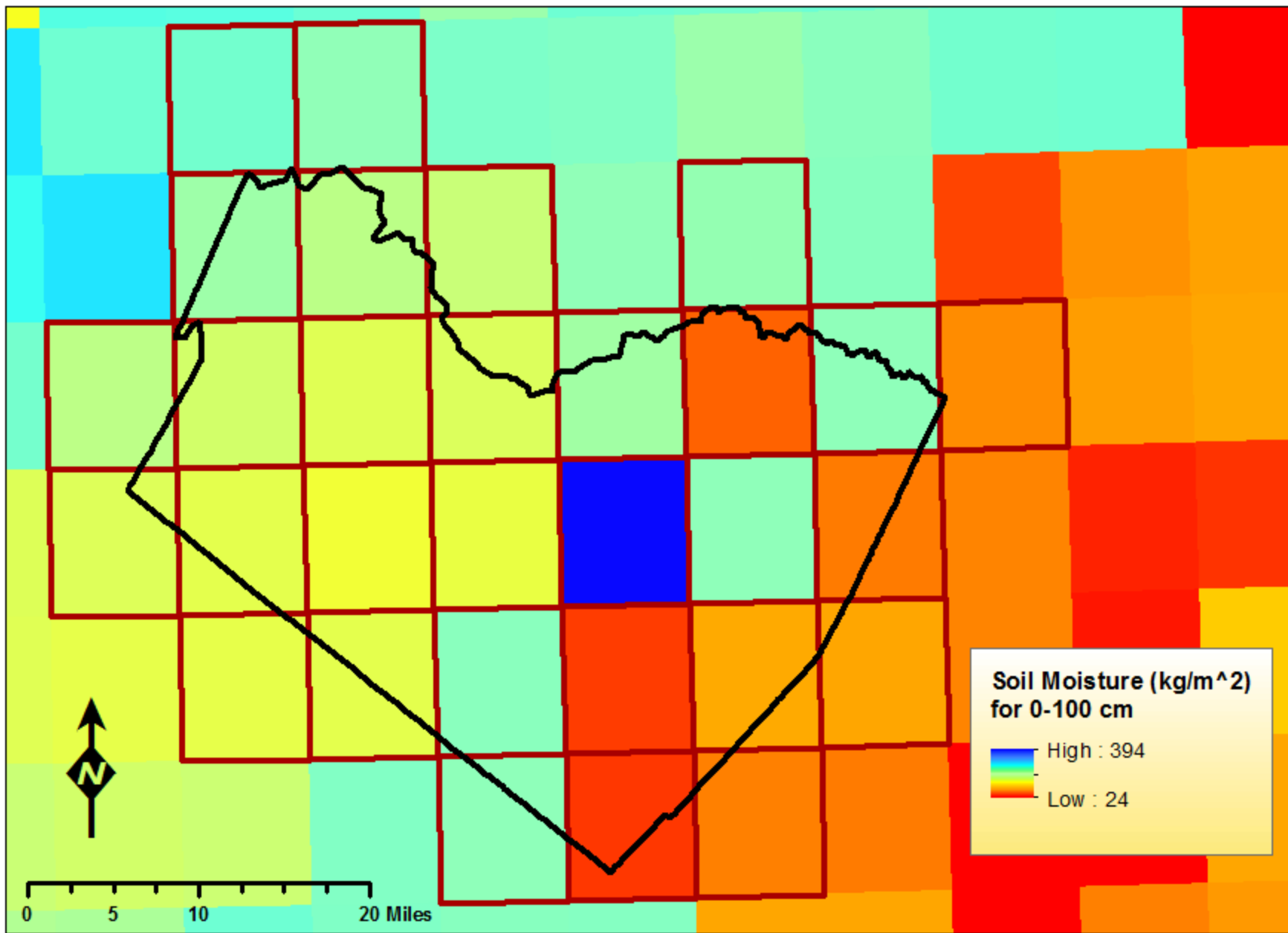








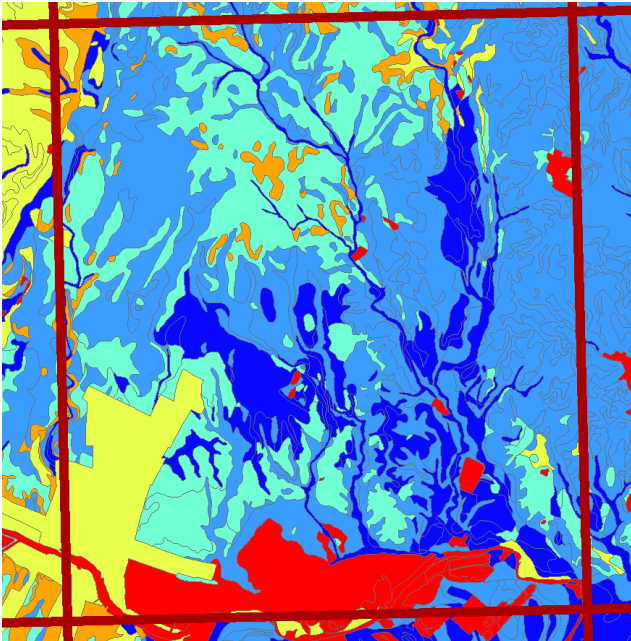




# Data Comparison of One Quad

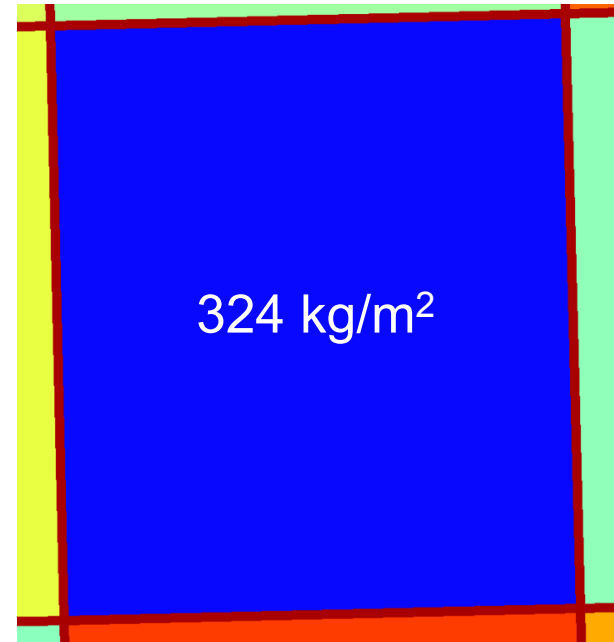
SSURGO

Many AWS values



NLDAS

One value for entire quad



...need to apportion NLDAS water content into SSURGO polygons!

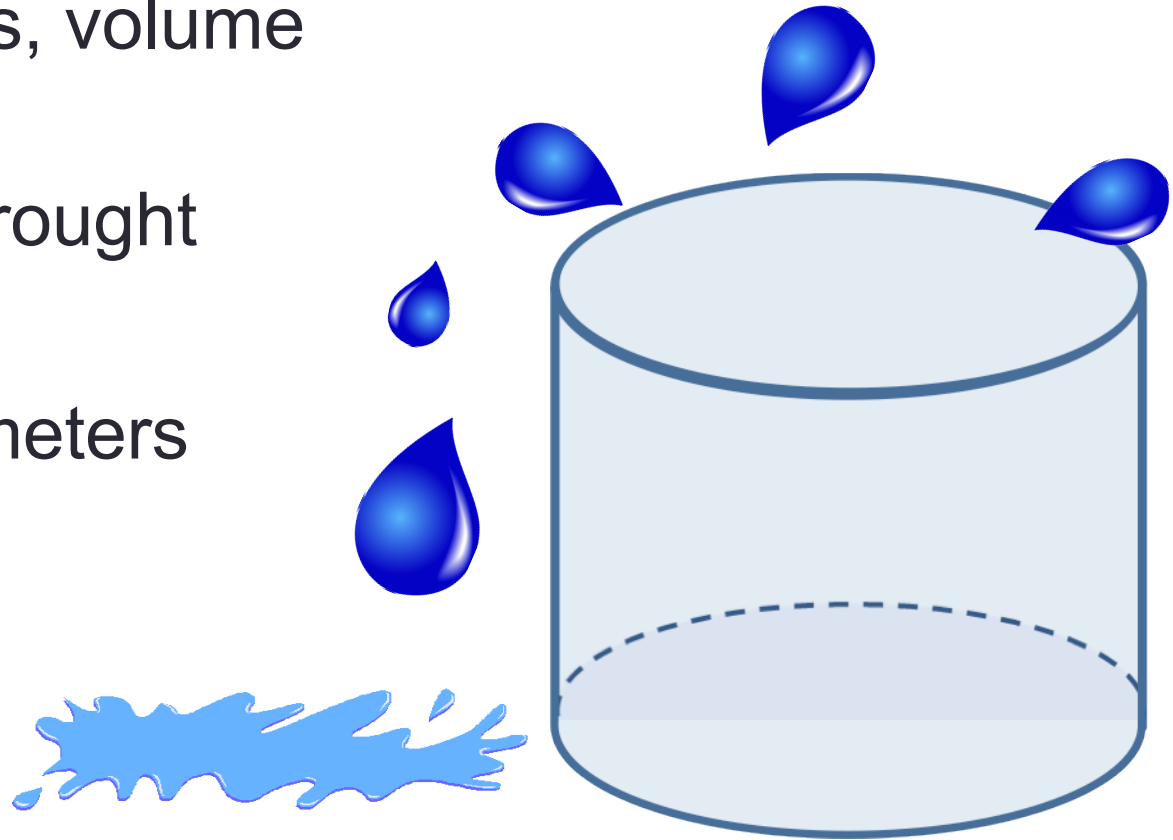


# Results



# Results

- In many cases, volume ratio  $\geq 1$
- Currently in drought
- Data flawed
- NLDAS parameters outdated





# Solution

- NLDAS data can be used to determine the **% moisture**
- SSURGO model parameters up-to-date
- Use this % moisture with SSURGO **AWS values**, yield accurate **current moisture** content

# Ongoing Work

- **Automation** of data acquisition and **continuously-updating** map publishing
- LDM (*Local Data Manager*)
- THREDDS (*Thematic Realtime Environmental Distributed Data Services*)
- Converts to native format
- Easily export to **netCDF, WCS**
- Expansion to rest of Texas