

December 15, 2025

From:

Nathaniel Byars, Lonquist & Co. LLC

Sergey Samsonov, PhD, InSAR Corporation

**Re: Combined Monthly Surface Deformation Report – November 2025  
Sulphur Mines Salt Dome, Louisiana**

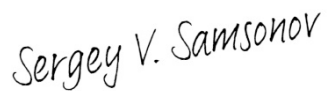
Please find attached the combined monthly deformation report for the Sulphur Mines dome, which includes results from the precision tiltmeters and GNSS stations for the November monitoring period and the cumulative InSAR results as of the end of the month.

*Status of a deformation alert plan.* We continue testing a draft deformation alert system that reports daily tiltmeter activity in relation to the full statistical history of the network. Alert thresholds will be set and adjusted to prioritize long-duration signals observed at multiple monitoring sites over anomalous or short-duration tilt signals associated with precipitation, shallow deformation, or mechanical activities near individual sites. We plan to integrate tiltmeter deformation alert levels with real-time monitoring data from Sulphur Mines, which include the Cavern 7 pressure and microseismic monitoring. GNSS and InSAR data will also be used for validation.

Sincerely,



Nathaniel Byars  
Principal Engineer  
Lonquist & Co. LLC



Sergey Samsonov, PhD  
InSAR Corporation

Attachment List

- A. Tiltmeter/GNSS Data Report - November 2025
- B. TSX-A InSAR report - November 23, 2025
- C. TSX/PAZ InSAR report - November 27, 2025
- D. Vertical & East-West 2D InSAR report - November 27, 2025

# **ATTACHMENT A**

## **Tiltmeter/GNSS Data Report - November 2025**

December 15, 2025

Sergey Samsonov, PhD, InSAR Corporation  
 Nathaniel Byars, Lonquist & Co. LLC

**Re: Tiltmeter/GNSS Data Evaluation – November 2025, Sulphur Mines Salt Dome, Louisiana**

The tiltmeter/GNSS network, which includes twenty tiltmeters and five GNSS stations, has been operational since June 1, 2024. It was installed and is currently being operated by Halliburton’s Pinnacle Group. Please refer to Figure 1 for the map of the tiltmeter and GNSS stations. Station coordinates are provided in Appendix 3.

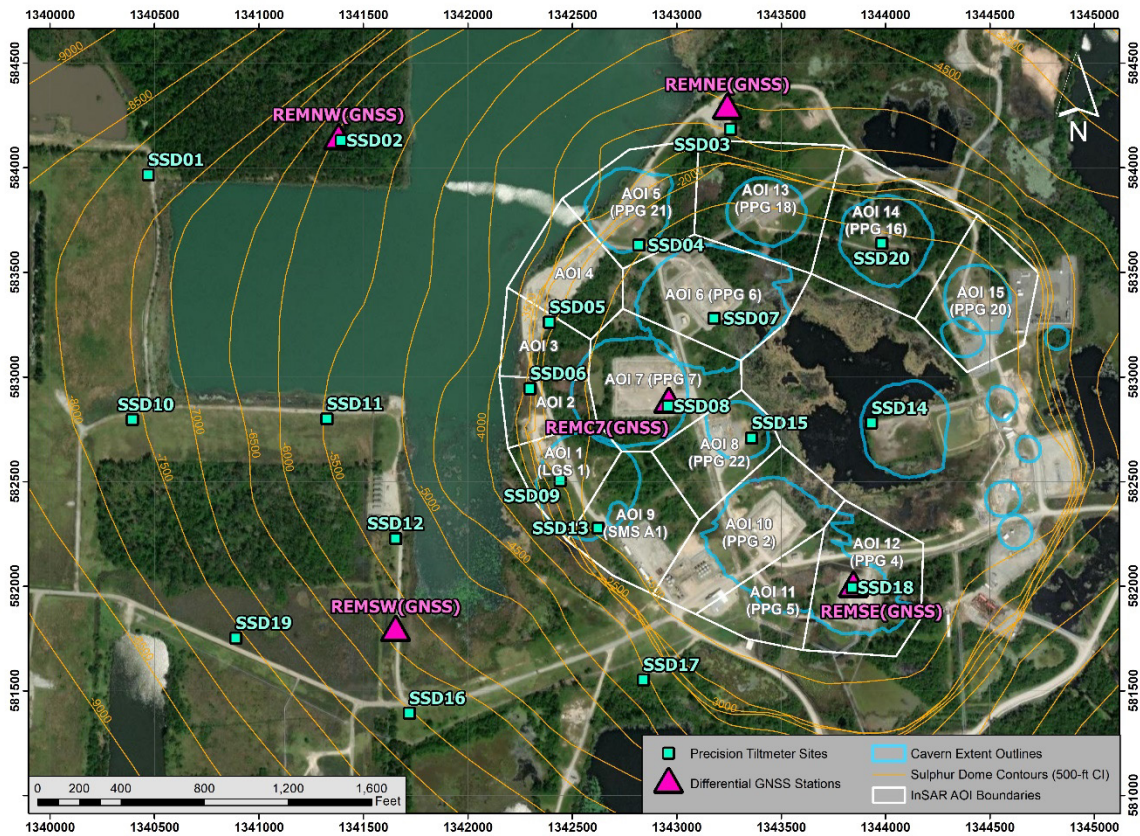


Figure 1. Map of the tiltmeter and GNSS network installed at Sulphur Mines dome. The cyan squares indicate the tiltmeter site locations. The GNSS stations are shown by pink triangles. The InSAR AOI boundaries are shown for reference. The surface projection of the various salt caverns is indicated by blue lines. The salt dome contours are in light orange. The backdrop is an aerial photograph of the Sulphur Mines salt dome.

## Introduction

This report describes tiltmeter and GNSS measurements from the Sulphur Mines Salt Dome collected in November 2025.

For each tiltmeter station, the report provides:

- Raw measurements of east and north tilt components with outliers removed by filtering (measured in microradians) at the four-minute temporal resolution and their linear trends.
- Detrended east and north tilt components at four-minute temporal resolution.
- Daily ranges of east and north tilt components.
- Daily precipitation amount (measured in inches).
- Daily tilt direction distribution diagram, along with the direction to Cavern 7 and the direction of the linear trend.

For each GNSS station, the report provides:

- Daily averages of the east, north, and vertical deformation (measured in inches) and their linear trends estimated in the global reference frame.
- Deformation rates (measured in inches per year) estimated in the local reference frame. Deformation rates in a local reference frame are computed by subtracting the tectonic plate deformation rate, common to all sites, from the measurements taken in the global reference frame.

## Summary of tiltmeter observations

The tiltmeter network operated continuously throughout November, with no interruptions in data collection. No signals indicative of anomalous activity associated with Cavern 7 were detected during this reporting period. Plots for each tiltmeter station are provided in Appendix 1.

In previous months, tiltmeter SSD17 recorded tilt rates exceeding its long-term baseline. Throughout most of September, the east-component showed a persistent eastward tilt, while the north-component displayed a northward tilt during the first half of the month, reversing to southward in the second half. By end of October, tilt rates had nearly returned to their long-term averages, and during November they stayed near their long-term averages (see Figure 2).

Figure 3 shows tilt data from SSD17 recorded between July and November 2025, alongside annulus and tubing pressure measurements from the Cavern 4 wellhead. The data indicate that variations in tilt may have followed pressure changes in Caverns 2, 4, and 5, suggesting

a possible delayed response. As the pressure fluctuations diminished, tilt rates gradually stabilized near their long-term averages.

Several precipitation events temporarily disrupted the established tilt trends. For instance, a heavy rainfall on November 30 triggered tilt responses at multiple stations, including SSD02, SSD09, SSD12 (Figure 4), SSD13, SSD16, SSD18, and others. During these events, tilt directions were carefully monitored across the network, and no consistent evidence of tilt toward Cavern 7 was observed.

Some tiltmeters also recorded abrupt or irregular changes in tilt direction that could not be fully explained by precipitation. For example, the east component of SSD19 exhibited elevated tilt rates throughout October and November. On November 12–13, the tilt trend abruptly shifted (Figure 5), and the tilt rate gradually declined by the end of the month. SSD19 is located in a remote area near ongoing levee construction, and no similar trends were observed at other tiltmeters. Therefore, the elevated tilt rate and sudden change in tilt direction are unlikely to be related to subsurface activity at Cavern 7. Because these anomalies were confined to a single station, they are most likely caused by local effects such as shallow subsurface features or nearby mechanical activity, with ongoing levee construction potentially contributing to some of the unexplained signals.

Tilt data are manually reviewed each day using a seven-day rolling window to identify any persistent, multi-day trends that appear across multiple stations. During the reporting period, no consistent patterns of ground movement were observed that would suggest deep-sourced deformation or raise immediate concerns regarding Cavern 7.

SSD17: Analyzed range: 2024-06-01 – 2025-12-08 | Plotted range: 2025-11-01 – 2025-11-30 (CTZ)

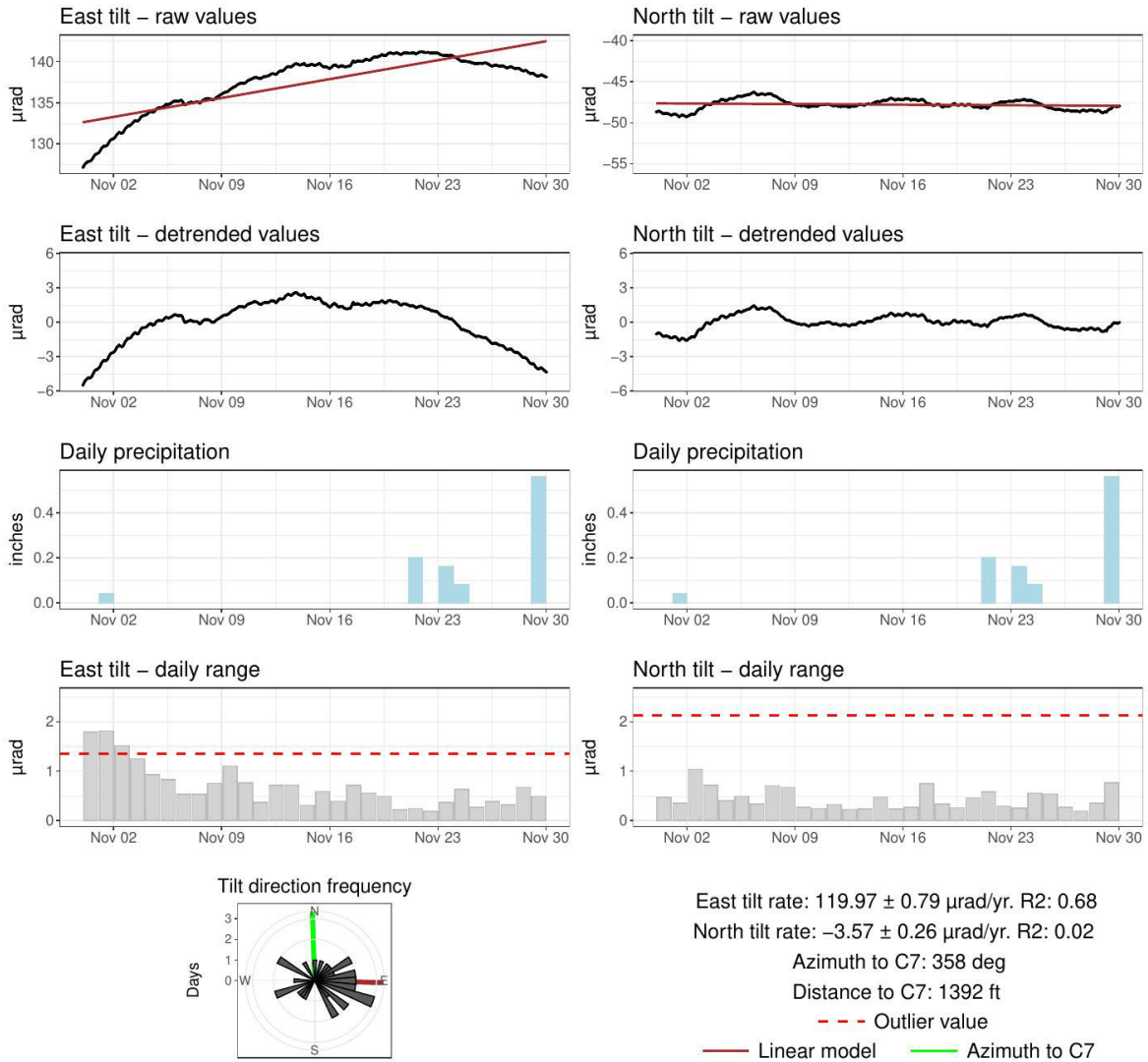


Figure 2. Charts of the tilt signals observed by the SSD17 tiltmeter over the current monthly reporting period. During November, tilt rates remained near their long-term averages.

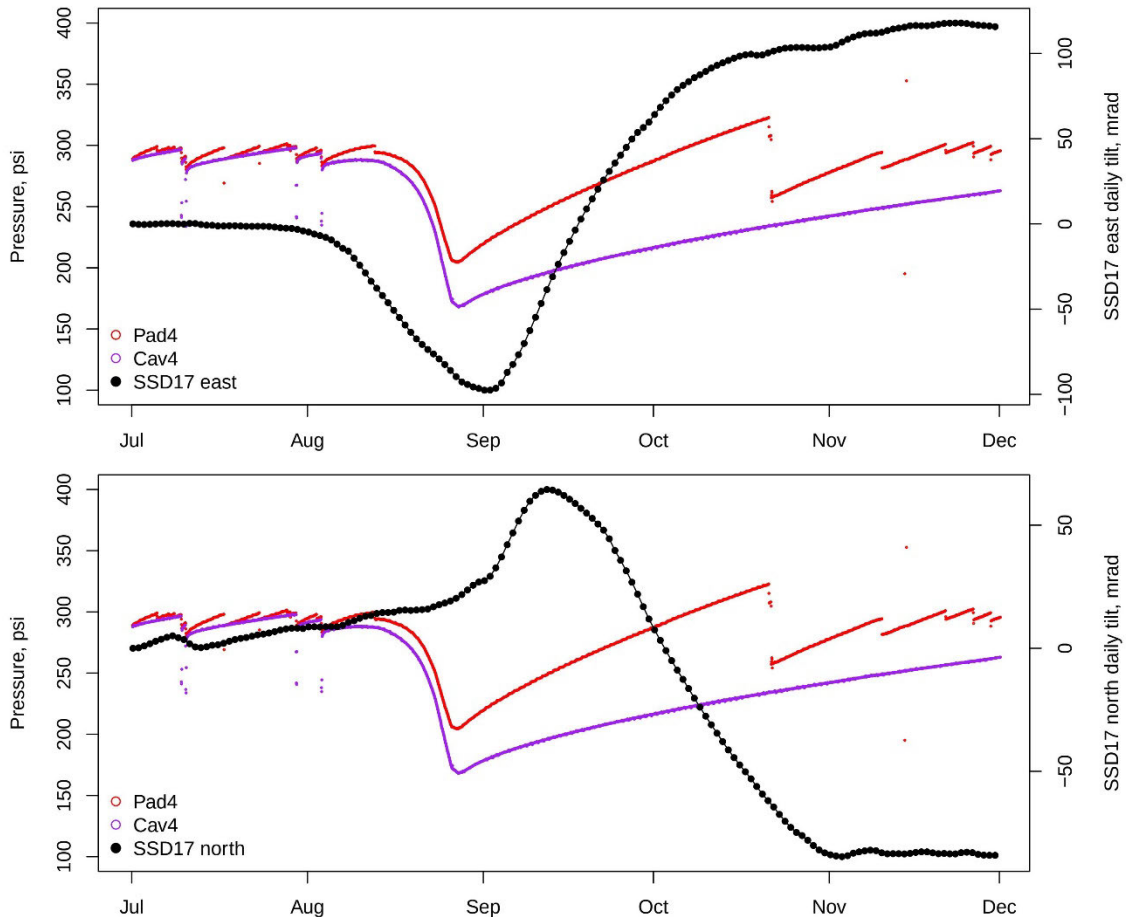


Figure 3. Tilt signals recorded by the SSD17 tiltmeter during the July–November 2025 period, plotted alongside annulus (Pad) and tubing (Cav) pressure data from Cavern 4. The top panel shows east component tilt with pressure, while the bottom panel shows north component tilt with the same pressure records.

SSD12: Analyzed range: 2024-06-01 – 2025-12-08 | Plotted range: 2025-11-01 – 2025-11-30 (CTZ)

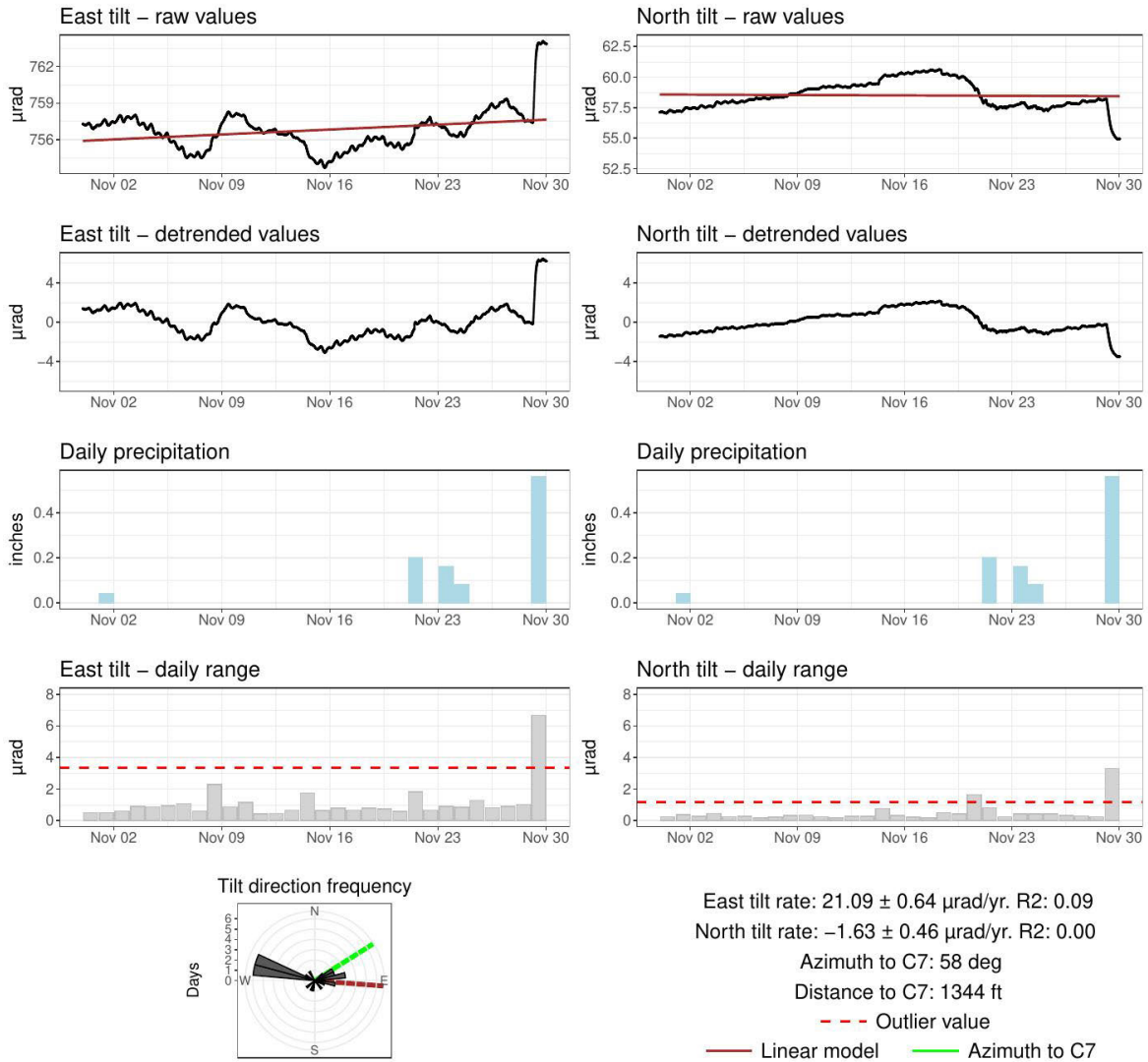


Figure 4. Charts showing the tilt signals recorded by the SSD12 tiltmeter over the current monthly reporting period. Note the changes in the east and north components in response to a precipitation event on November 30.

SSD19: Analyzed range: 2024-06-01 – 2025-12-08 | Plotted range: 2025-11-01 – 2025-11-30 (CTZ)

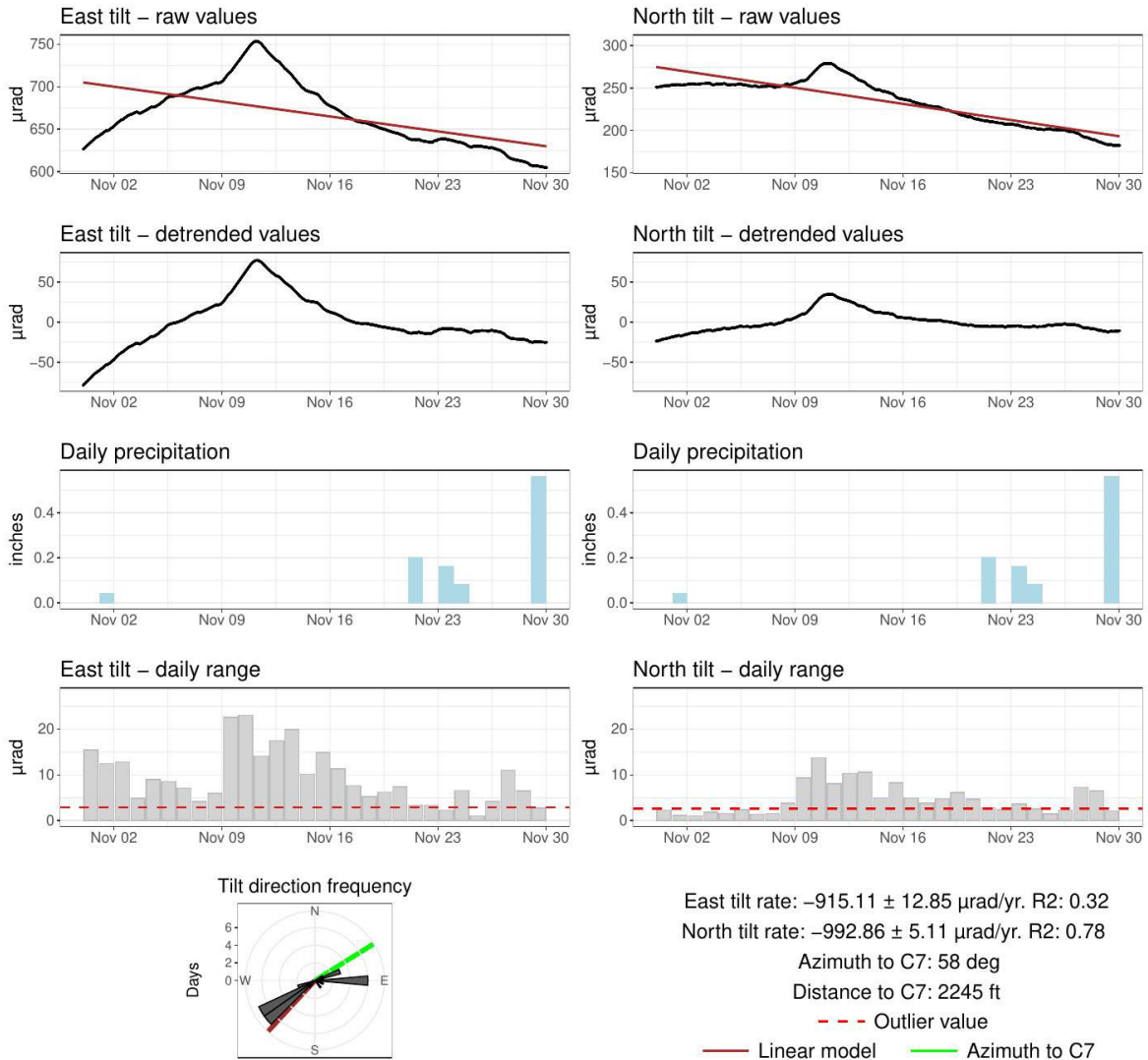


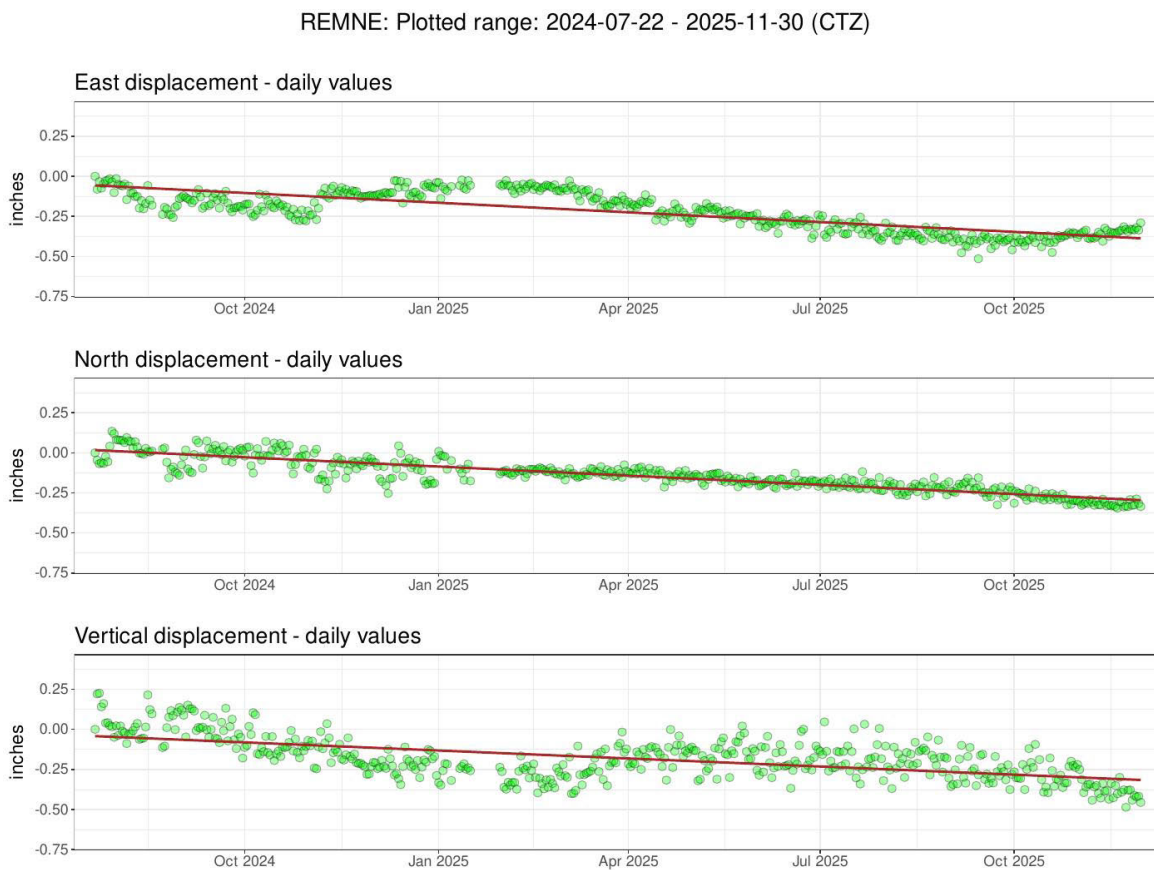
Figure 5. Charts of the tilt signals observed by the SSD19 tiltmeter over the current monthly reporting period. Note the abrupt change in the east and north components on November 12-13.

### Summary of GNSS observations

The GNSS network operated continuously and without interruption throughout November. Appendix 2 presents plots for each GNSS station. We calculated the annualized three-dimensional deformation rates (east, north, and vertical) at each site within a local reference frame by subtracting a constant tectonic rate, common to all sites, from measurements in the global reference frame. Daily measurements from November support an ongoing deformation trend, primarily characterized by horizontal motion

directed toward Central Lake, accompanied by subsidence. Notably, the subsidence rate increases closer to Central Lake.

The REMNE GNSS site recorded minor deviations from its long-term deformation rate, with slightly enhanced movements to the east and downward (Figure 6). A similar pattern was observed during the same period in 2024, indicating that these signals are likely attributable to seasonal variations.



Local east rate:  $0.240 \pm 0.020$  inches/year, R2: 0.64  
 Local north rate:  $-0.188 \pm 0.018$  inches/year, R2: 0.80  
 Local vertical rate:  $-0.121 \pm 0.057$  inches/year, R2: 0.37  
— Linear model

Local rate values have been calculated by removing  
 the regional tectonic plate rates from the raw data displayed in the charts.

Figure 6. Charts of the tilt signals observed by the GNSS REMNE station. Note a slight shift in the trend toward the east and downward.

### Analysis Maps

Three maps have been created to visually summarize the results of the current analysis. These maps are displayed below and are also included in Appendix 3.

- Figure 7 is a vector map illustrating the direction and magnitude of the tilt and deformation rates identified at each tiltmeter (during the current reporting period) and each GNSS station (from July 22, 2024, to the end of the current reporting period).
- Figure 8 presents rose diagrams showing the daily tilt direction frequency for each tiltmeter, covering the entire data history from June 2024 to the present.
- Figure 9 details the daily tilt direction frequency for the current monthly reporting period.

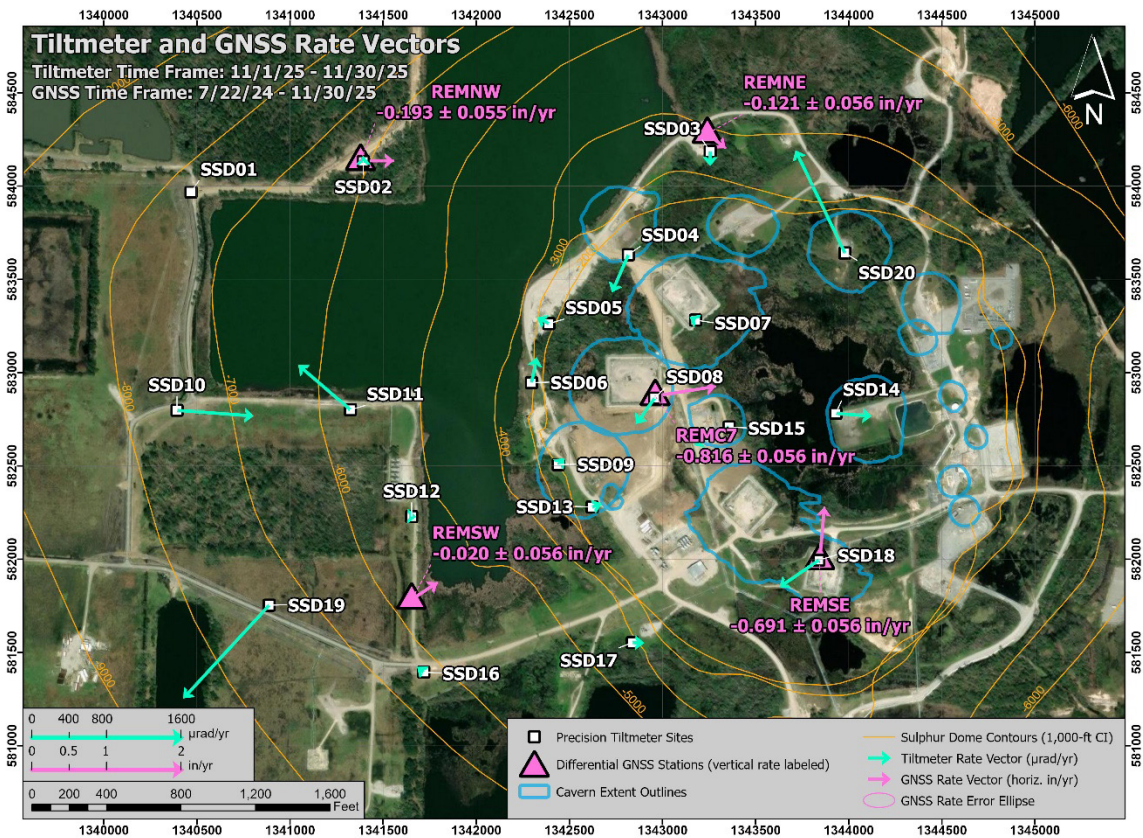


Figure 7. Map of deformation rate vectors for the tiltmeters and GNSS stations over their respective evaluated time frames. The tiltmeter vectors are shown in cyan and scaled by their respective values in units of microradians per year. The GNSS vectors and their corresponding error ellipses (derived from east and north rate errors) are shown in pink representing inches of horizontal movement per year. The GNSS stations are additionally labeled with the vertical motion rate and corresponding error value.

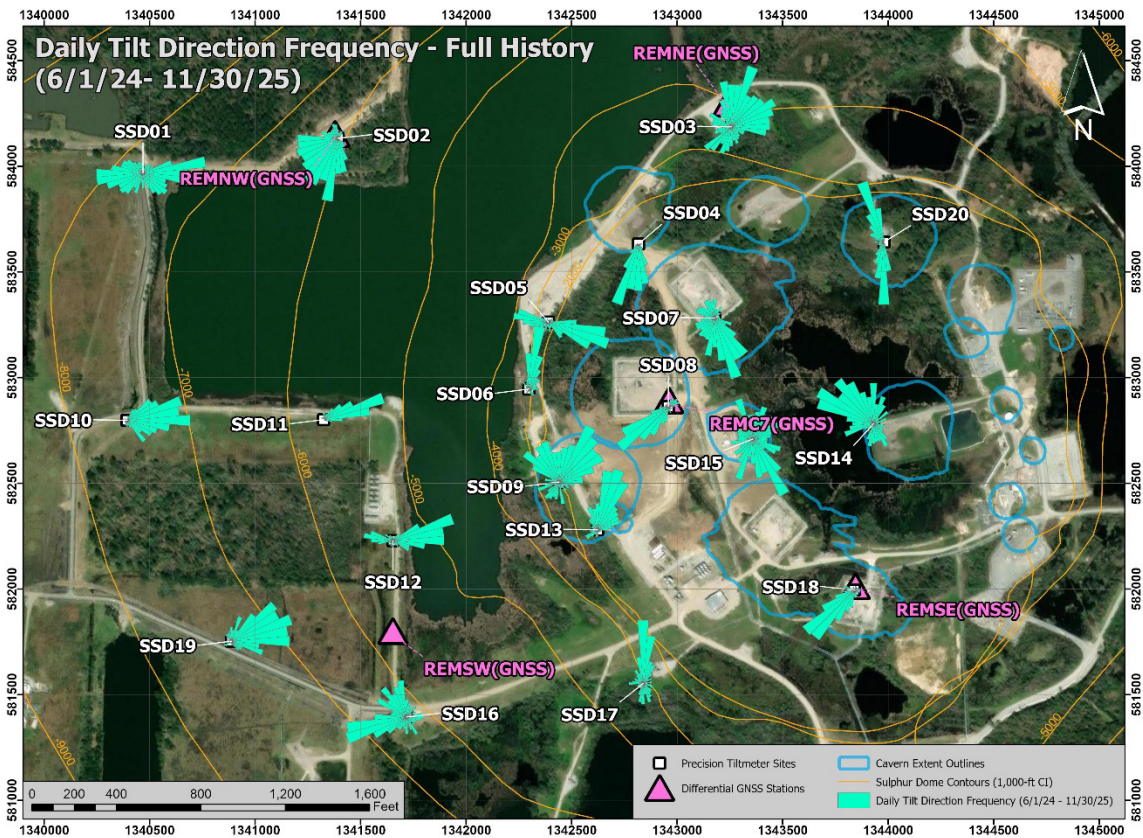


Figure 8. Map of daily tilt direction distribution for each tiltmeter for the full data history beginning in June 2024. Rose diagrams indicate the number of days that tilt was oriented along specific azimuths (bin size is 10°).

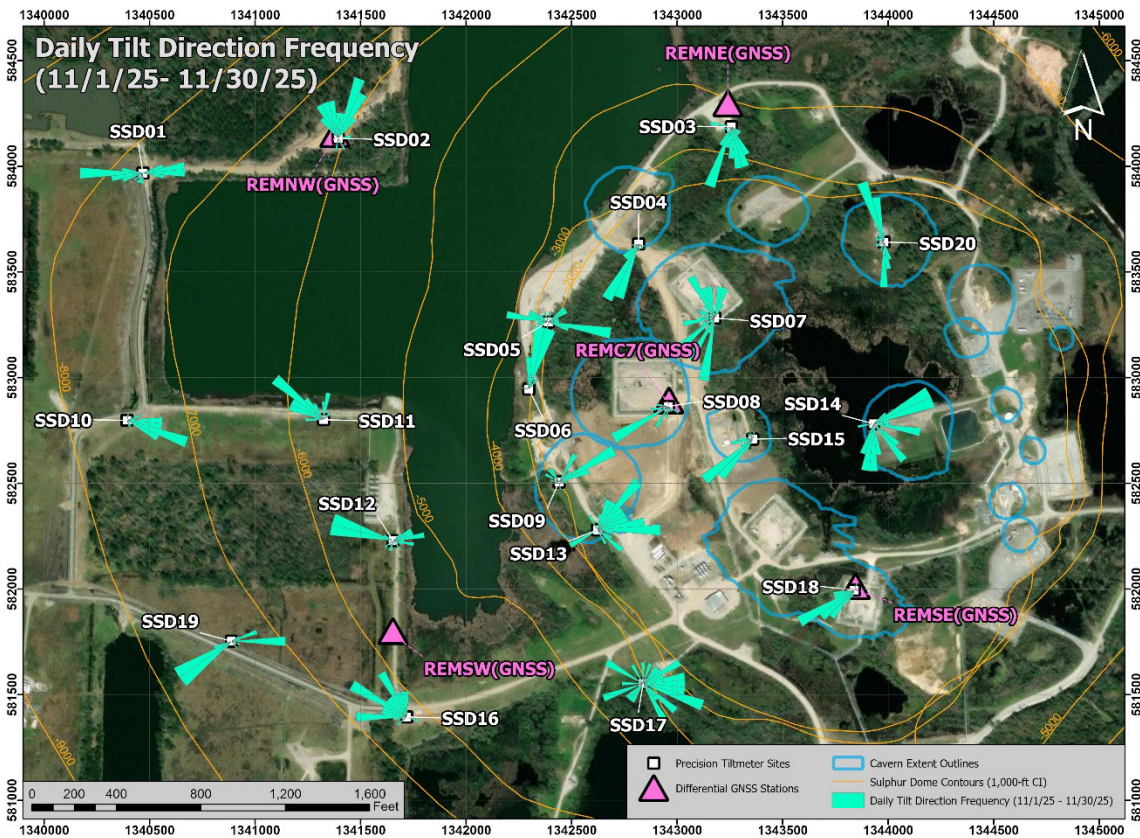


Figure 9. Map of daily tilt direction distribution for each tiltmeter for the current monthly reporting period. Rose diagrams indicate the number of days that tilt was oriented along specific azimuths (bin size is 10°).

### Deformation Alert System Update

We continue testing a draft deformation alert system that incorporates the magnitude of daily tiltmeter readings using non-Gaussian statistics across the full tiltmeter network. This allows for the appropriate interpretation of long-duration tilt observations and helps bypass the effects of short-duration anomalous tilt signals associated with precipitation and mechanical activities near the monitoring sites. We plan to evaluate the tilt alert system until we are confident it will give reliable results. In addition, we will use this ongoing analysis to set and adjust the alert triggering thresholds and refine the appropriate response actions due to a change in the alert status.

Our theoretical deformation (Mogi) modelling (discussed in the deformation monitoring plan dated December 22, 2023) indicates that deep deformation associated with potential changes in volume at Cavern 7 (located at a depth of approximately 2,500 to 3,160 feet) is expected to impact the entire tiltmeter array. If the deformation moves upward from Cavern 7, we anticipate that the corresponding tiltmeter response will be concentrated at the stations nearest the cavern, and the tilt magnitude will increase. In contrast, local,

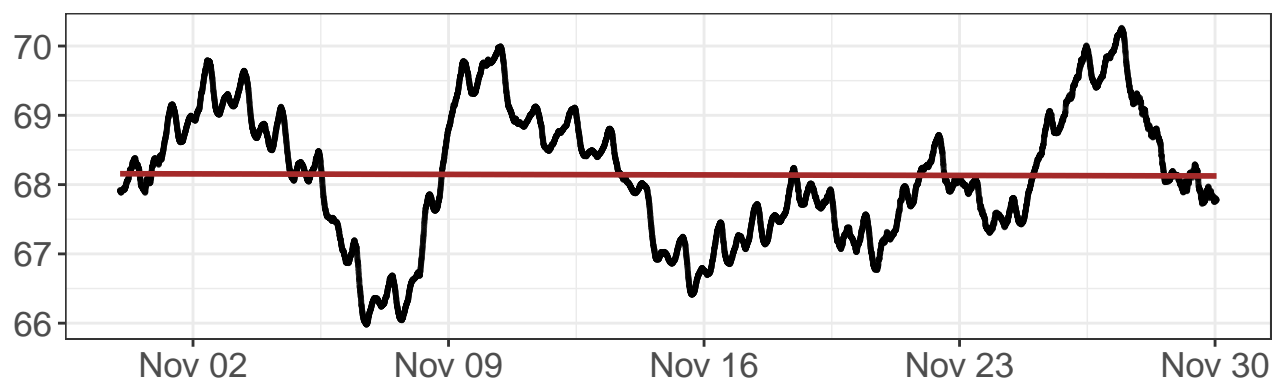
shallow deformation, such as movement in the caprock, is likely to affect only the nearby tiltmeters.

We anticipate that short-term deformation alert levels will be evaluated with the other real-time monitoring observations currently active at Sulphur Mines, which include the Cavern 7 pressure and microseismic monitoring. Additionally, long-term trends from GNSS and InSAR, which typically become available with some delay, will also be necessary for ongoing alert assessments.

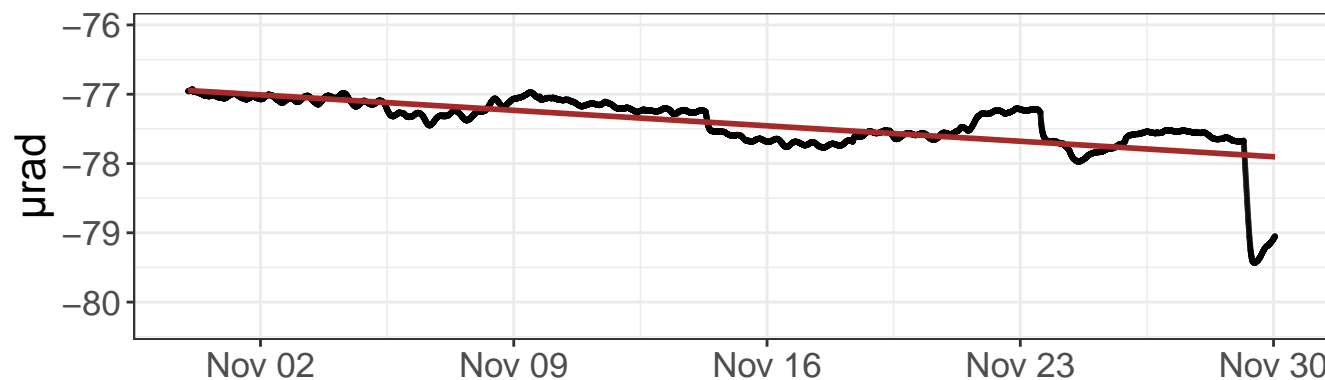
# **APPENDIX 1**

## **Tiltmeter Data Plots**

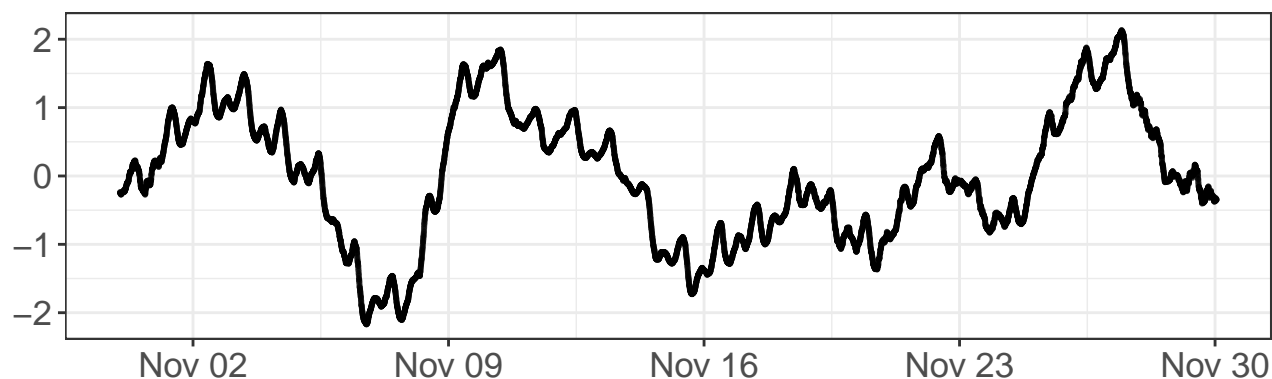
East tilt – raw values



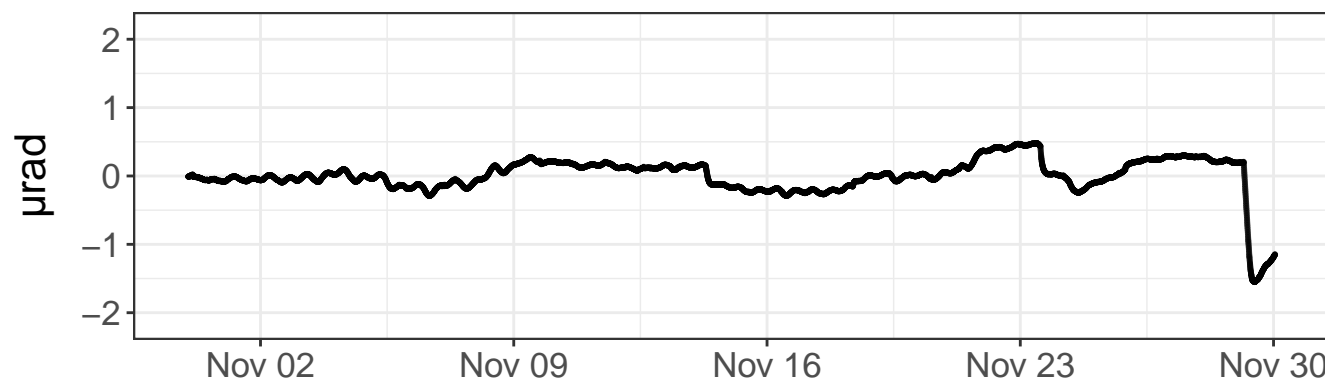
North tilt – raw values



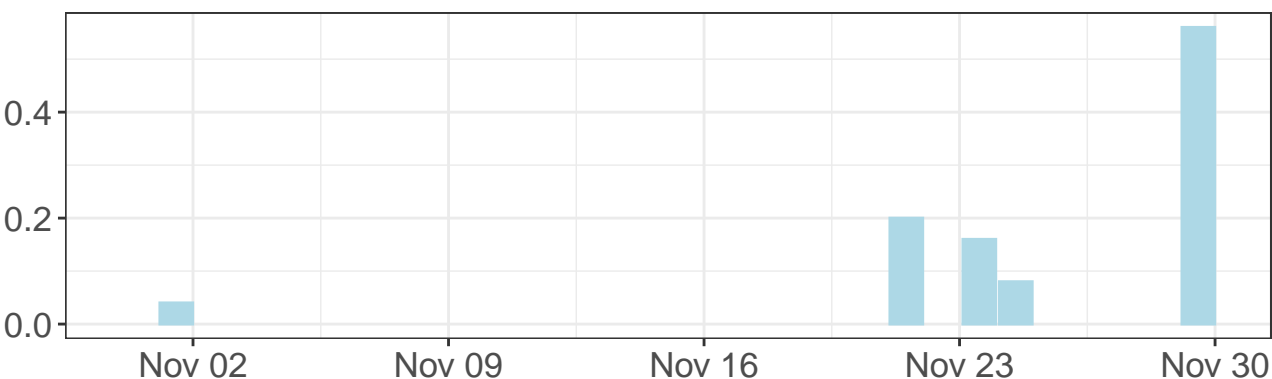
East tilt – detrended values



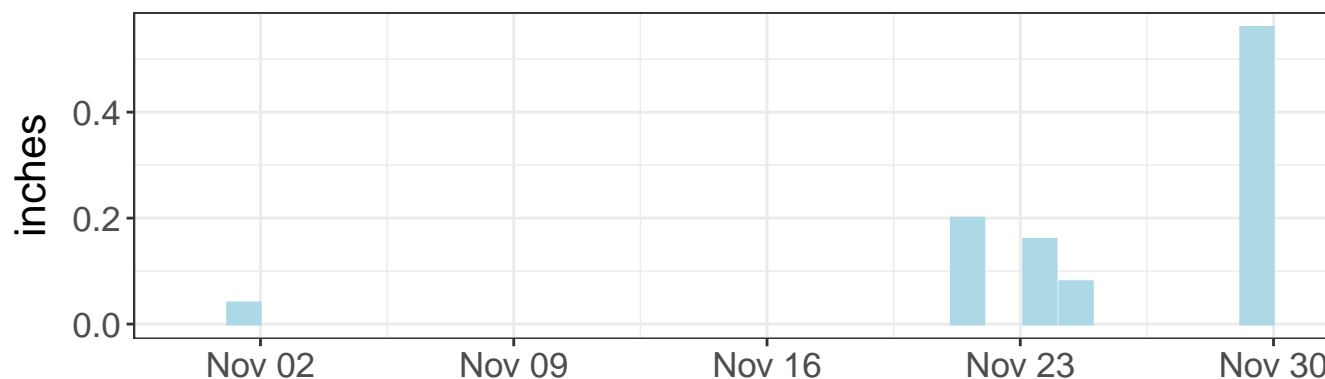
North tilt – detrended values



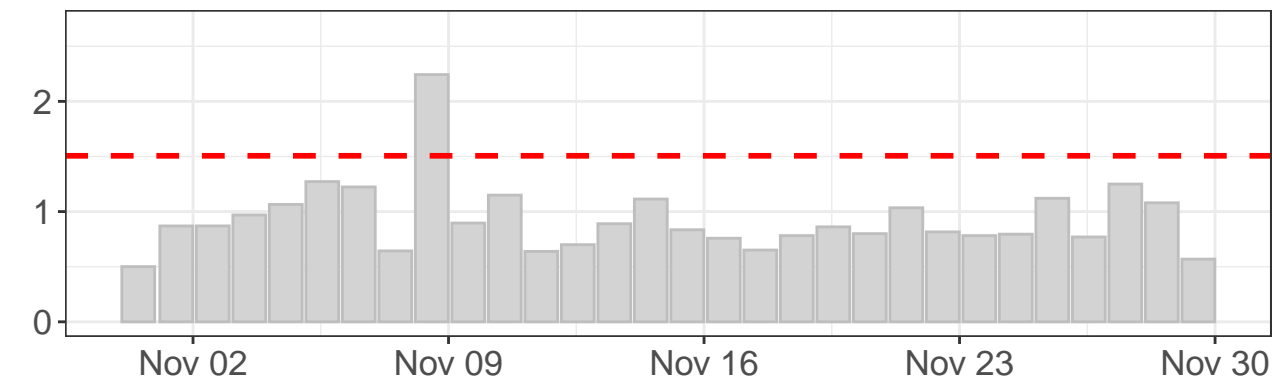
Daily precipitation



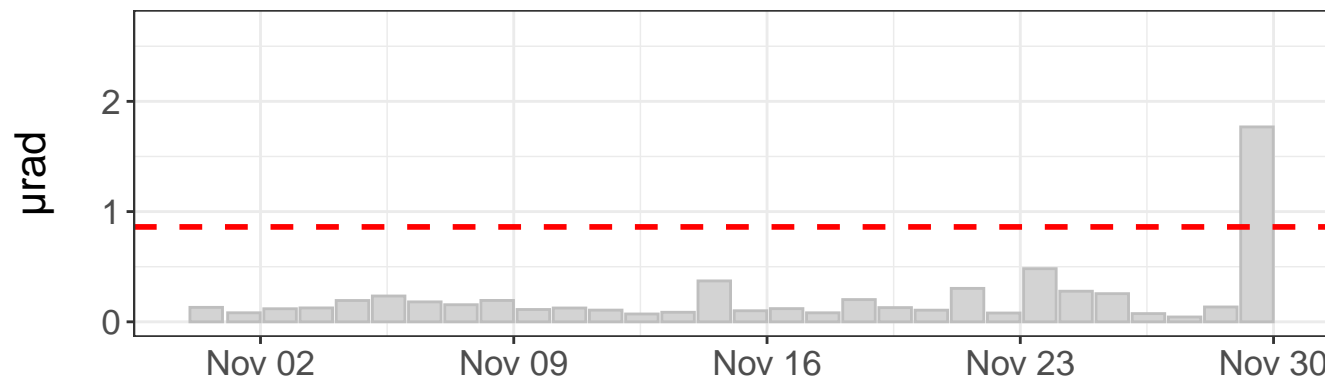
Daily precipitation



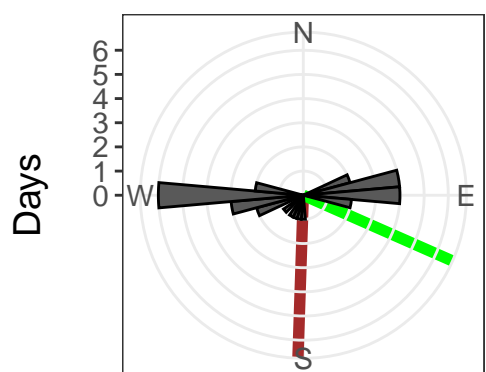
East tilt – daily range



North tilt – daily range

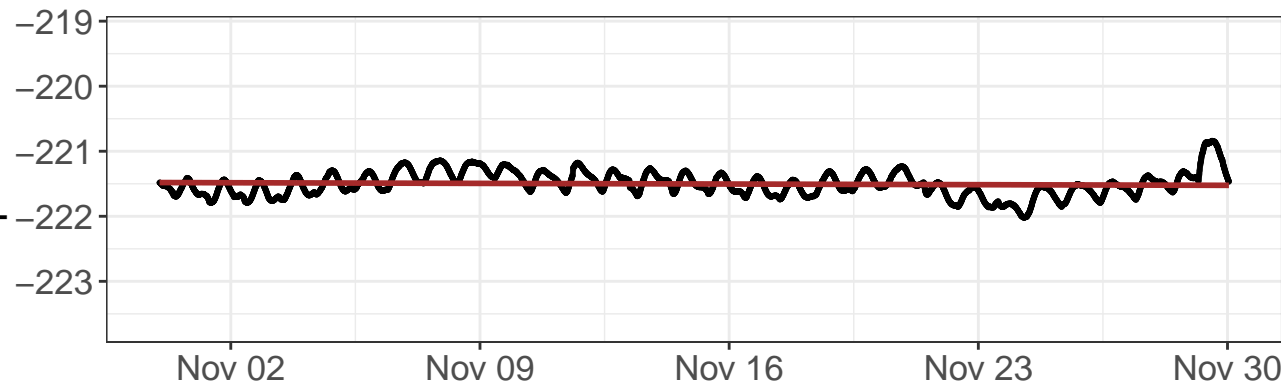


Tilt direction frequency

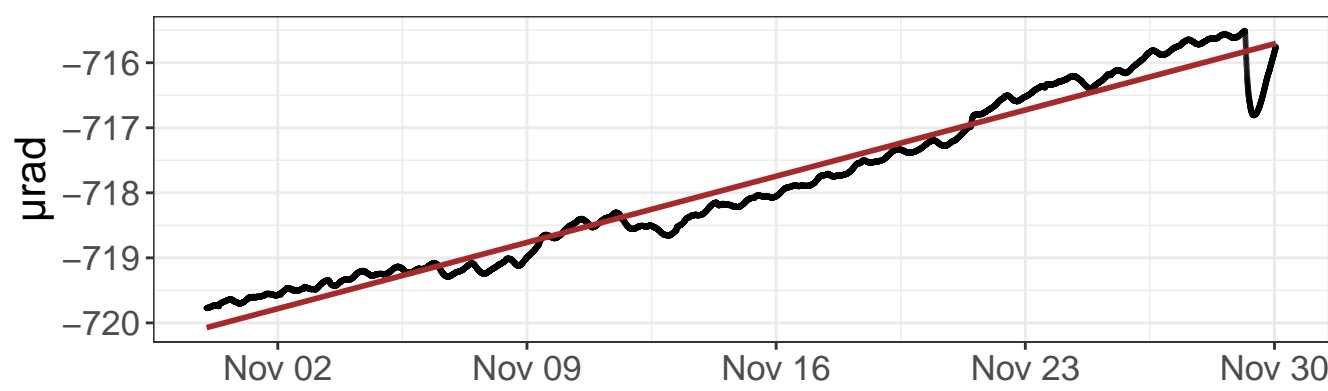


East tilt rate:  $-0.39 \pm 0.38 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.00  
 North tilt rate:  $-11.63 \pm 0.11 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.49  
 Azimuth to C7: 114 deg  
 Distance to C7: 2538 ft  
 - - - Outlier value  
 — Linear model — Azimuth to C7

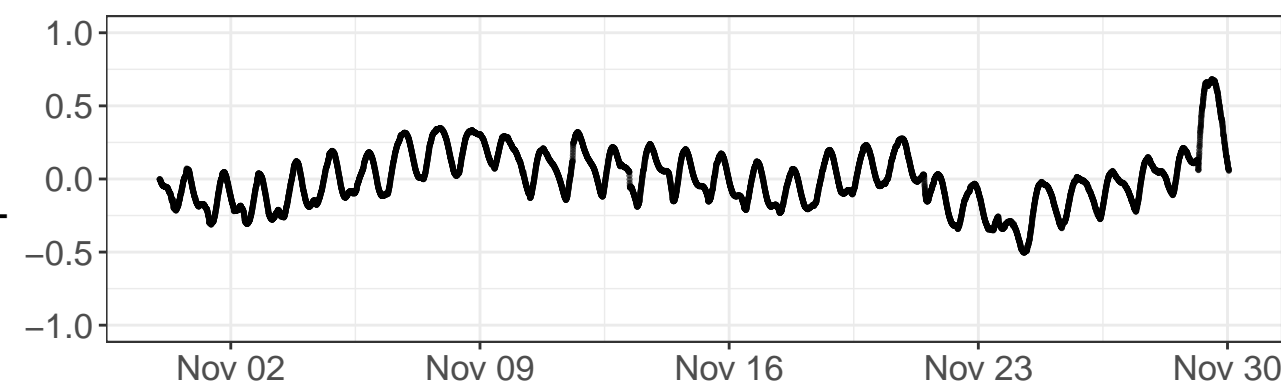
East tilt – raw values



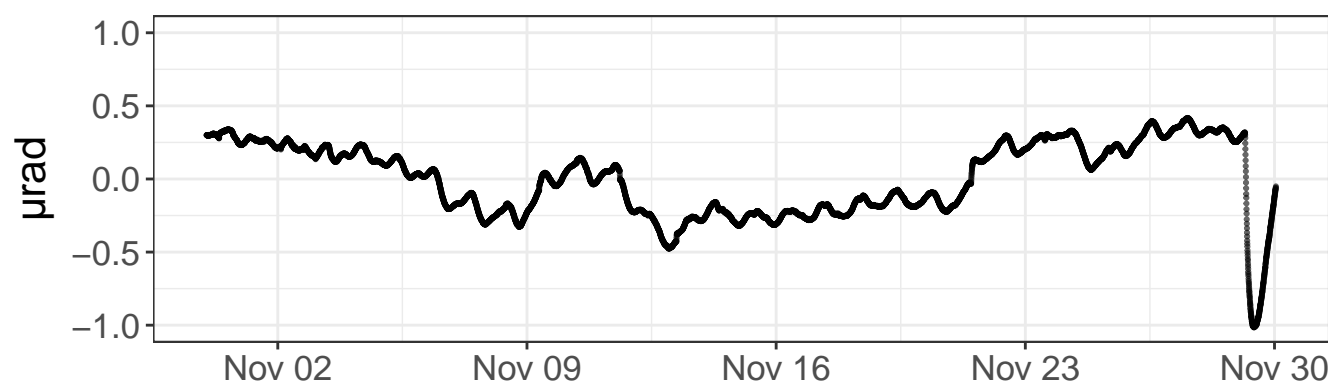
North tilt – raw values



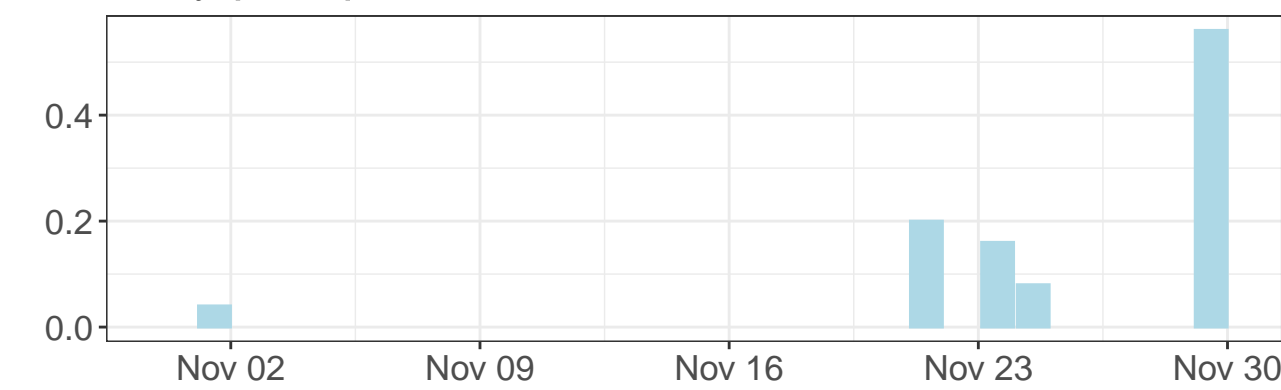
East tilt – detrended values



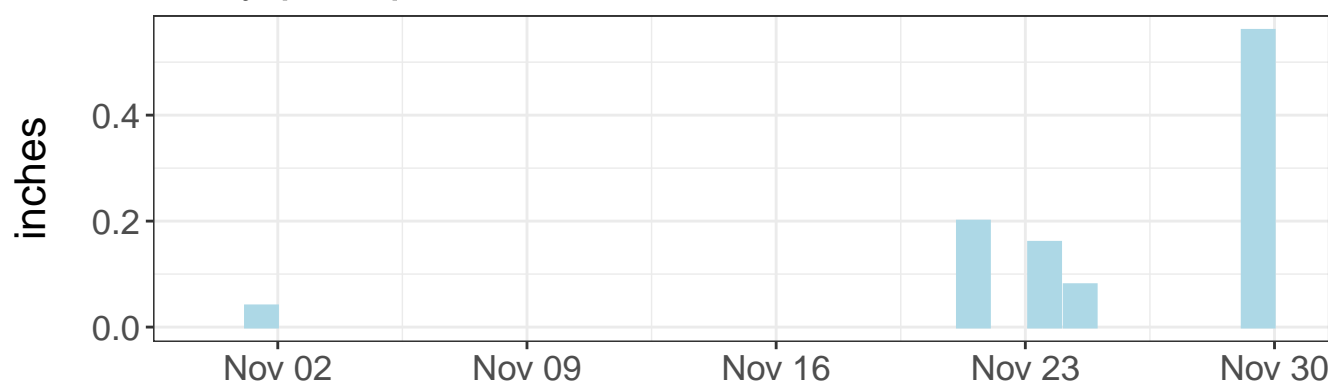
North tilt – detrended values



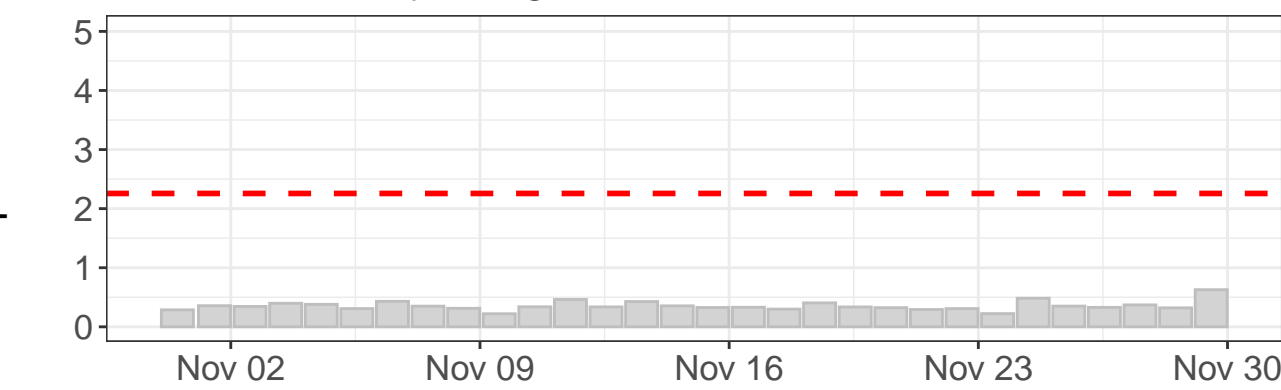
Daily precipitation



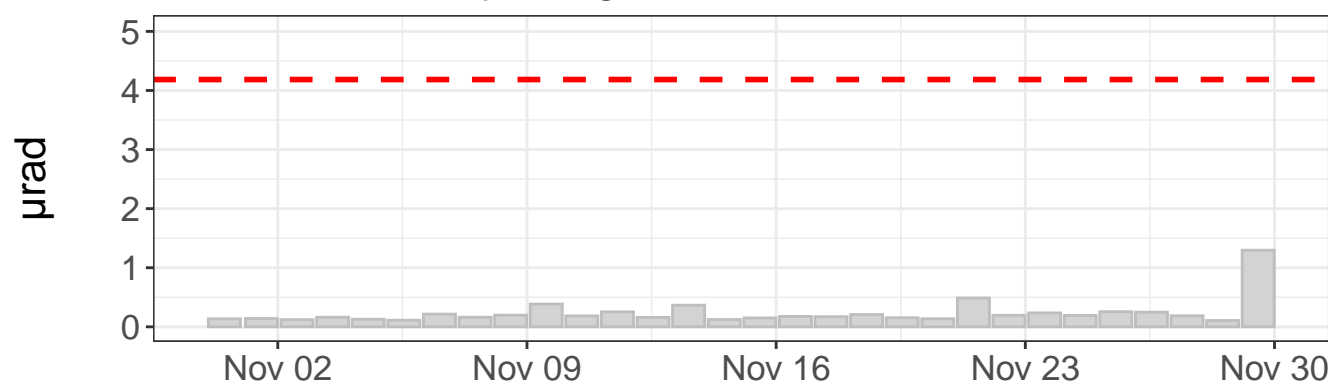
Daily precipitation



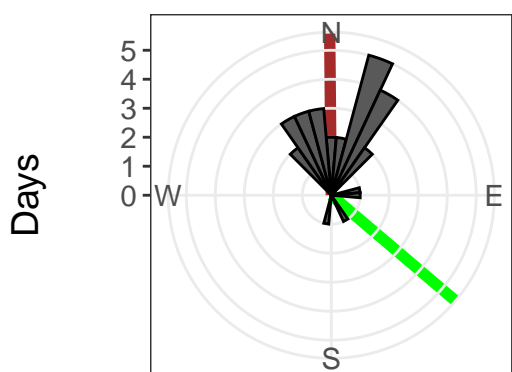
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-0.52 \pm 0.08$   $\mu\text{rad}/\text{yr}$ .  $R^2$ : 0.00

North tilt rate:  $53.10 \pm 0.10$   $\mu\text{rad}/\text{yr}$ .  $R^2$ : 0.96

Azimuth to C7: 130 deg

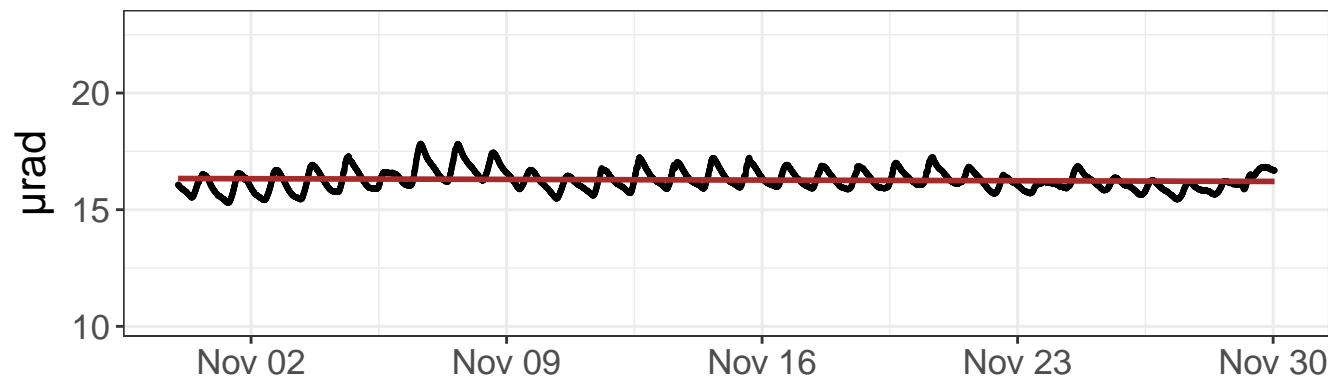
Distance to C7: 1834 ft

- - - Outlier value

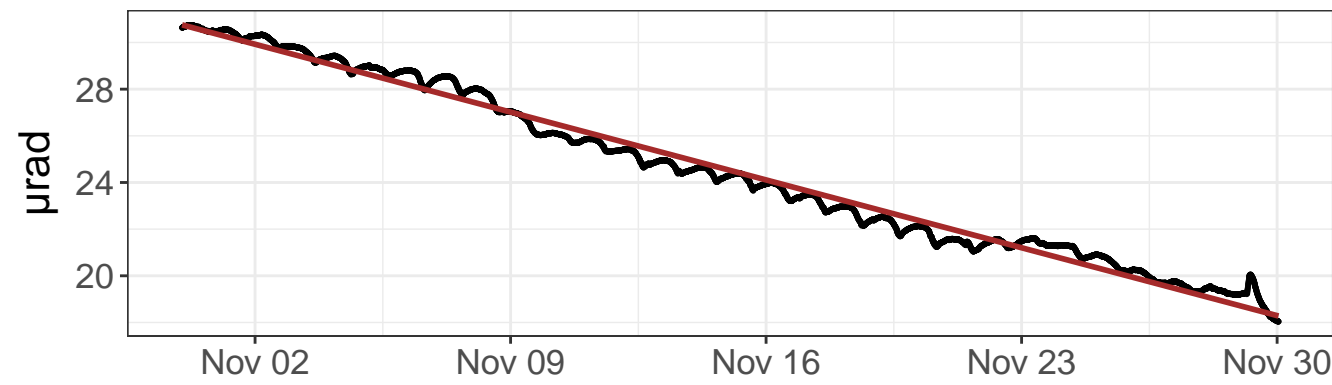
— Linear model

— Azimuth to C7

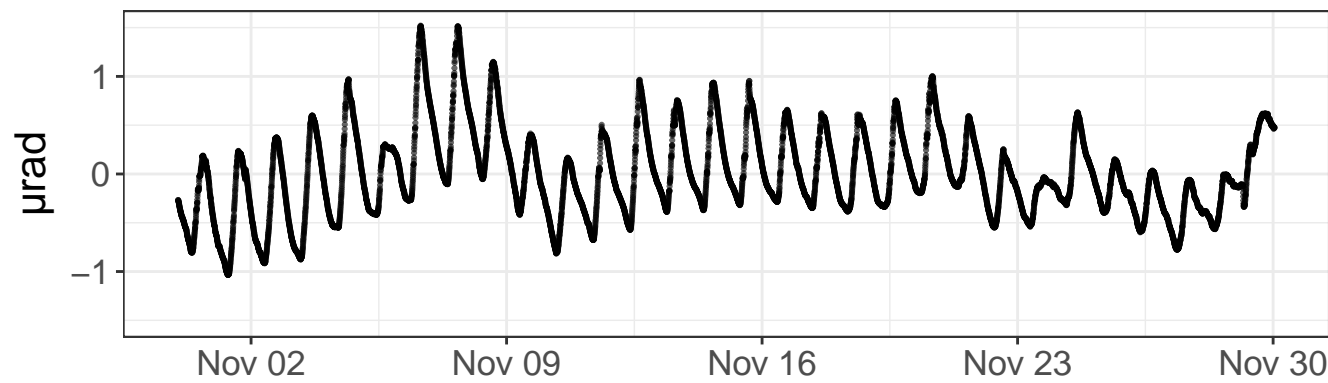
East tilt – raw values



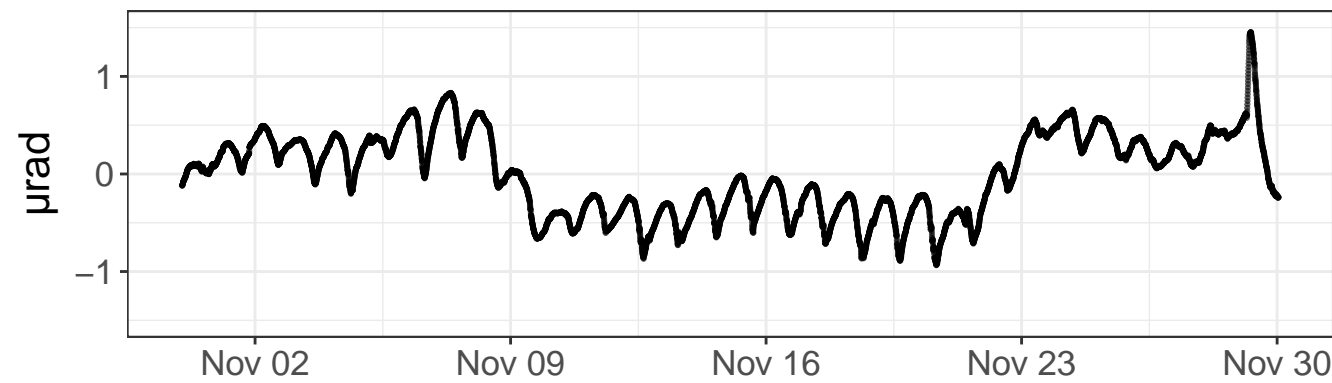
North tilt – raw values



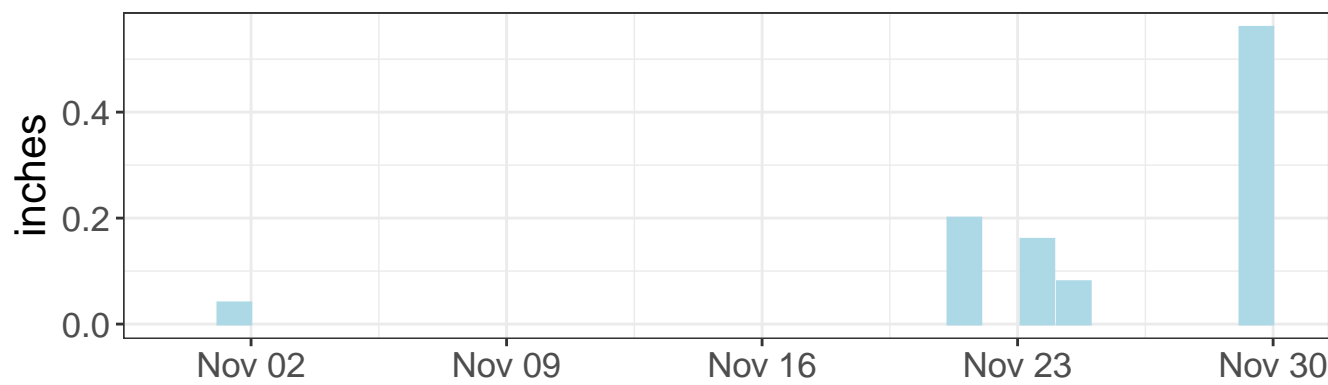
East tilt – detrended values



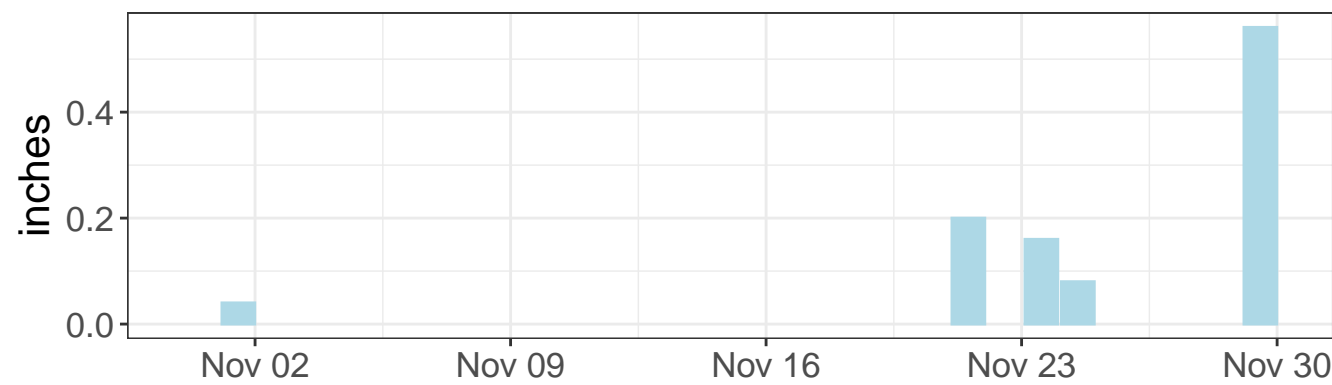
North tilt – detrended values



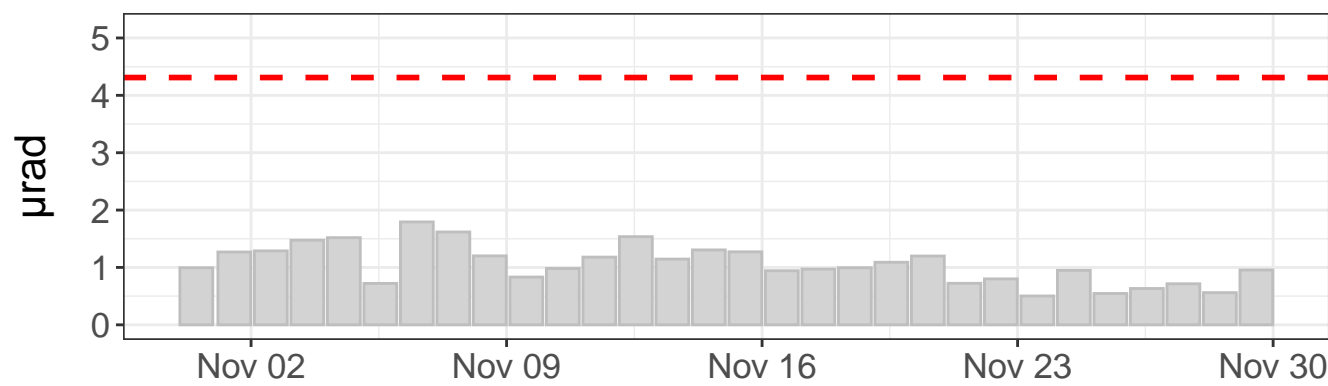
Daily precipitation



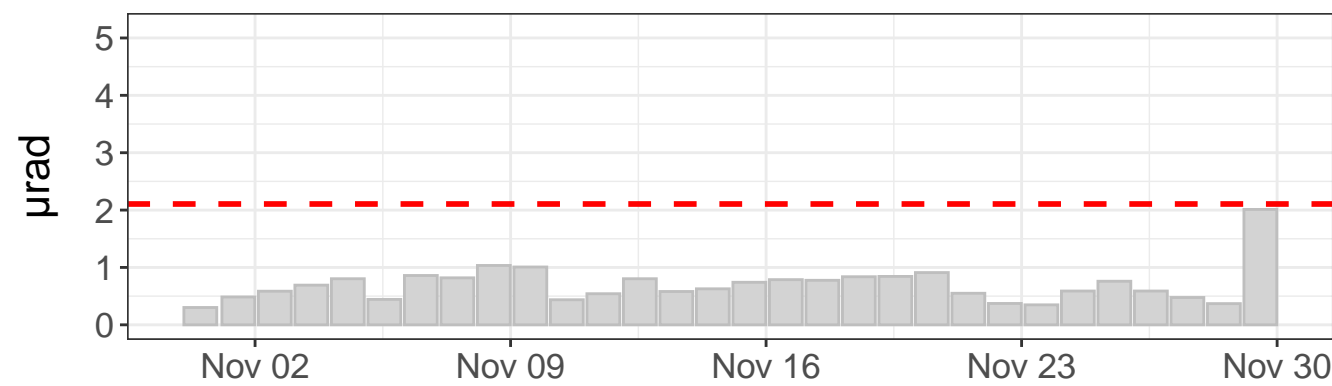
Daily precipitation



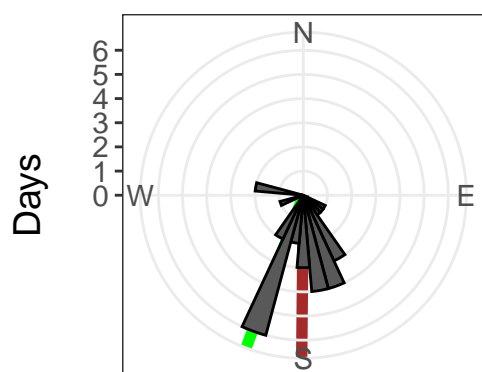
East tilt – daily range



North tilt – daily range

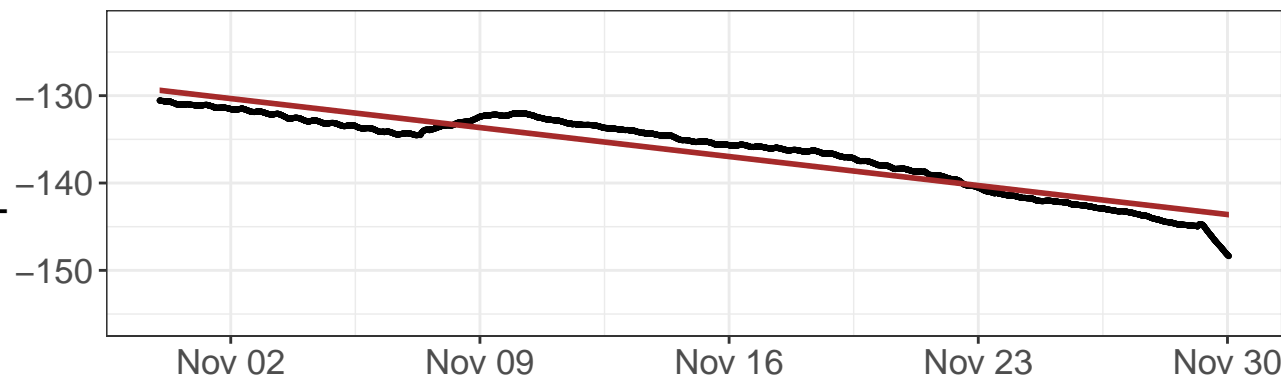


Tilt direction frequency

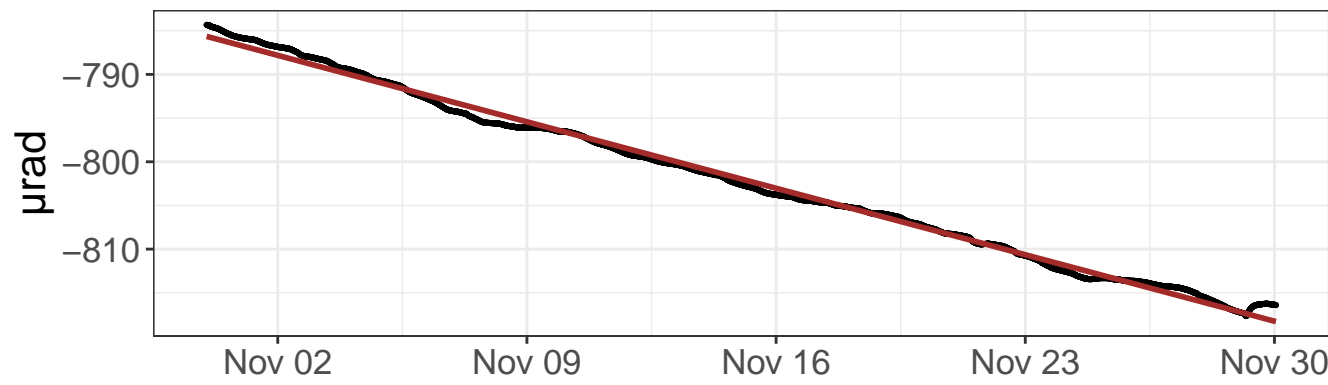


East tilt rate:  $-1.52 \pm 0.18 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.01  
 North tilt rate:  $-151.61 \pm 0.17 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.99  
 Azimuth to C7: 201 deg  
 Distance to C7: 1326 ft  
 - - - Outlier value  
 — Linear model — Azimuth to C7

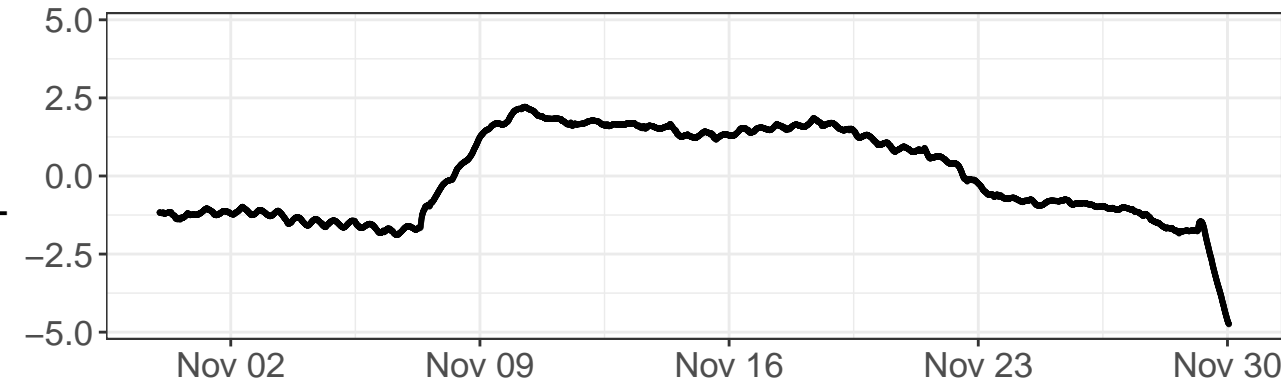
East tilt – raw values



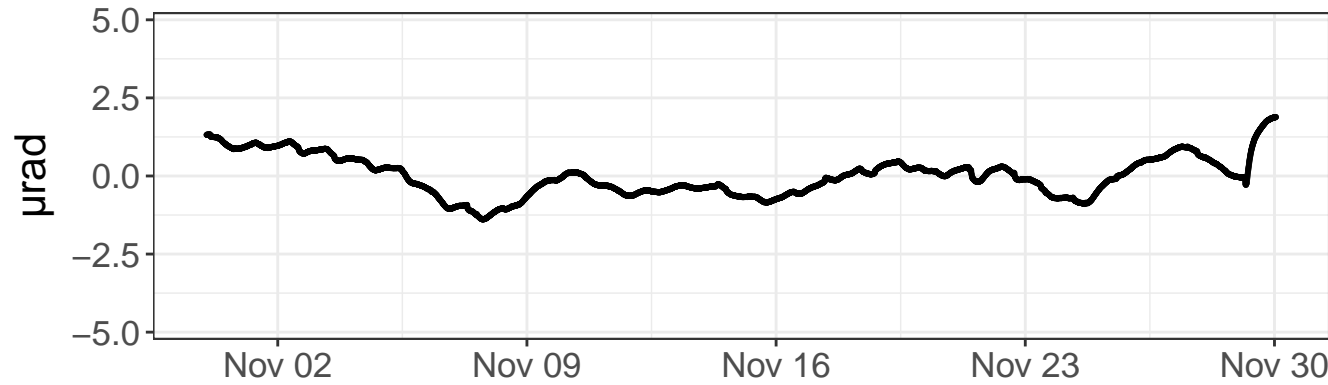
North tilt – raw values



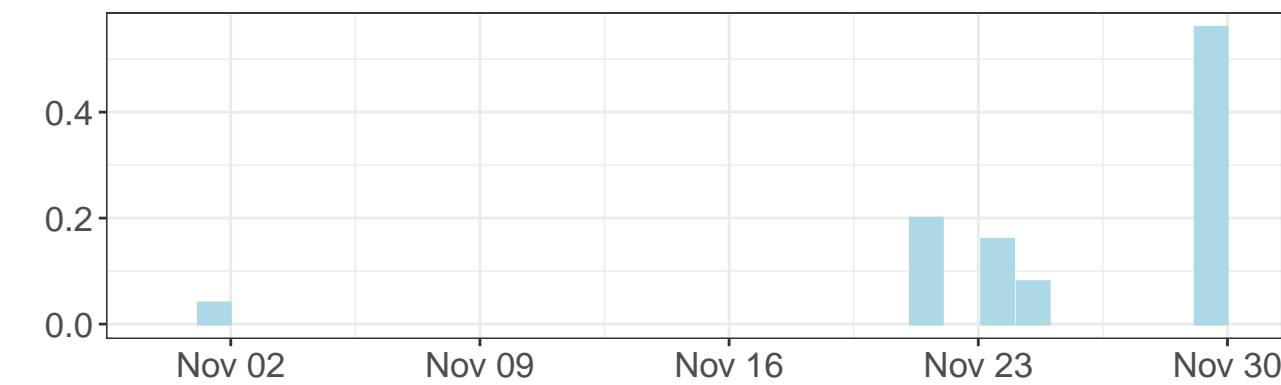
East tilt – detrended values



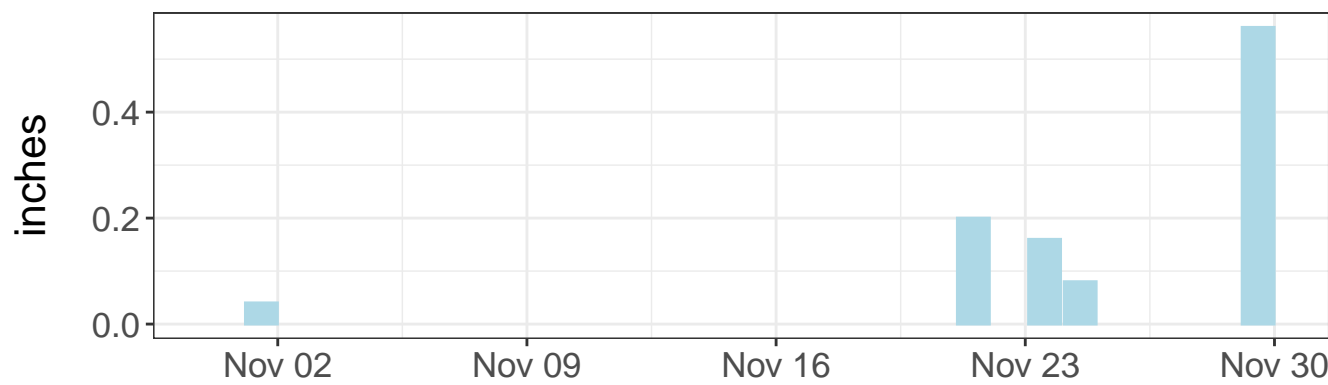
North tilt – detrended values



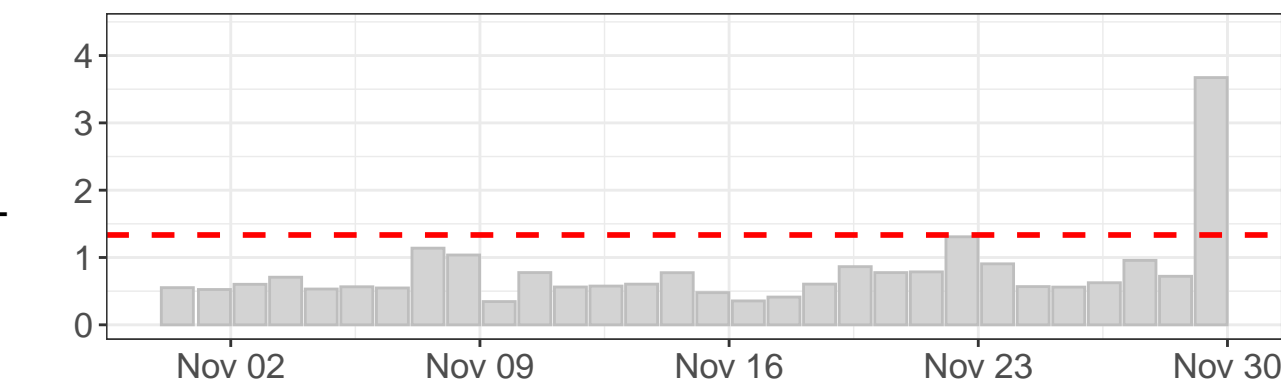
Daily precipitation



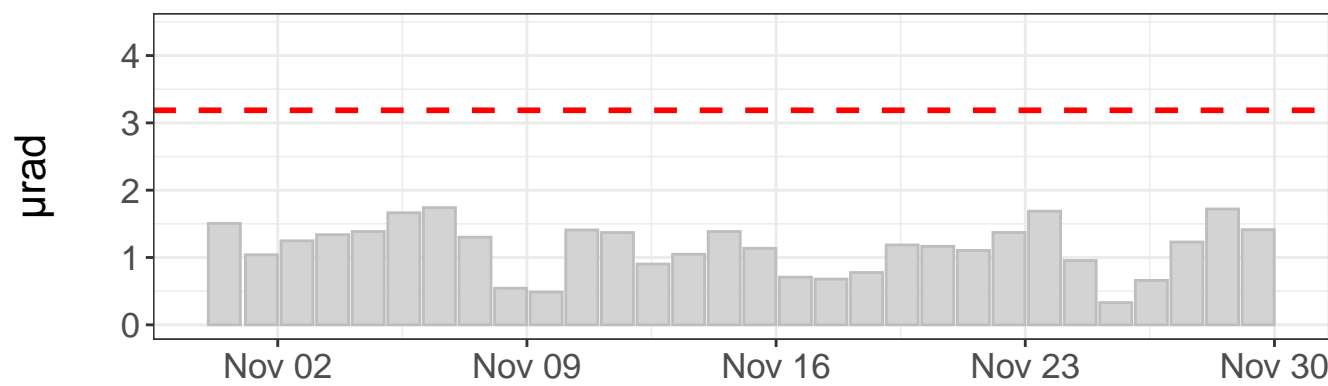
Daily precipitation



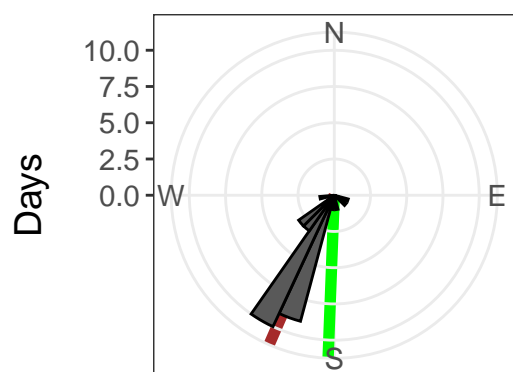
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-173.03 \pm 0.58 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.89

North tilt rate:  $-396.75 \pm 0.26 \mu\text{rad}/\text{yr}$ .  $R^2$ : 1.00

Azimuth to C7: 182 deg

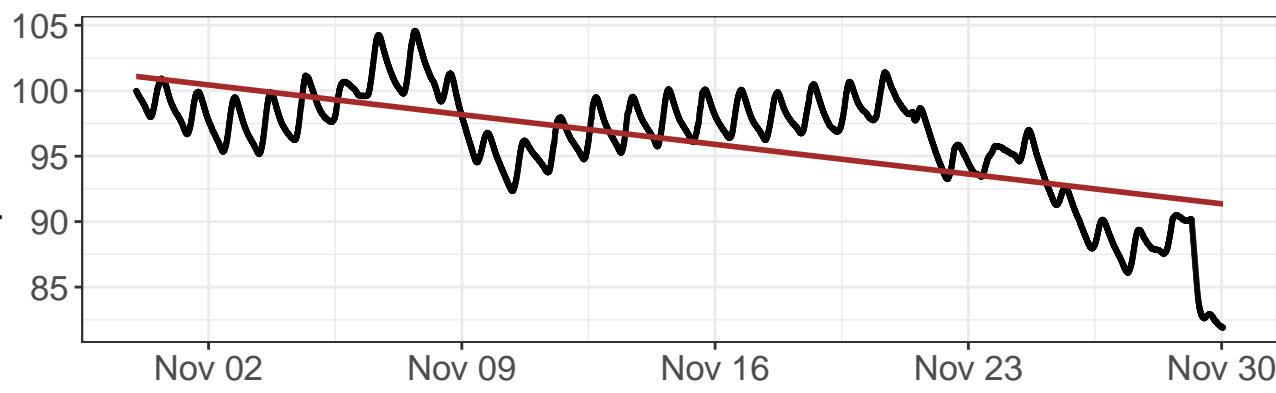
Distance to C7: 688 ft

- - - Outlier value

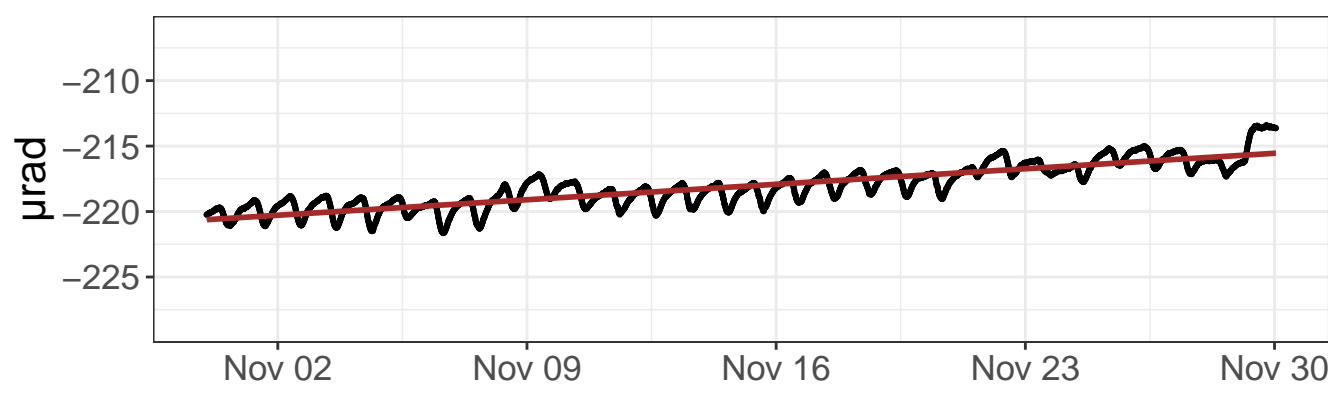
— Linear model

— Azimuth to C7

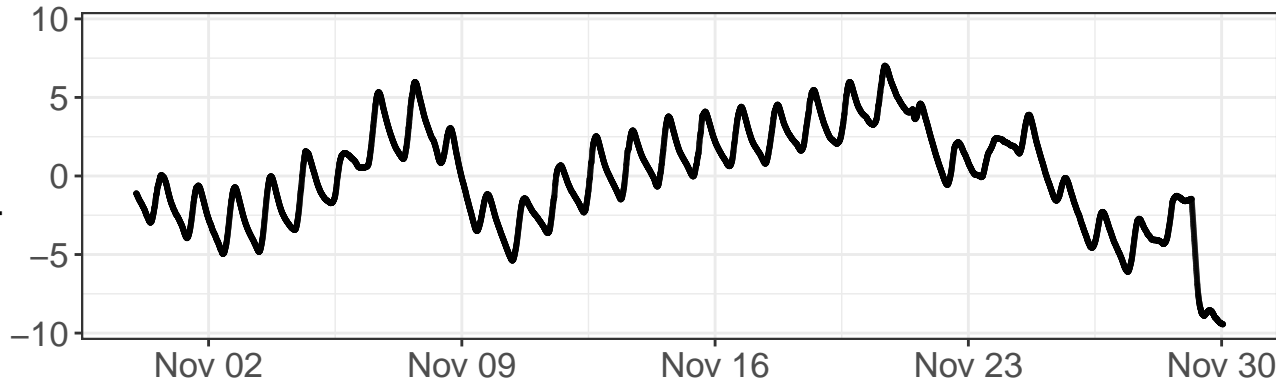
East tilt – raw values



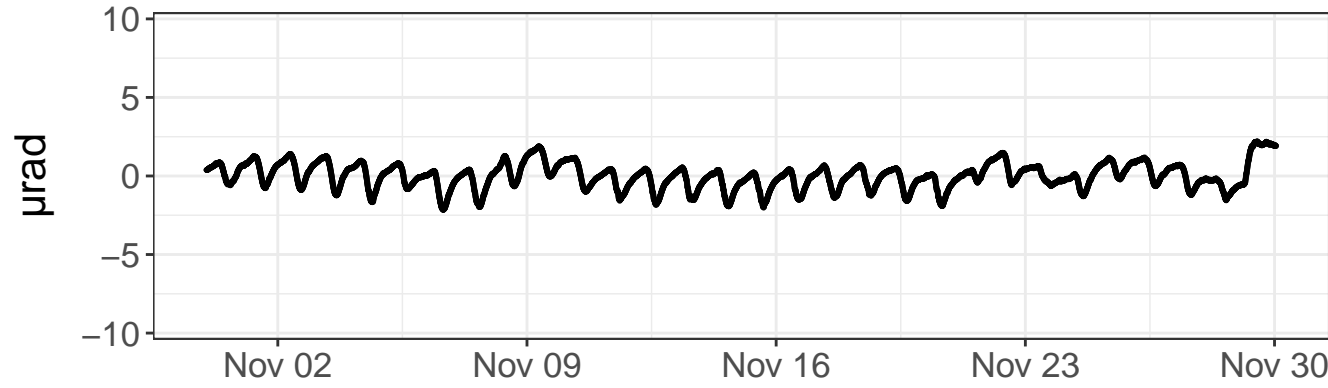
North tilt – raw values



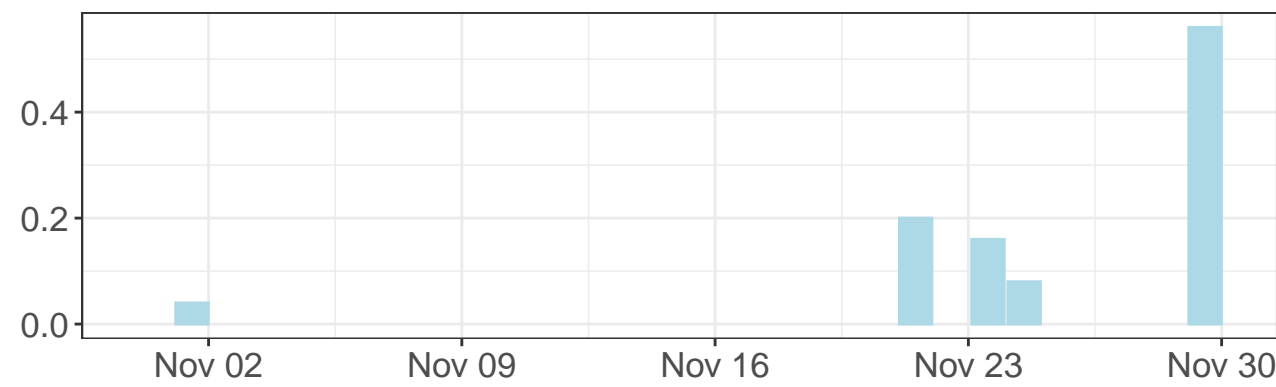
East tilt – detrended values



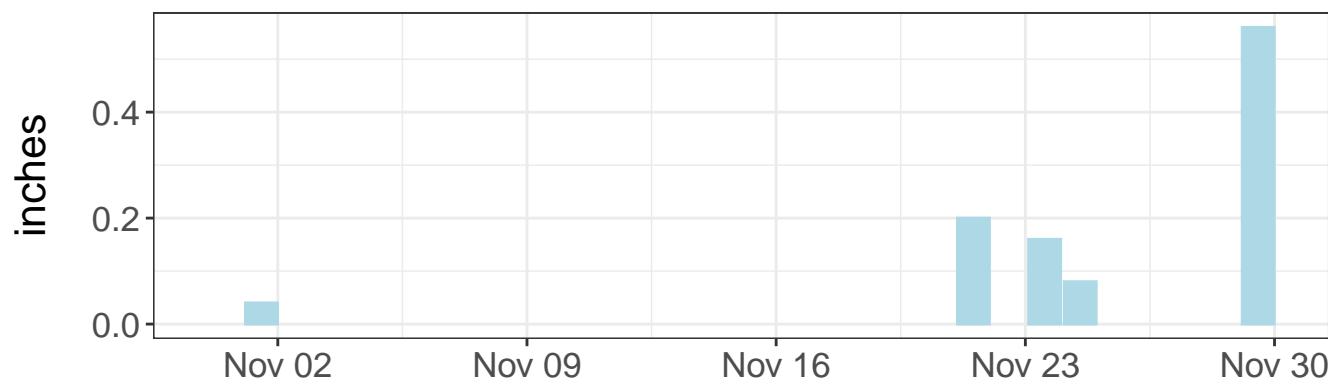
North tilt – detrended values



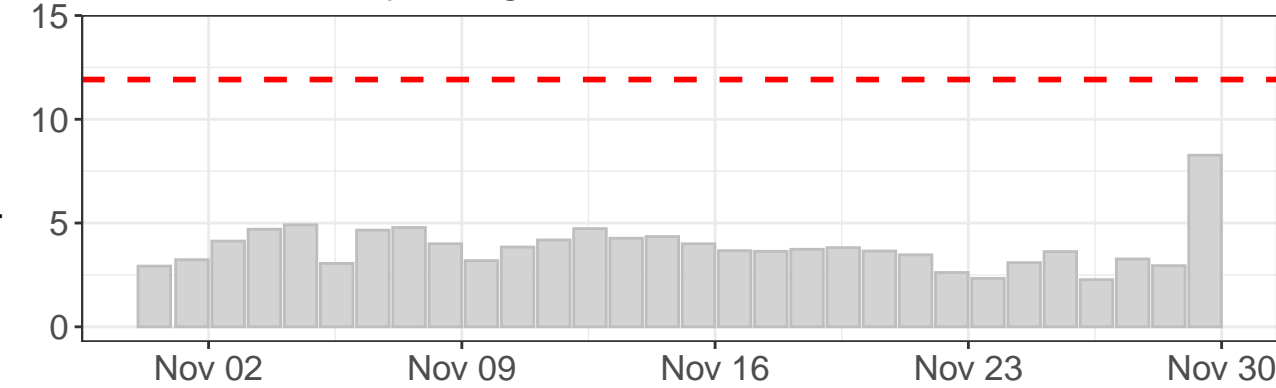
Daily precipitation



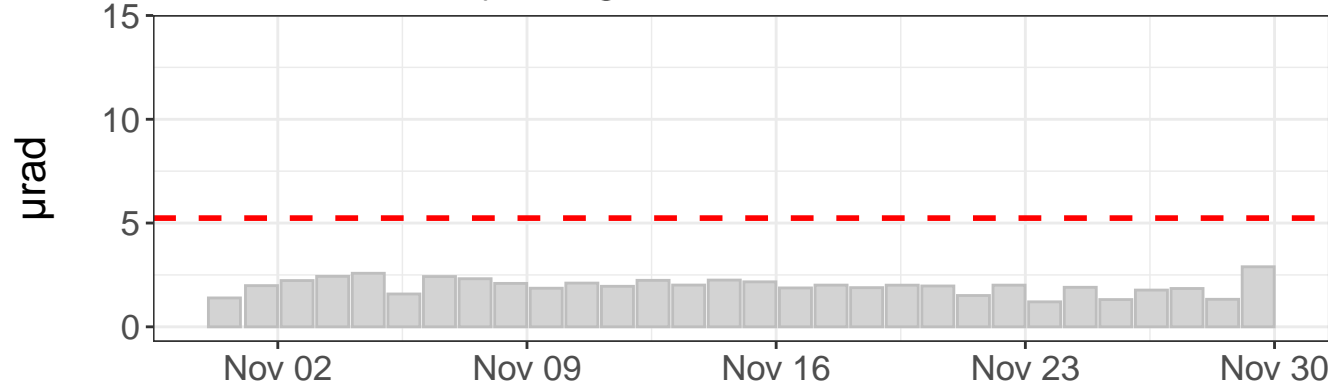
Daily precipitation



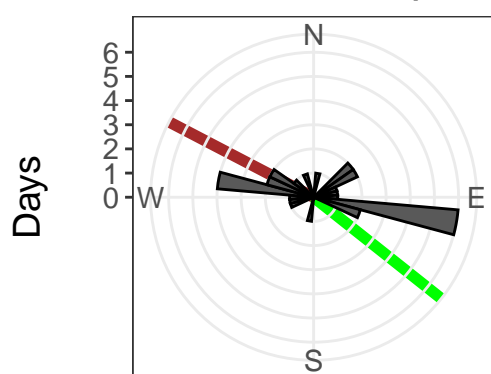
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-118.37 \pm 1.27 \mu\text{rad}/\text{yr}$ .  $R^2: 0.44$

North tilt rate:  $61.70 \pm 0.34 \mu\text{rad}/\text{yr}$ .  $R^2: 0.76$

Azimuth to C7: 128 deg

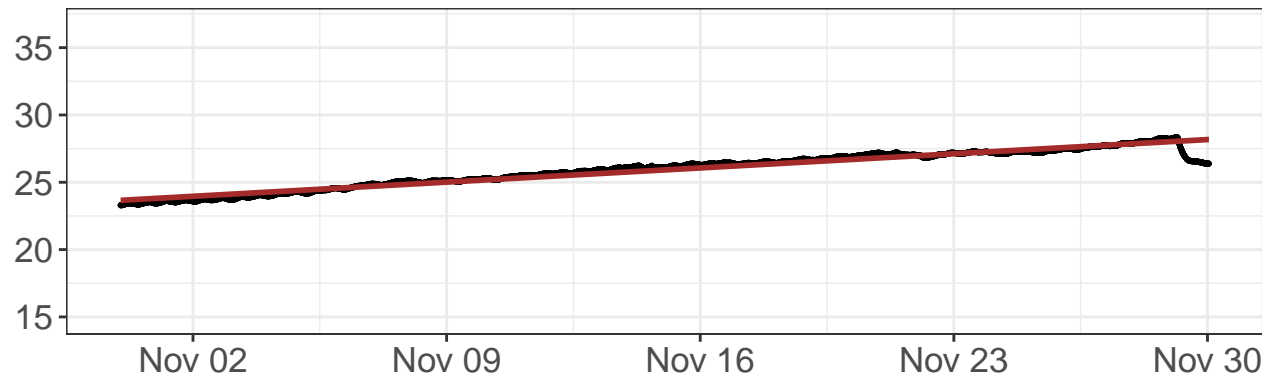
Distance to C7: 512 ft

- - - Outlier value

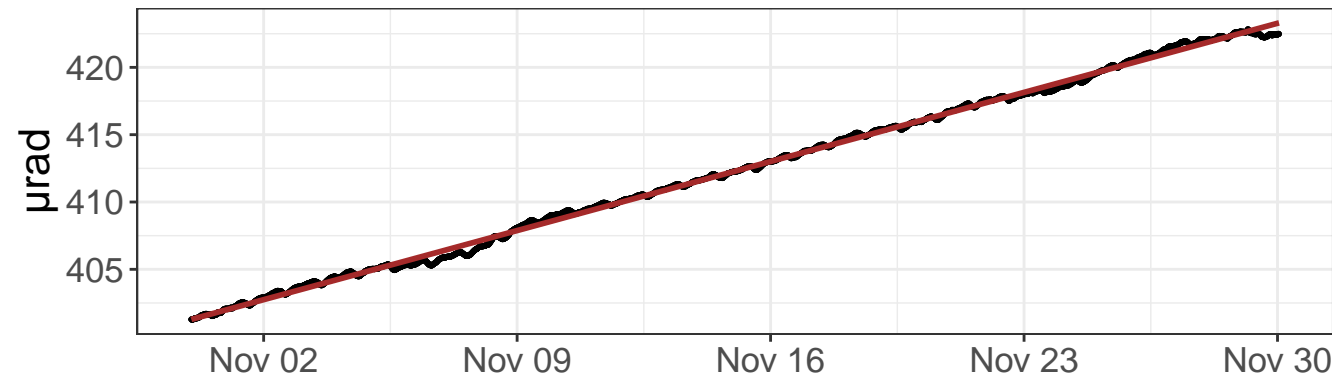
— Linear model

— Azimuth to C7

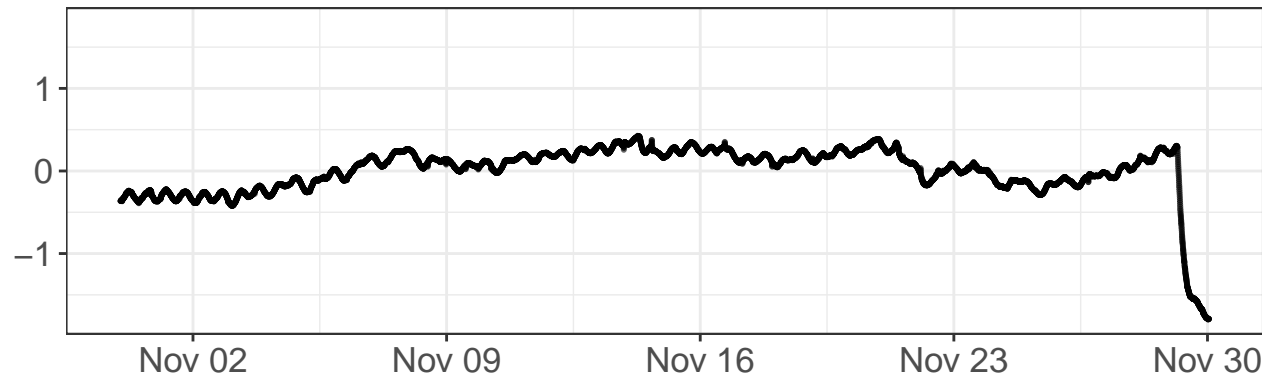
East tilt – raw values



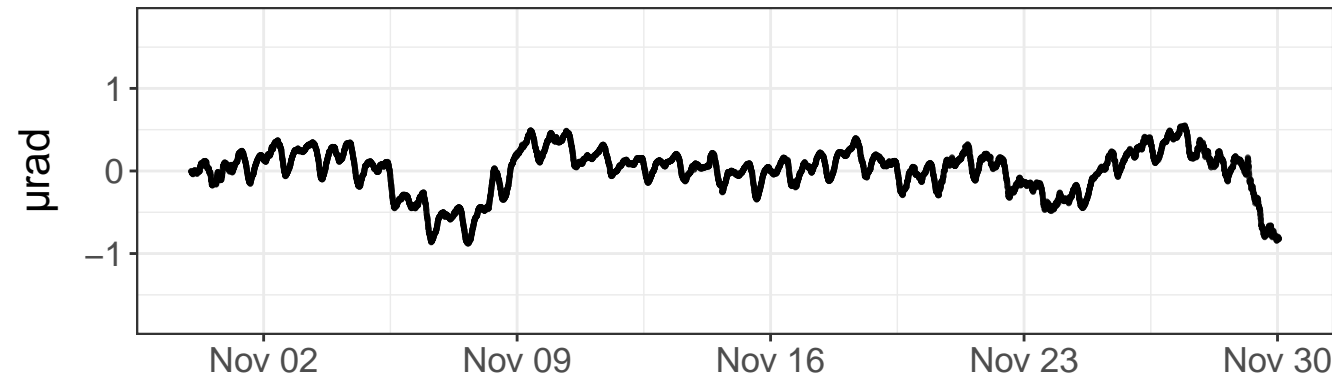
North tilt – raw values



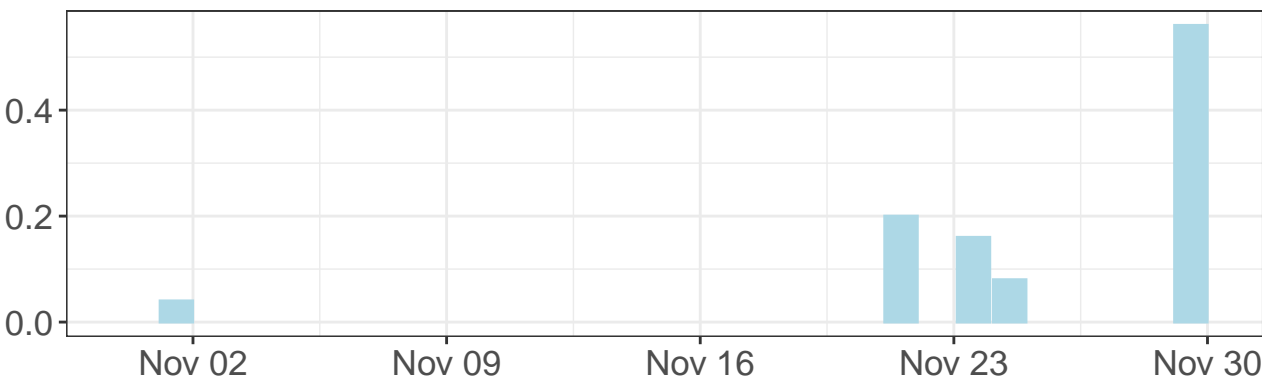
East tilt – detrended values



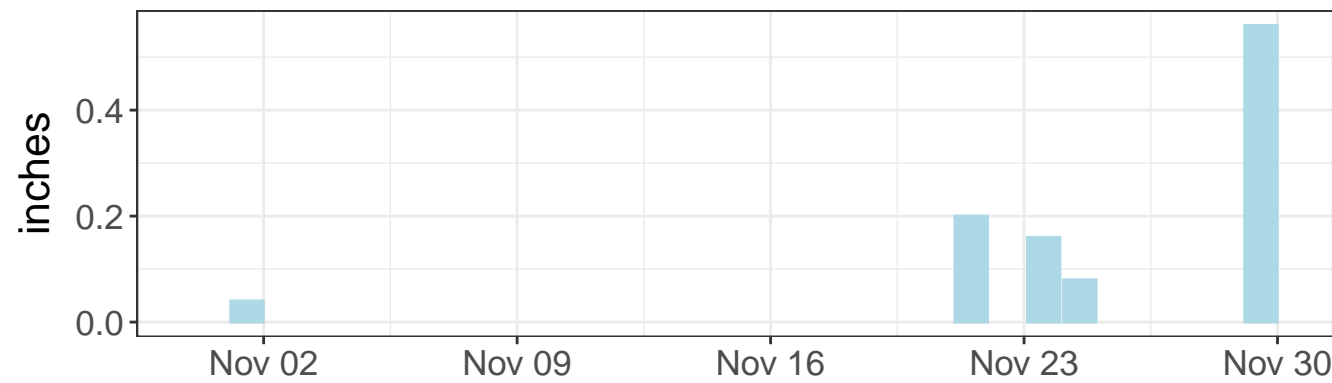
North tilt – detrended values



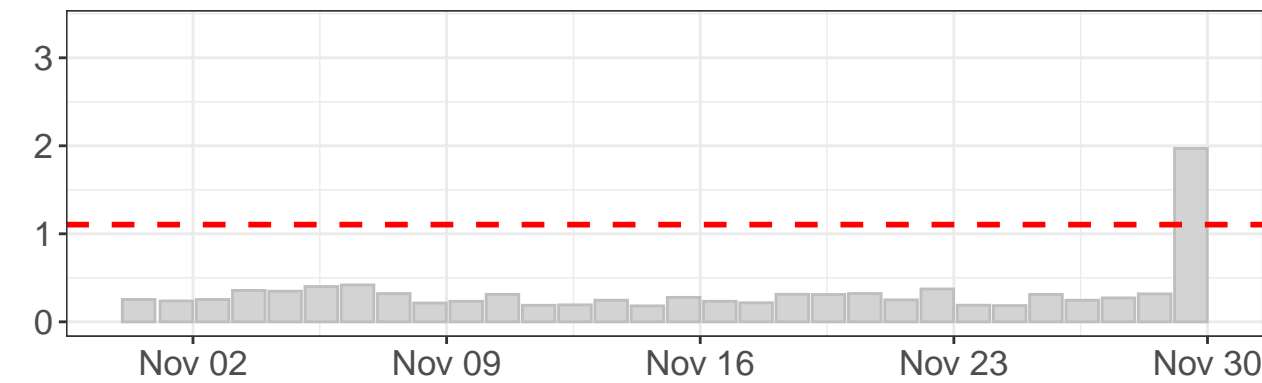
Daily precipitation



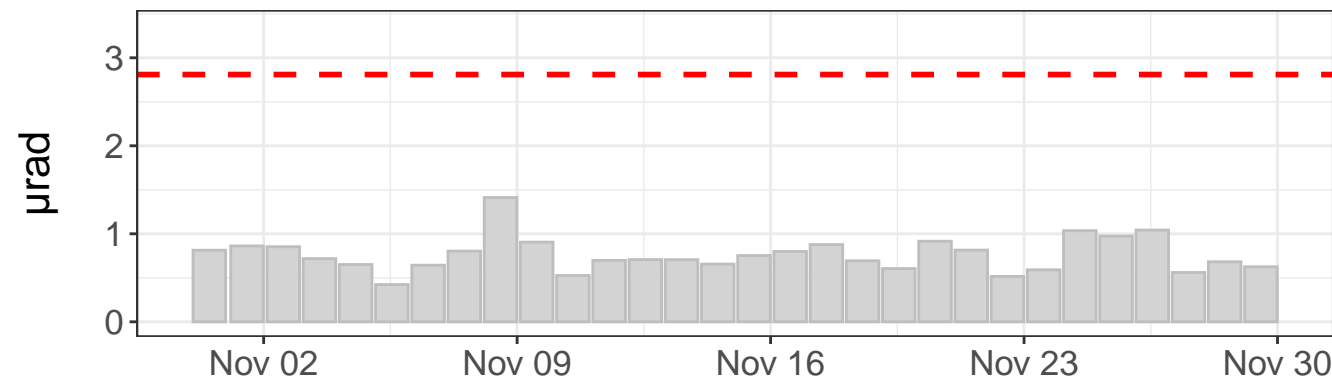
Daily precipitation



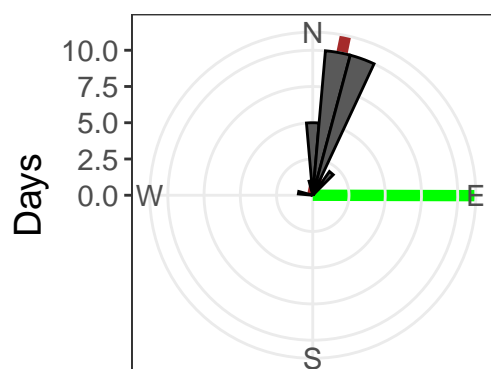
East tilt – daily range



North tilt – daily range

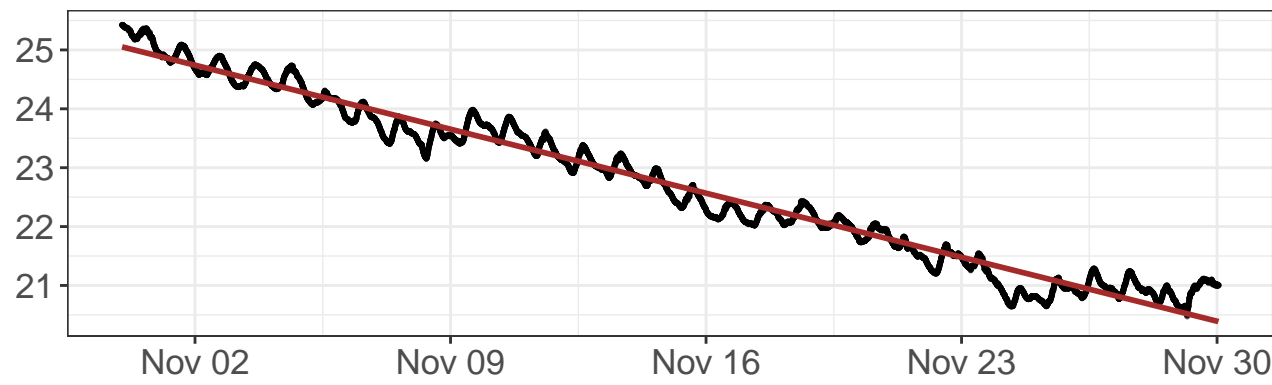


Tilt direction frequency

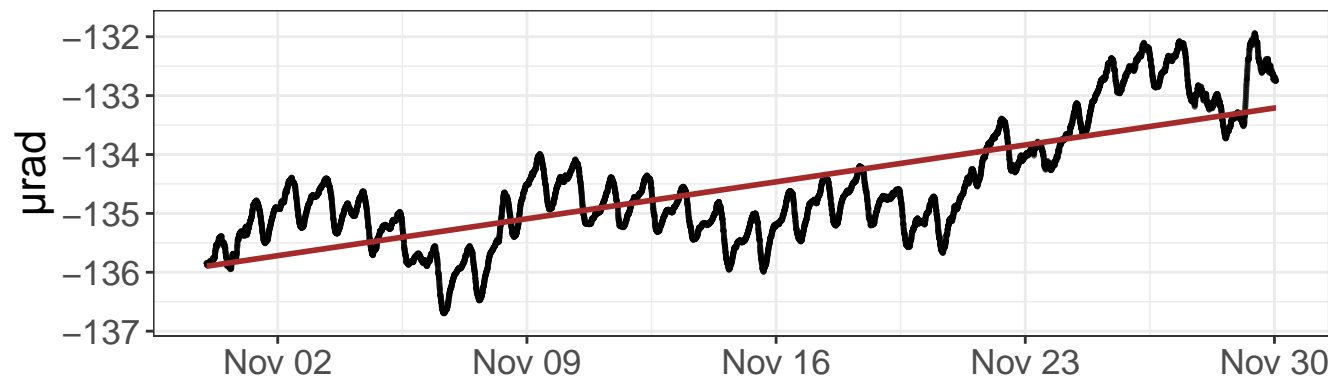


East tilt rate:  $54.93 \pm 0.13 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.94  
 North tilt rate:  $267.62 \pm 0.11 \mu\text{rad}/\text{yr}$ .  $R^2$ : 1.00  
 Azimuth to C7: 90 deg  
 Distance to C7: 494 ft  
 - - - Outlier value  
 — Linear model — Azimuth to C7

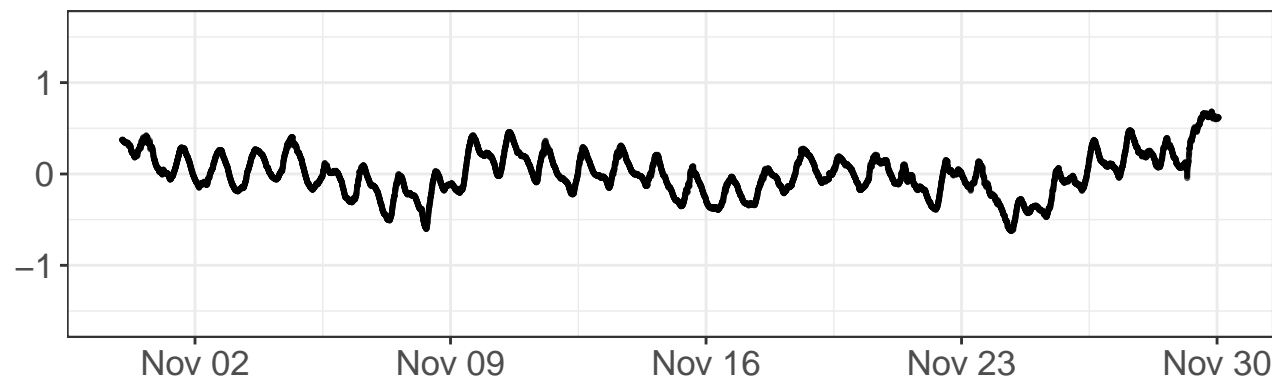
East tilt – raw values



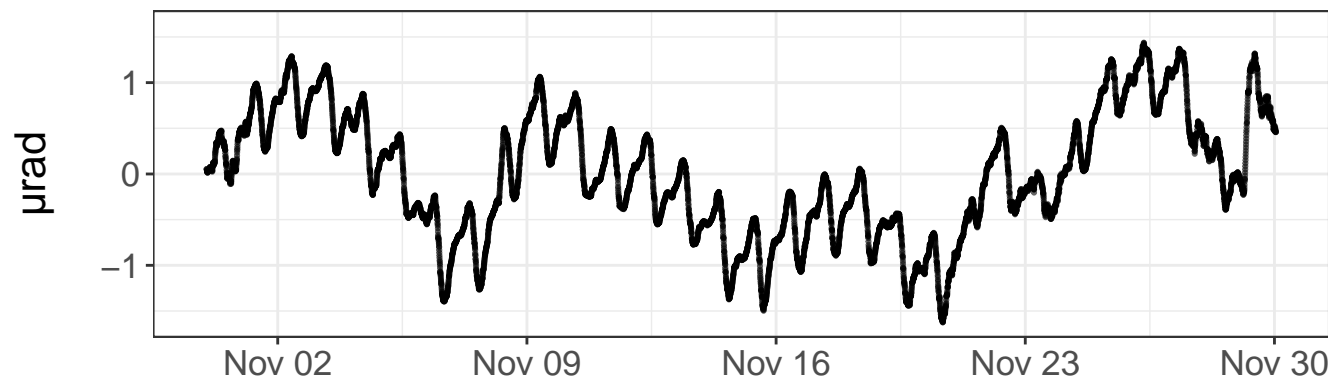
North tilt – raw values



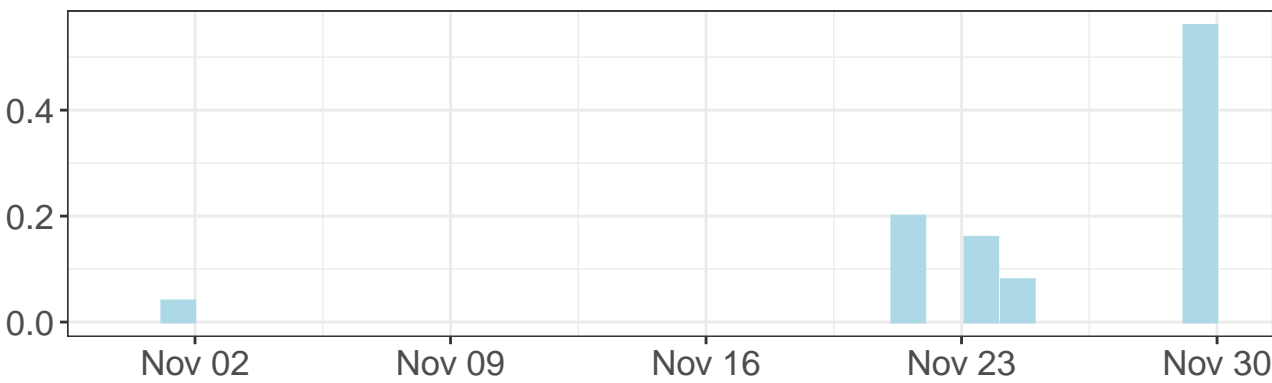
East tilt – detrended values



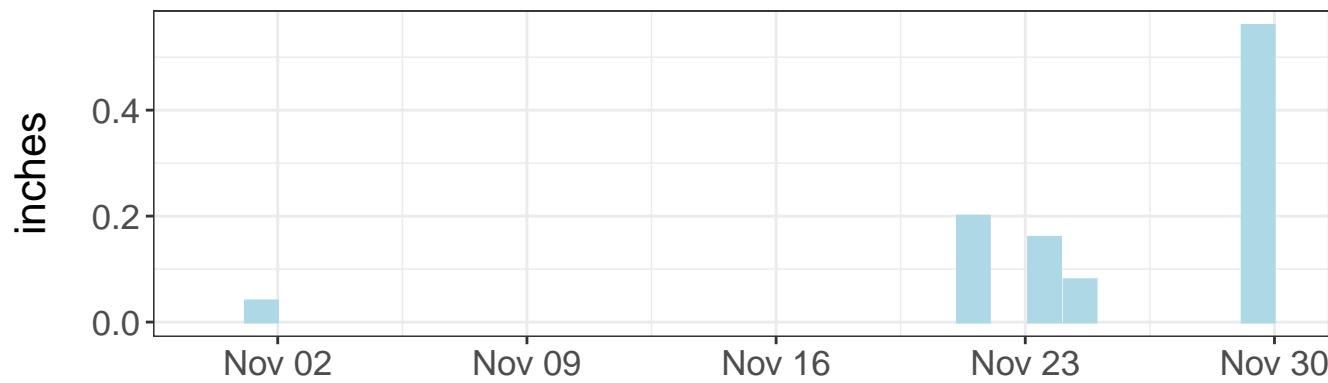
North tilt – detrended values



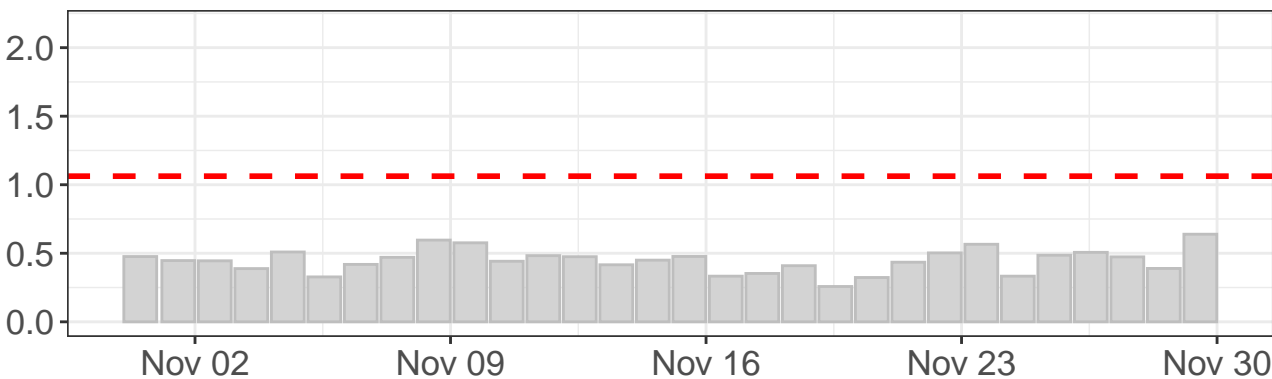
Daily precipitation



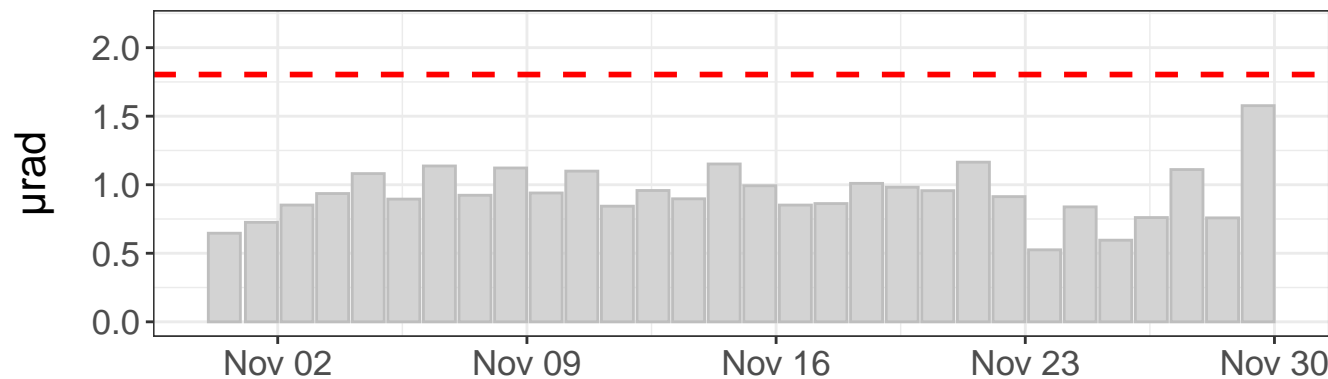
Daily precipitation



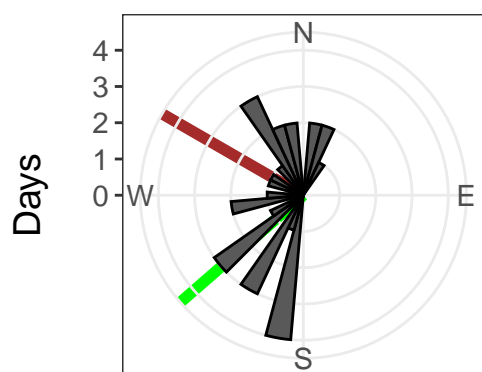
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-56.68 \pm 0.09 \mu\text{rad/yr}$ .  $R^2: 0.97$

North tilt rate:  $32.69 \pm 0.27 \mu\text{rad/yr}$ .  $R^2: 0.57$

Azimuth to C7: 229 deg

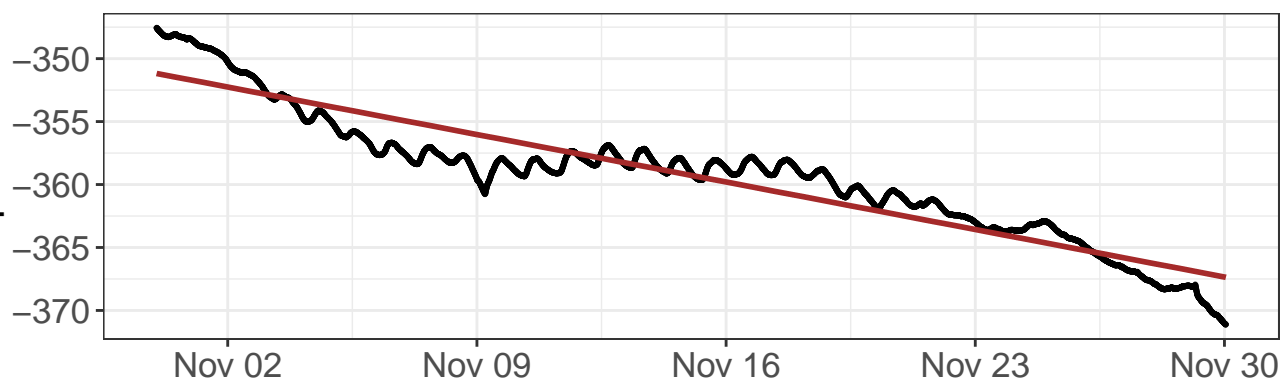
Distance to C7: 513 ft

- - - Outlier value

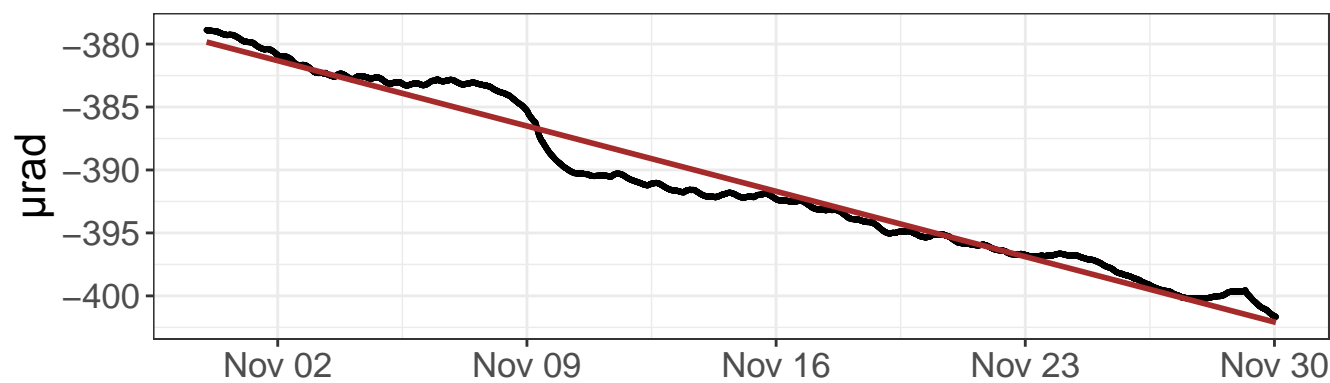
— Linear model

— Azimuth to C7

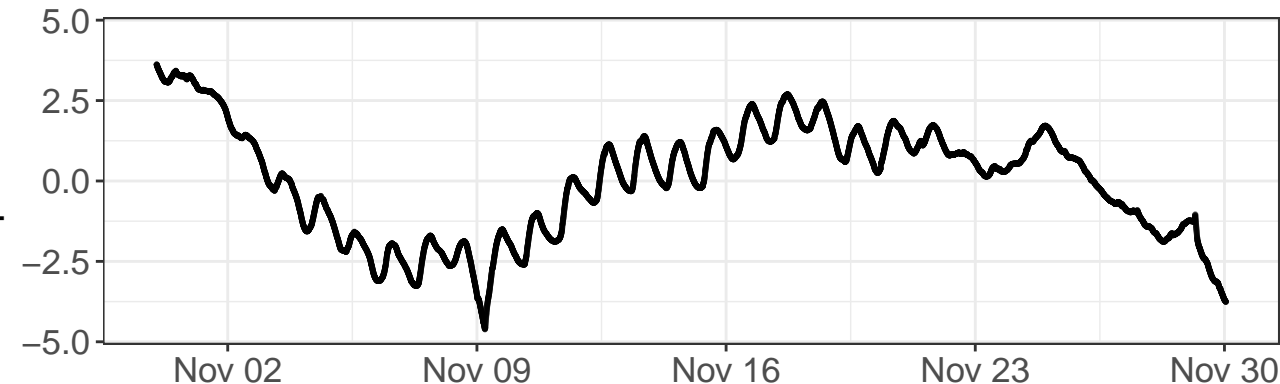
East tilt – raw values



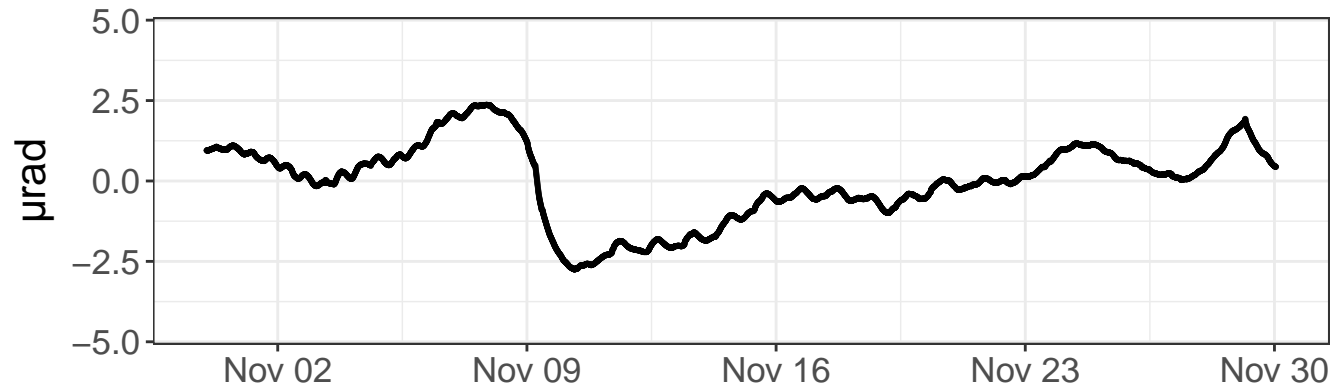
North tilt – raw values



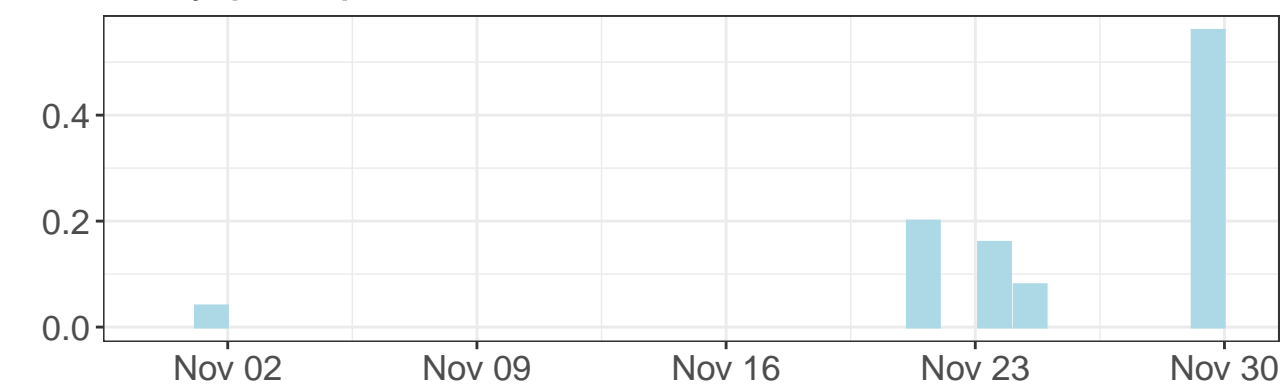
East tilt – detrended values



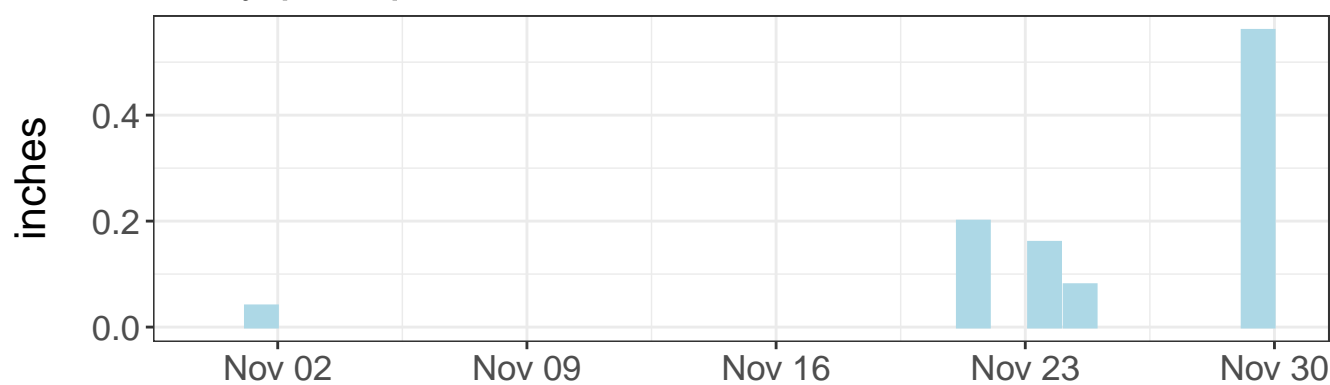
North tilt – detrended values



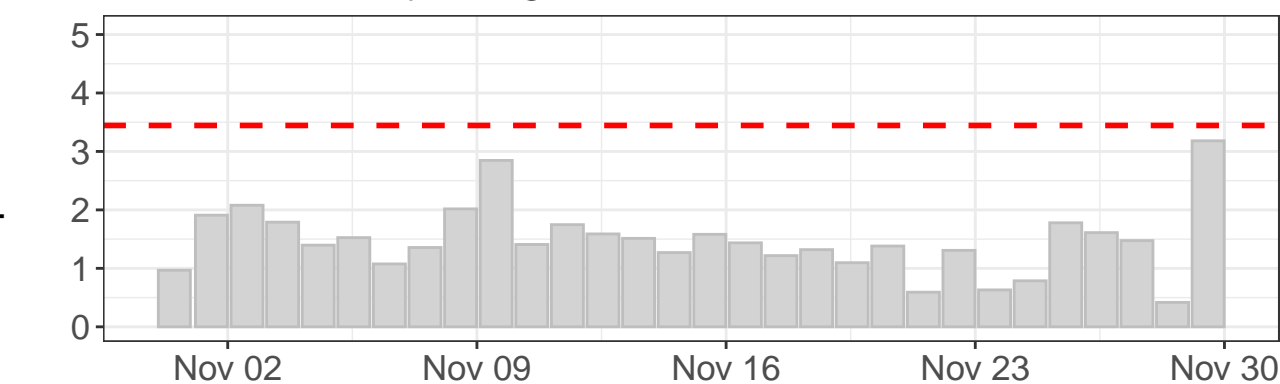
Daily precipitation



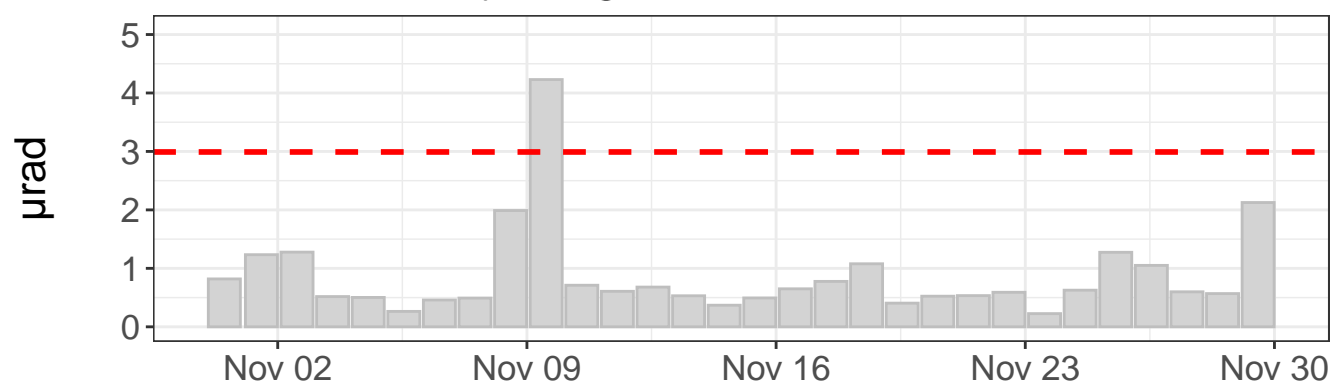
Daily precipitation



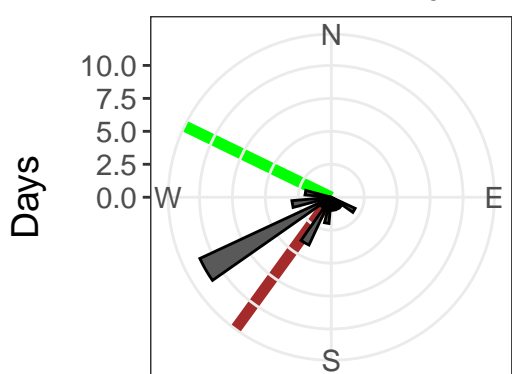
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-196.67 \pm 0.70 \mu\text{rad}/\text{yr}$ .  $R^2: 0.88$

North tilt rate:  $-270.56 \pm 0.49 \mu\text{rad}/\text{yr}$ .  $R^2: 0.97$

Azimuth to C7: 296 deg

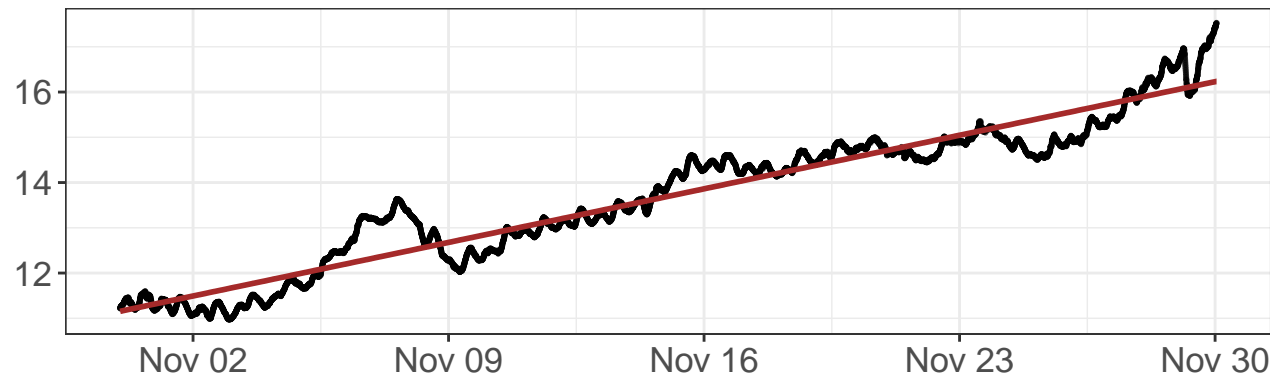
Distance to C7: 186 ft

--- Outlier value

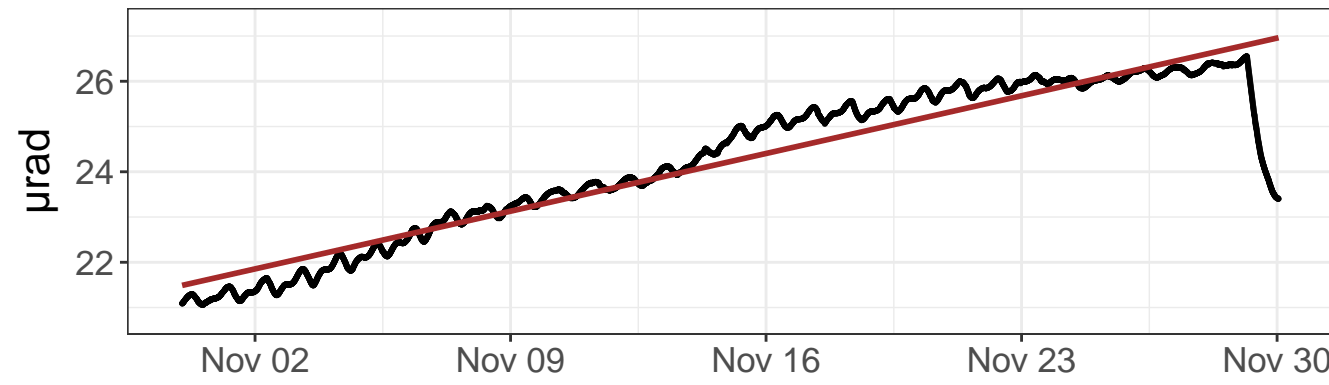
— Linear model

— Azimuth to C7

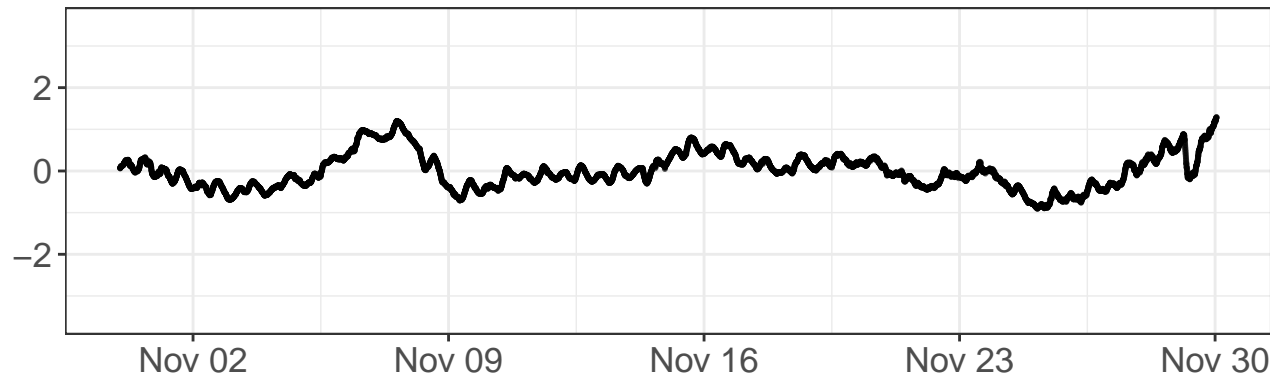
East tilt – raw values



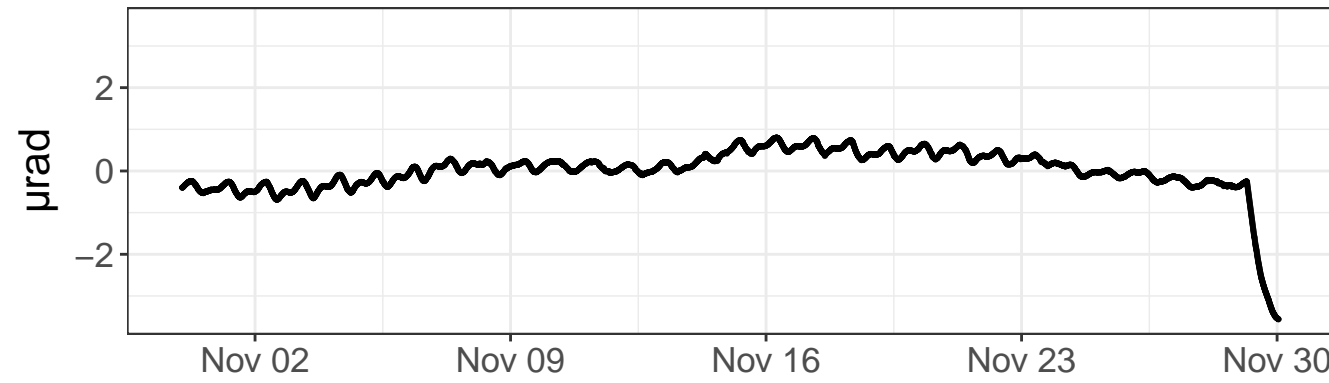
North tilt – raw values



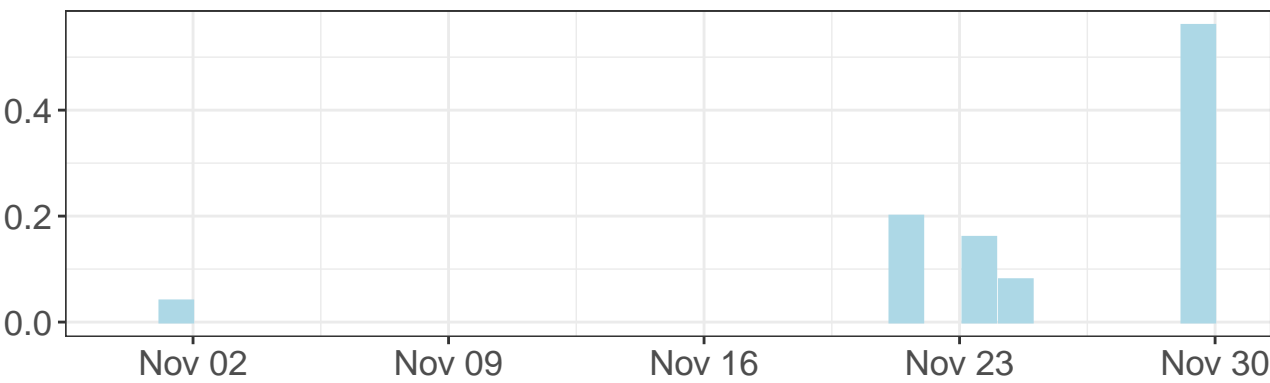
East tilt – detrended values



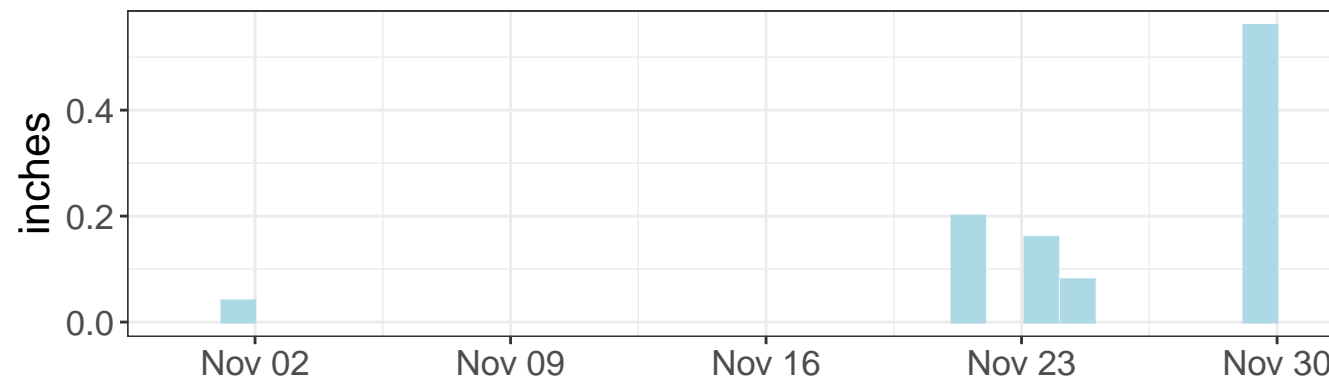
North tilt – detrended values



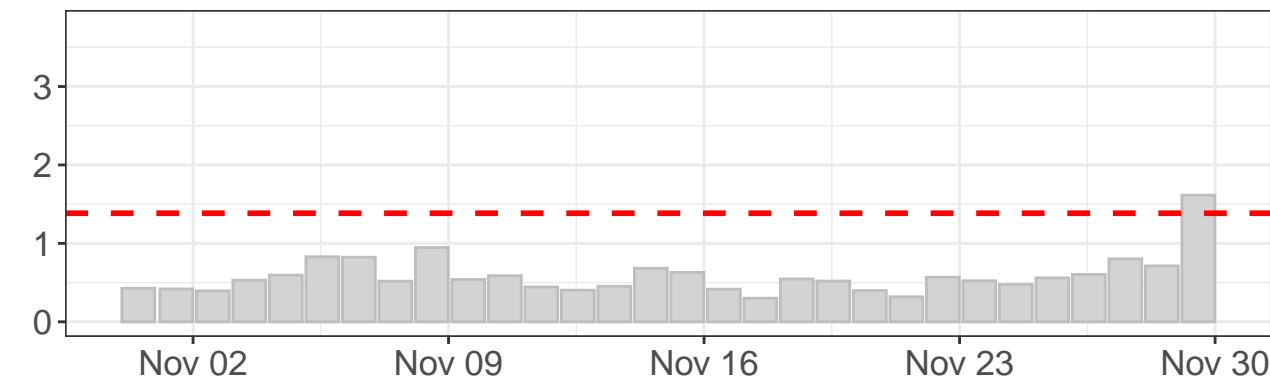
Daily precipitation



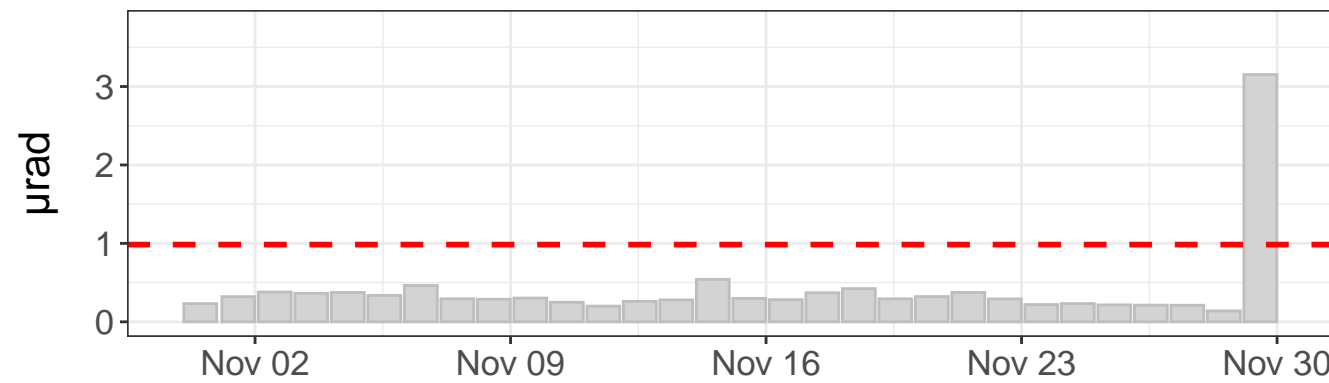
Daily precipitation



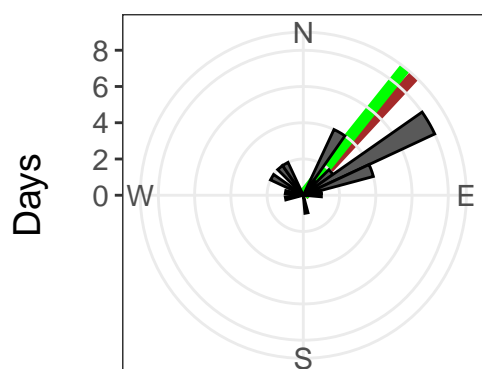
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $61.74 \pm 0.17 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.93

North tilt rate:  $66.50 \pm 0.23 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.89

Azimuth to C7: 39 deg

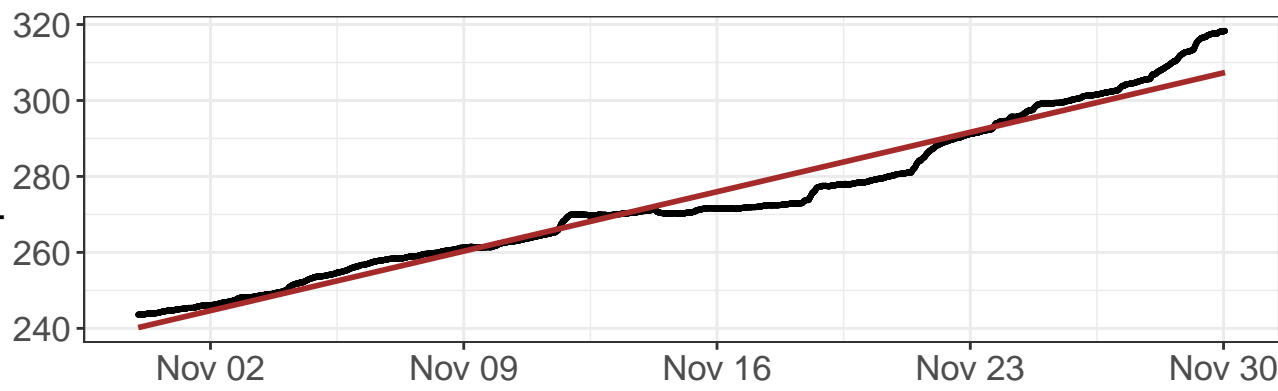
Distance to C7: 561 ft

--- Outlier value

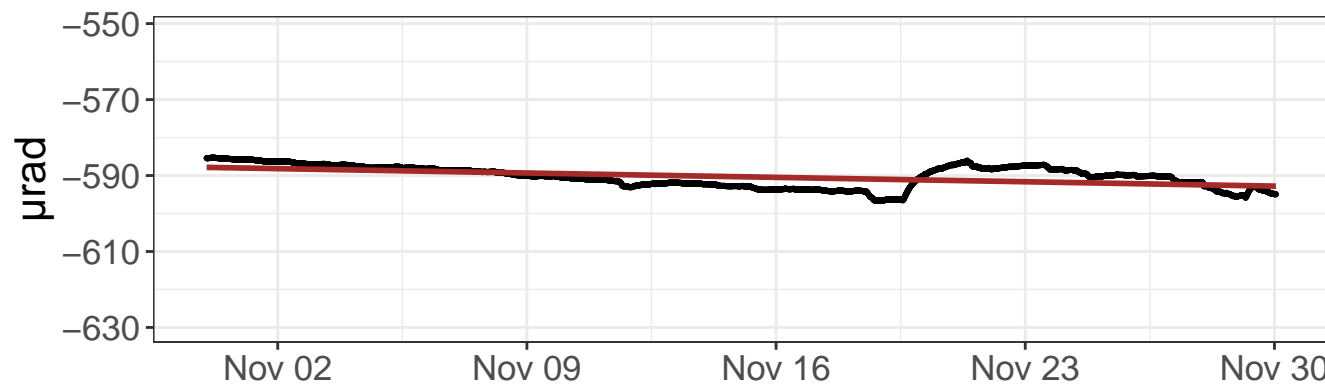
— Linear model

— Azimuth to C7

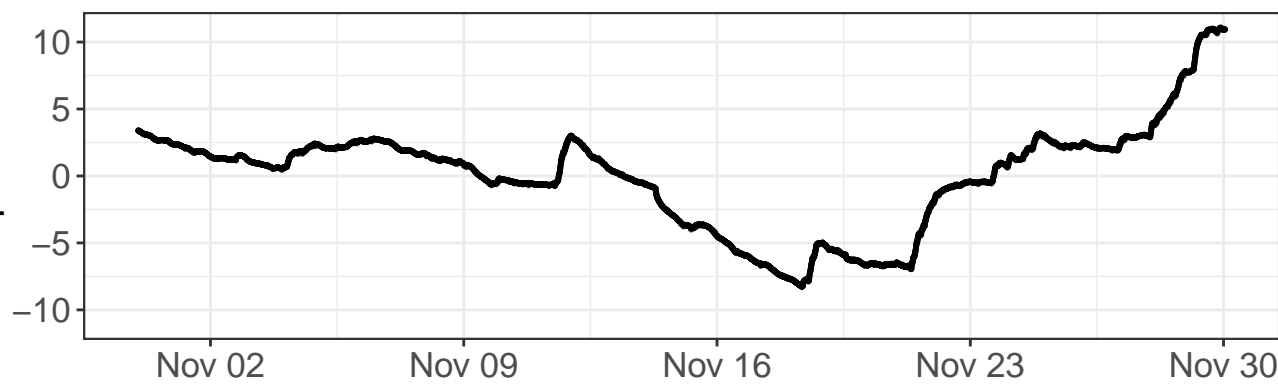
East tilt – raw values



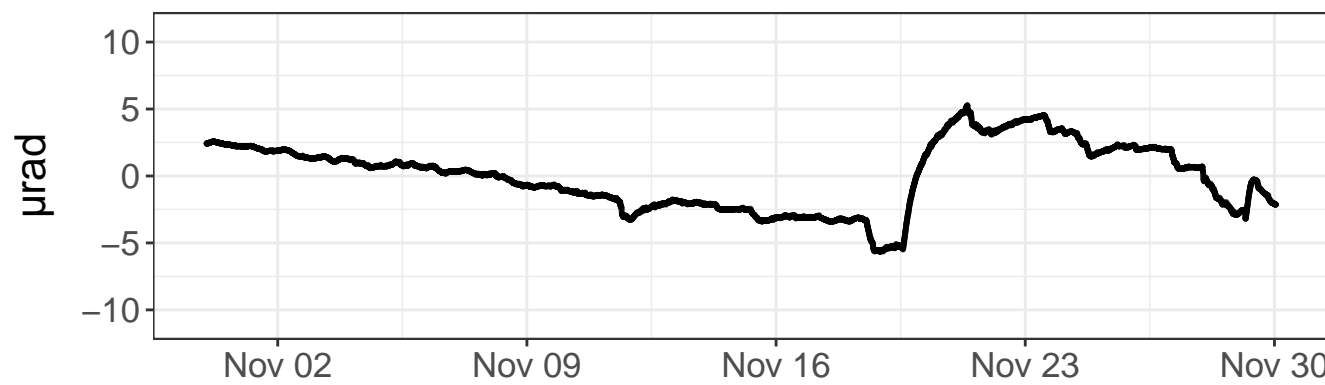
North tilt – raw values



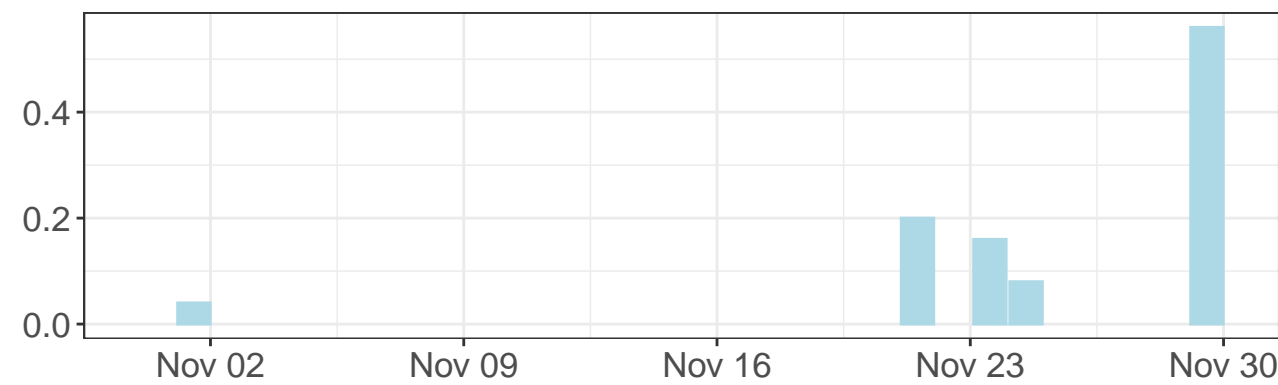
East tilt – detrended values



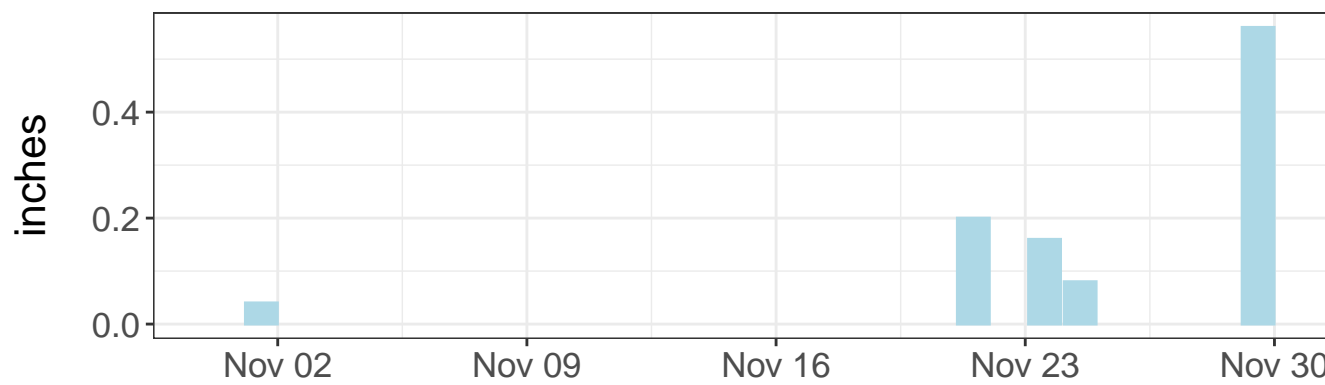
North tilt – detrended values



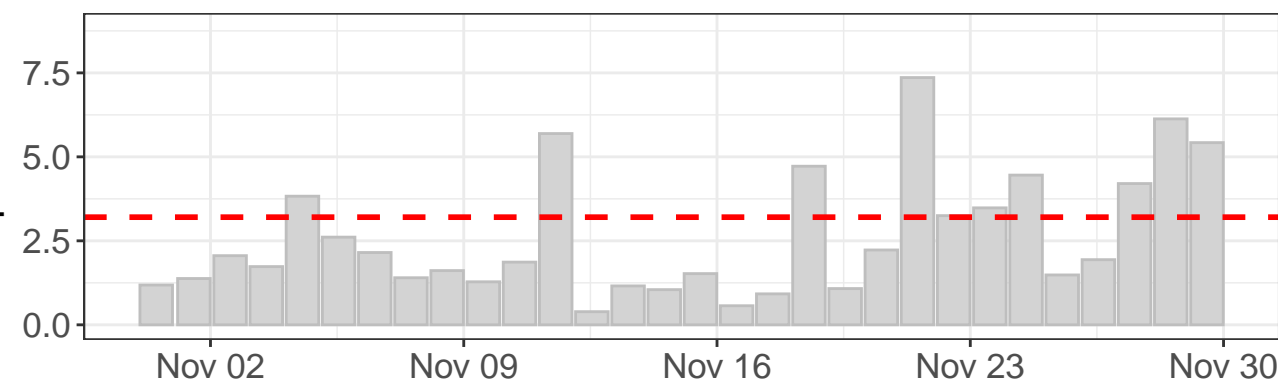
Daily precipitation



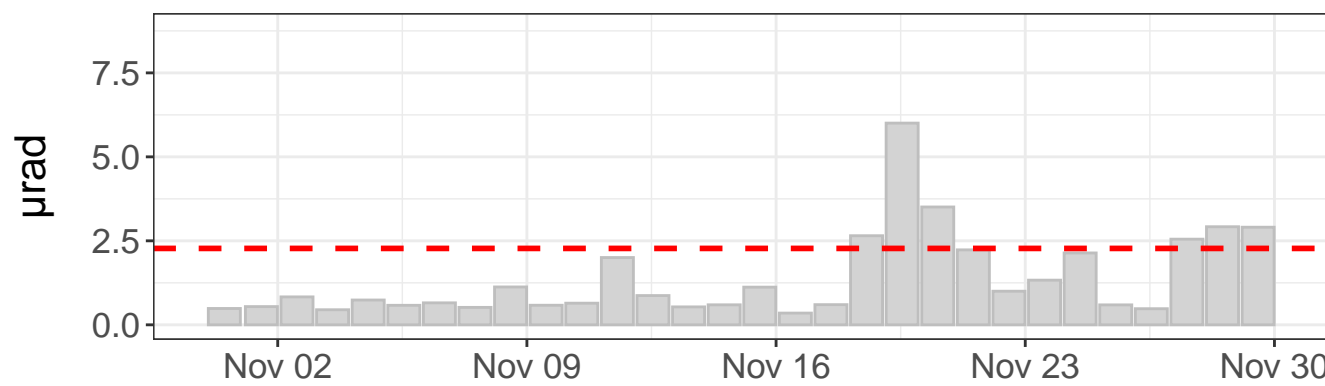
Daily precipitation



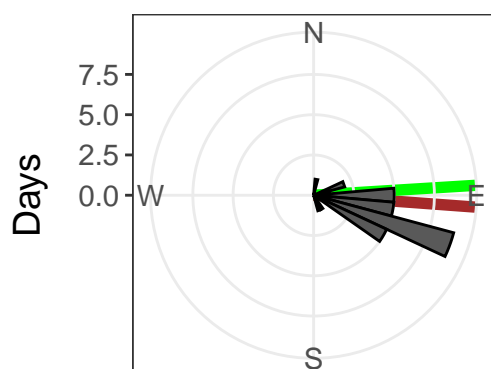
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $816.25 \pm 1.58 \mu\text{rad/yr}$ .  $R^2: 0.96$

North tilt rate:  $-60.01 \pm 1.00 \mu\text{rad/yr}$ .  $R^2: 0.25$

Azimuth to C7: 87 deg

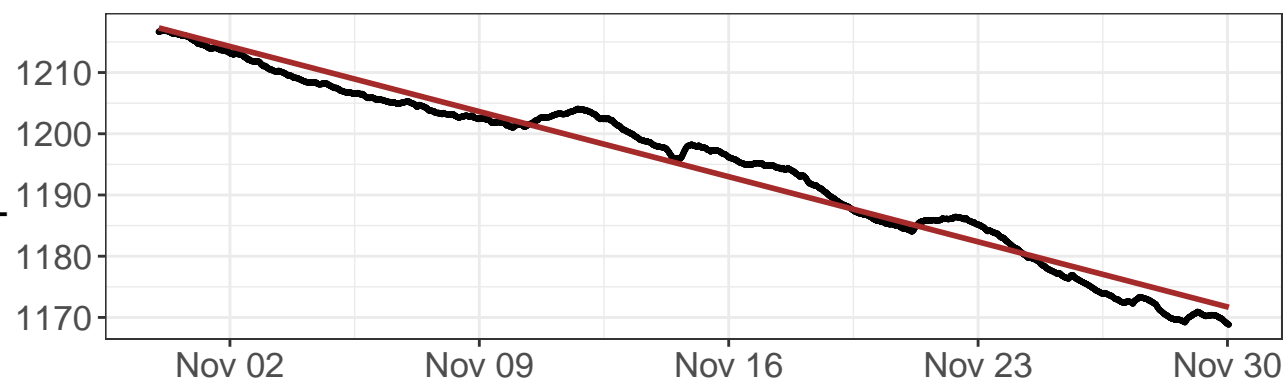
Distance to C7: 2402 ft

- - - Outlier value

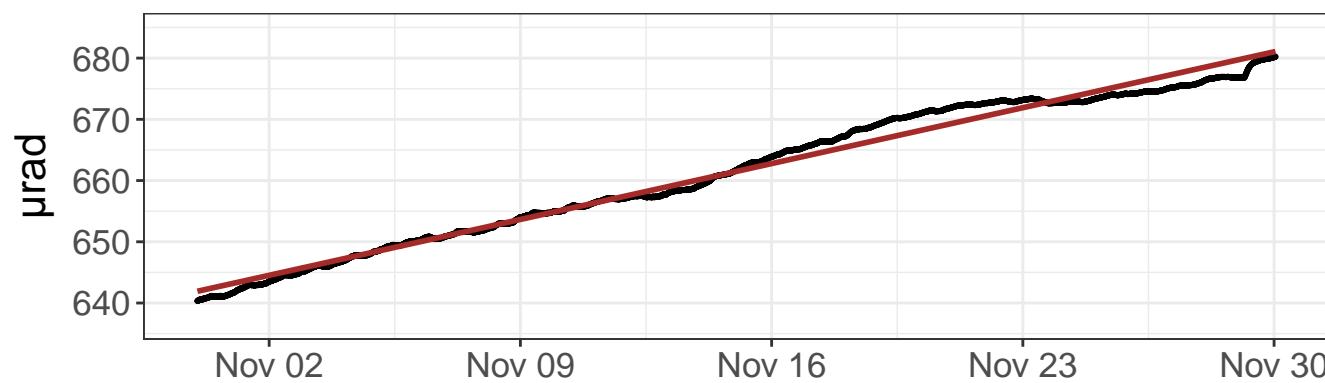
— Linear model

— Azimuth to C7

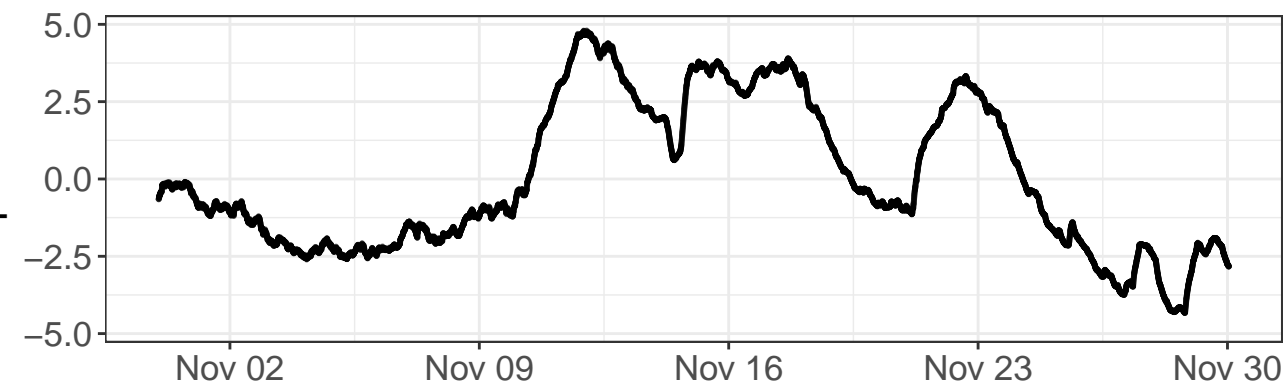
East tilt – raw values



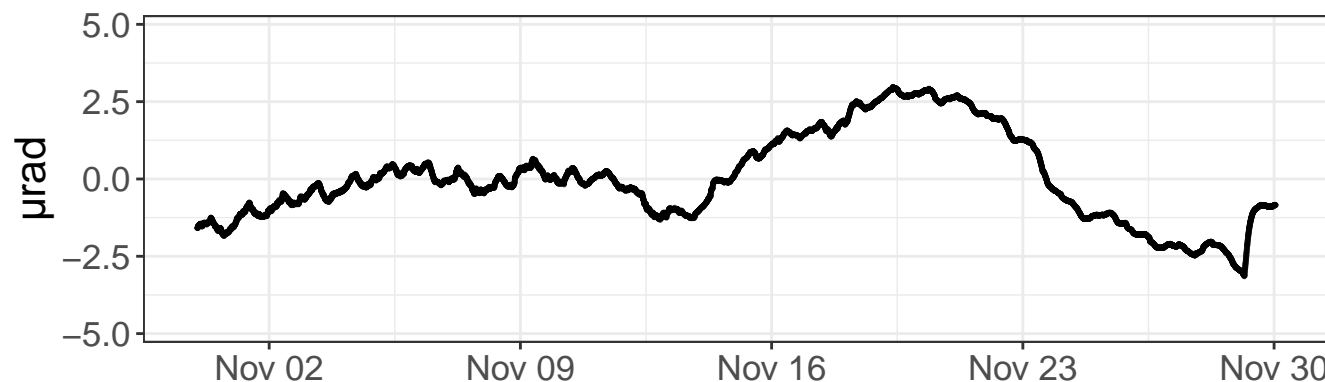
North tilt – raw values



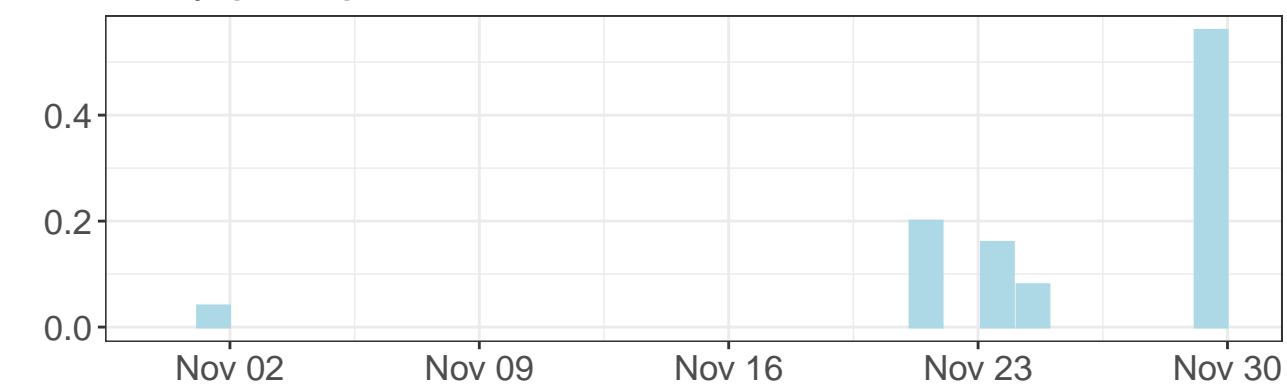
East tilt – detrended values



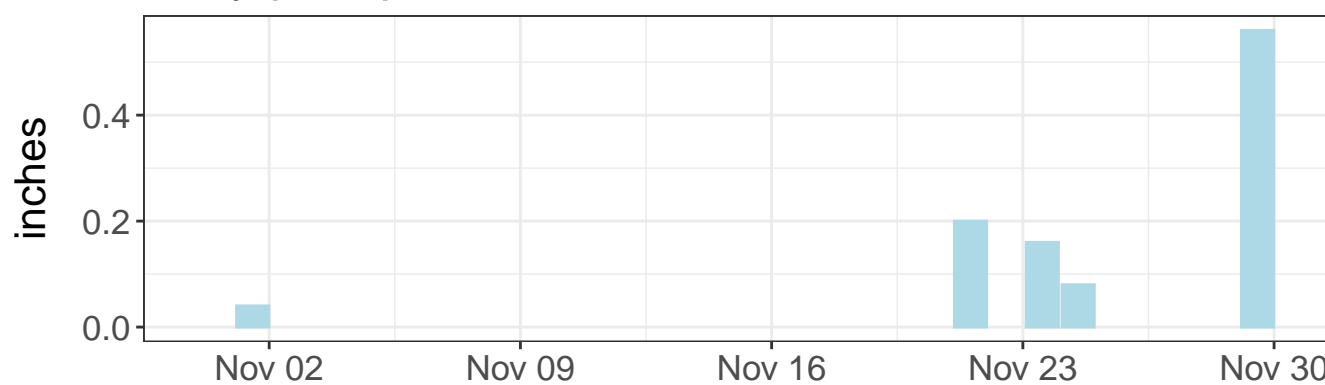
North tilt – detrended values



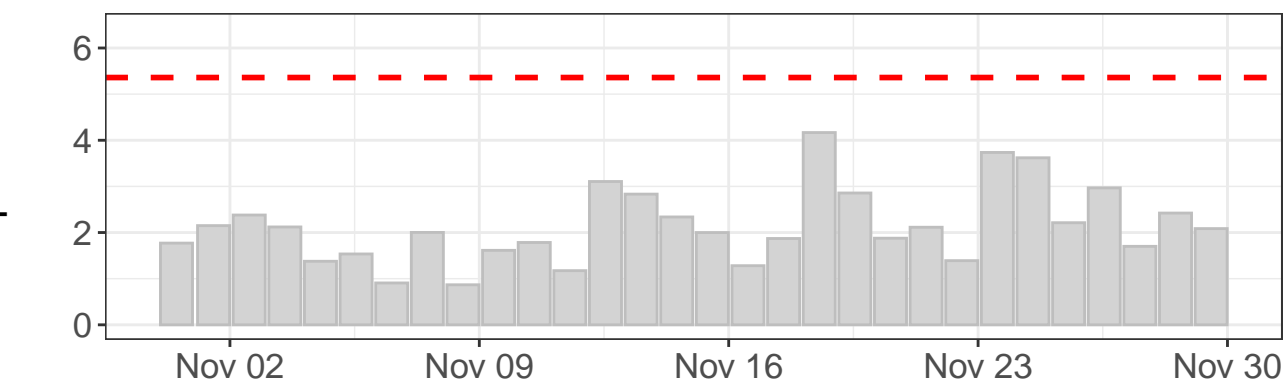
Daily precipitation



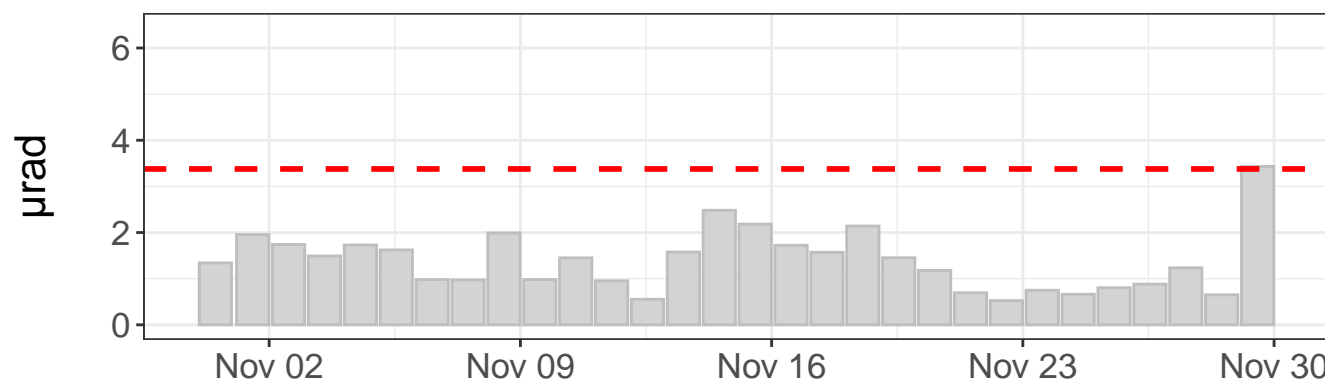
Daily precipitation



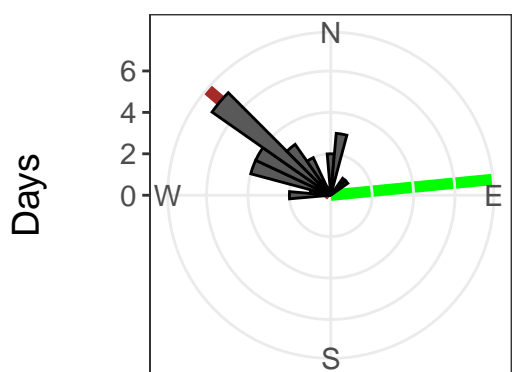
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-554.53 \pm 0.96 \mu\text{rad}/\text{yr}$ . R2: 0.97

North tilt rate:  $475.84 \pm 0.58 \mu\text{rad}/\text{yr}$ . R2: 0.98

Azimuth to C7: 84 deg

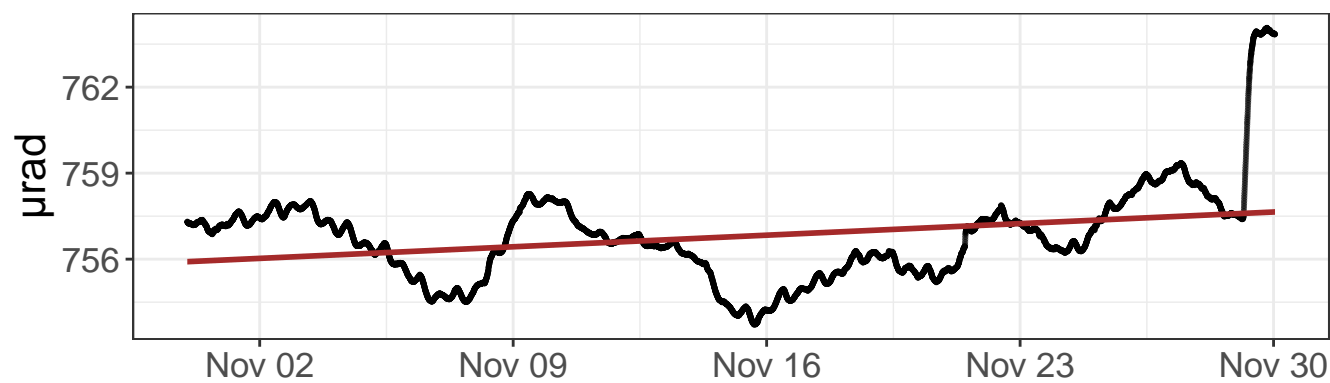
Distance to C7: 1473 ft

--- Outlier value

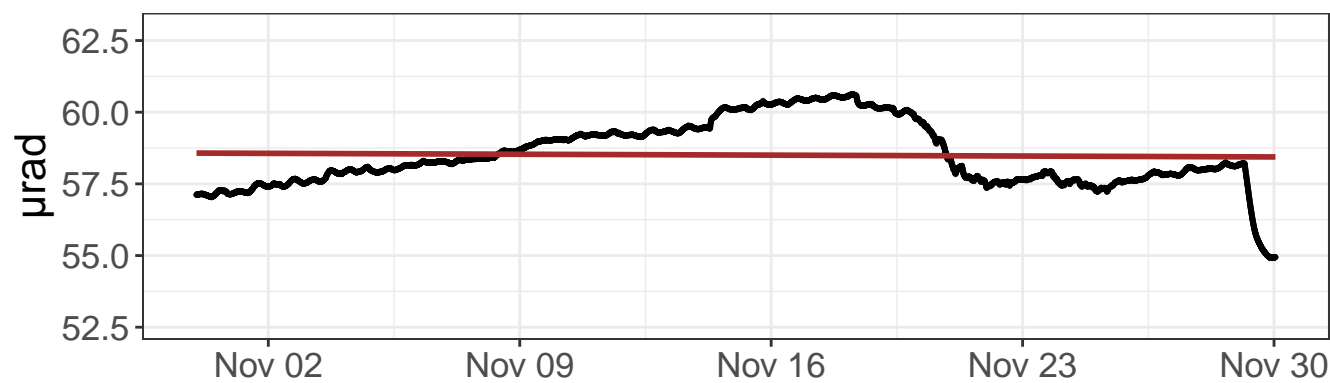
— Linear model

— Azimuth to C7

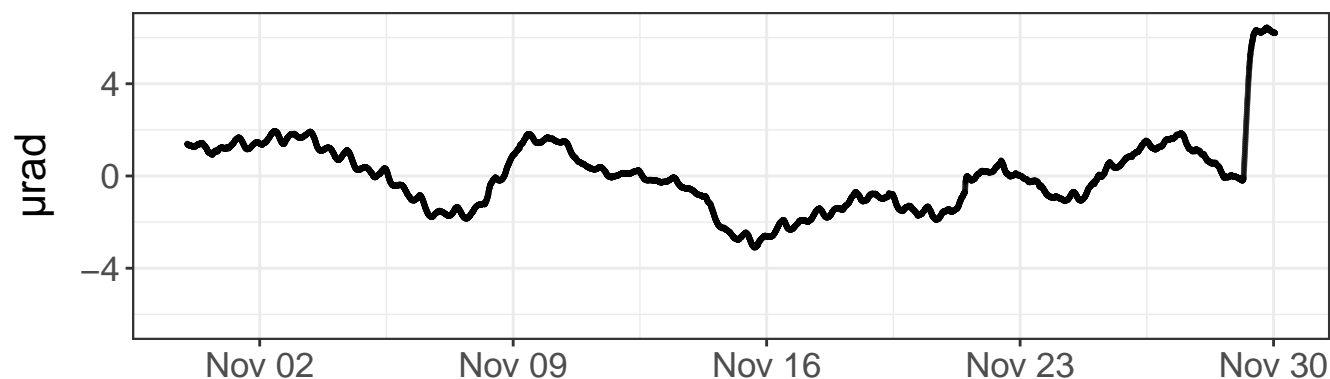
East tilt – raw values



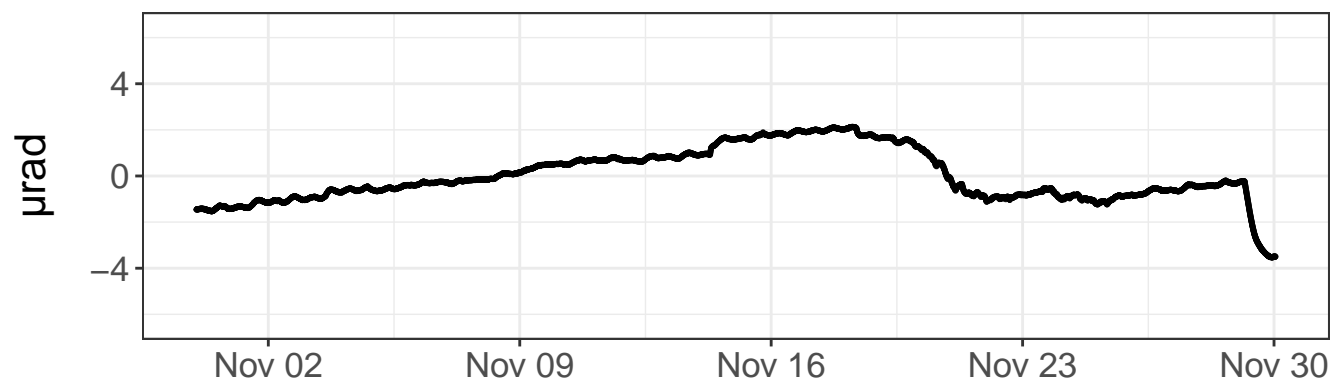
North tilt – raw values



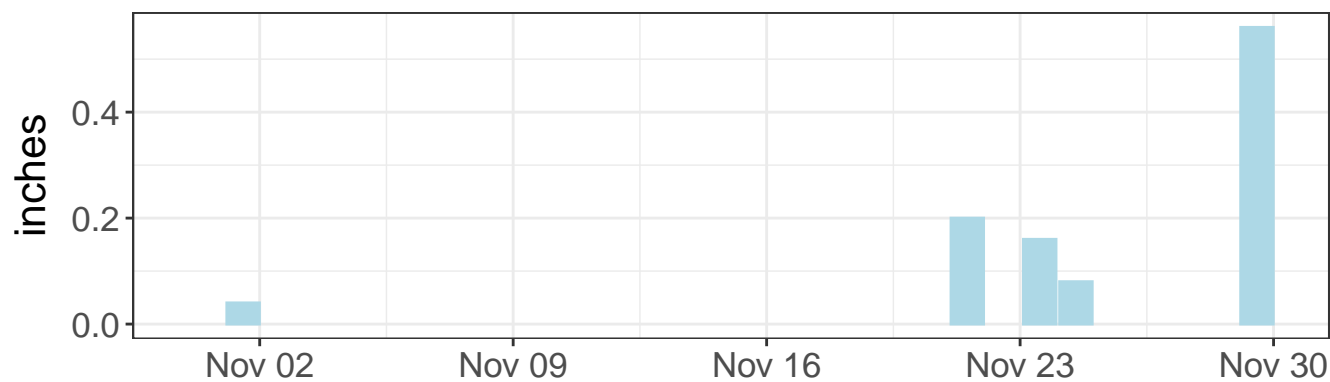
East tilt – detrended values



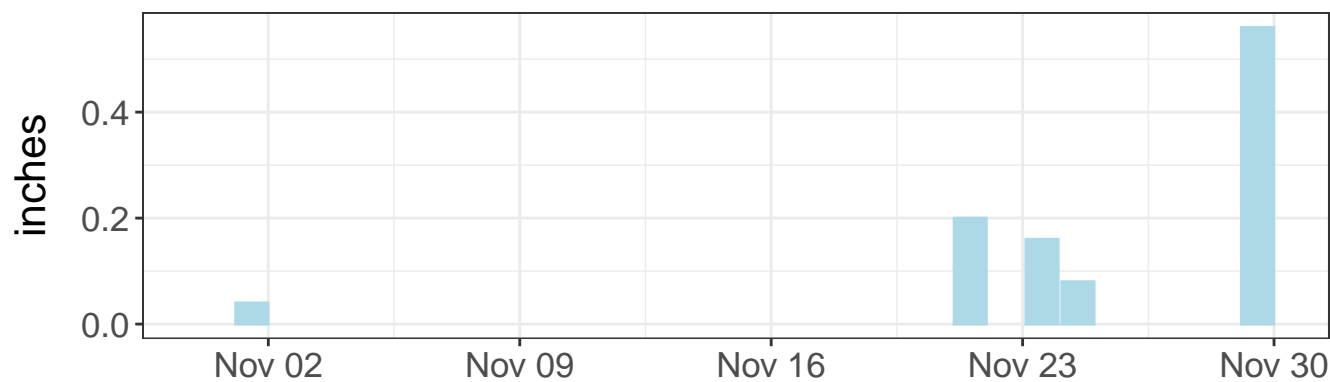
North tilt – detrended values



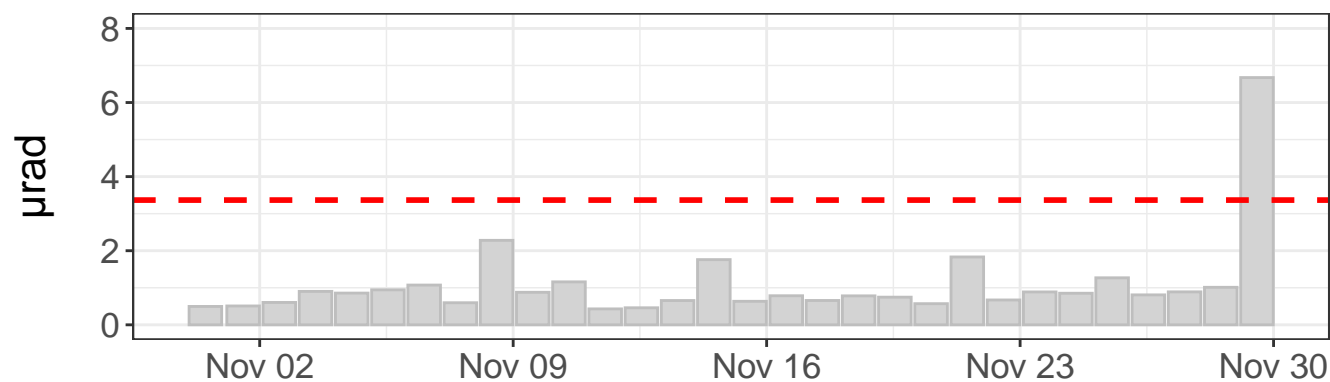
Daily precipitation



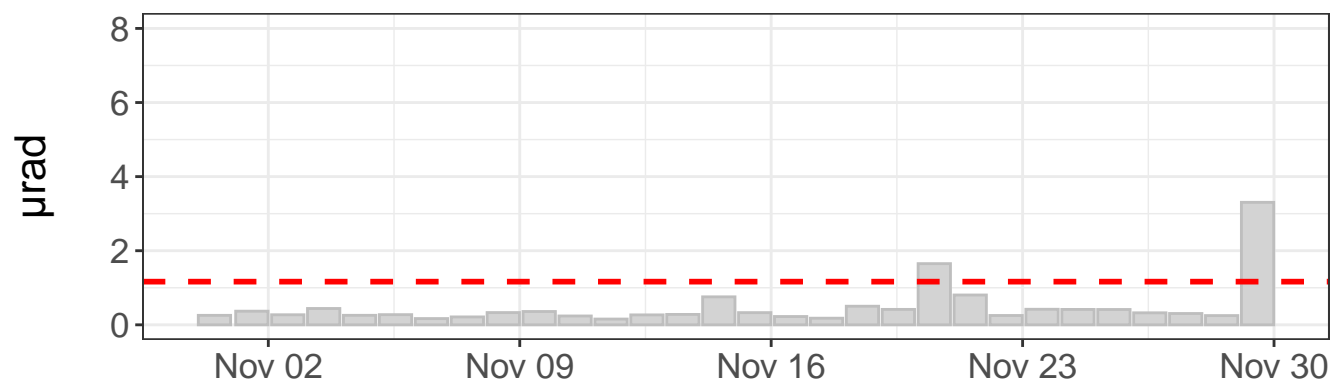
Daily precipitation



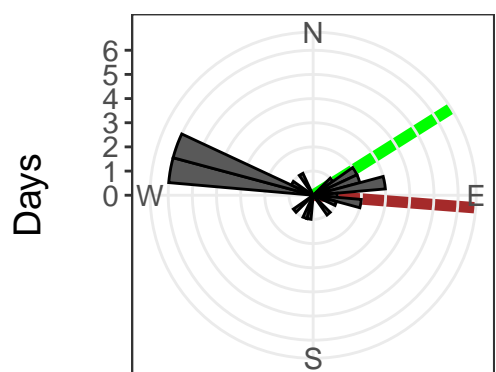
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $21.09 \pm 0.64 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.09

North tilt rate:  $-1.63 \pm 0.46 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.00

Azimuth to C7: 58 deg

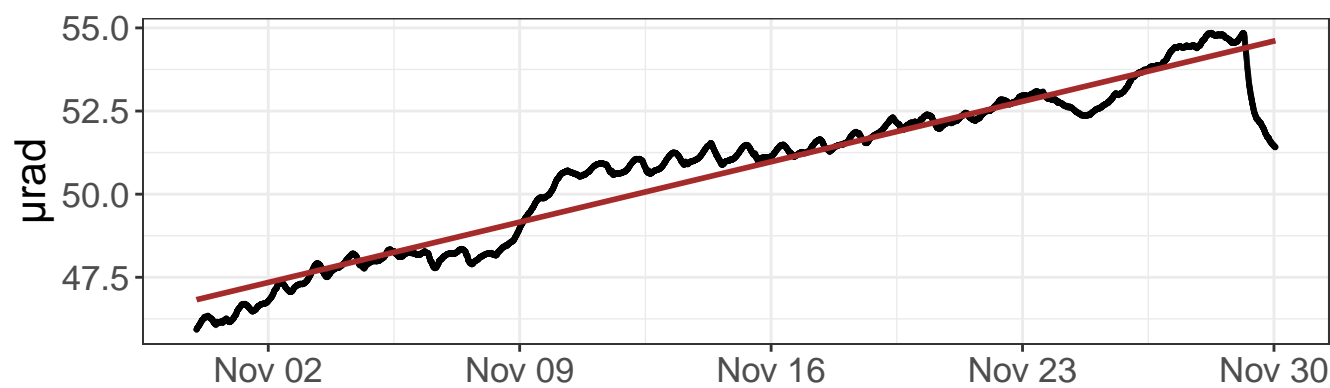
Distance to C7: 1344 ft

--- Outlier value

— Linear model

— Azimuth to C7

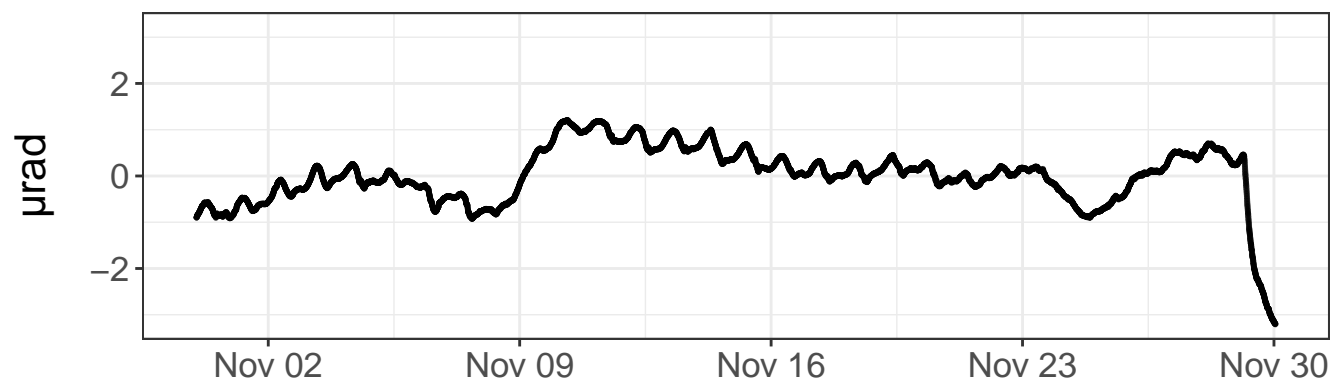
East tilt – raw values



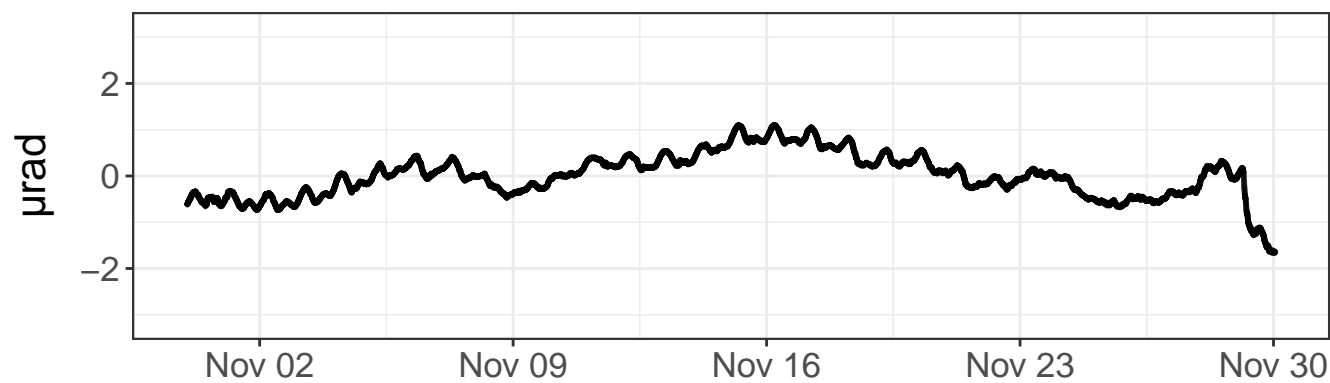
North tilt – raw values



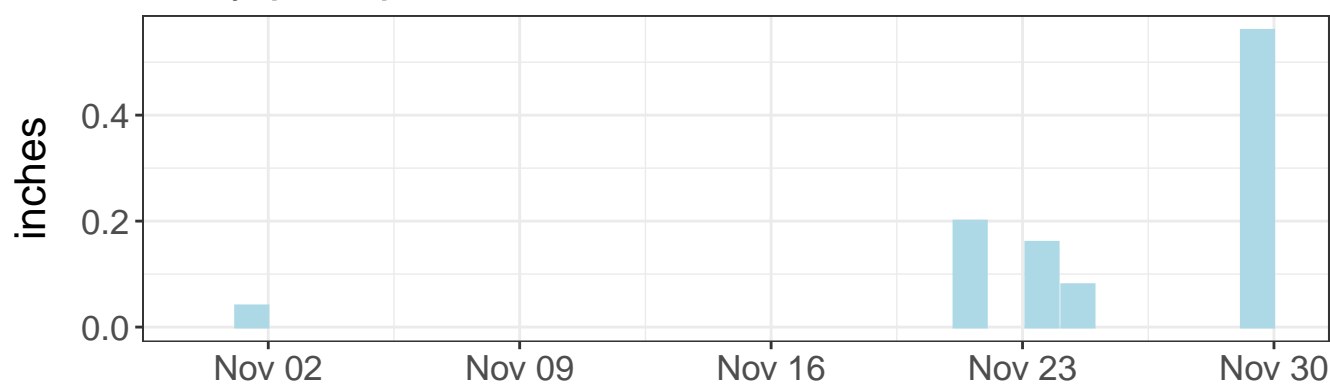
East tilt – detrended values



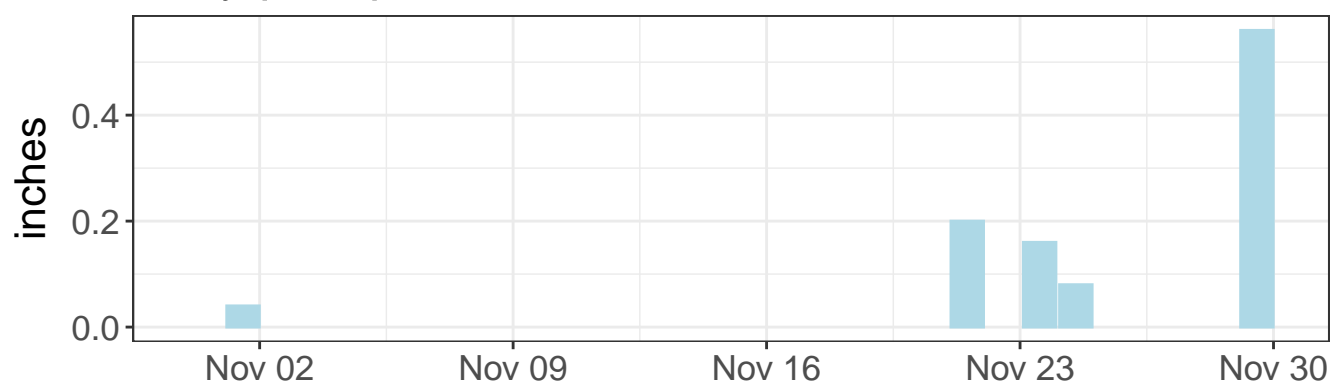
North tilt – detrended values



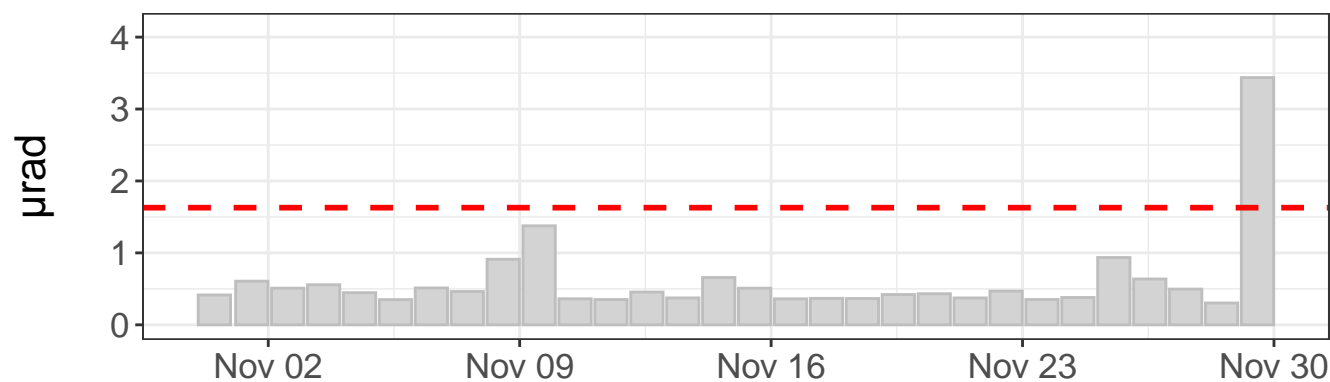
Daily precipitation



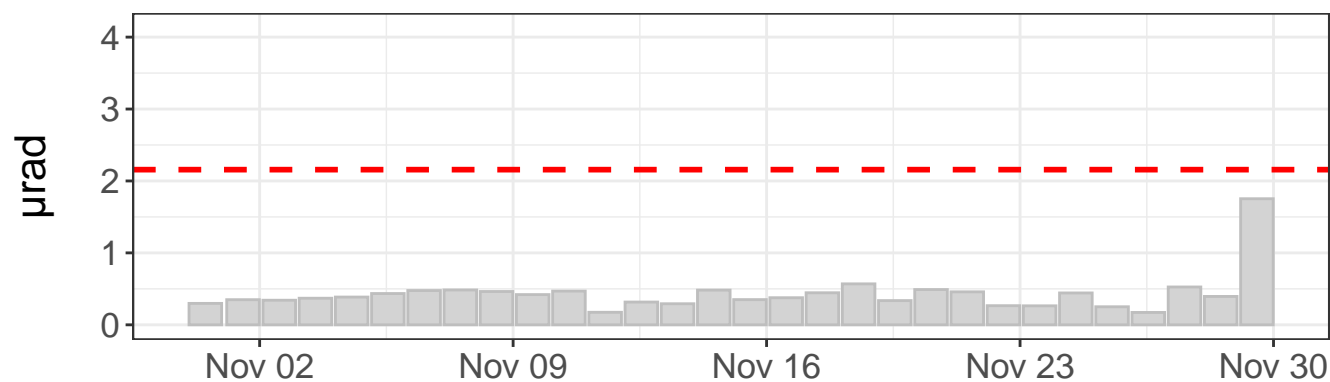
Daily precipitation



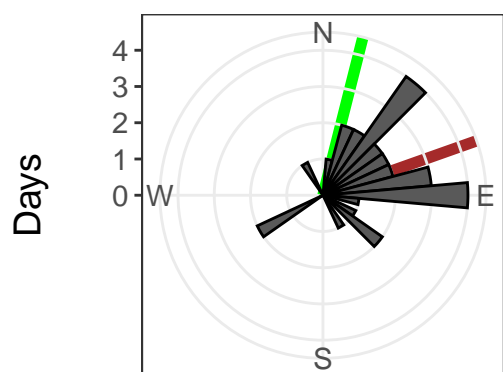
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $94.66 \pm 0.26 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.92

North tilt rate:  $33.52 \pm 0.20 \mu\text{rad}/\text{yr}$ .  $R^2$ : 0.73

Azimuth to C7: 14 deg

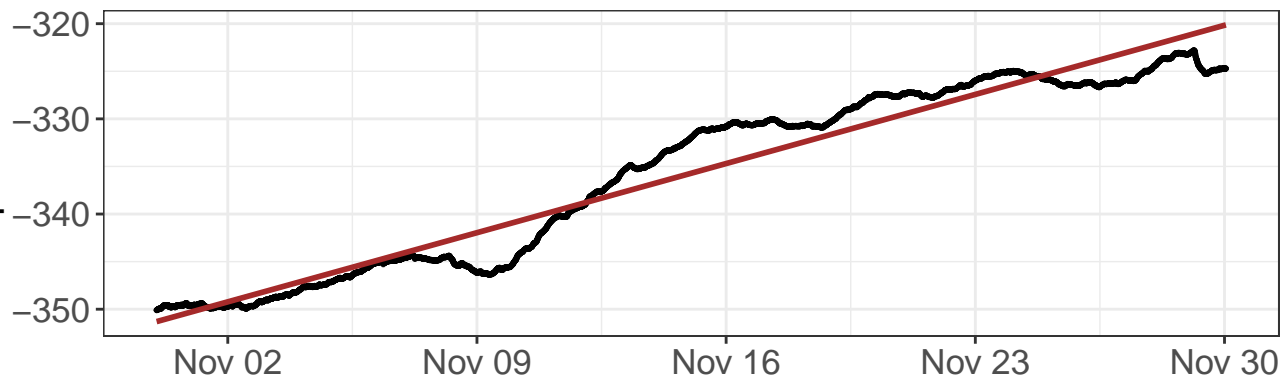
Distance to C7: 686 ft

--- Outlier value

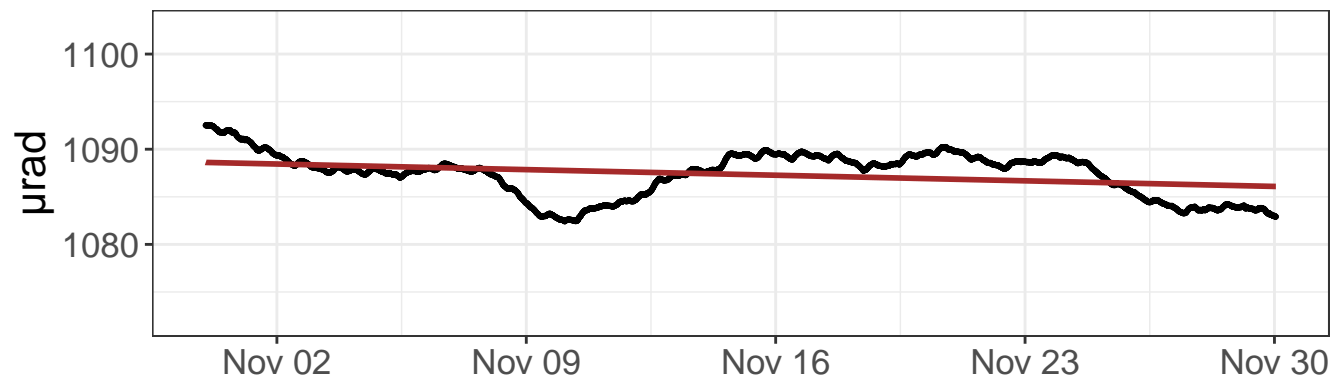
— Linear model

— Azimuth to C7

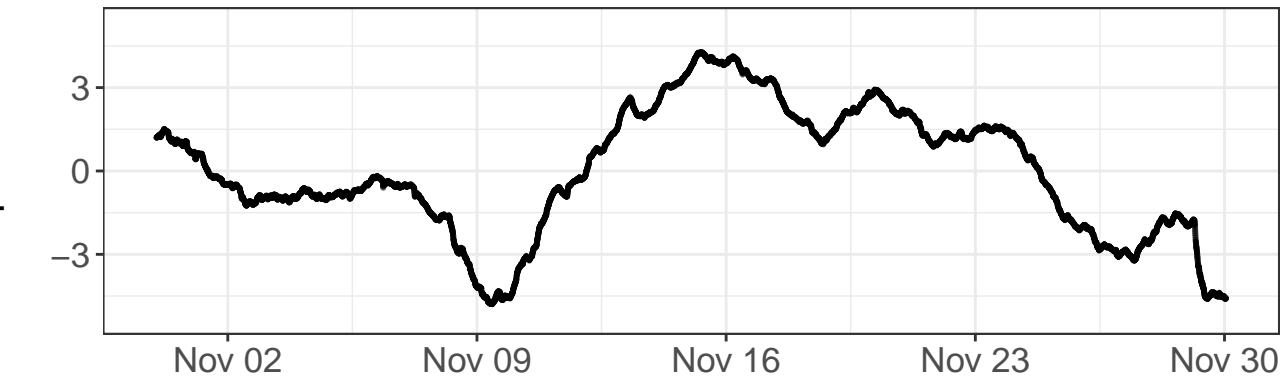
East tilt – raw values



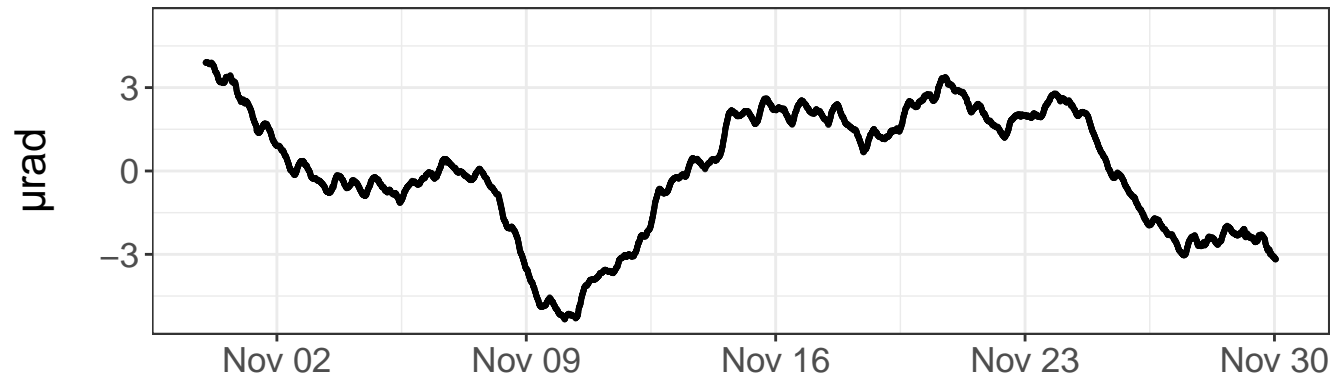
North tilt – raw values



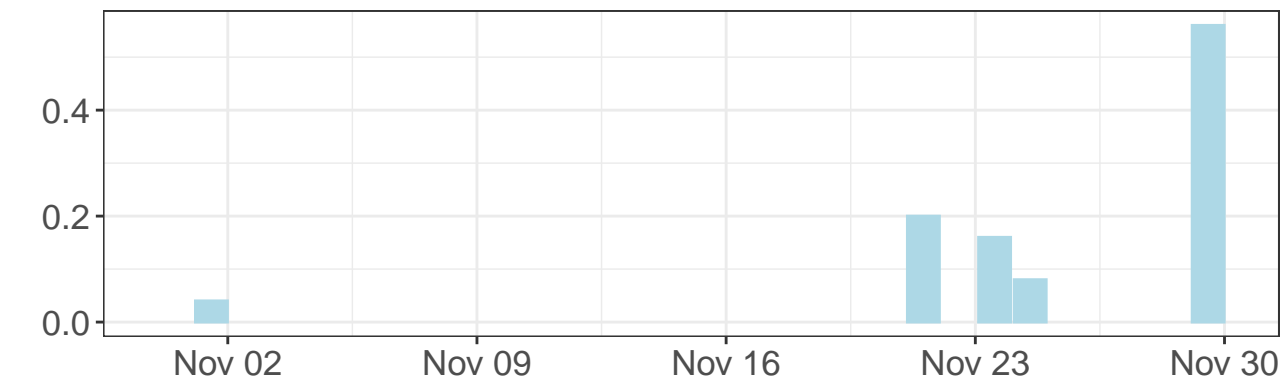
East tilt – detrended values



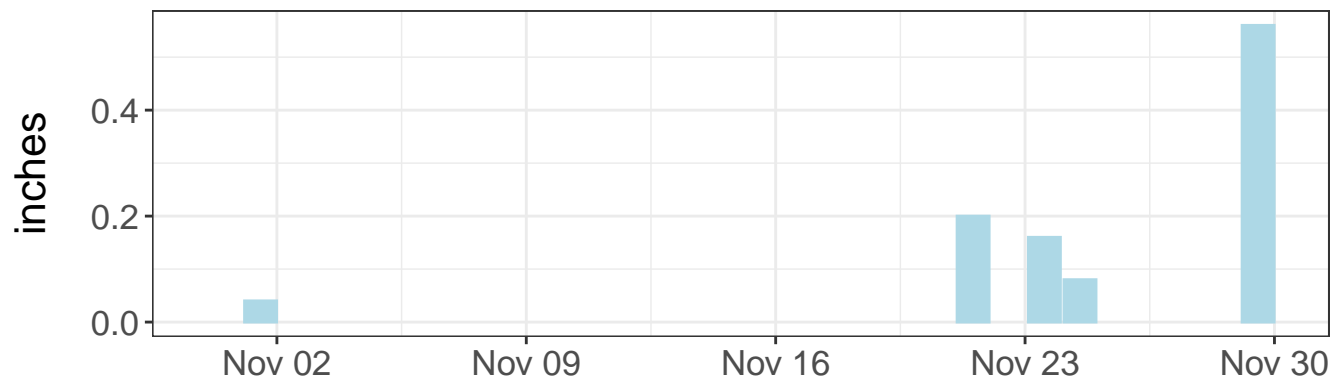
North tilt – detrended values



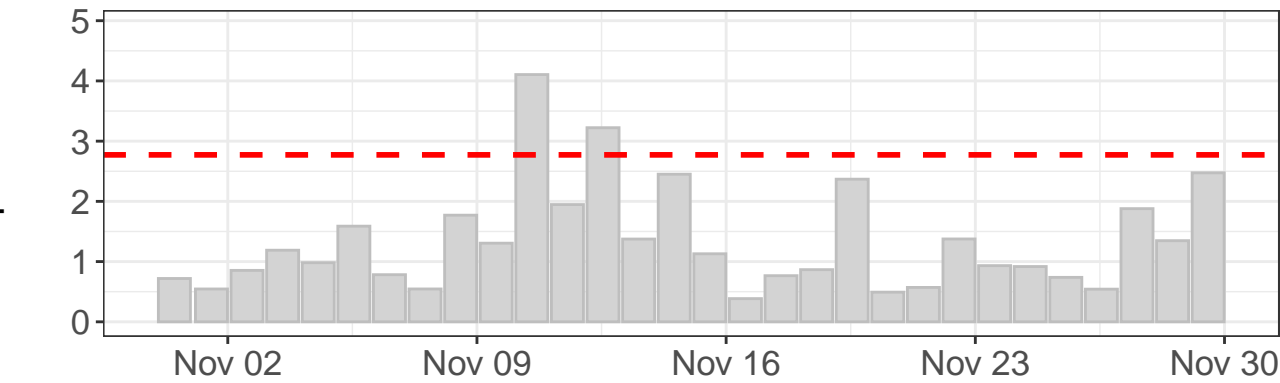
Daily precipitation



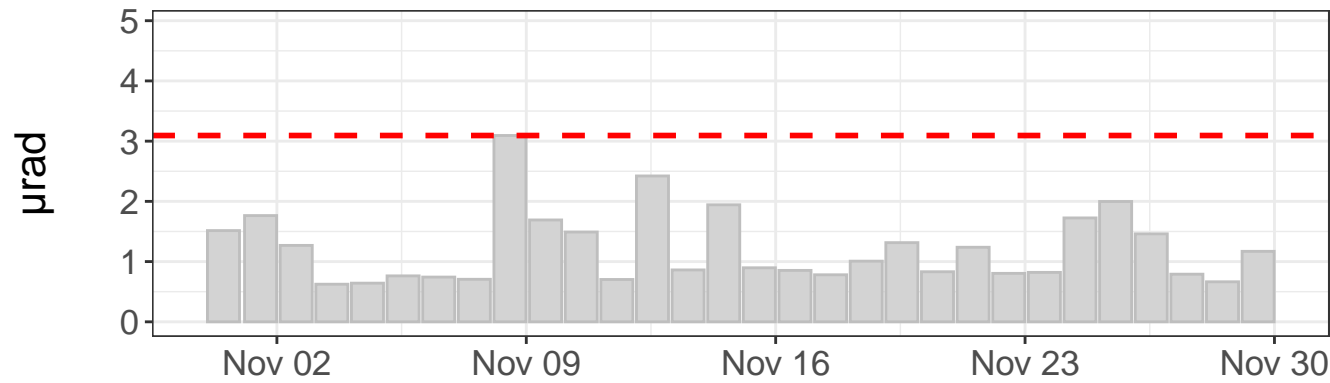
Daily precipitation



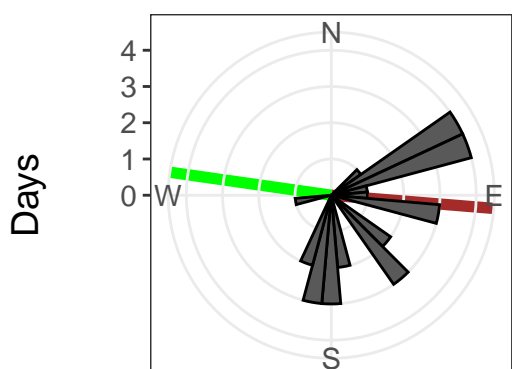
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $378.84 \pm 0.91 \mu\text{rad/yr}$ .  $R^2$ : 0.94

North tilt rate:  $-30.69 \pm 0.90 \mu\text{rad/yr}$ .  $R^2$ : 0.10

Azimuth to C7: 278 deg

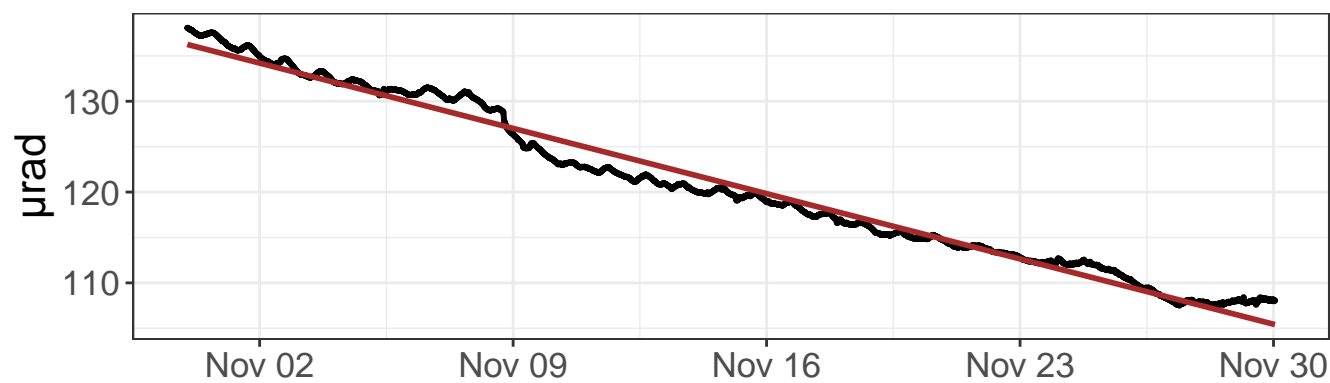
Distance to C7: 1151 ft

- - - Outlier value

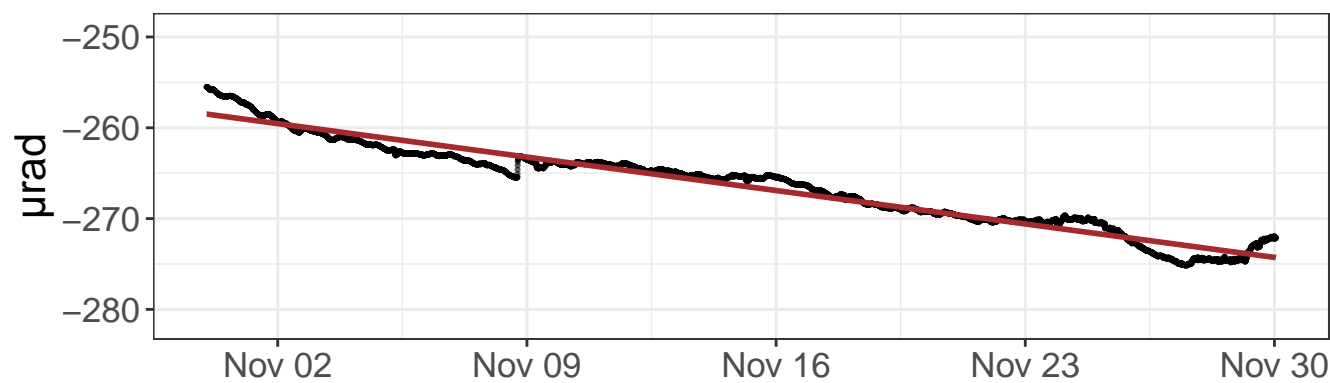
— Linear model

— Azimuth to C7

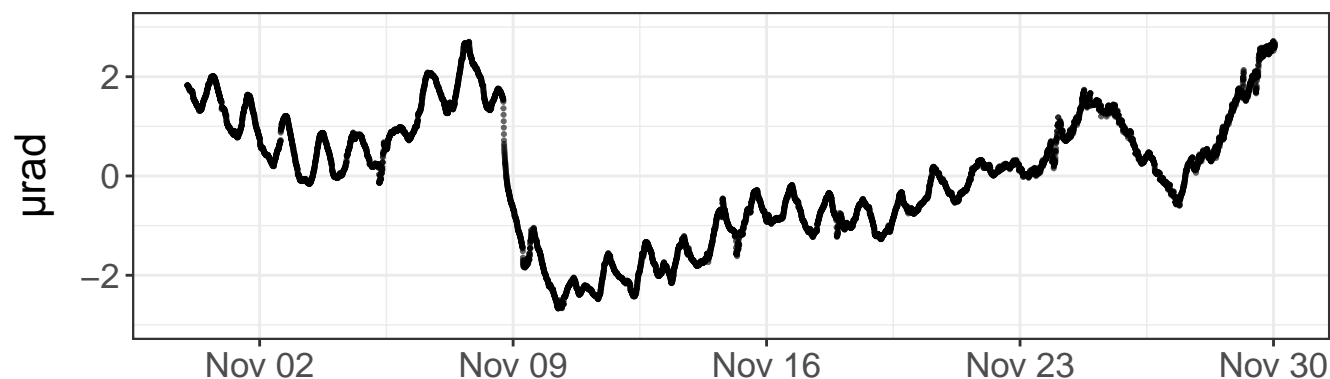
East tilt – raw values



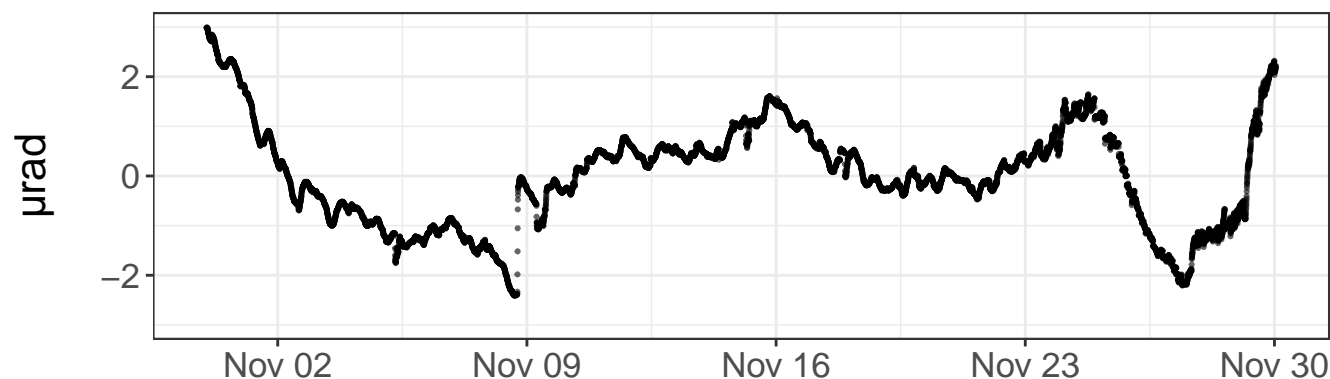
North tilt – raw values



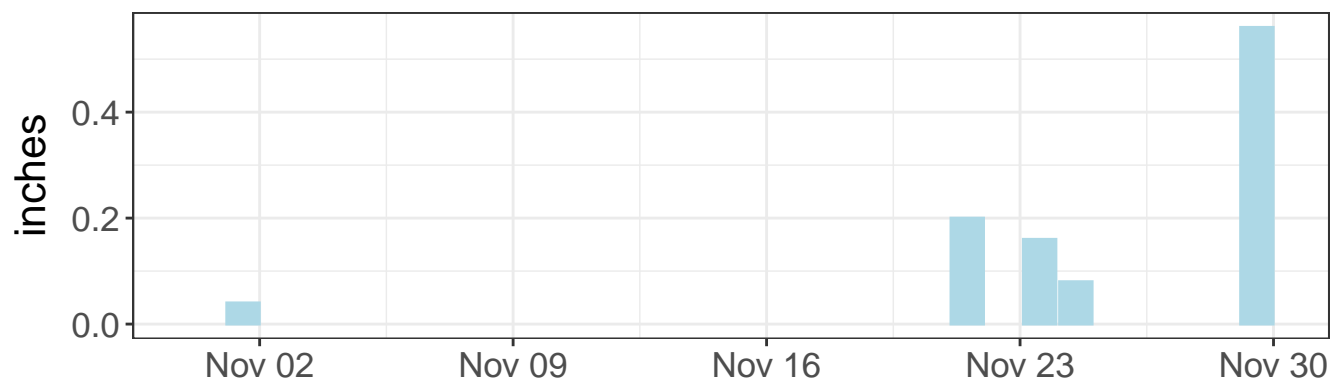
East tilt – detrended values



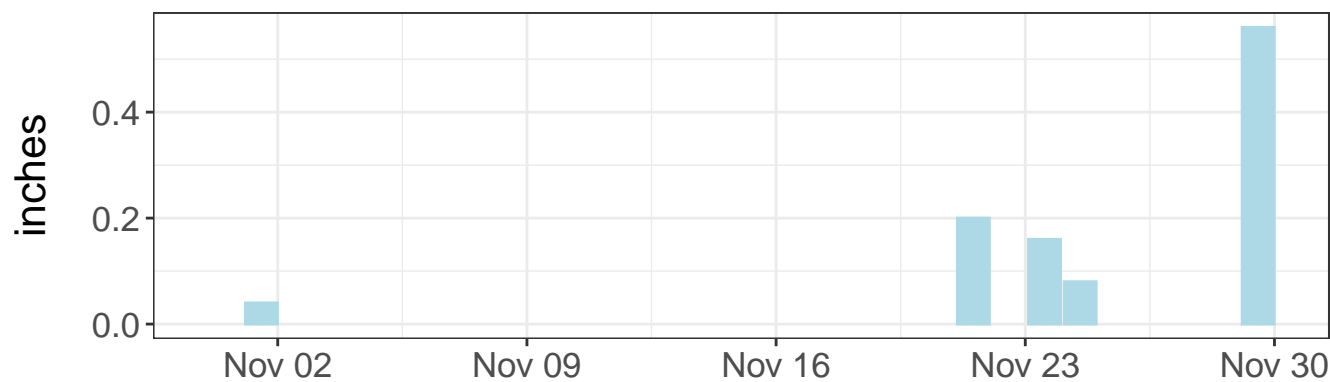
North tilt – detrended values



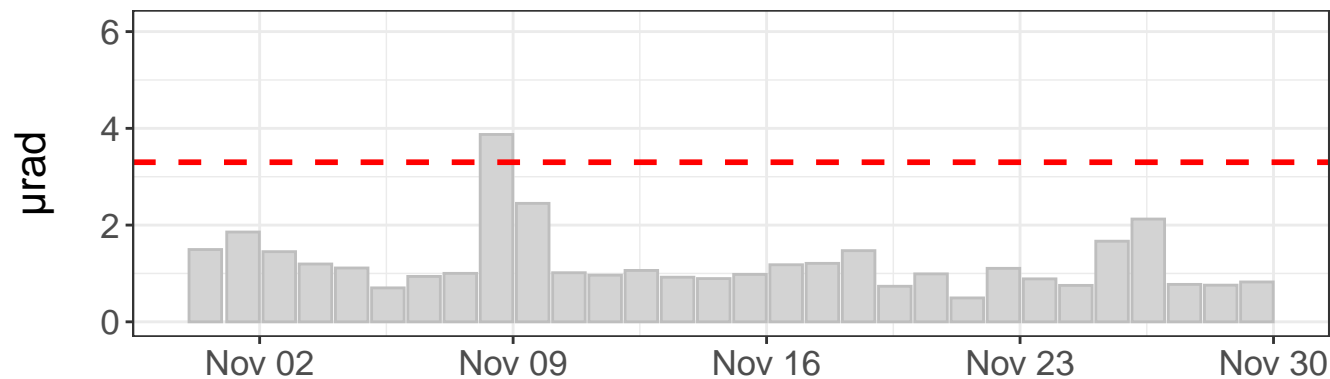
Daily precipitation



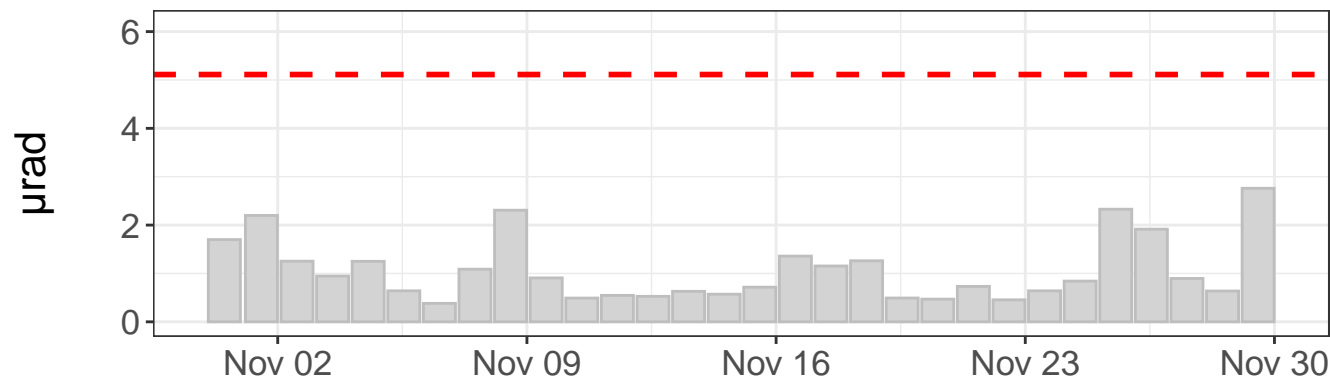
Daily precipitation



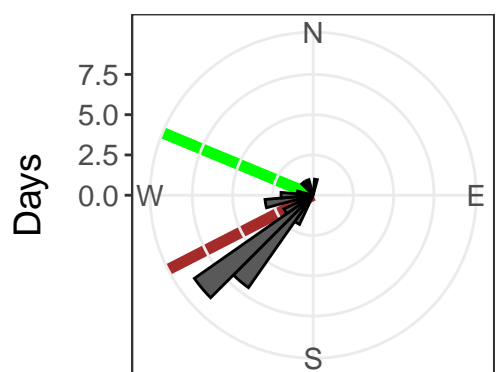
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-374.83 \pm 0.51 \mu\text{rad}/\text{yr}$ .  $R^2: 0.98$

North tilt rate:  $-192.04 \pm 0.41 \mu\text{rad}/\text{yr}$ .  $R^2: 0.95$

Azimuth to C7: 293 deg

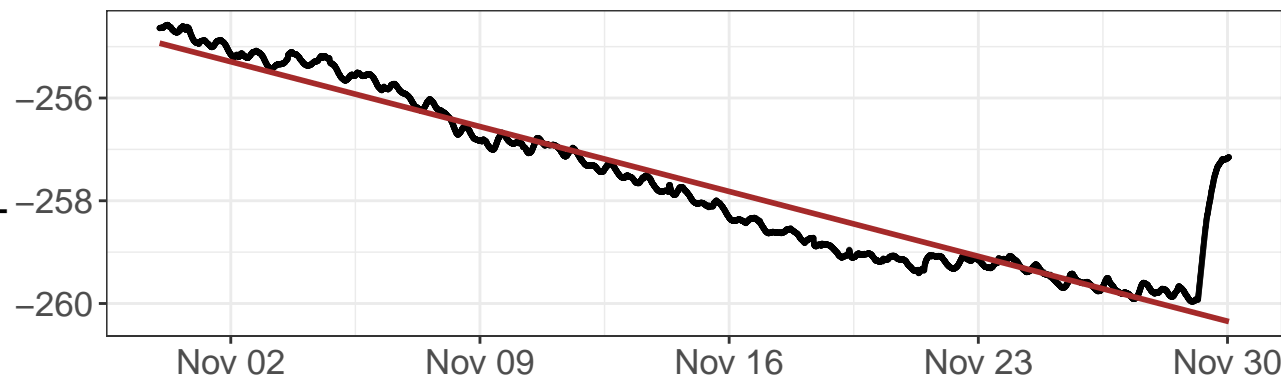
Distance to C7: 614 ft

- - - Outlier value

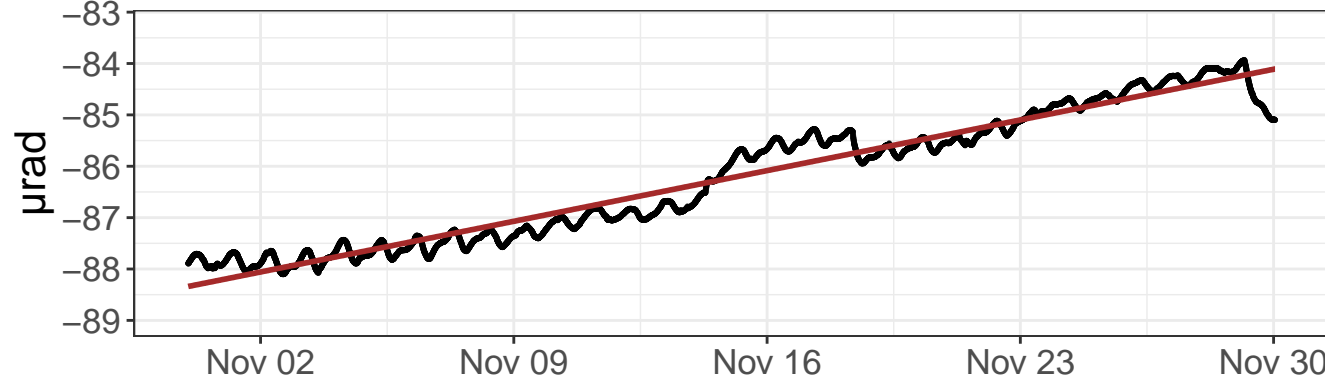
— Linear model

— Azimuth to C7

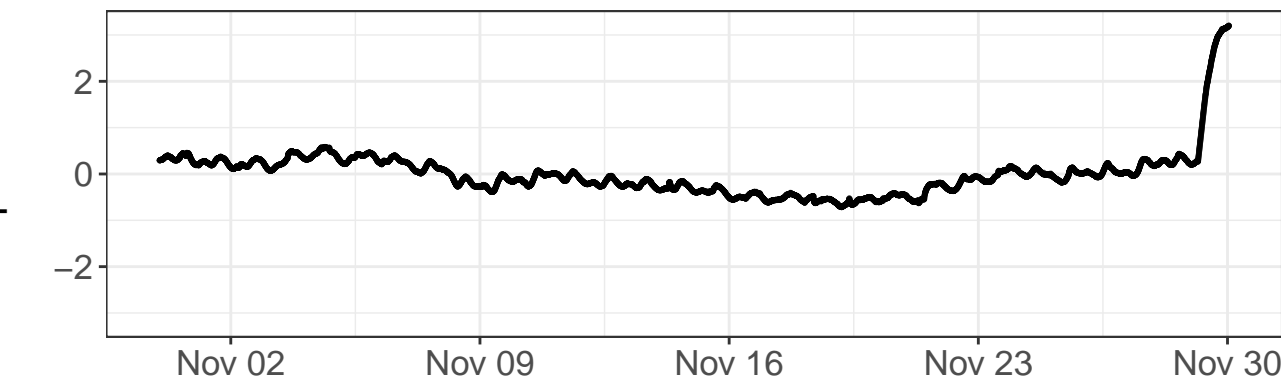
East tilt – raw values



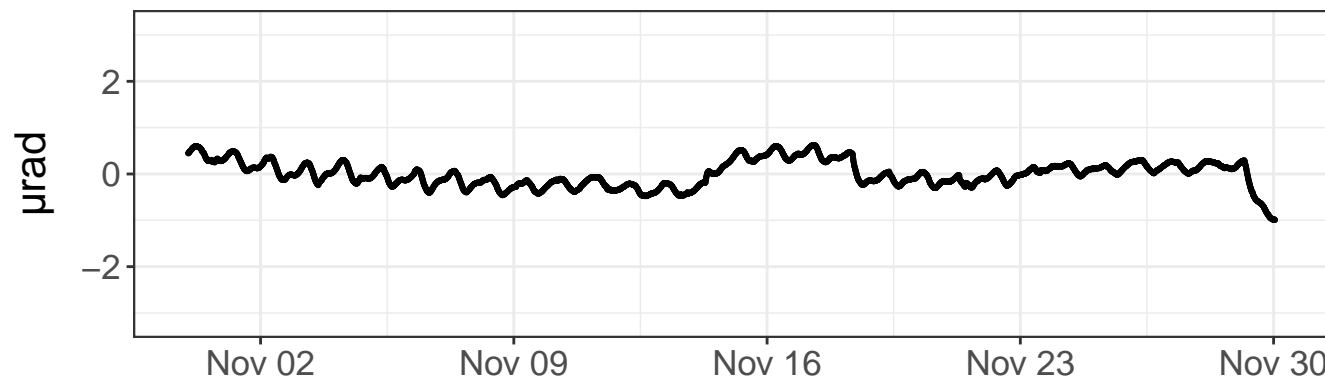
North tilt – raw values



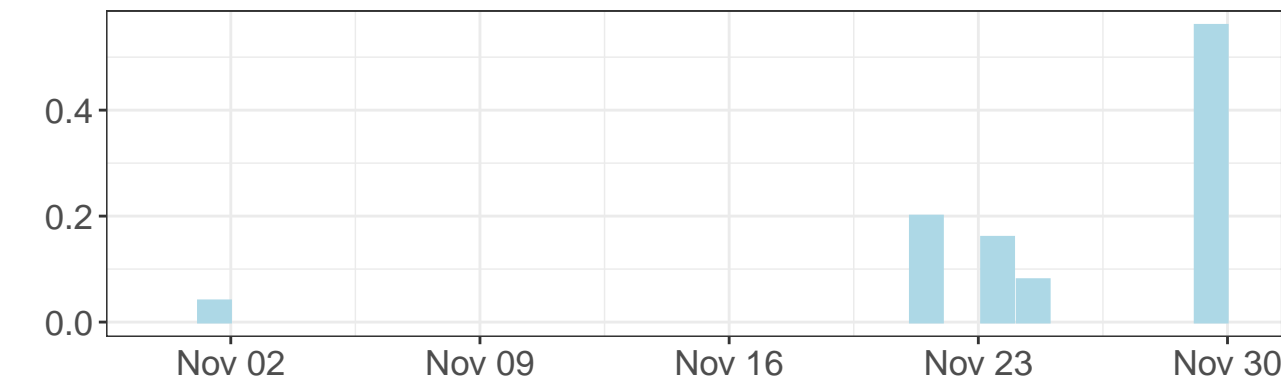
East tilt – detrended values



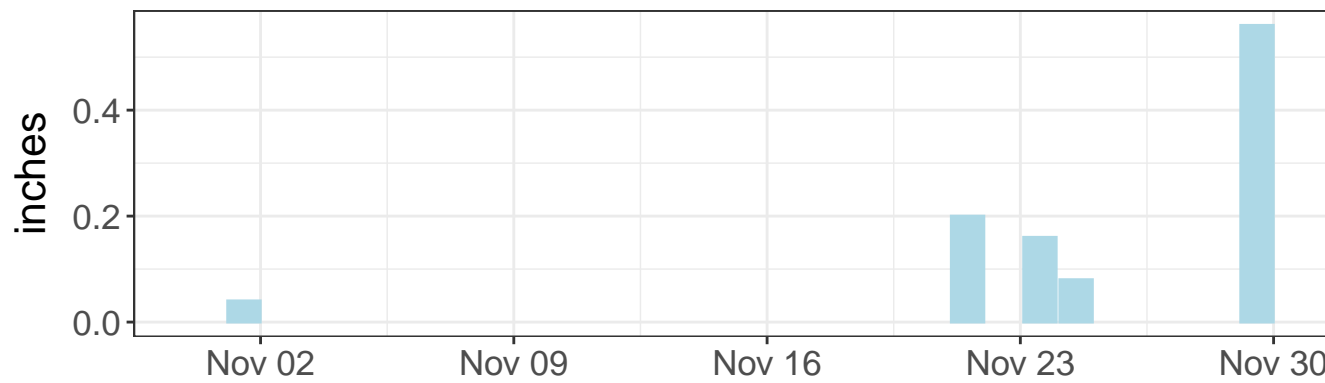
North tilt – detrended values



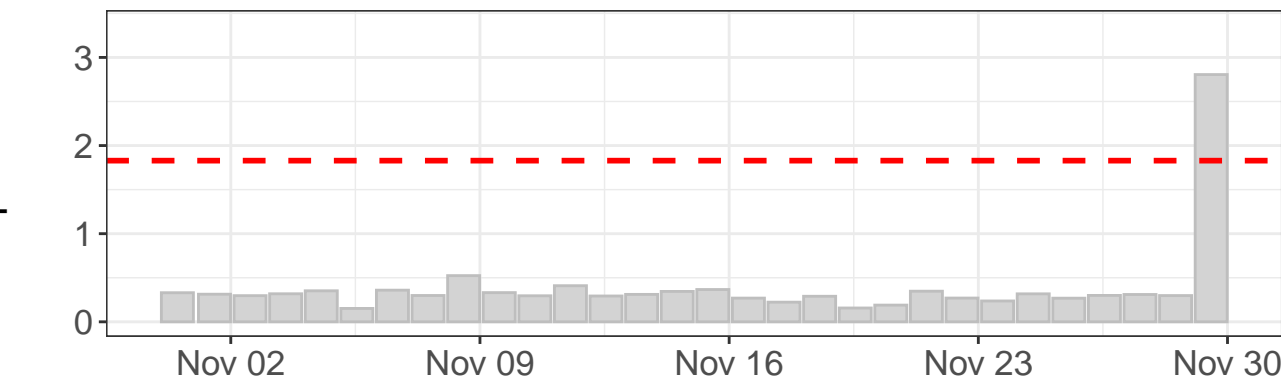
Daily precipitation



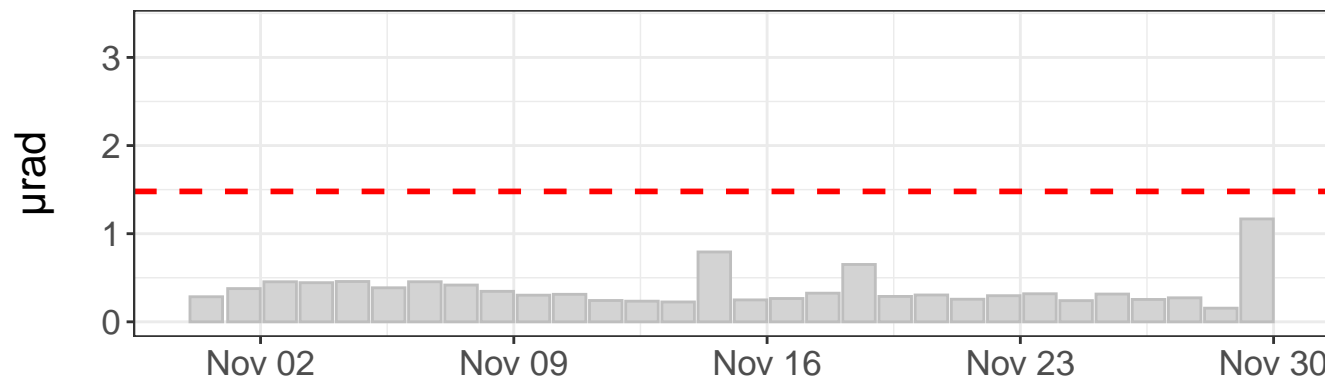
Daily precipitation



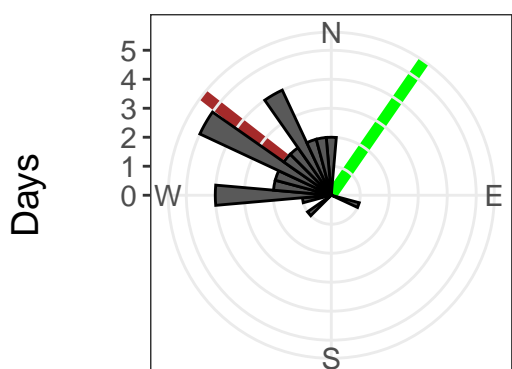
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-65.85 \pm 0.21$   $\mu\text{rad}/\text{yr}$ .  $R^2$ : 0.90

North tilt rate:  $51.44 \pm 0.11$   $\mu\text{rad}/\text{yr}$ .  $R^2$ : 0.95

Azimuth to C7: 35 deg

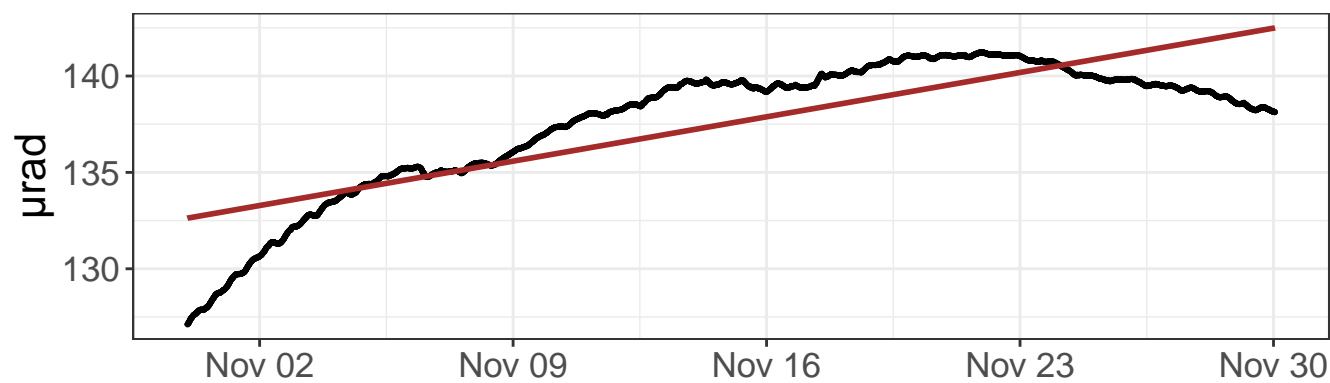
Distance to C7: 1885 ft

--- Outlier value

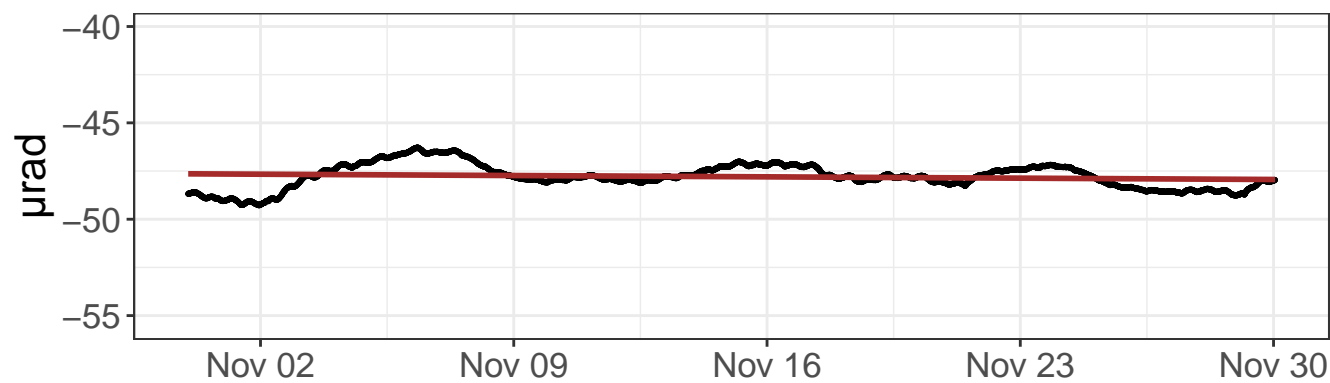
— Linear model

— Azimuth to C7

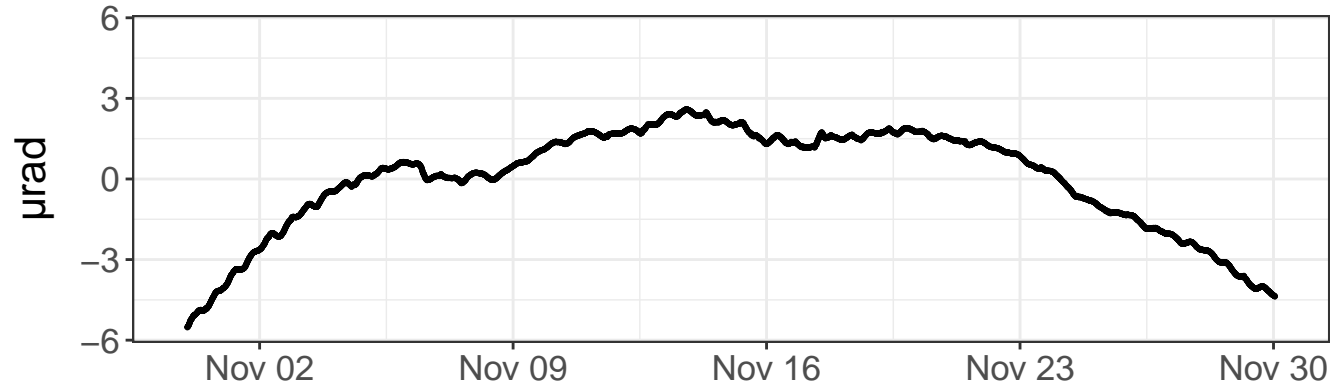
East tilt – raw values



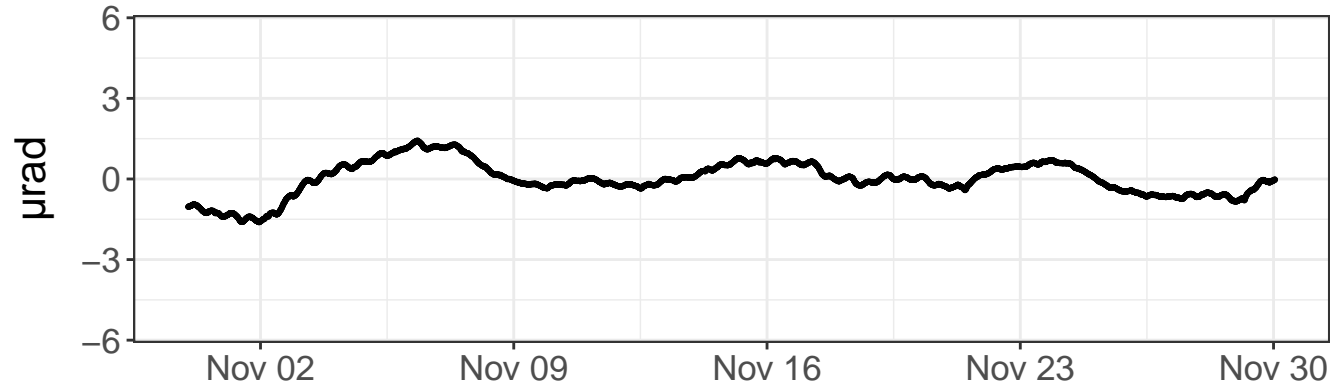
North tilt – raw values



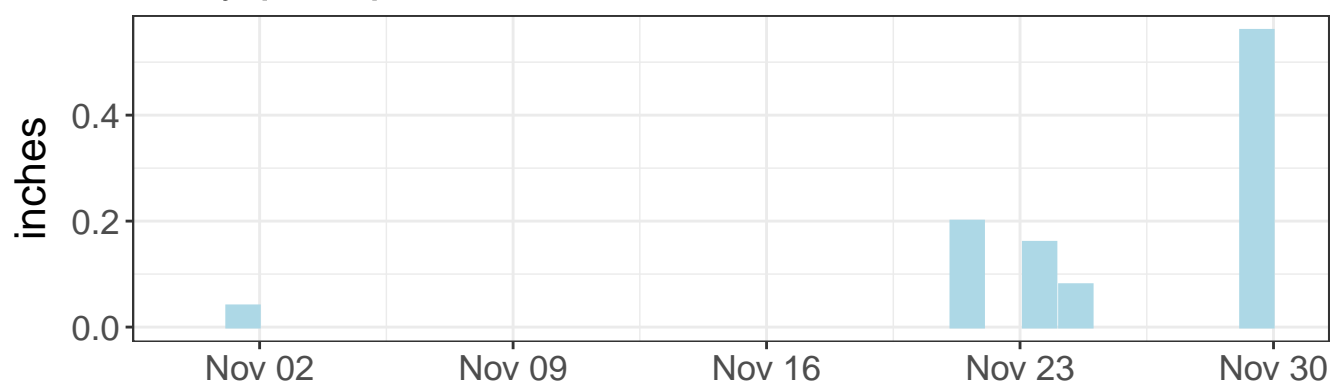
East tilt – detrended values



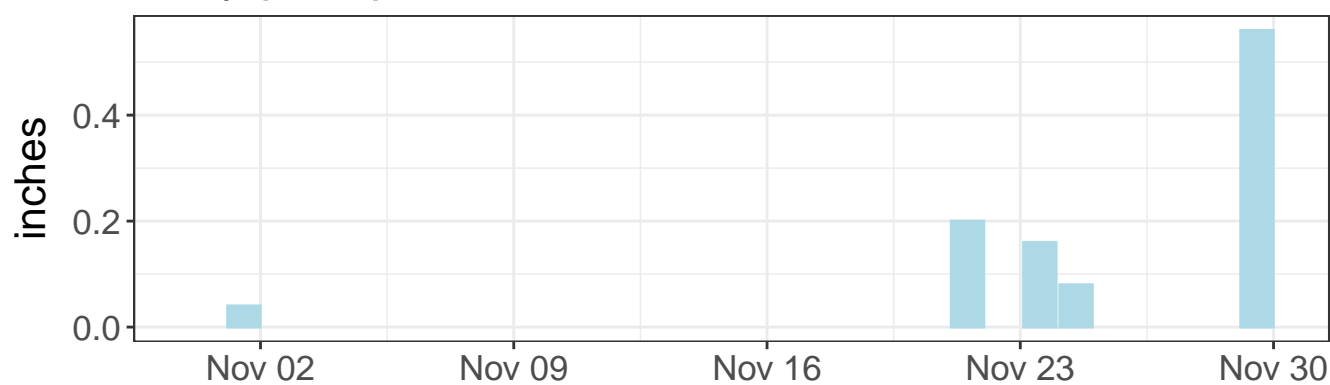
North tilt – detrended values



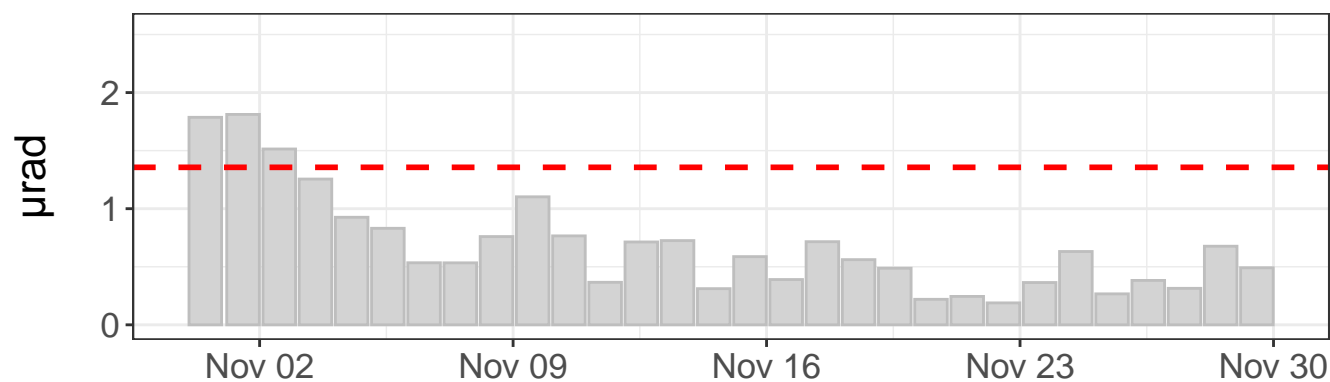
Daily precipitation



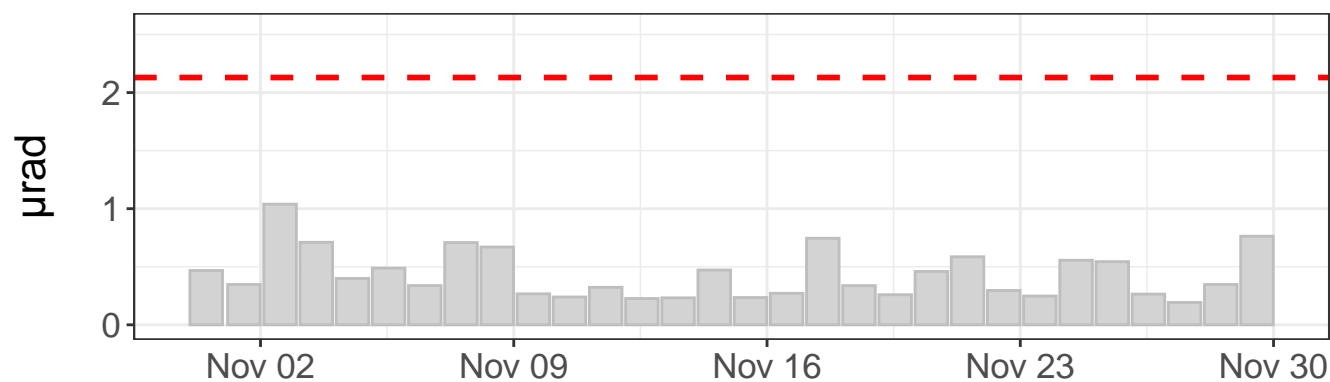
Daily precipitation



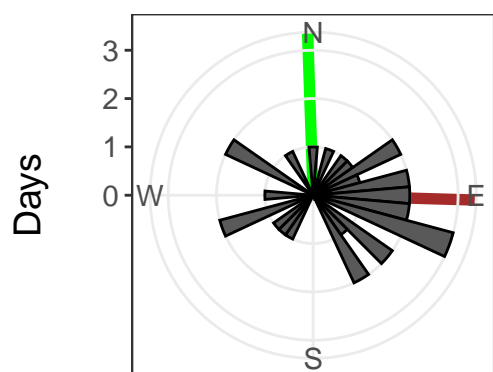
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $119.97 \pm 0.79 \mu\text{rad/yr}$ .  $R^2: 0.68$

North tilt rate:  $-3.57 \pm 0.26 \mu\text{rad/yr}$ .  $R^2: 0.02$

Azimuth to C7: 358 deg

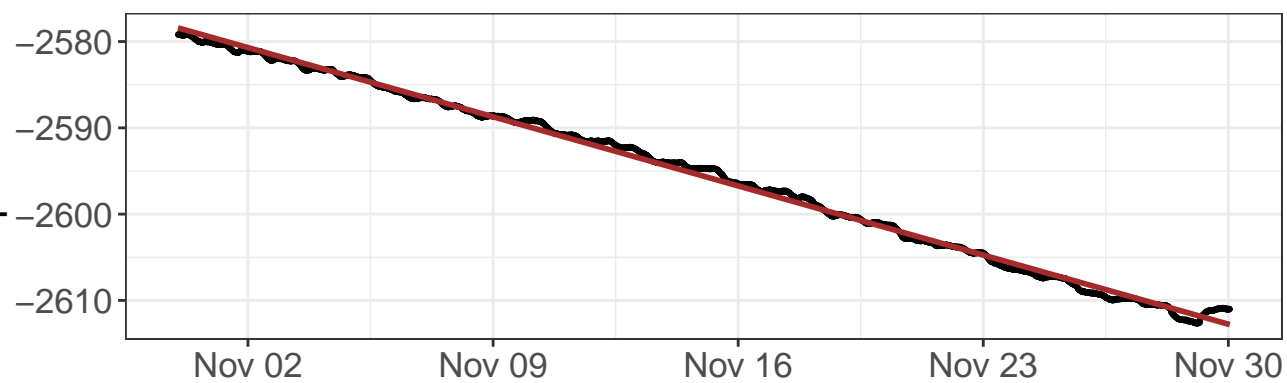
Distance to C7: 1392 ft

--- Outlier value

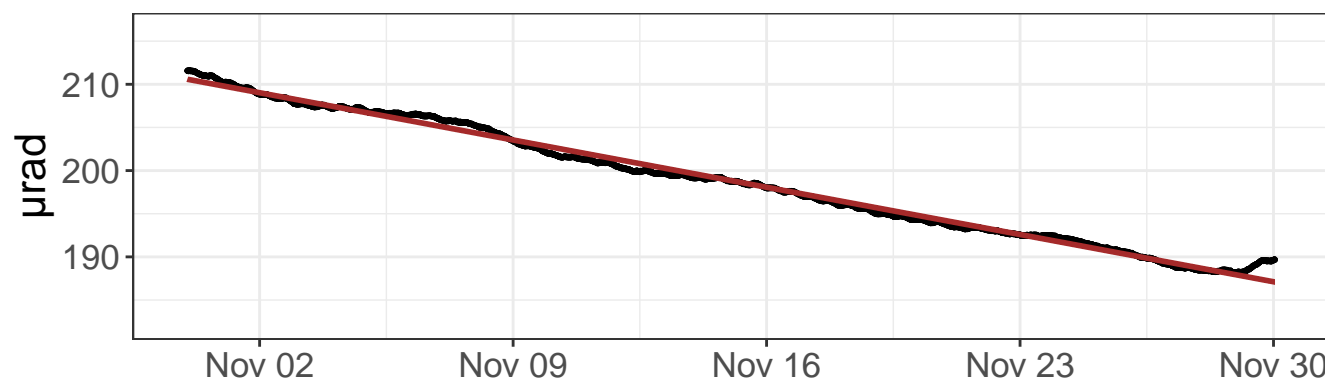
— Linear model

— Azimuth to C7

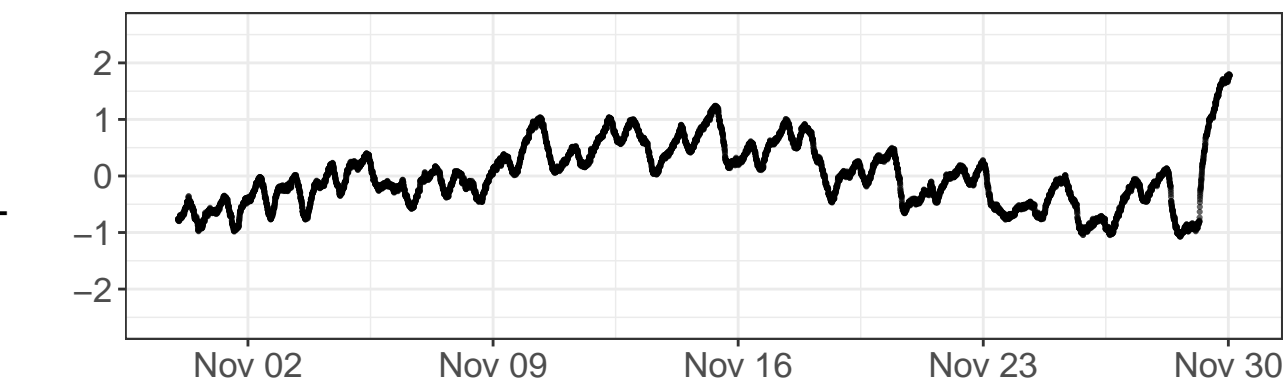
East tilt – raw values



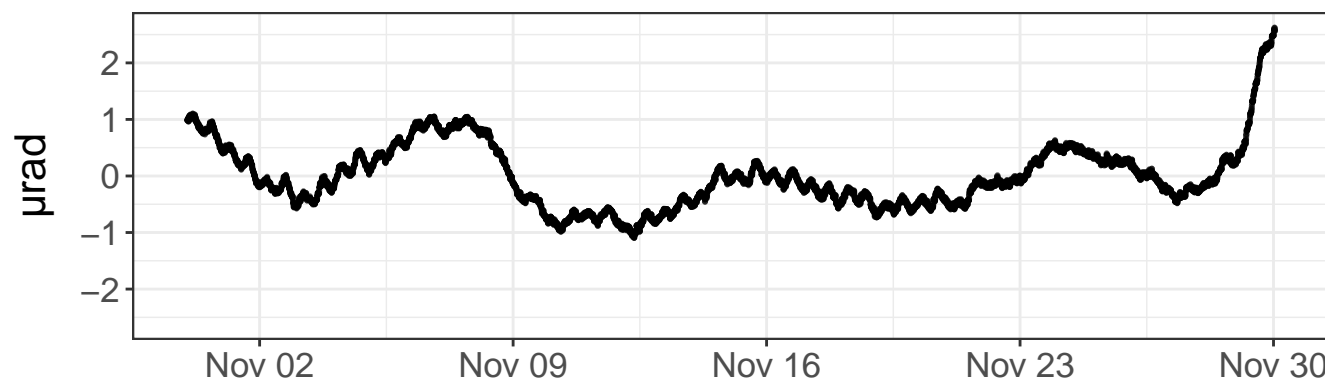
North tilt – raw values



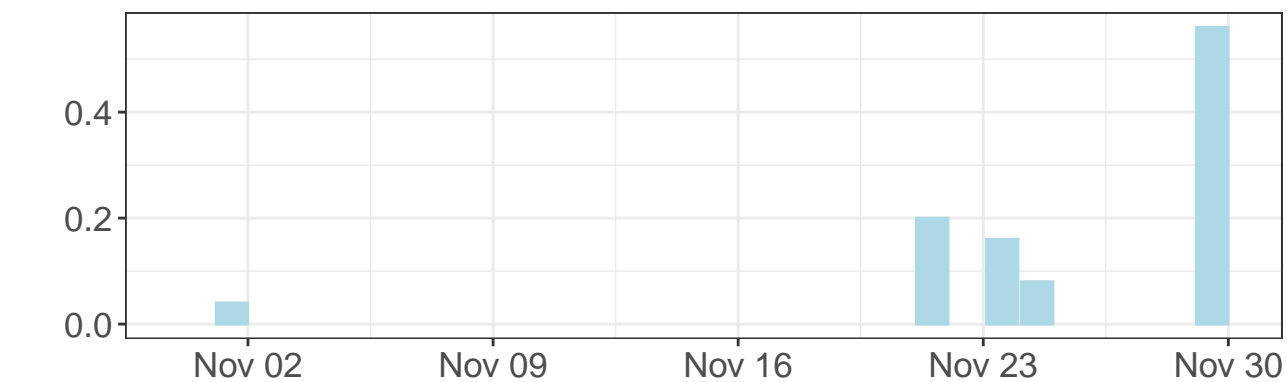
East tilt – detrended values



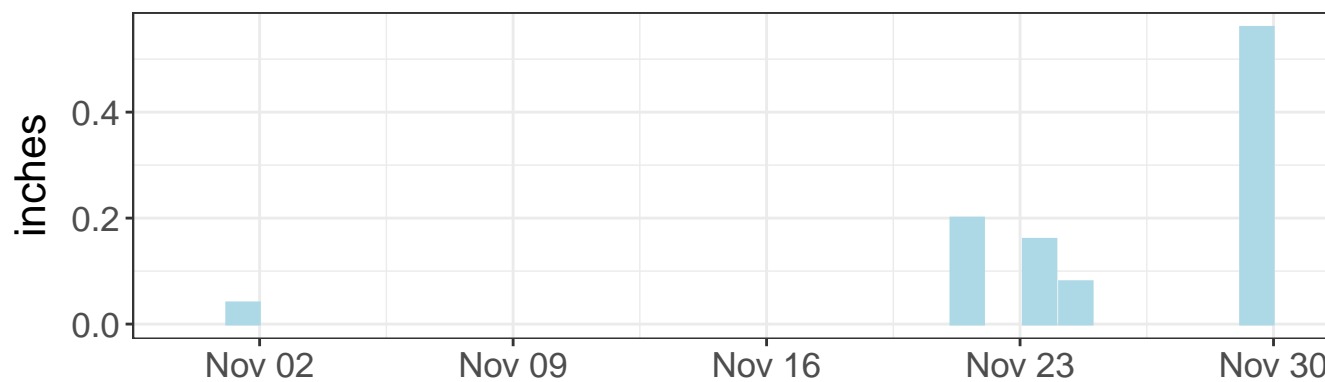
North tilt – detrended values



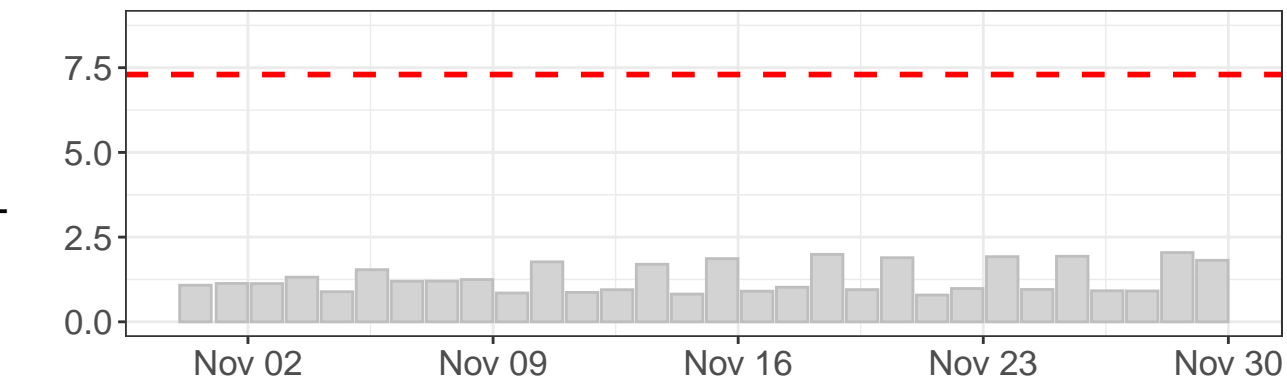
Daily precipitation



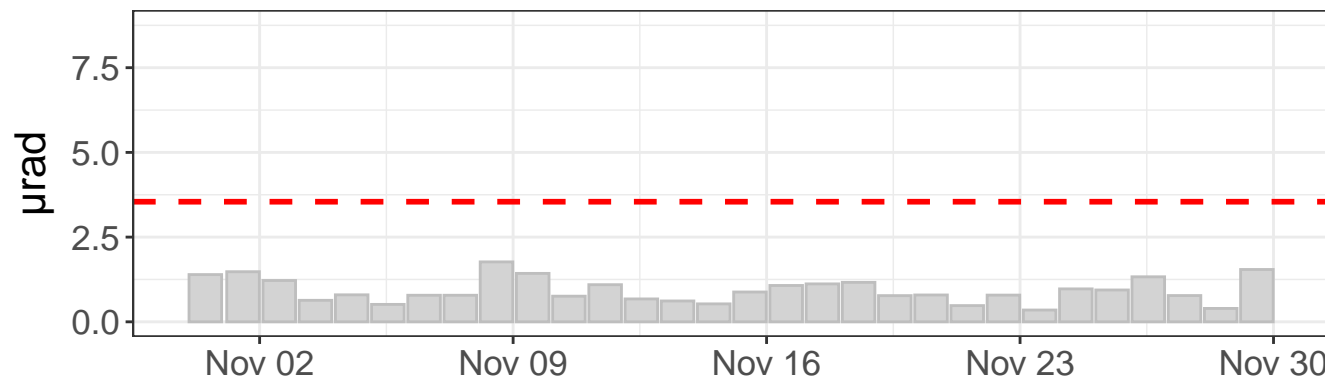
Daily precipitation



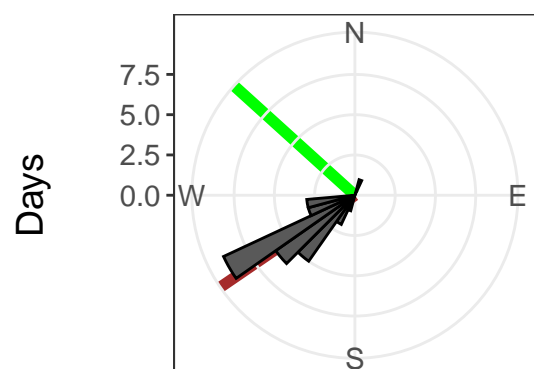
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-417.78 \pm 0.22 \mu\text{rad}/\text{yr}$ . R2: 1.00

North tilt rate:  $-285.53 \pm 0.24 \mu\text{rad}/\text{yr}$ . R2: 0.99

Azimuth to C7: 312 deg

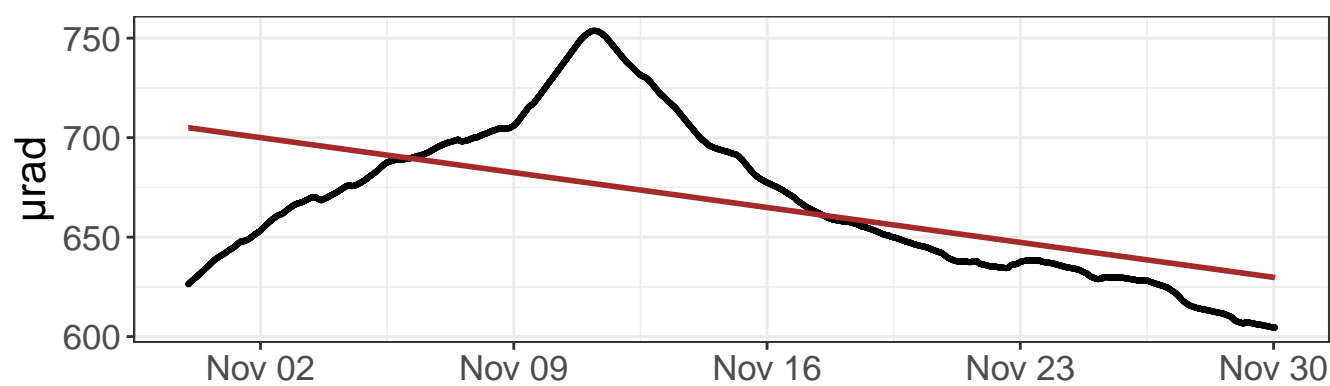
Distance to C7: 1415 ft

--- Outlier value

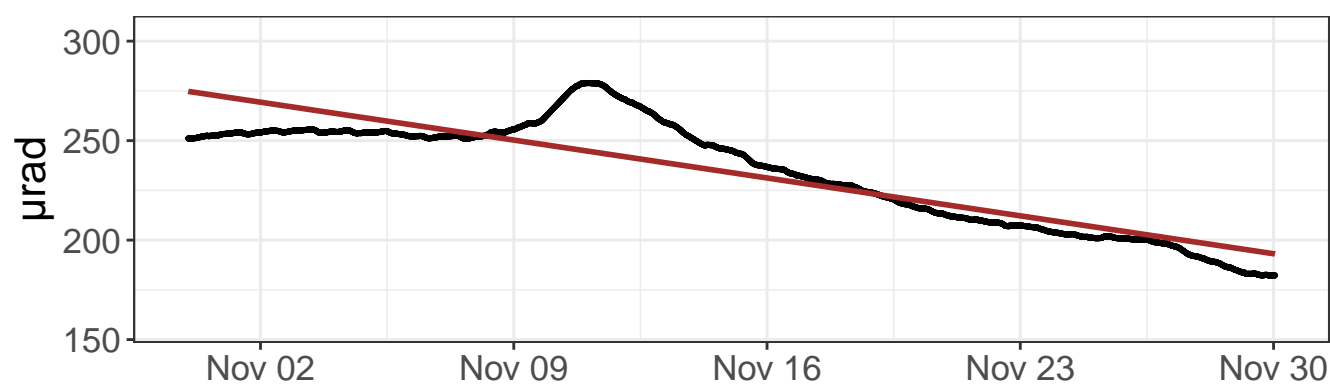
— Linear model

— Azimuth to C7

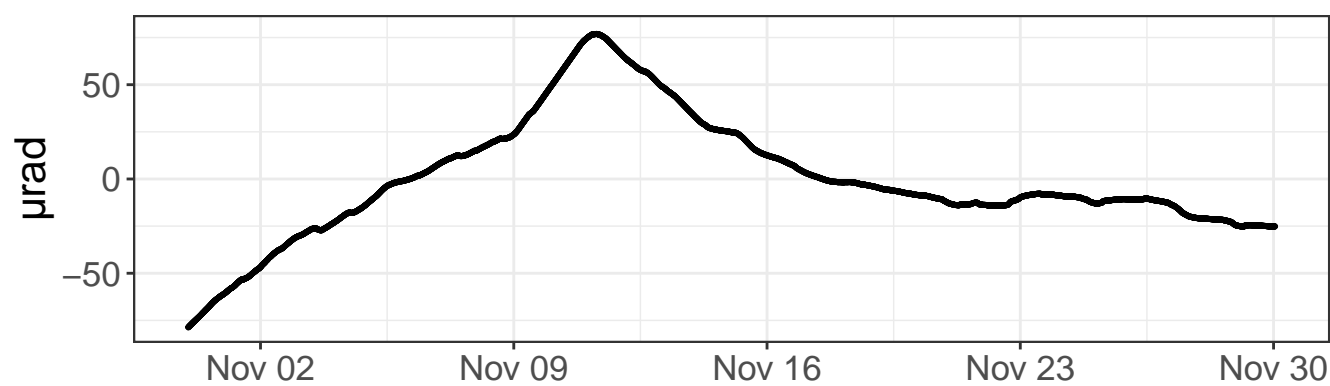
East tilt – raw values



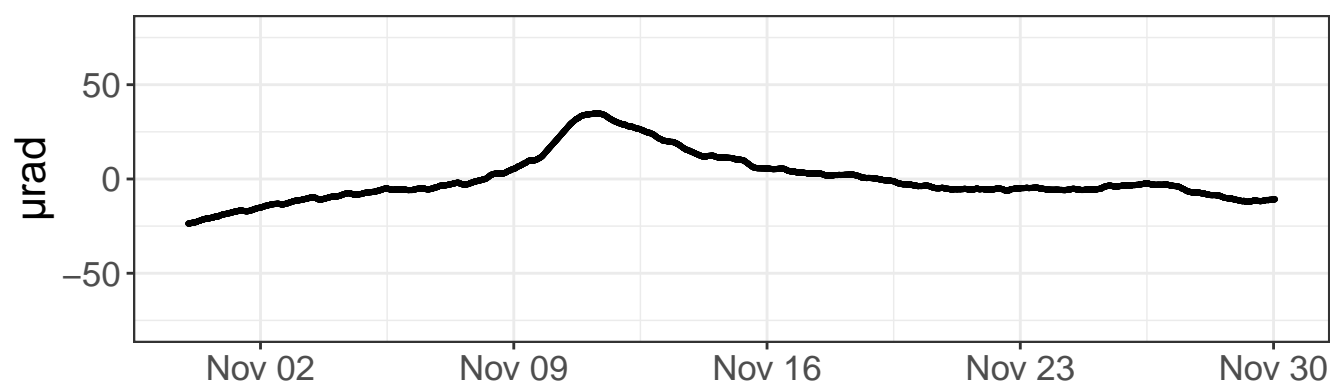
North tilt – raw values



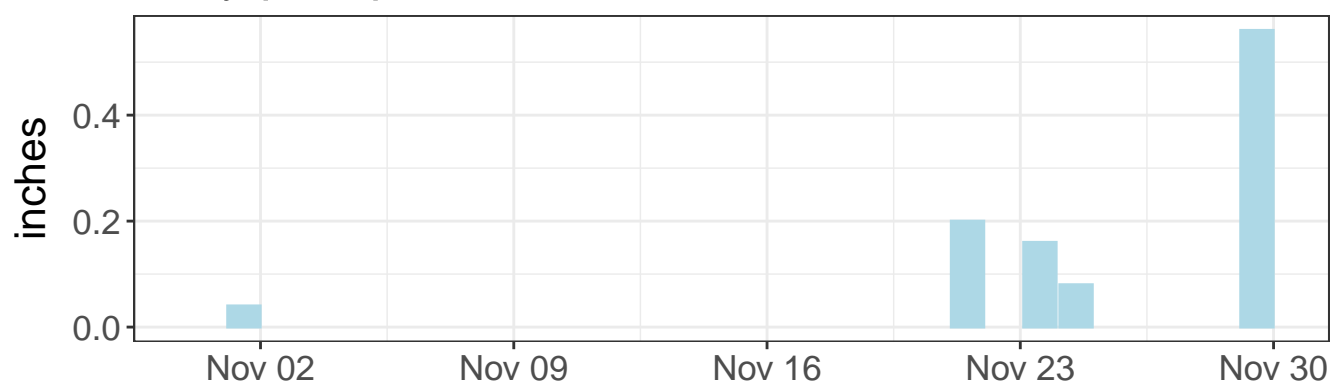
East tilt – detrended values



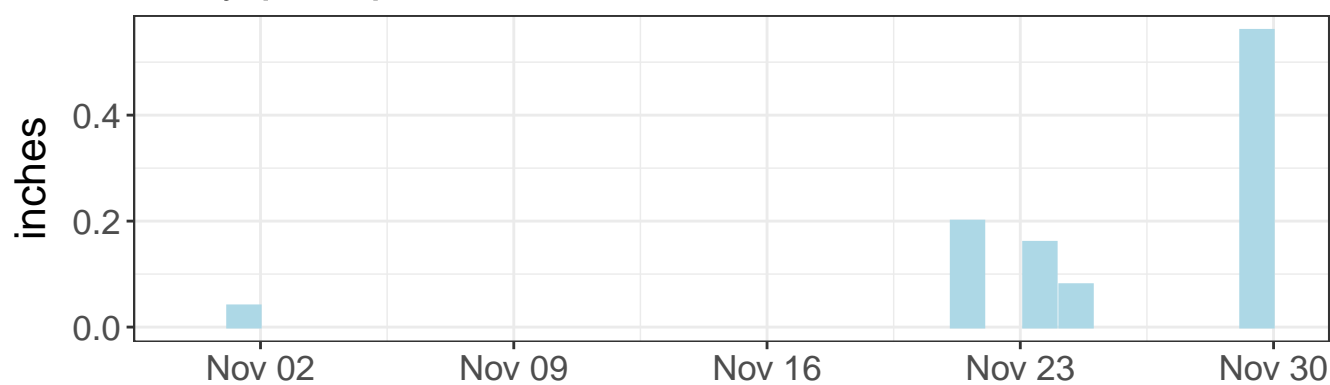
North tilt – detrended values



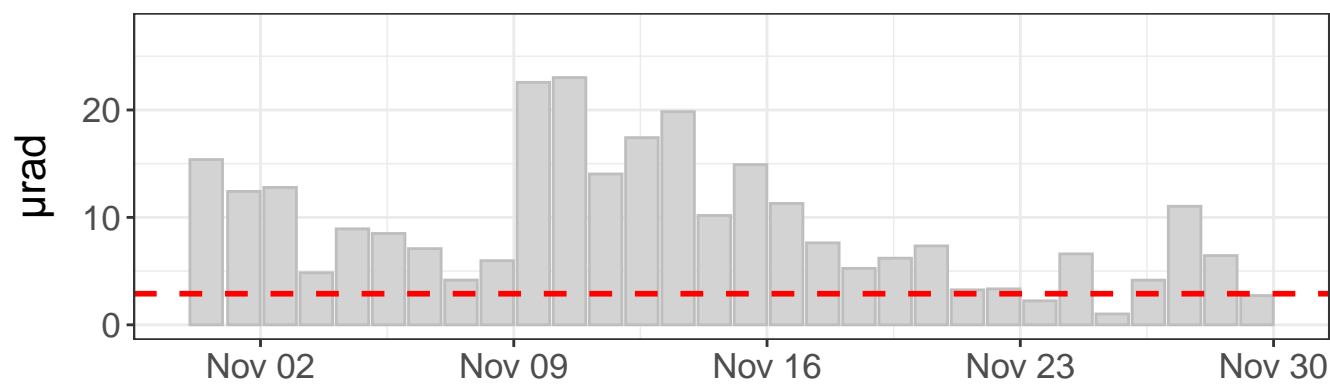
Daily precipitation



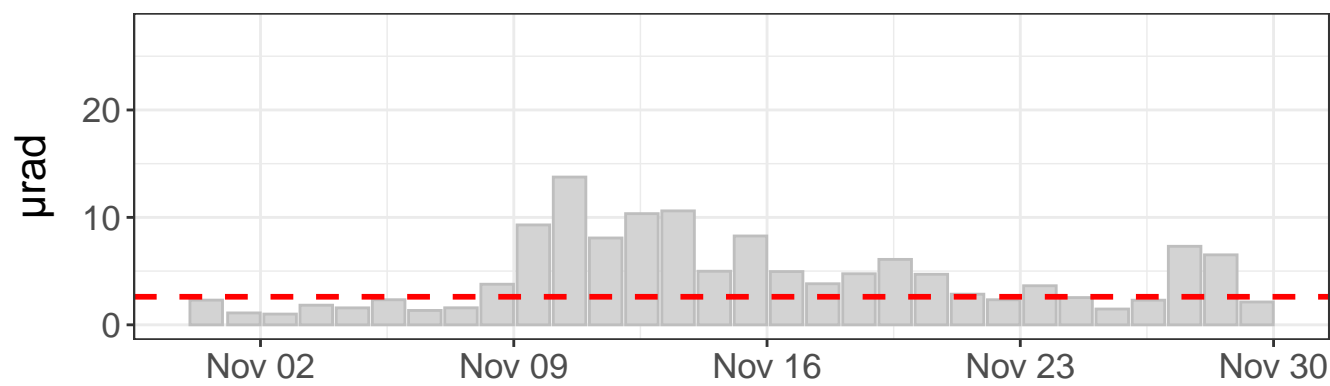
Daily precipitation



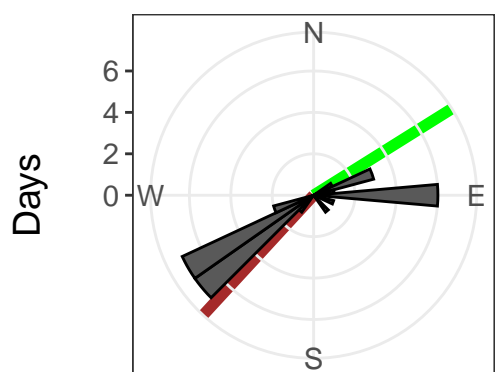
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-915.11 \pm 12.85 \mu\text{rad}/\text{yr}$ .  $R^2: 0.32$

North tilt rate:  $-992.86 \pm 5.11 \mu\text{rad}/\text{yr}$ .  $R^2: 0.78$

Azimuth to C7: 58 deg

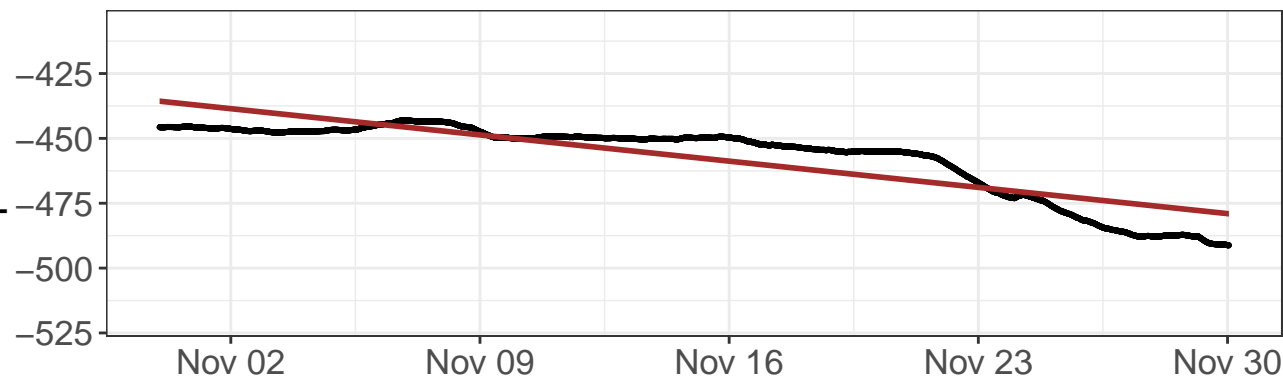
Distance to C7: 2245 ft

--- Outlier value

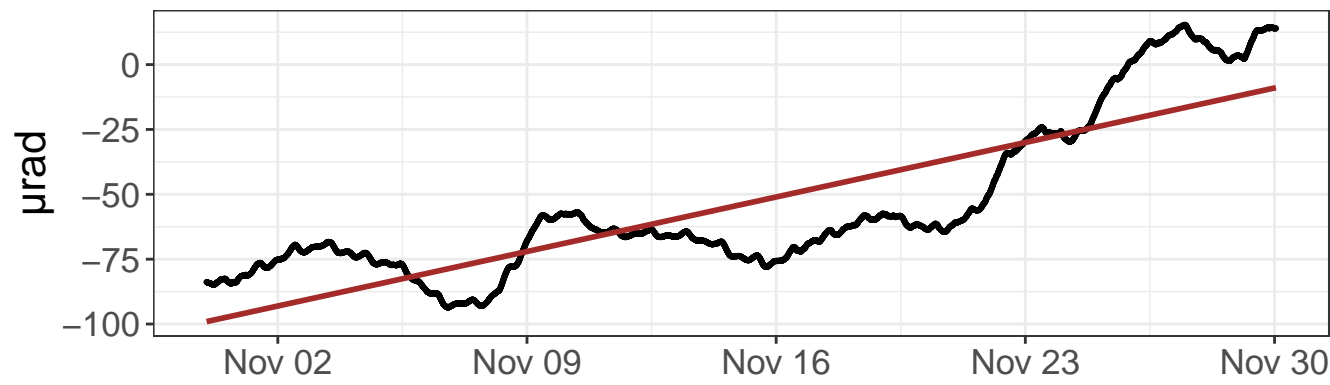
— Linear model

— Azimuth to C7

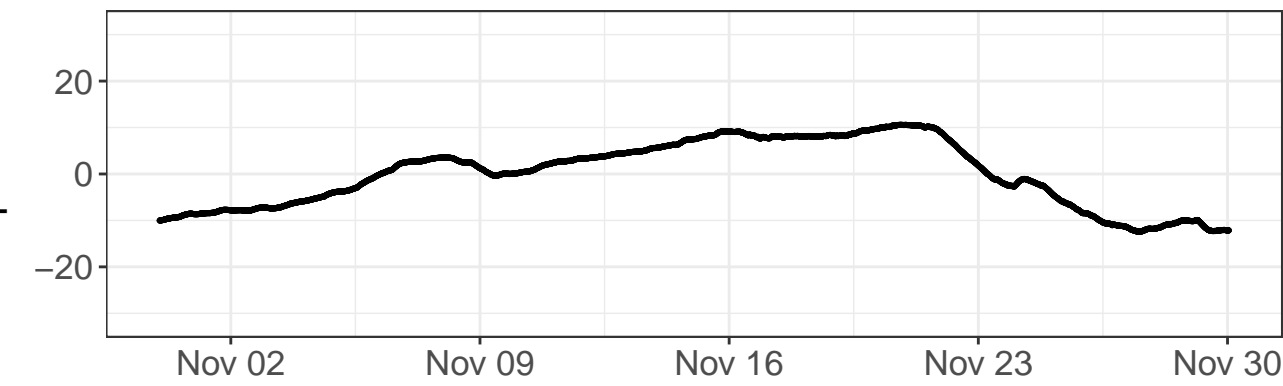
East tilt – raw values



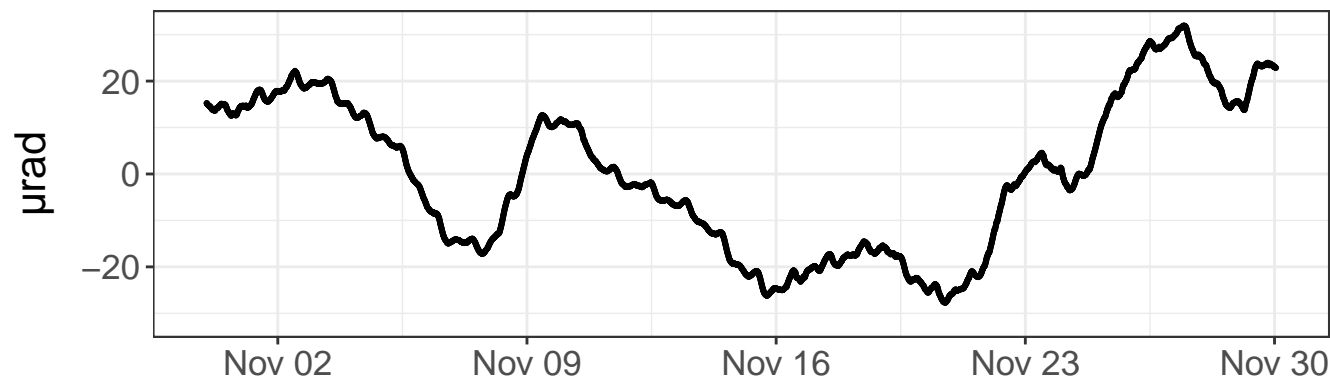
North tilt – raw values



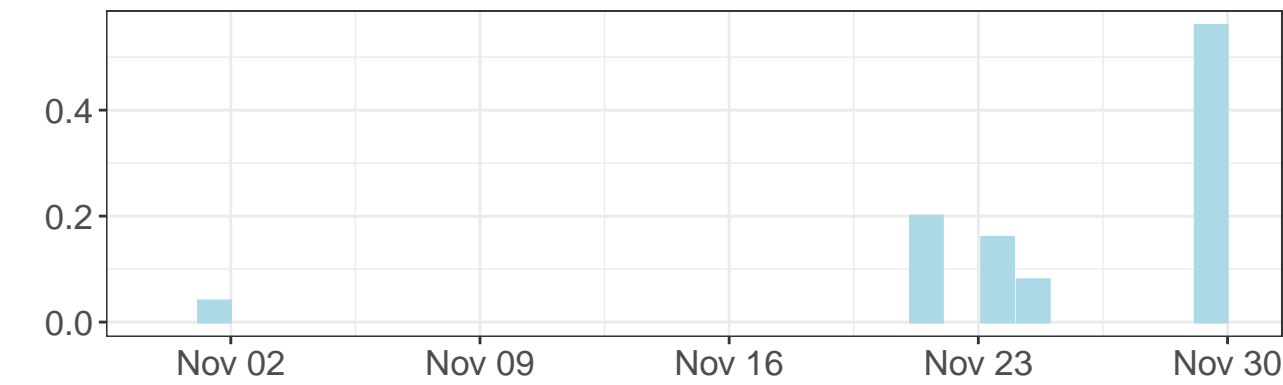
East tilt – detrended values



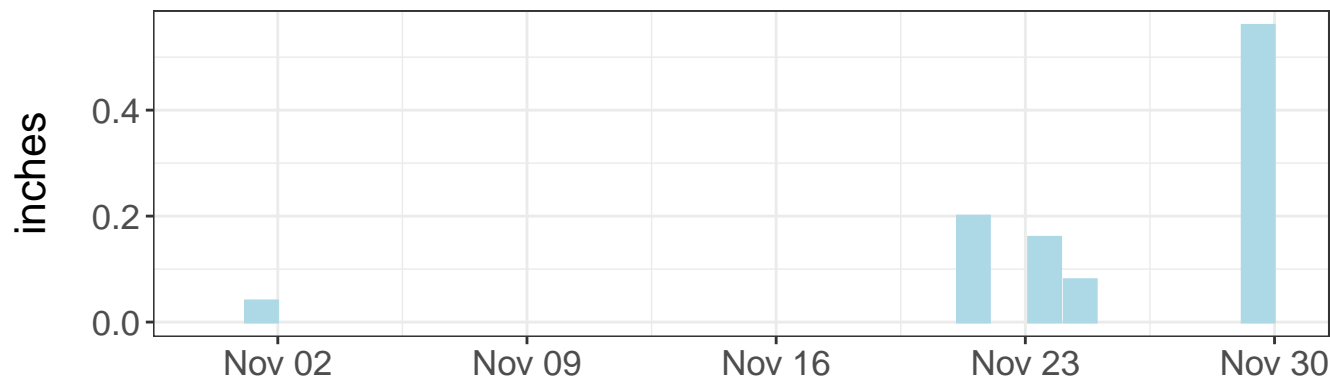
North tilt – detrended values



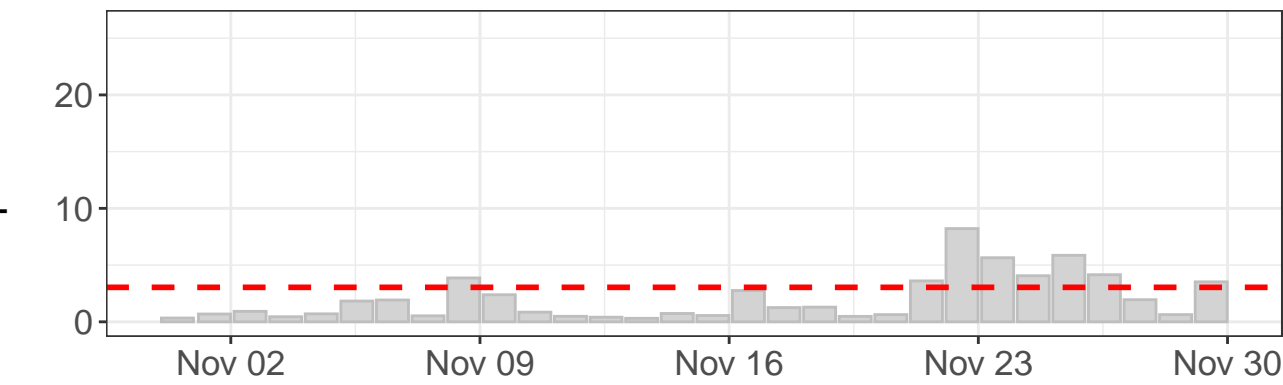
Daily precipitation



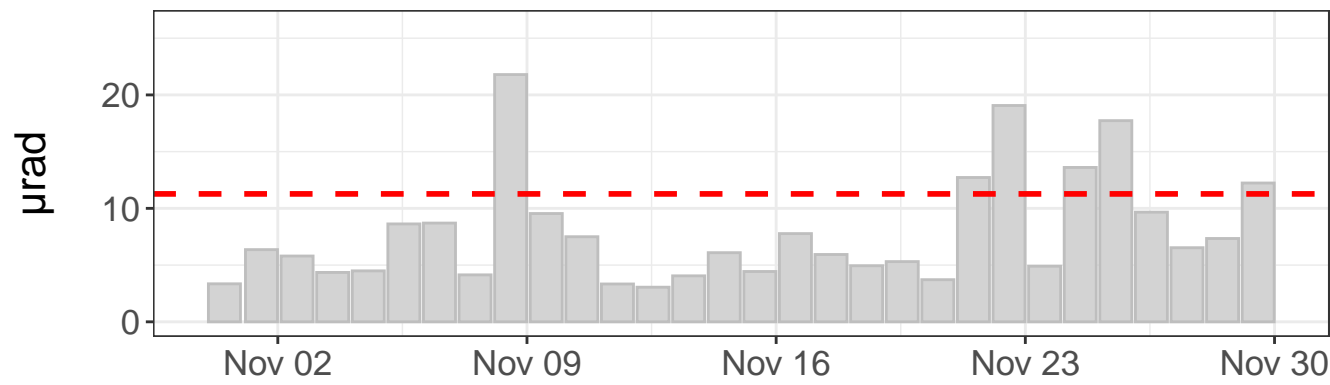
Daily precipitation



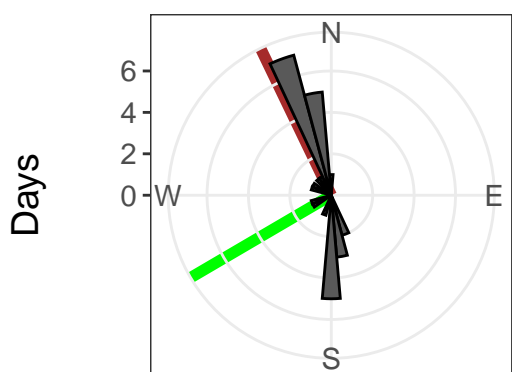
East tilt – daily range



North tilt – daily range



Tilt direction frequency



East tilt rate:  $-527.35 \pm 2.89 \mu\text{rad}/\text{yr}$ .  $R^2: 0.75$

North tilt rate:  $1095.70 \pm 6.64 \mu\text{rad}/\text{yr}$ .  $R^2: 0.72$

Azimuth to C7: 240 deg

Distance to C7: 1378 ft

- - - Outlier value

— Linear model

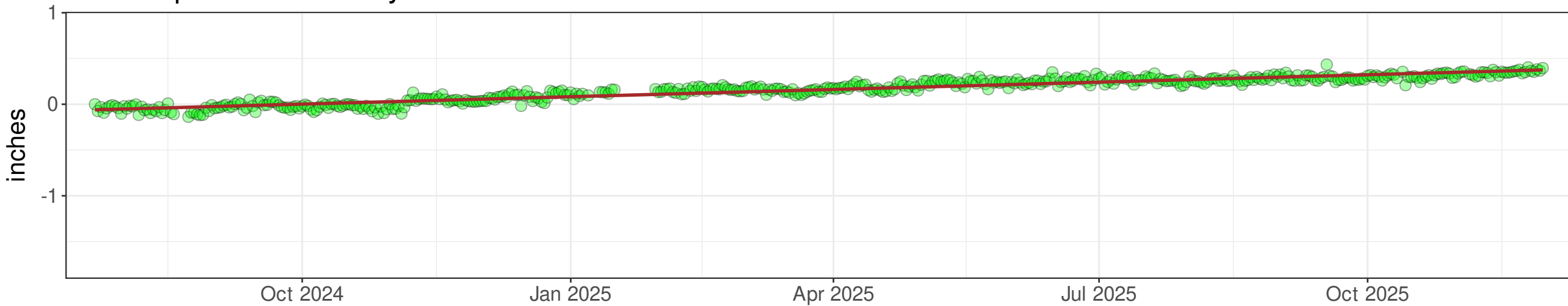
— Azimuth to C7

## **APPENDIX 2**

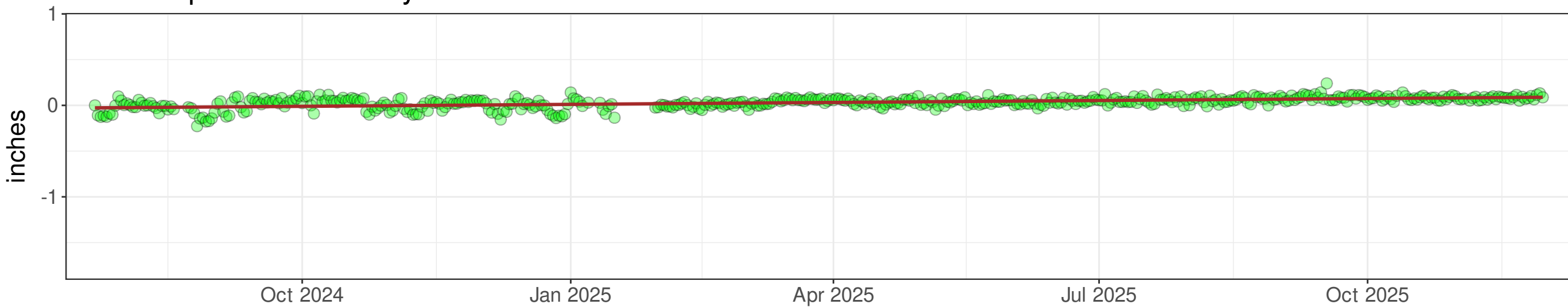
### **GNSS Data Plots**

# REMC7: Plotted range: 2024-07-22 - 2025-11-30 (CTZ)

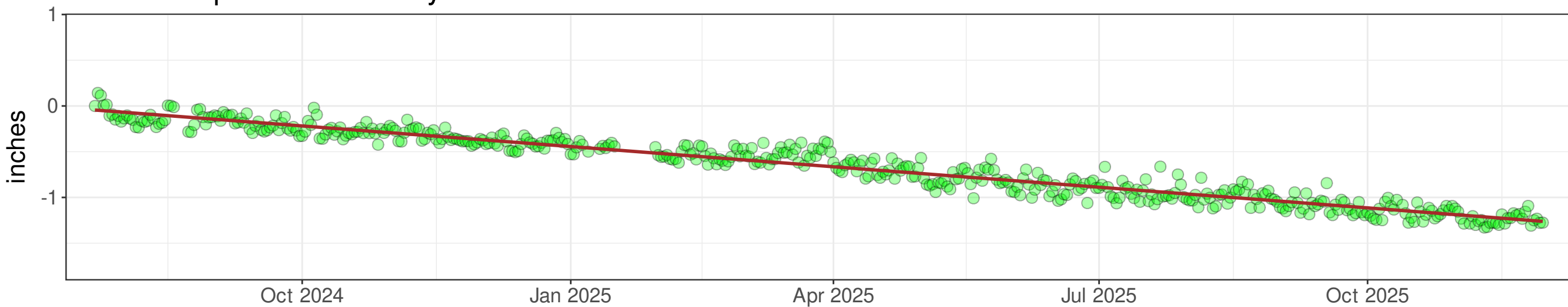
## East displacement - daily values



## North displacement - daily values



## Vertical displacement - daily values



Local east rate:  $0.804 \pm 0.019$  inches/year, R2: 0.91

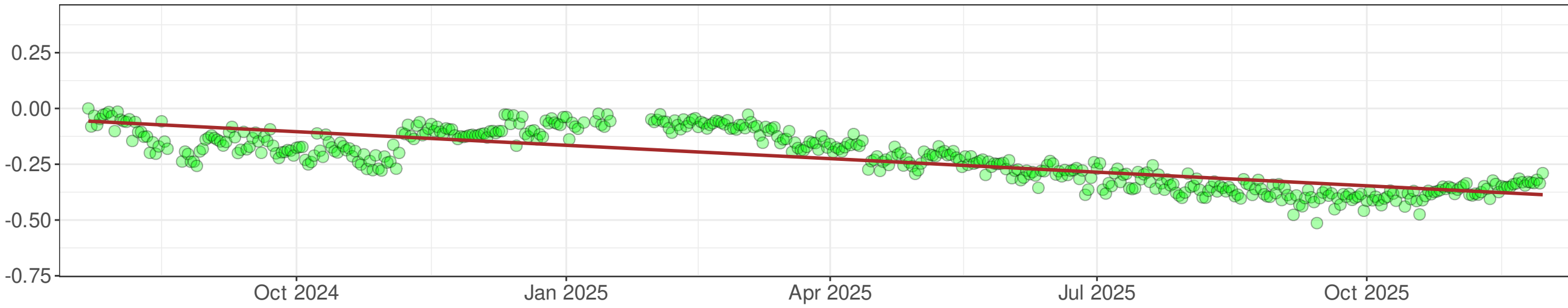
Local north rate:  $0.127 \pm 0.019$  inches/year, R2: 0.32

Local vertical rate:  $-0.816 \pm 0.056$  inches/year, R2: 0.95

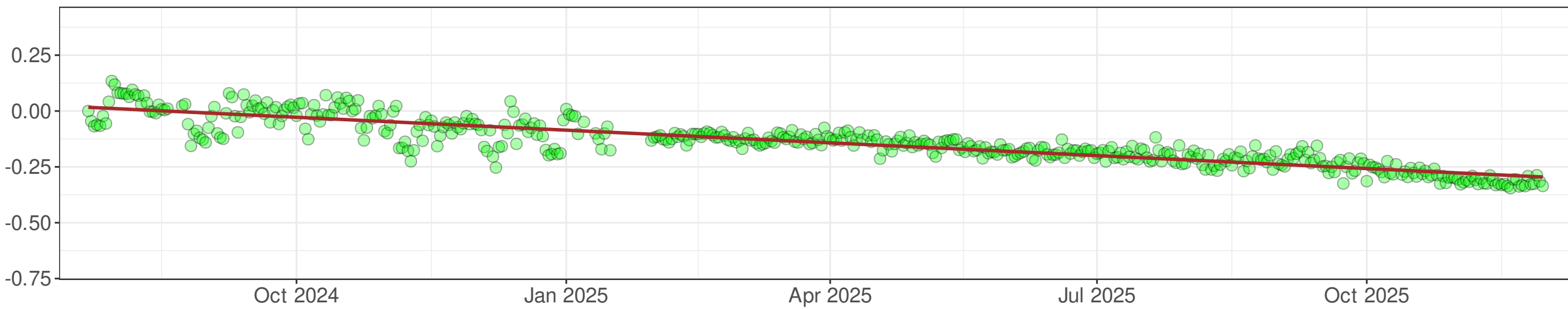
— Linear model

Local rate values have been calculated by removing the regional tectonic plate rates from the raw data displayed in the charts.

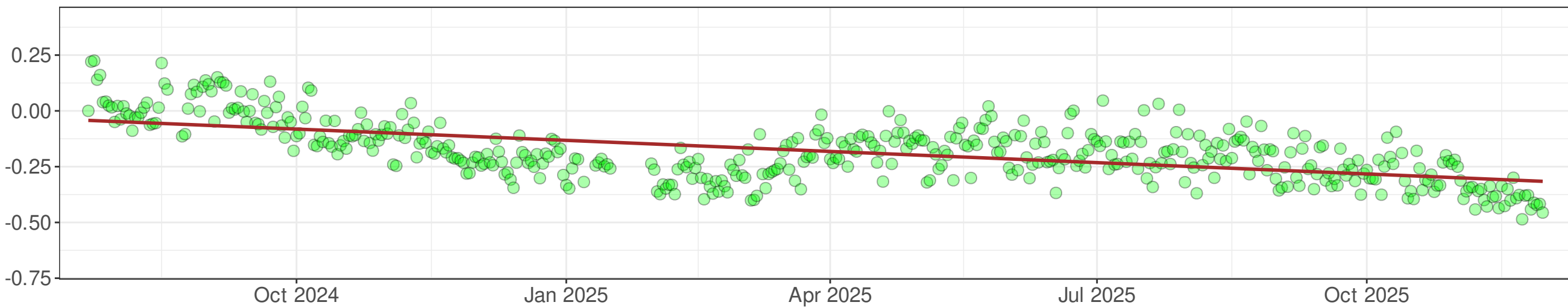
East displacement - daily values



North displacement - daily values



Vertical displacement - daily values



Local east rate:  $0.240 \pm 0.020$  inches/year, R2: 0.64

Local north rate:  $-0.188 \pm 0.018$  inches/year, R2: 0.80

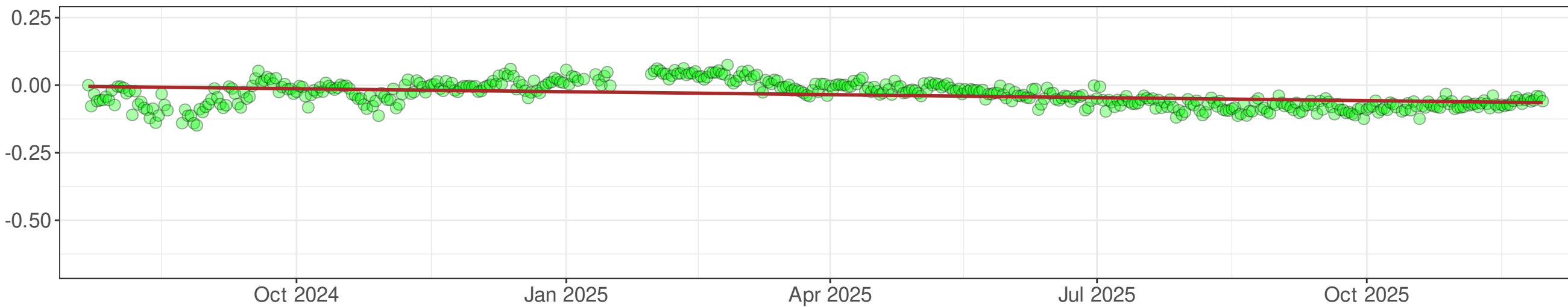
Local vertical rate:  $-0.121 \pm 0.057$  inches/year, R2: 0.37

— Linear model

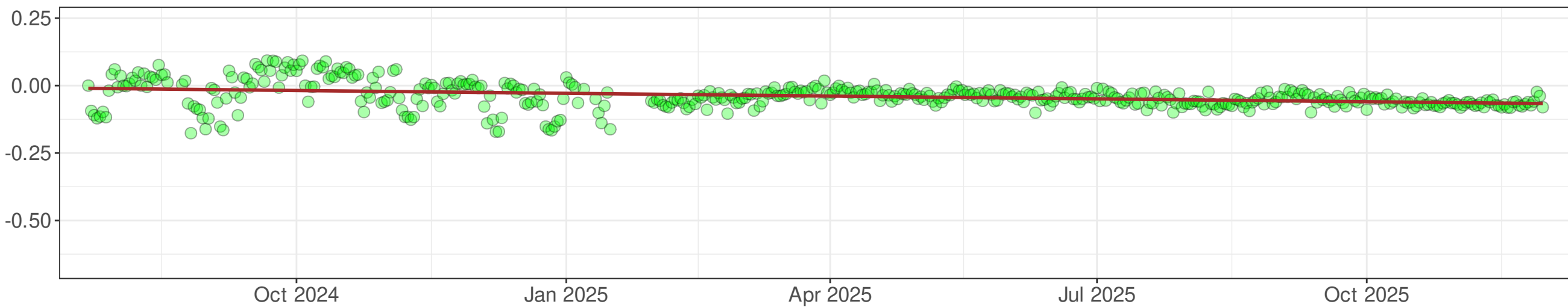
Local rate values have been calculated by removing the regional tectonic plate rates from the raw data displayed in the charts.

# REMNW: Plotted range: 2024-07-22 - 2025-11-30 (CTZ)

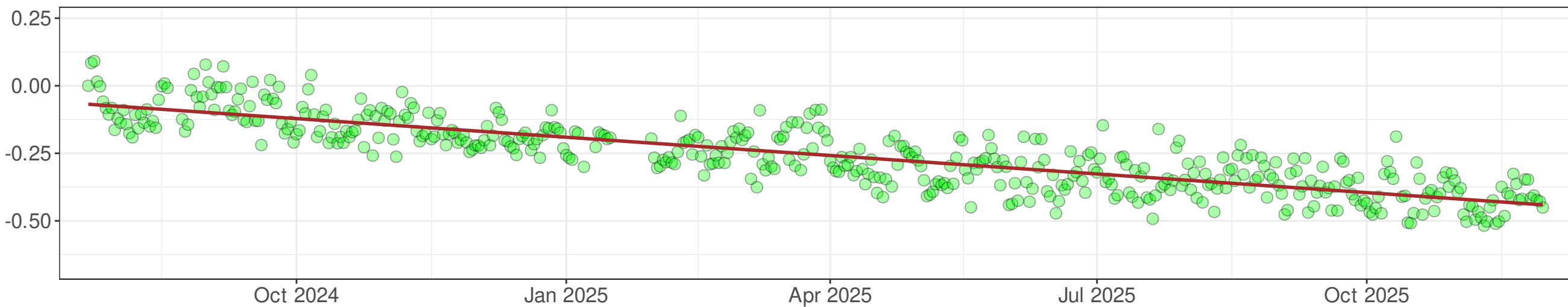
## East displacement - daily values



## North displacement - daily values



## Vertical displacement - daily values



Local east rate:  $0.439 \pm 0.019$  inches/year, R2: 0.15

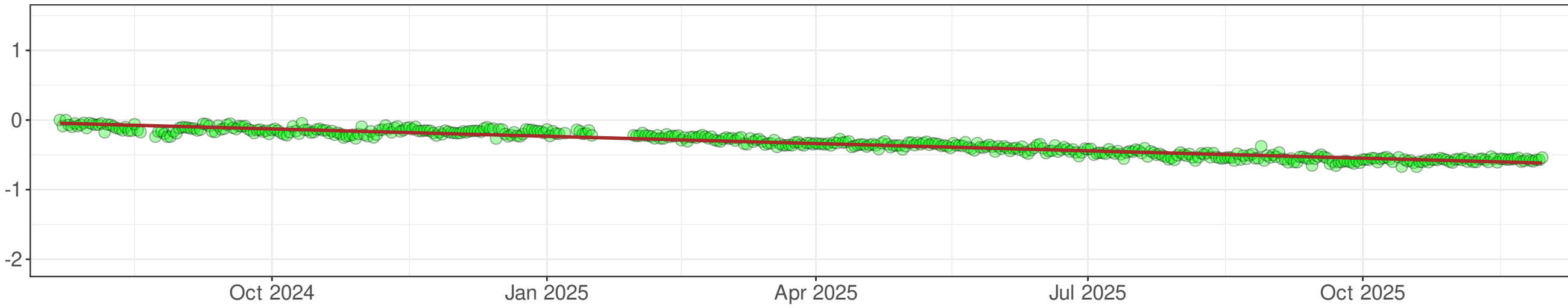
Local north rate:  $0.000 \pm 0.018$  inches/year, R2: 0.12

Local vertical rate:  $-0.194 \pm 0.056$  inches/year, R2: 0.71

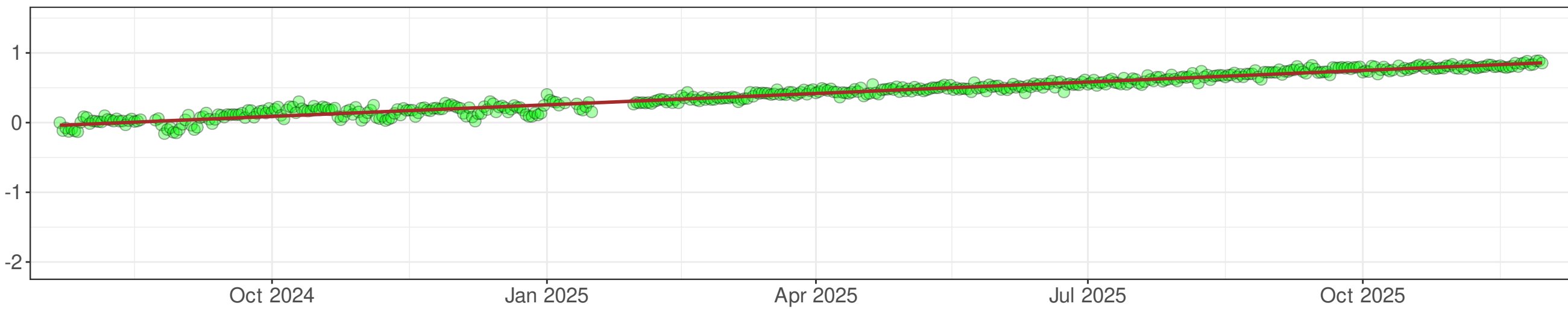
— Linear model

Local rate values have been calculated by removing the regional tectonic plate rates from the raw data displayed in the charts.

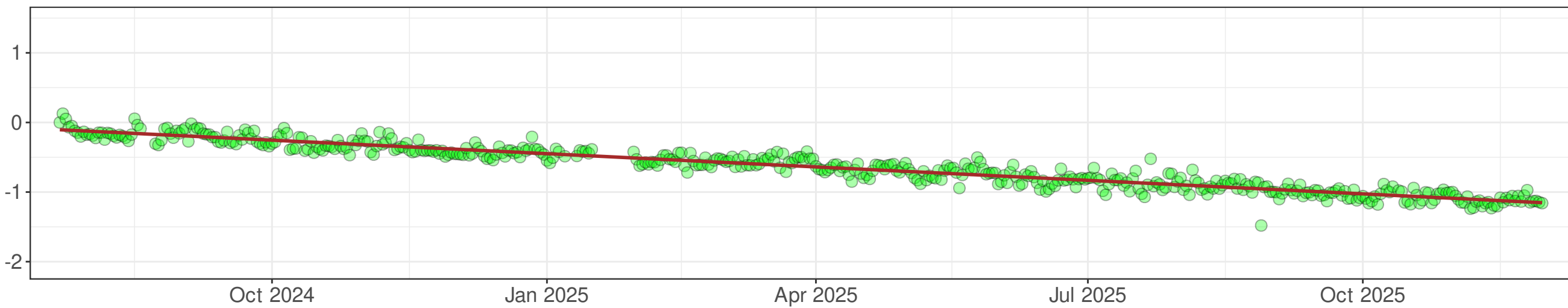
East displacement - daily values



North displacement - daily values



Vertical displacement - daily values



Local east rate:  $0.062 \pm 0.019$  inches/year, R2: 0.93

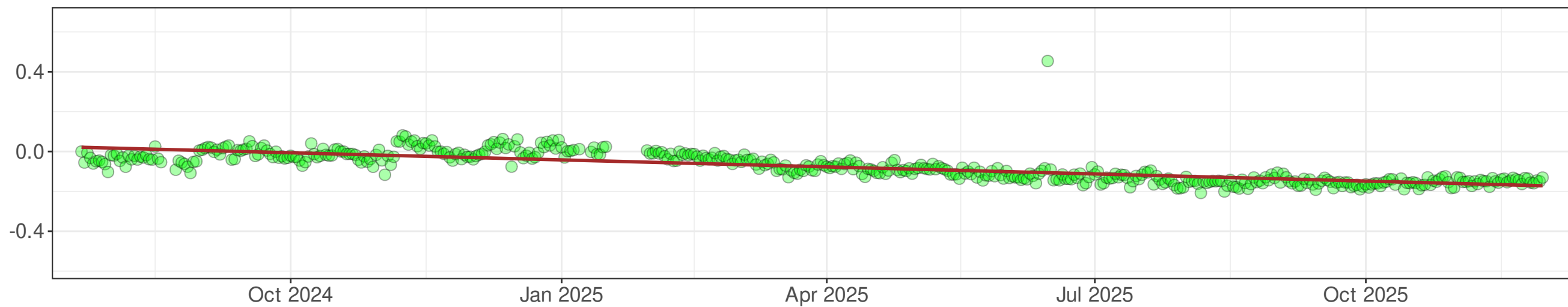
Local north rate:  $0.702 \pm 0.019$  inches/year, R2: 0.96

Local vertical rate:  $-0.692 \pm 0.056$  inches/year, R2: 0.92

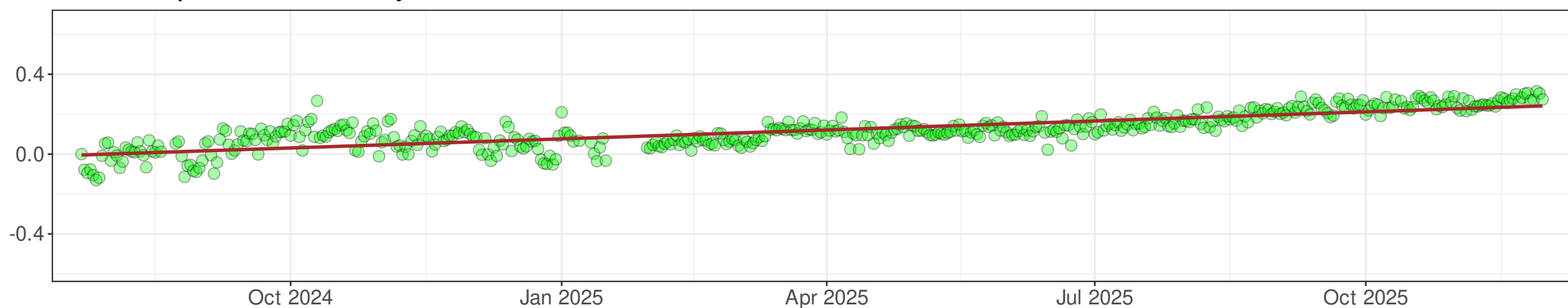
— Linear model

Local rate values have been calculated by removing the regional tectonic plate rates from the raw data displayed in the charts.

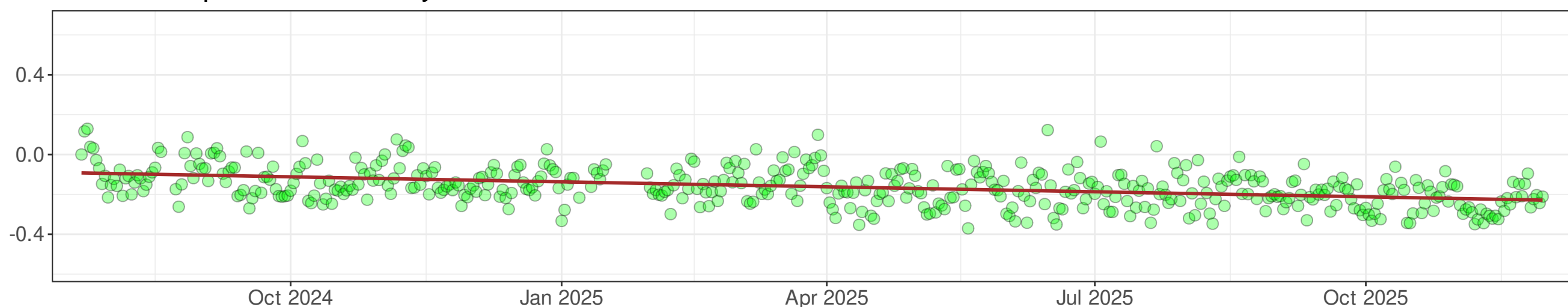
East displacement - daily values



North displacement - daily values



Vertical displacement - daily values



Local east rate:  $0.340 \pm 0.019$  inches/year, R2: 0.62

Local north rate:  $0.223 \pm 0.019$  inches/year, R2: 0.66

Local vertical rate:  $-0.020 \pm 0.056$  inches/year, R2: 0.18

— Linear model

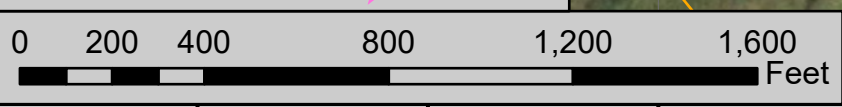
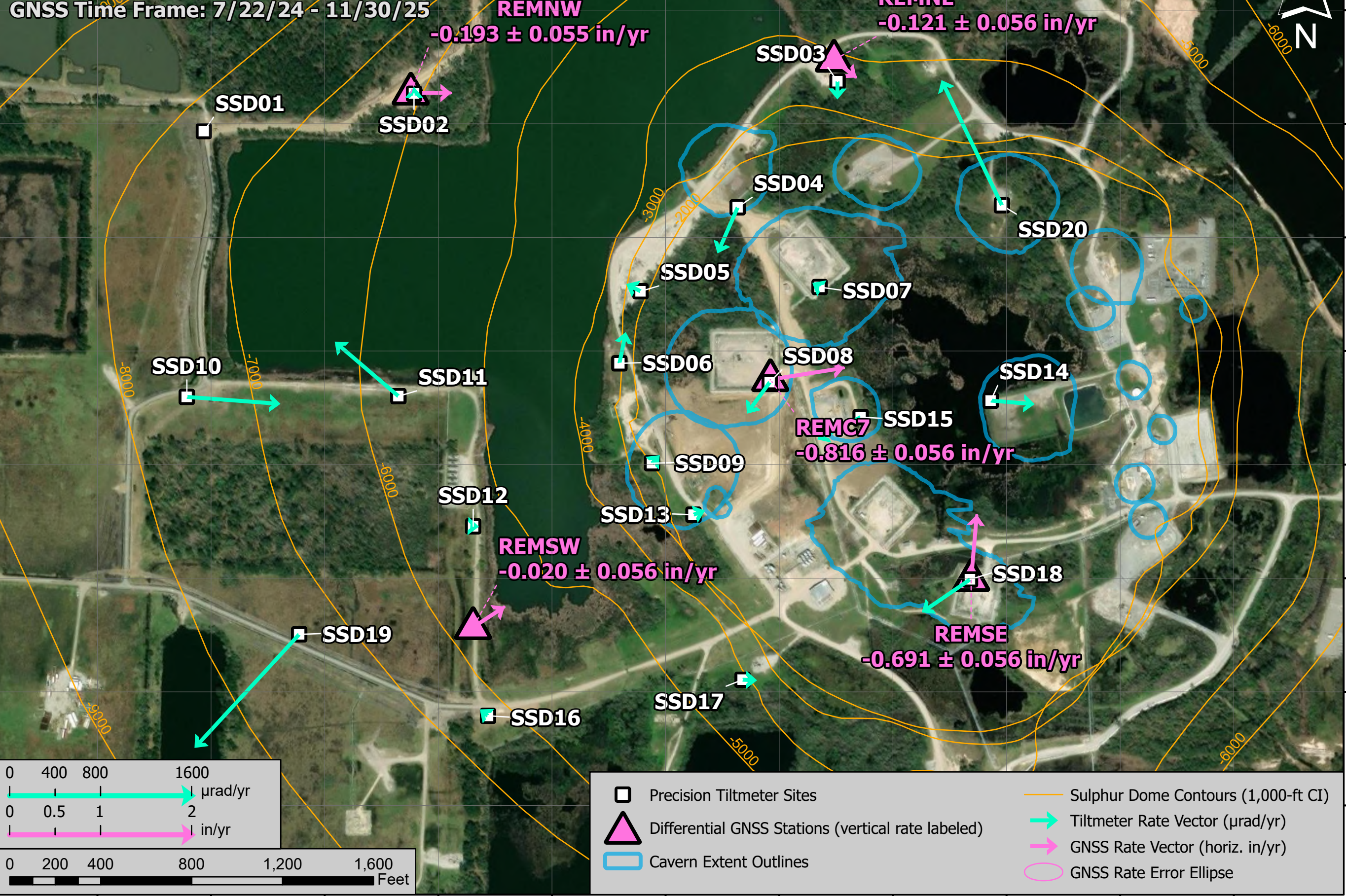
Local rate values have been calculated by removing the regional tectonic plate rates from the raw data displayed in the charts.

# **APPENDIX 3**

## **Analysis Maps**

# Tiltmeter and GNSS Rate Vectors

Tiltmeter Time Frame: 11/1/25 - 11/30/25  
GNSS Time Frame: 7/22/24 - 11/30/25

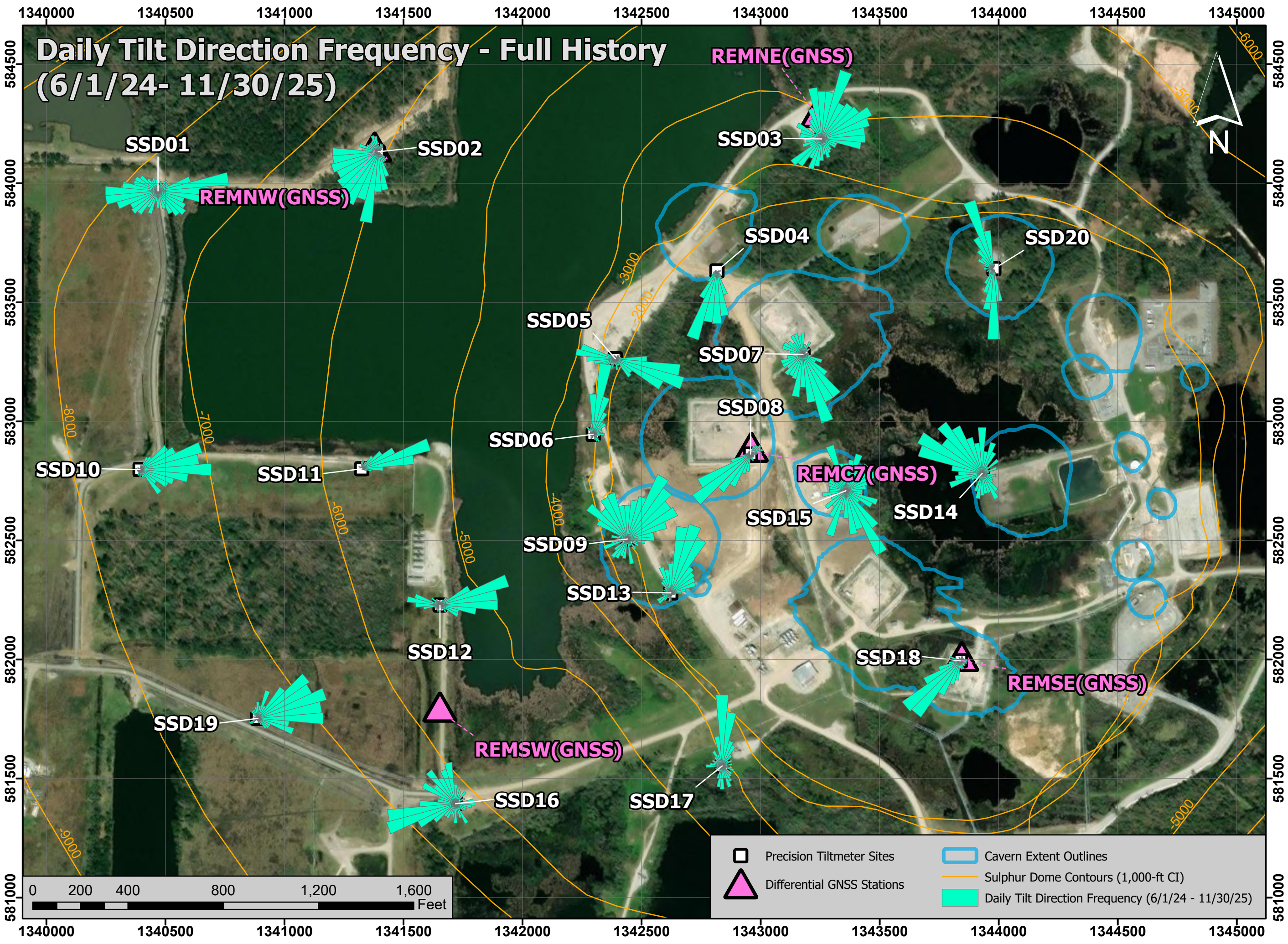


1340000 1340500 1341000 1341500 1342000 1342500 1343000 1343500 1344000 1344500 1345000

581000  
581500  
582000  
582500  
583000  
583500  
584000  
584500

581000  
581500  
582000  
582500  
583000  
583500  
584000  
584500

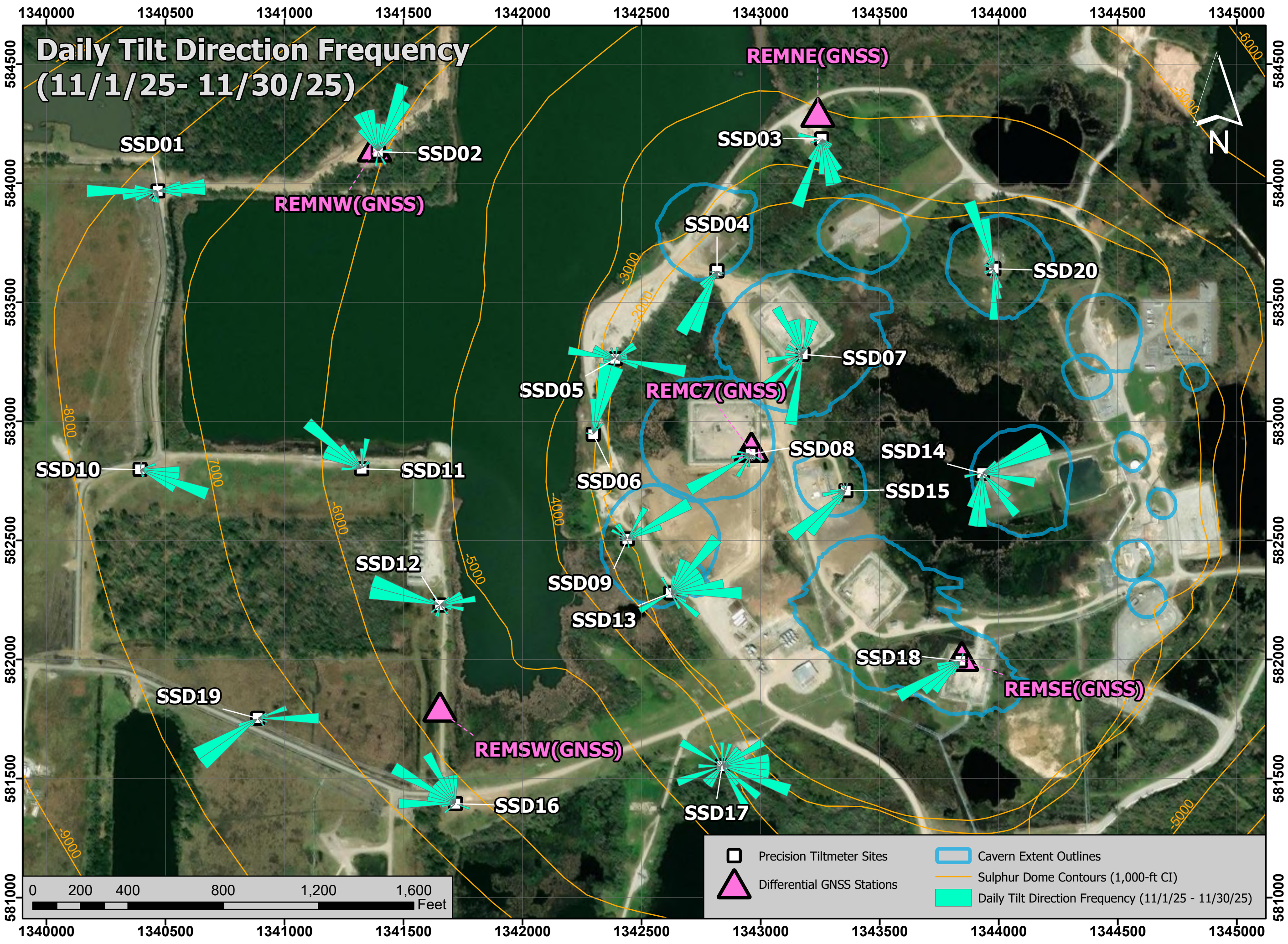
# Daily Tilt Direction Frequency - Full History (6/1/24- 11/30/25)



- Precision Tiltmeter Sites
- Differential GNSS Stations
- Cavern Extent Outlines
- Sulphur Dome Contours (1,000-ft CI)
- Daily Tilt Direction Frequency (6/1/24 - 11/30/25)

0 200 400 800 1,200 1,600 Feet

# Daily Tilt Direction Frequency (11/1/25- 11/30/25)



## **ATTACHMENT B**

### **TSX-A InSAR report - November 23, 2025**



# TSX-A Satellite Update

Continuous InSAR Monitoring of  
Ground Displacement At Westlake  
Caverns and Western Dome Flank

## Sulphur Mines Salt Dome

Prepared for:  
**Westlake Chemical**

Prepared by:  
Lonquist Field Service, LLC  
8591 United Plaza Blvd., Suite 280  
Baton Rouge, LA 70809

| Dataset                          |
|----------------------------------|
| Satellite Source                 |
| <b>TerraSAR-X - Ascending</b>    |
| Most Recent Image Date           |
| <b>Sunday, November 23, 2025</b> |

Analysis Report Date:  
**December 14, 2025**

| Dataset Information           |   |
|-------------------------------|---|
| Satellite Source              | TerraSAR-X - Ascending                            |
| Revisit Frequency             | 11 days   |
| Most Recent Image Date        | Sunday, November 23, 2025                         |
| Dataset Image Count           | 86  |
| Dataset Time Range            | February 4, 2023 - November 23, 2025              |
| Dataset Length                | 2.80 Years  |
| Satellite Line-of-Sight (LOS) | 44° West of Vertical (Viewing site from the West) |

### Analysis Methodology

**Time Series Charts**  
Trend lines were calculated for the averaged displacement values within each AOI. Both a nonlinear (quadratic) and linear regression were applied to each AOI point group to identify rates of change in LOS displacement. These trends are displayed in the Time Series section of this report.

**Contour Maps**  
A nonlinear (quadratic) and linear trend was also calculated for each individual measurement point across the analysis region. Nonlinear trend values for each point were used to generate Velocity and Acceleration contour maps to convey the spatial distribution of the calculated movement. The linear trend values for each point (which lack an acceleration component) were used to generate an additional Velocity contour map. Maps depicting the individual data points colored by these trend values are also included in the last section of the report.

Negative velocity values indicate subsidence or eastward movement and positive velocity indicates uplift or westward movement. Negative acceleration values indicate increasing rates of subsidence, increasing eastward movement, or slowing westward movement and positive acceleration values indicate slowing rates of subsidence, slowing eastward movement, or increasing westward movement.

### Observations

To-date there have been no acute deviations from established subsidence trends in the areas investigated.

The time series charts show broadly consistent near-linear trends among the analysis AOIs. Acceleration values for the quadratic (non-linear) trend fit are negative in most AOIs (increasing negative displacement rates) but minor overall. A slight seasonal fluctuation may be evident in some of the charts, but with less prominence than in the TSX/PAZ data.

The contour maps show the greatest negative displacement centered around the western central portion of the dome where the combination of subsidence and eastern horizontal movement (toward dome center) are expected to produce the greatest rate of movement away from the satellite's line of sight from the west.



Date Signed: December 14, 2025  
Austin, Texas

Nathaniel L. Byars, P.E.  
Principal Engineer  
Louisiana License No. 40697

## InSAR Data Sources

### InSAR Data

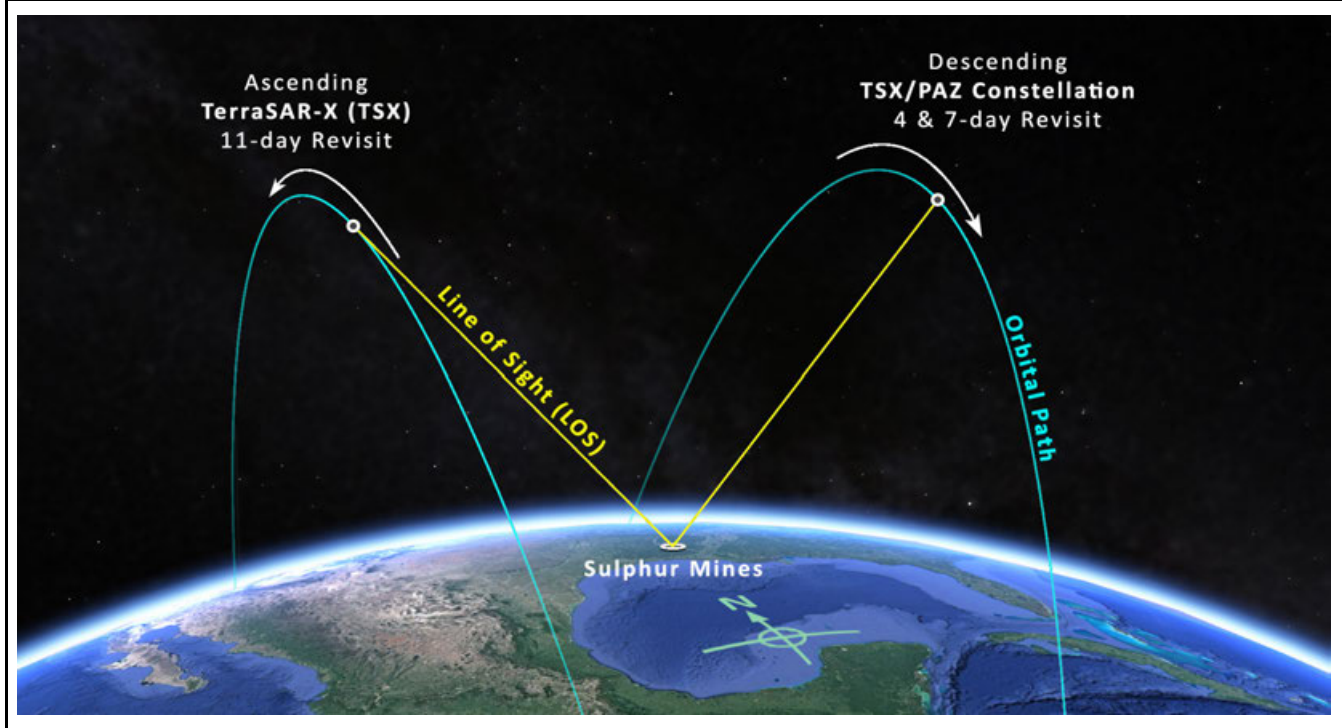
Interferometric Synthetic Aperture Radar (InSAR) is the most well established method to continually evaluate small, normally undetectable, ground movement over a large area. Radar imagery collected via satellites over successive orbital passes is used to identify and define measurement points on the ground. Objects or ground features providing a stable reflection of radar energy such as buildings, roads, and infrastructure produce the highest quality measurement points. InSAR analysis identifies the change in distance between the satellite and each measurement point over time relative to a stable reference point within the imaged area.

### Satellite Sources

Two InSAR datasets are being used to evaluate subsidence over the Sulphur Mines Salt Dome. These datasets provide Line-of-Sight (LOS) displacement measurements from both ascending and descending orbits. An ascending orbit denotes the satellite's longitudinal course from south to north as it passes over the site, while a descending orbit denotes the satellite is moving from north to south.

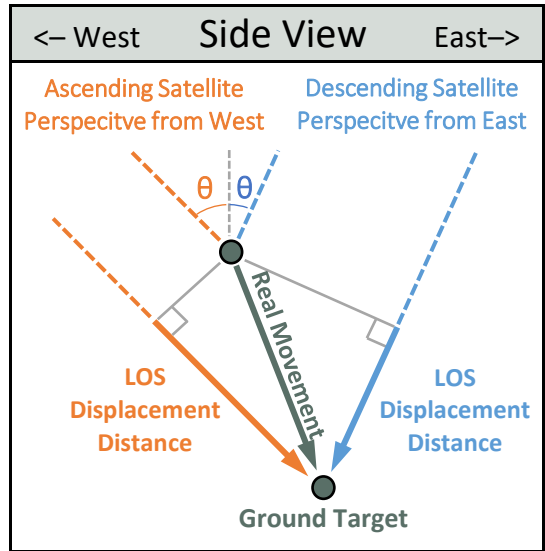
The first dataset comes from the high-resolution TerraSAR-X satellite on an ascending orbit track ("TSX-A") that captures data from the west of the site on an 11-day frequency. The second comes from a pair of high-resolution satellites that include the TerraSAR-X satellite and the PAZ satellite ("TSX/PAZ Constellation") which share the same descending orbit track and capture data from east of the site, each with an 11-day frequency. Their orbits are offset with the PAZ satellite passing over the site 4 days after the TSX satellite. Prior to May 2024, the ascending data was captured from a low-resolution Sentinel-1 satellite at a similar viewing angle to the TSX orbit. The transition to the ascending TSX track was made to increase data accuracy and measurement point density once a suitable data history had been gathered for trend analysis. The image below depicts the orbital paths of the current satellites in relation to the Sulphur Mines Salt Dome.

## Satellite Orbital Diagram



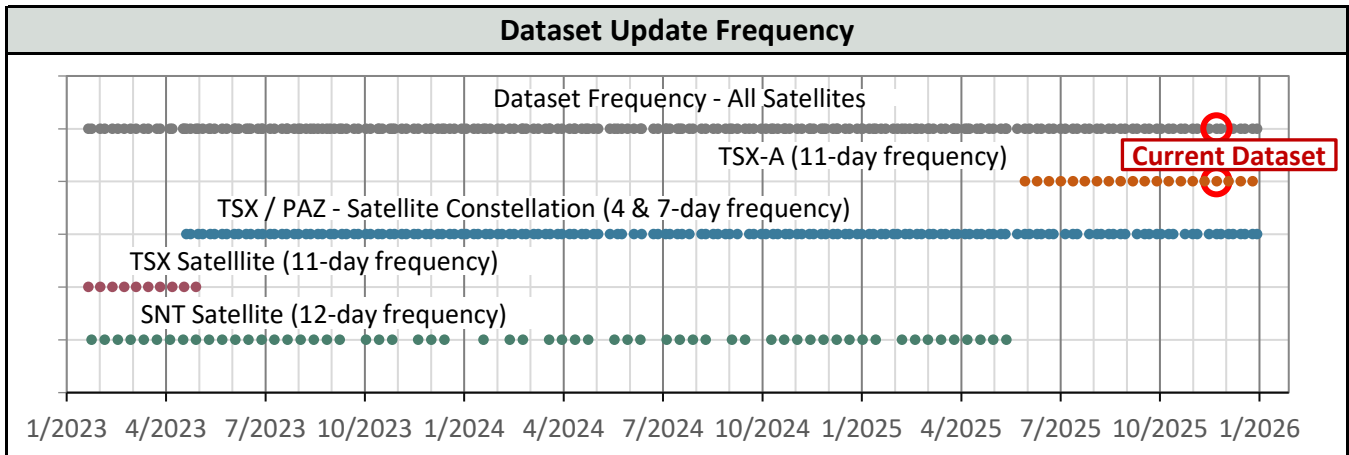
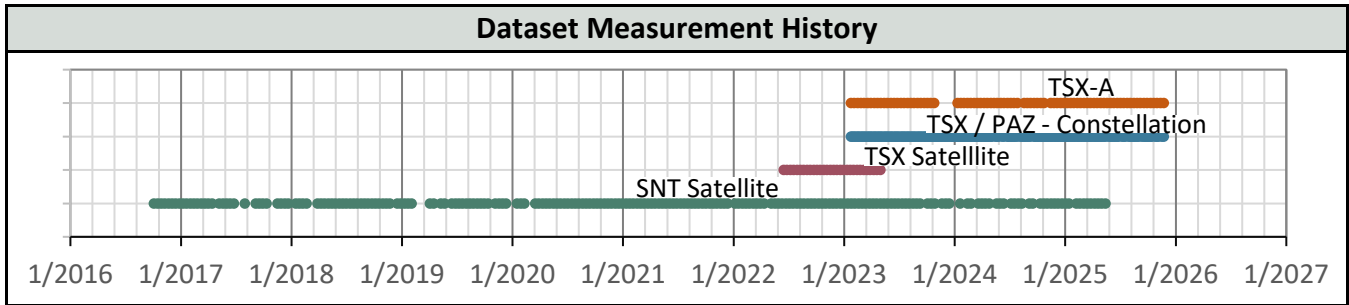
### InSAR Line-of-Site (LOS) Data

LOS displacement measurements refer to a change in distance between the satellite sensor and the ground target. Measurement positions on the west side of the Sulphur Dome are known to be experiencing some eastward movement toward the dome center due to the geometry of the subsidence basin. The InSAR satellites view the site from eastward and westward positions so LOS measurements are understood to convey a movement distance that is not purely vertical. The diagram to the right illustrates the geometric relationship between the theoretical Real movement of a ground target and LOS displacement measurements from two different satellite viewing directions.

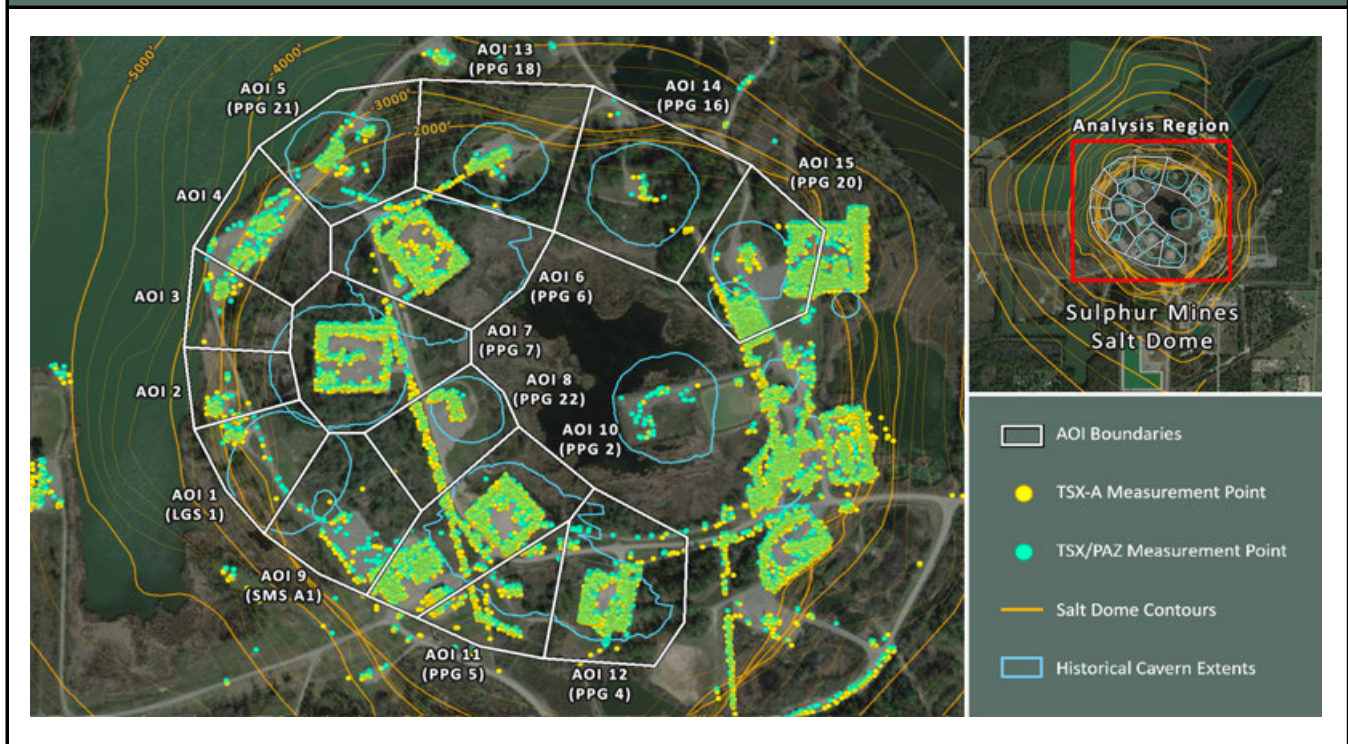


## Satellite Properties & Image Frequency

| Satellite and Data Properties                 | SNT              | TSX-A            | TSX/PAZ Constellation |
|---|------------------|------------------|-----------------------|
| <b>Band (Wavelength)</b>                      | C-band (2.32 in) | X-band (1.22 in) | X-band (1.22 in)      |
| <b>Track</b>                                  | T136             | T52              | T67 & T120            |
| <b>Pixel resolution</b>                       | 65 x 16 ft       | 3 x 3 ft         | 3 x 3 ft              |
| <b>Revisit frequency</b>                      | 12 days          | 11 days          | 4 & 7 days            |
| <b>Orbit (LOS Angle, <math>\theta</math>)</b> | Ascending (42°)  | Ascending (44°)  | Descending (37°)      |
| <b>Data Start Date</b>                        | 10/4/2016        | 2/4/2023         | 1/24/2023             |
| <b>Measurement error range</b>                | ± 0.20 in        | ± 0.06 in        | ± 0.07 in             |



## AOI Boundaries & InSAR Measurement Points

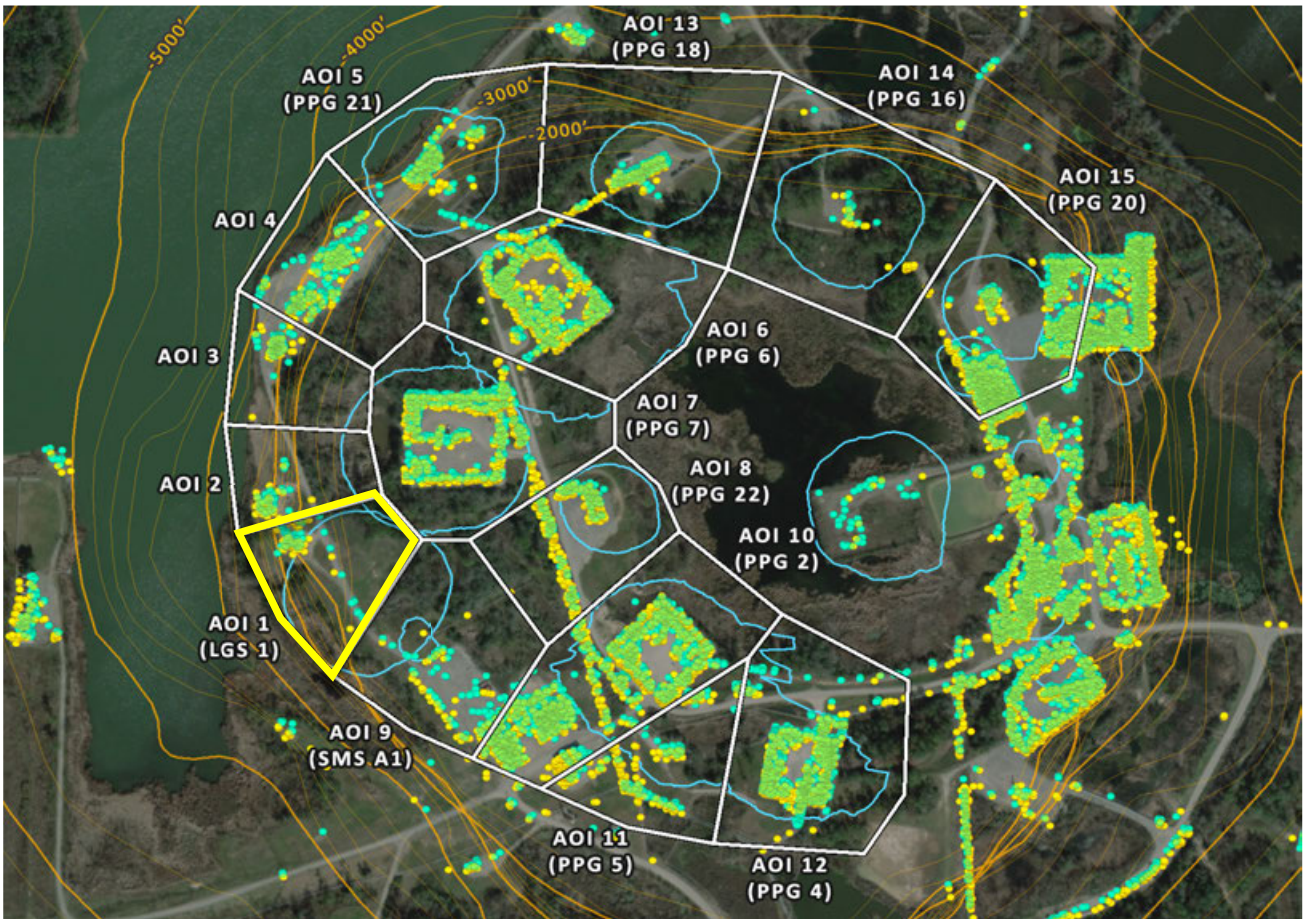


## Subsidence Monitoring Areas of Interest (AOIs)

To visually convey and evaluate trend consistency for the displacement time series of each ground target, measurement points were grouped and their displacement values were averaged. The point groups are referred to as Areas of Interest (AOIs) in this analysis and their boundaries are depicted on the above map. The below table lists the trend values calculated in each AOI for the dataset evaluated in this report.

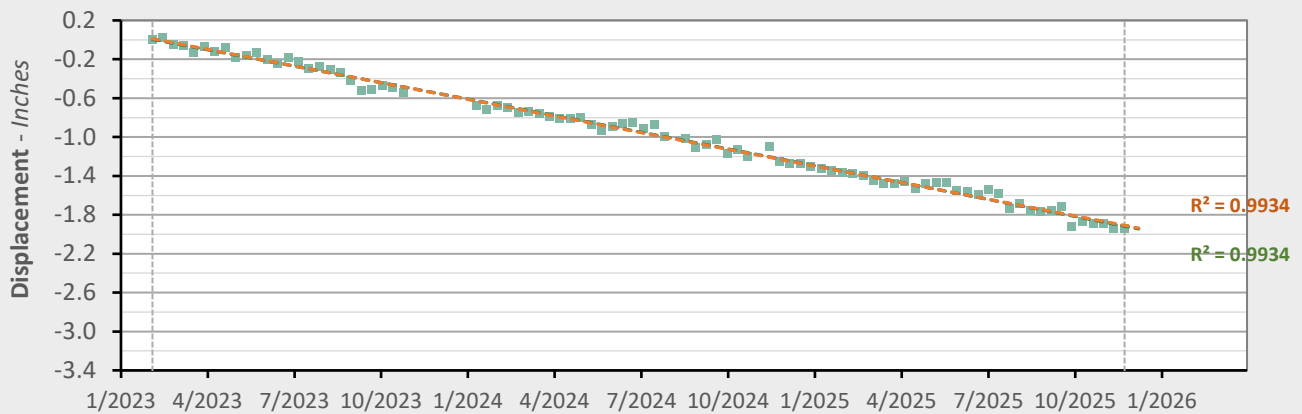
| AOI Name        | TSX-A<br>(11/23/2025) | LOS Velocity (in/yr) |        | LOS Acceleration (in/yr <sup>2</sup> ) |        |
|-----------------|-----------------------|----------------------|--------|--|--------|
|                 | Point Count           | Nonlinear            | Linear | Nonlinear                              | Linear |
| AOI 1 (LGS 1)   | 51                    | -0.70                | -0.69  | -0.01                                  | 0.00   |
| AOI 2           | 39                    | -0.79                | -0.70  | -0.06                                  | 0.00   |
| AOI 3           | 55                    | -0.64                | -0.59  | -0.04                                  | 0.00   |
| AOI 4           | 124                   | -0.67                | -0.62  | -0.04                                  | 0.00   |
| AOI 5 (PPG 21)  | 111                   | -0.58                | -0.55  | -0.02                                  | 0.00   |
| AOI 6 (PPG 6)   | 408                   | -0.92                | -0.83  | -0.06                                  | 0.00   |
| AOI 7 (PPG 7)   | 371                   | -1.09                | -0.99  | -0.07                                  | 0.00   |
| AOI 8 (PPG 22)  | 187                   | -1.19                | -1.13  | -0.04                                  | 0.00   |
| AOI 9 (SMS A1)  | 50                    | -0.70                | -0.75  | +0.03                                  | 0.00   |
| AOI 10 (PPG 2)  | 813                   | -1.05                | -0.94  | -0.08                                  | 0.00   |
| AOI 11 (PPG 5)  | 154                   | -0.90                | -0.79  | -0.08                                  | 0.00   |
| AOI 12 (PPG 4)  | 328                   | -0.68                | -0.65  | -0.02                                  | 0.00   |
| AOI 13 (PPG 18) | 93                    | -0.61                | -0.61  | +0.00                                  | 0.00   |
| AOI 14 (PPG 16) | 22                    | -0.48                | -0.36  | -0.08                                  | 0.00   |
| AOI 15 (PPG 20) | 521                   | -0.30                | -0.23  | -0.05                                  | 0.00   |

### AOI 1 (LGS 1) - Location Map

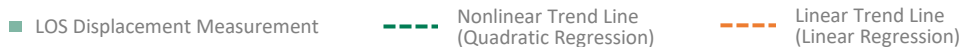


### AOI 1 (LGS 1) - Displacement Time Series

TSX-A (11/23/2025) Point Count: 51



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.70 in/yr              | -0.69 in/yr             |
| Acceleration: | -0.01 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

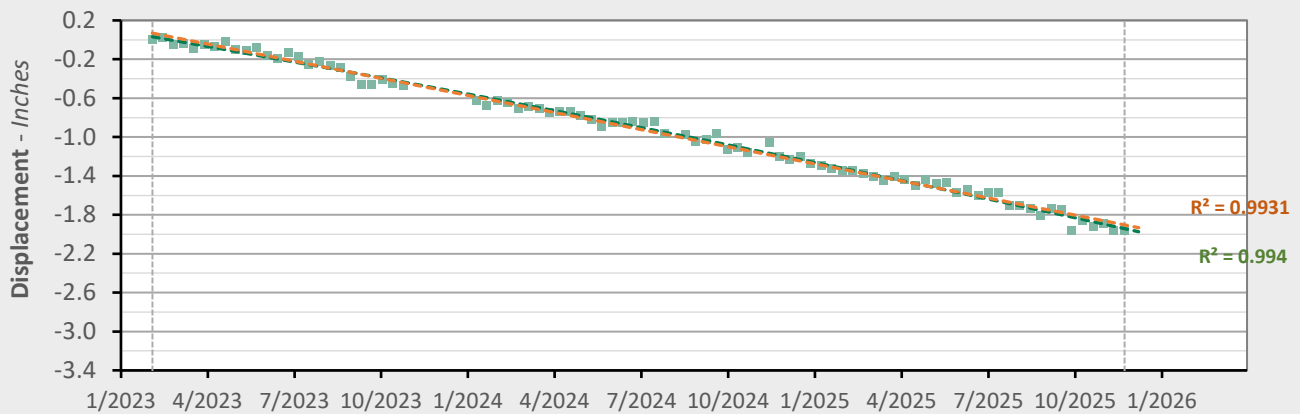


### AOI 2 - Location Map

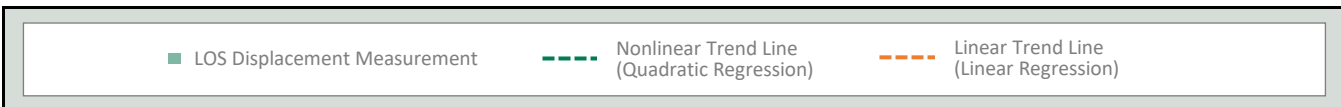


### AOI 2 - Displacement Time Series

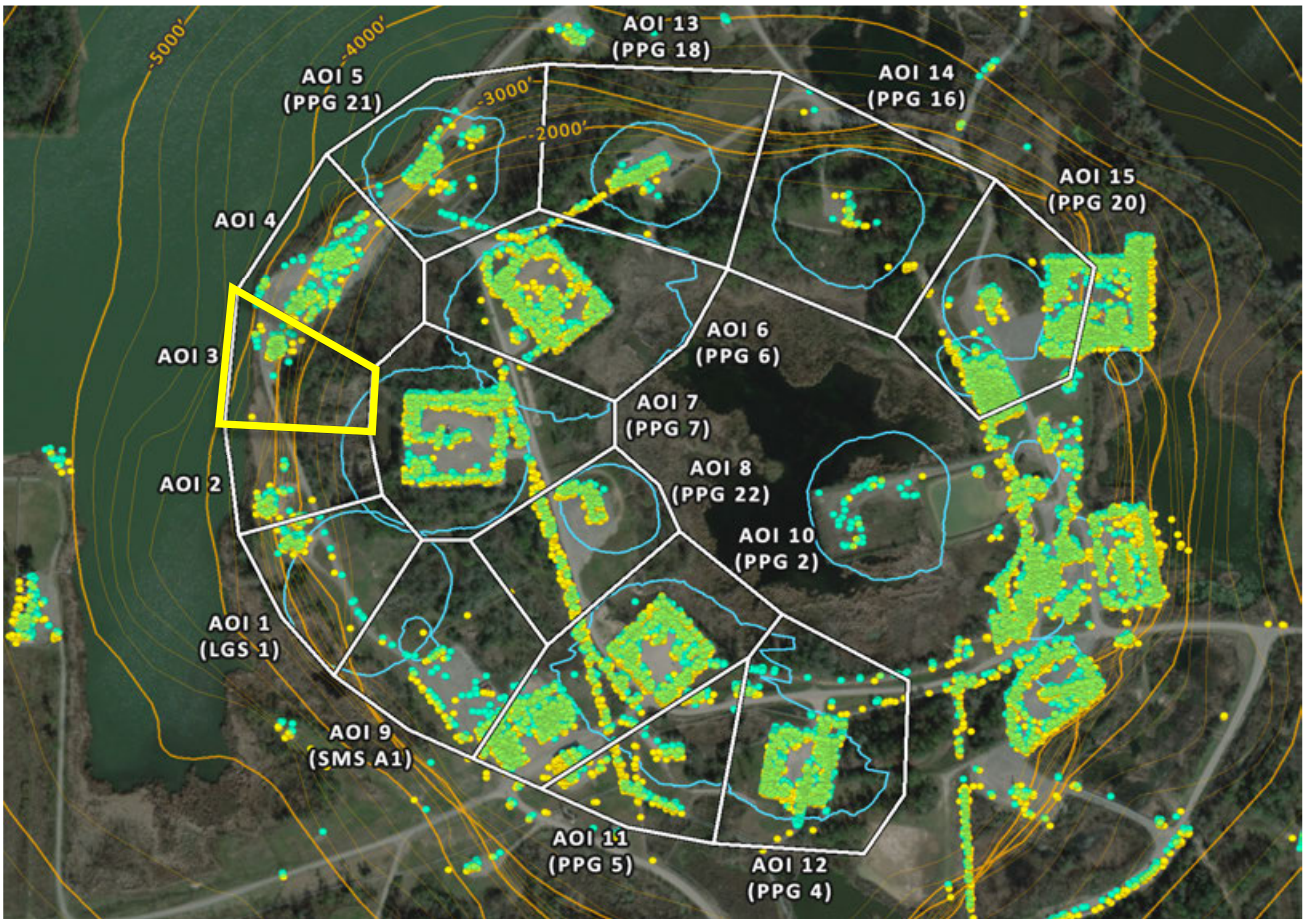
TSX-A (11/23/2025) Point Count: 39



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.79 in/yr              | -0.70 in/yr             |
| Acceleration: | -0.06 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

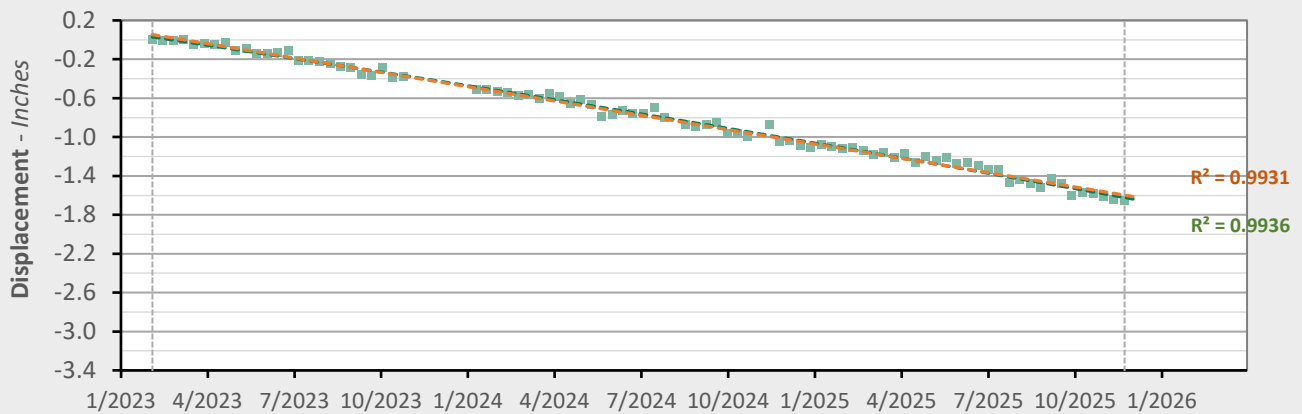


### AOI 3 - Location Map

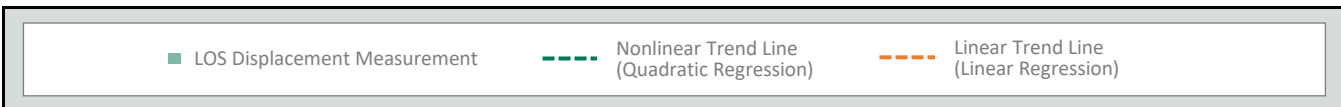


### AOI 3 - Displacement Time Series

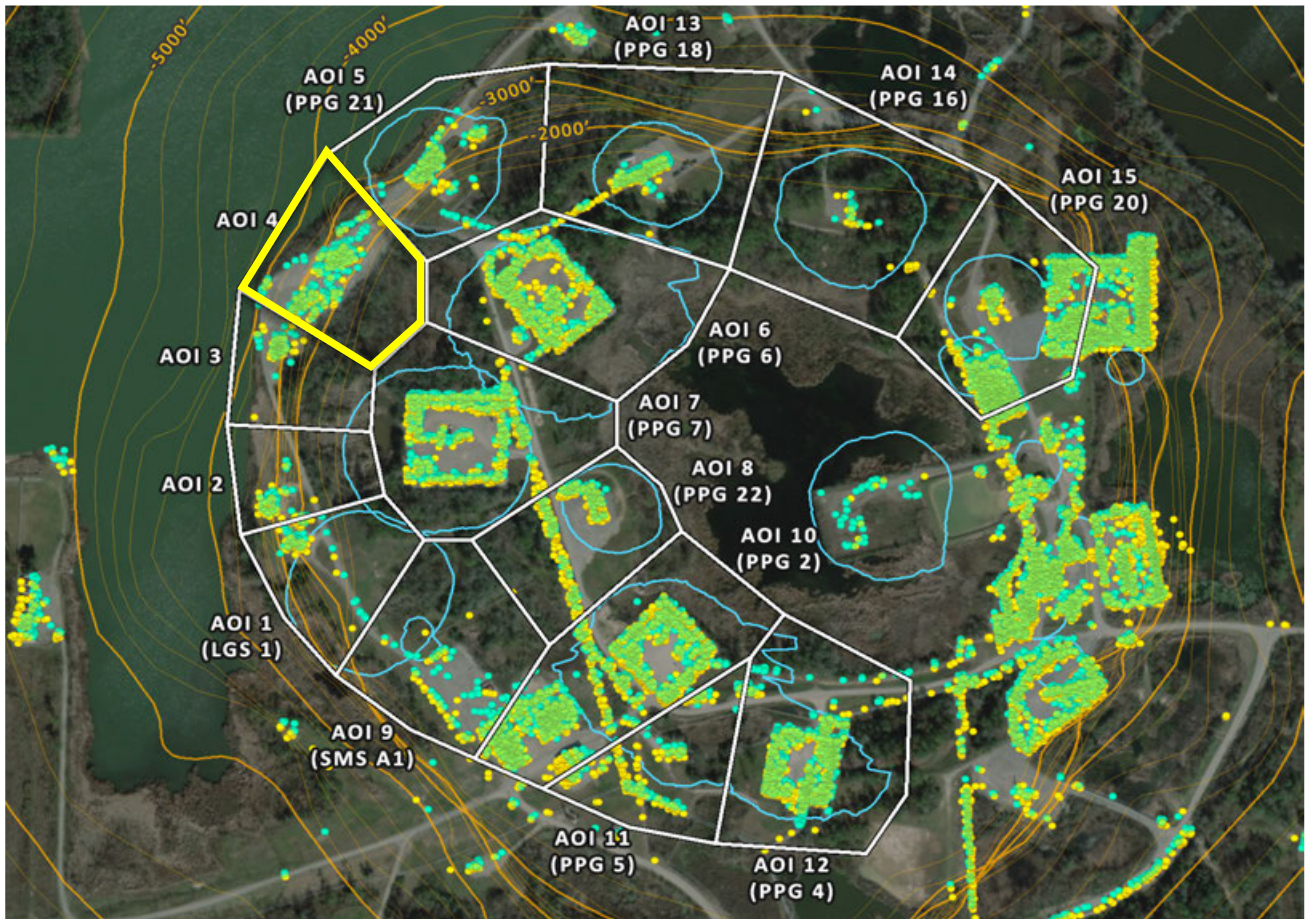
TSX-A (11/23/2025) Point Count: 55



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.64 in/yr              | -0.59 in/yr             |
| Acceleration: | -0.04 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

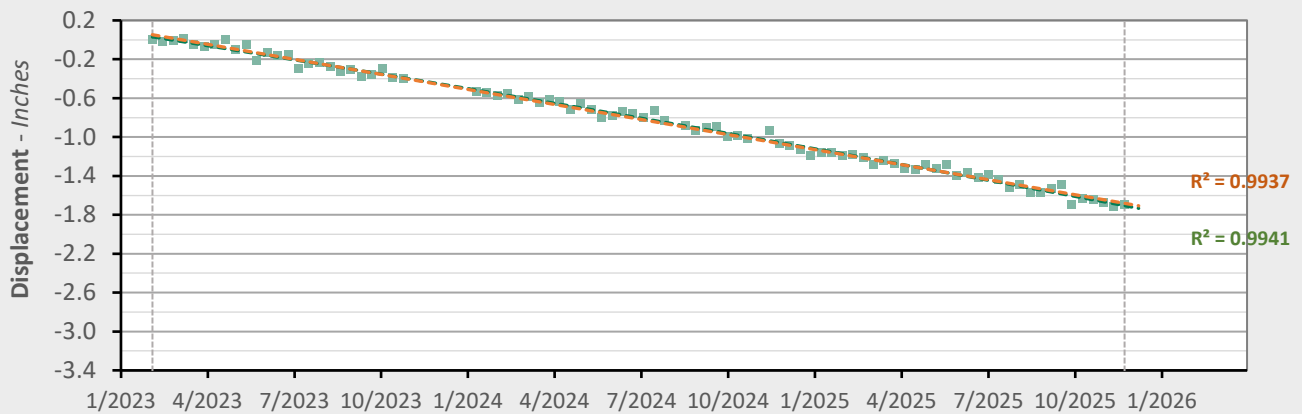


### AOI 4 - Location Map

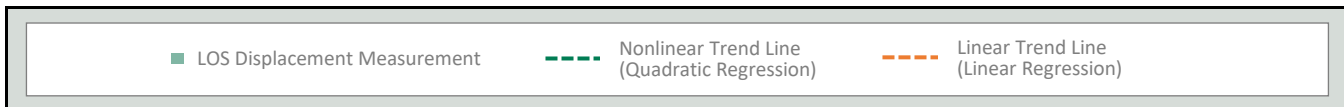


### AOI 4 - Displacement Time Series

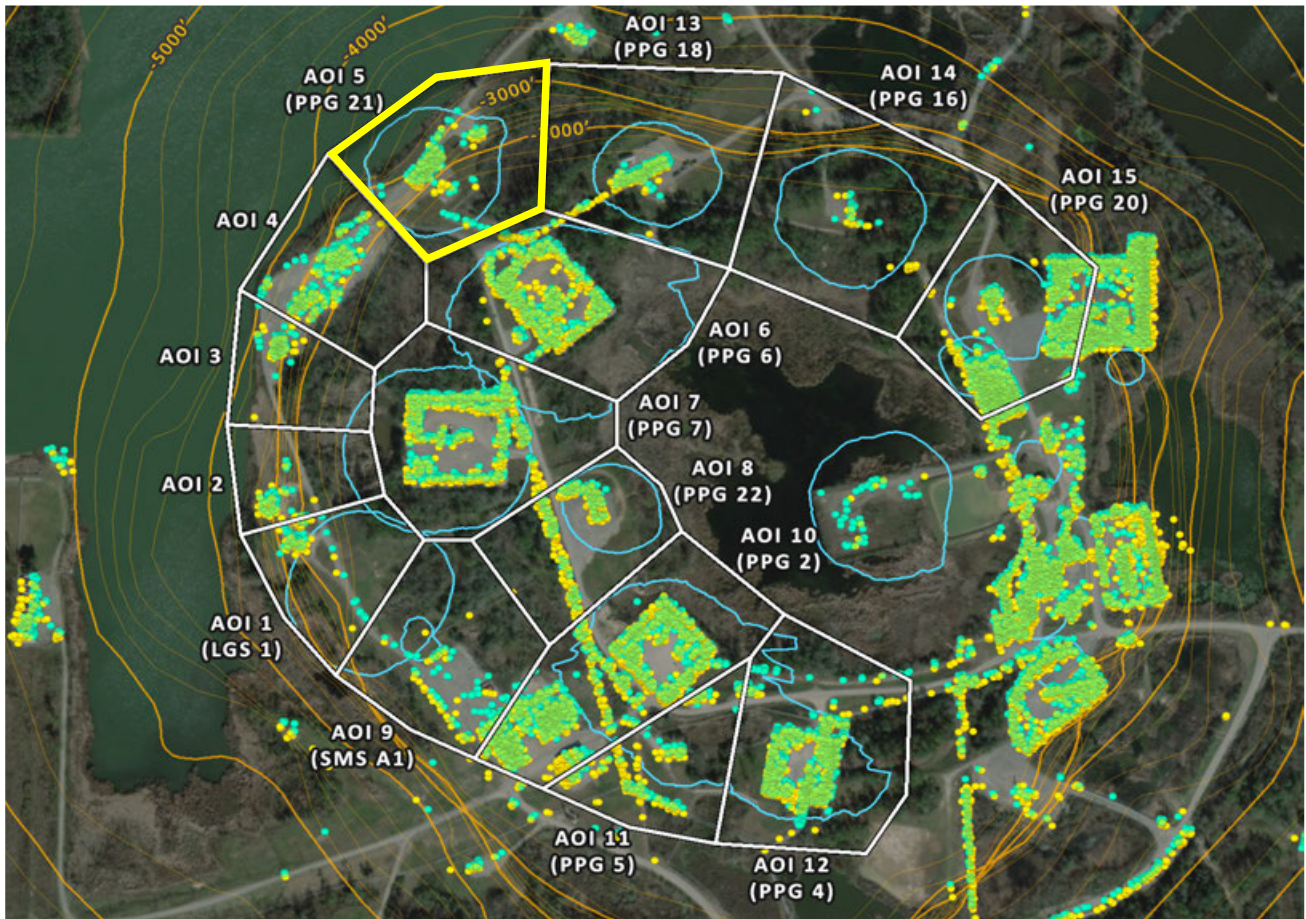
TSX-A (11/23/2025) Point Count: **124**



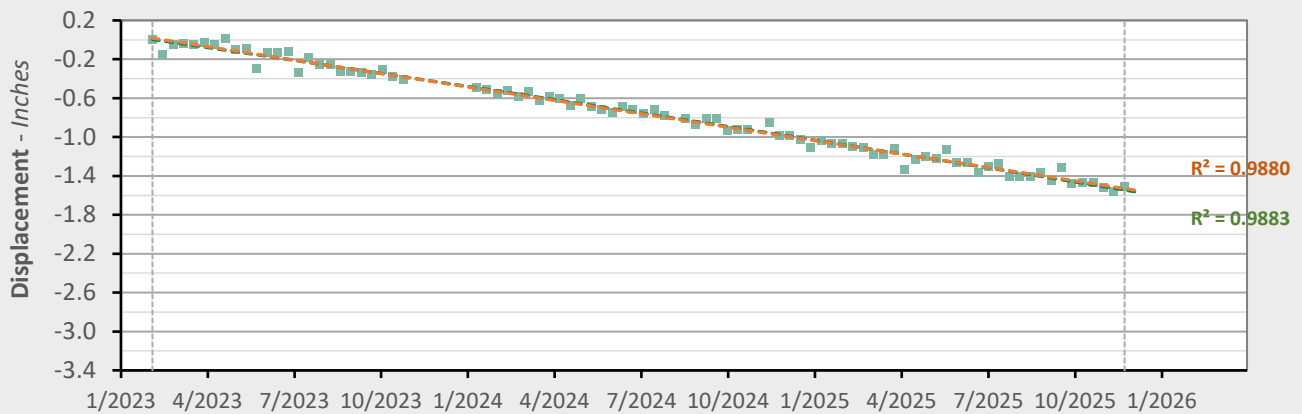
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.67 in/yr              | -0.62 in/yr             |
| Acceleration: | -0.04 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



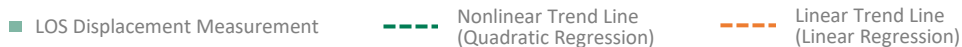
### AOI 5 (PPG 21) - Location Map



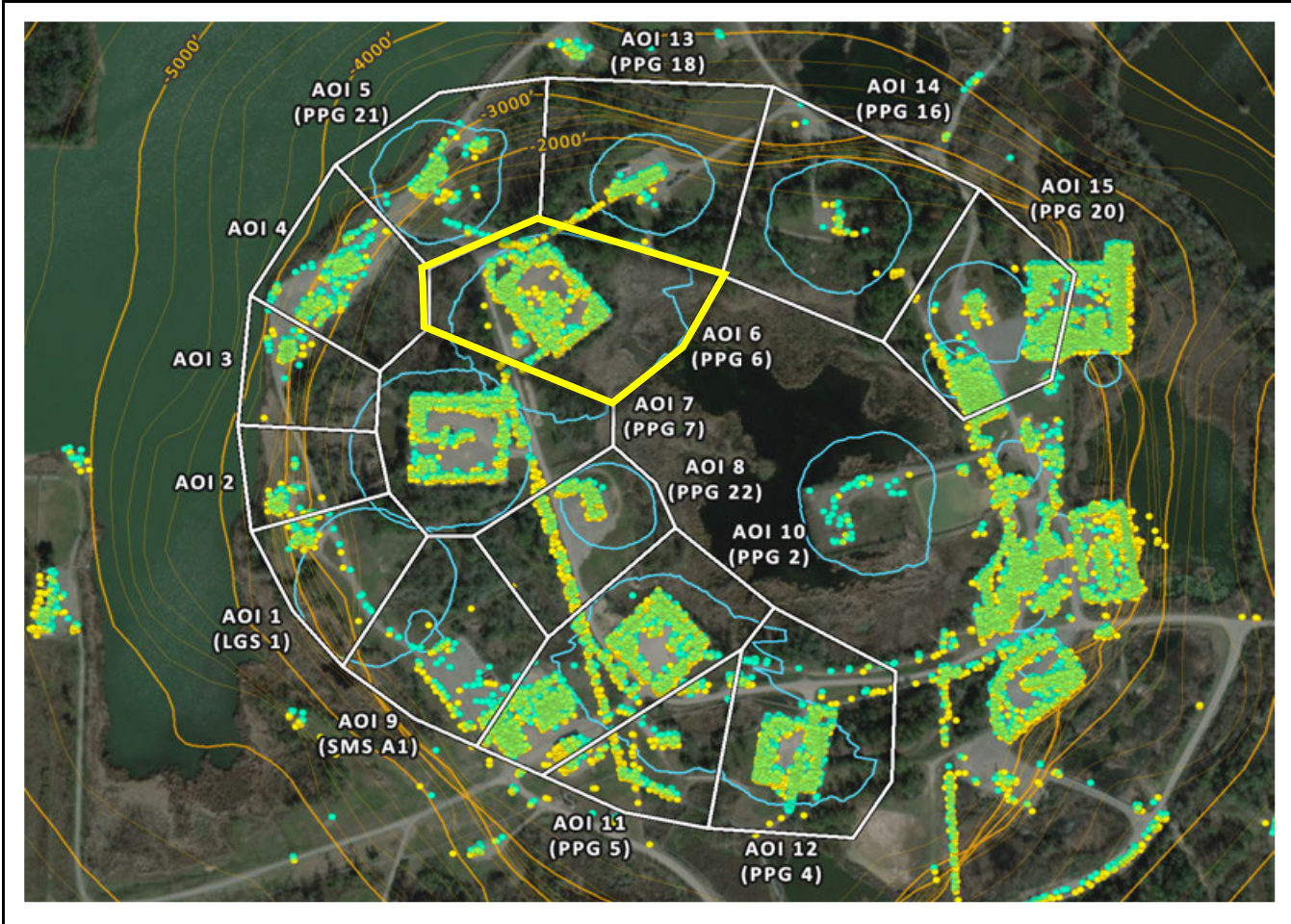
### AOI 5 (PPG 21) - Displacement Time Series TSX-A (11/23/2025) Point Count: 111



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.58 in/yr              | -0.55 in/yr             |
| Acceleration: | -0.02 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

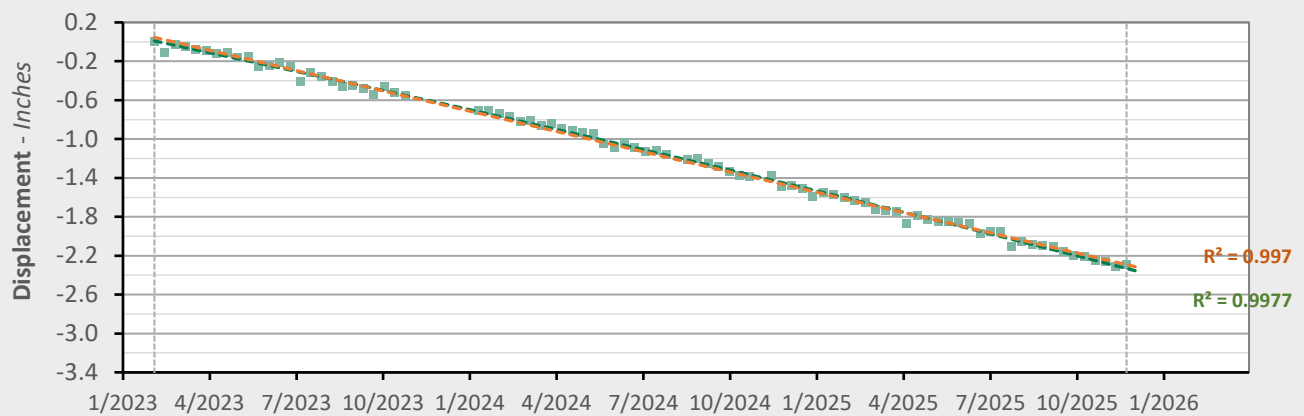


### AOI 6 (PPG 6) - Location Map

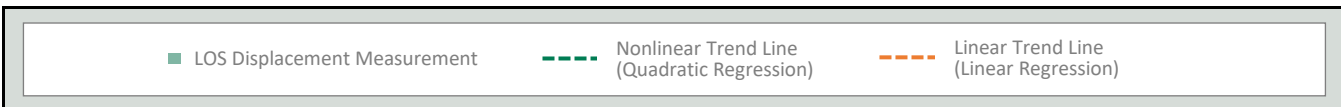


### AOI 6 (PPG 6) - Displacement Time Series

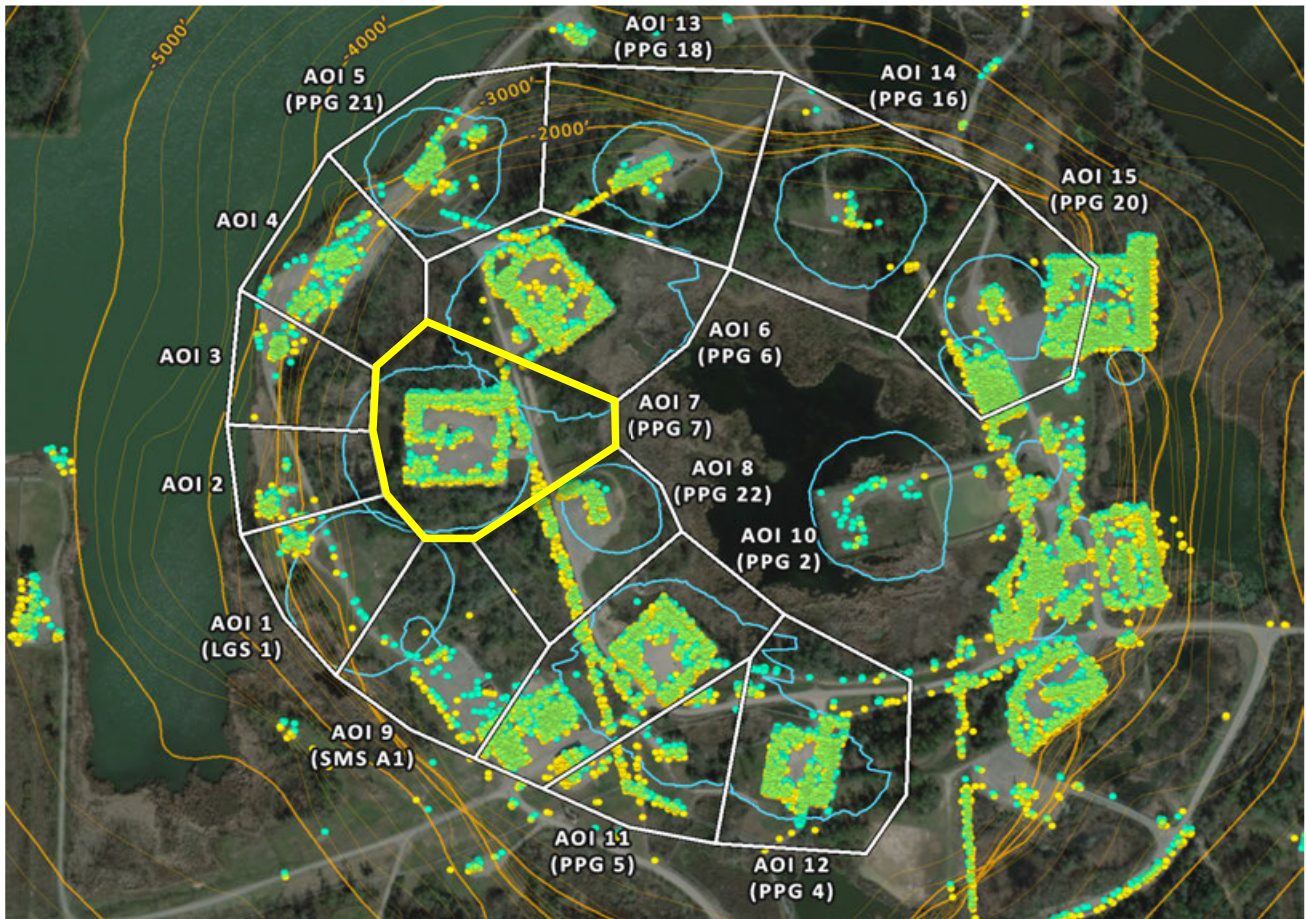
TSX-A (11/23/2025) Point Count: 408



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.92 in/yr              | -0.83 in/yr             |
| Acceleration: | -0.06 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

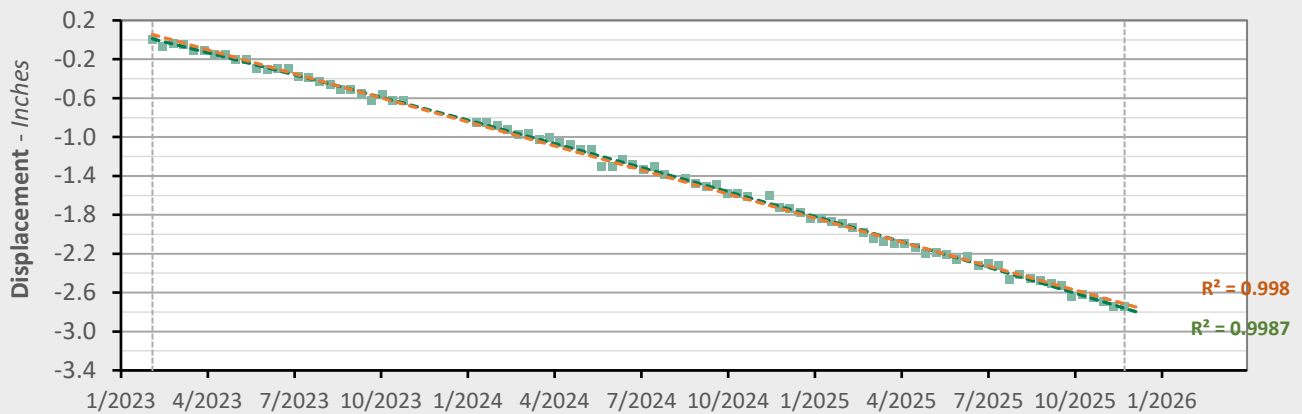


### AOI 7 (PPG 7) - Location Map

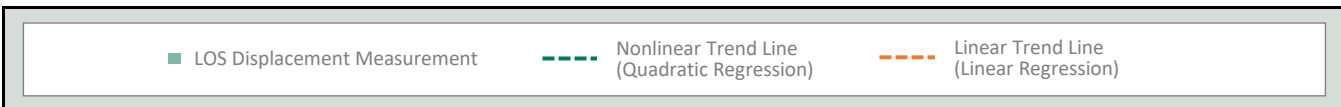


### AOI 7 (PPG 7) - Displacement Time Series

TSX-A (11/23/2025) Point Count: **371**



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.09 in/yr              | -0.99 in/yr             |
| Acceleration: | -0.07 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

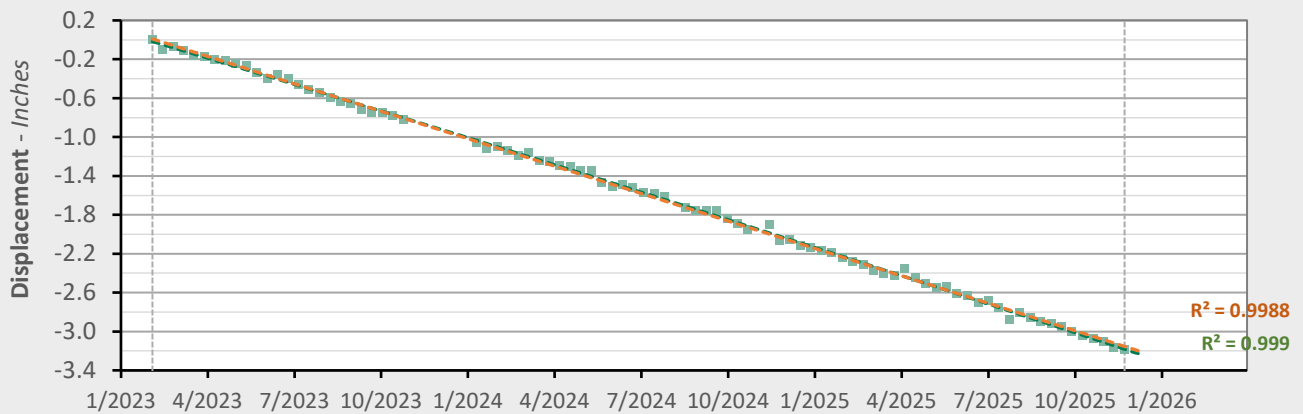


### AOI 8 (PPG 22) - Location Map

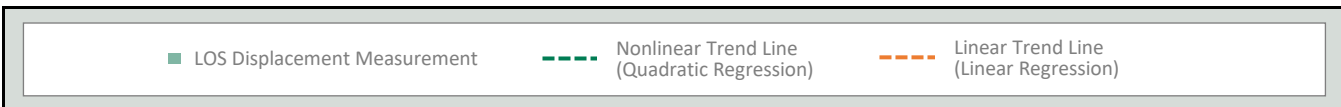


### AOI 8 (PPG 22) - Displacement Time Series

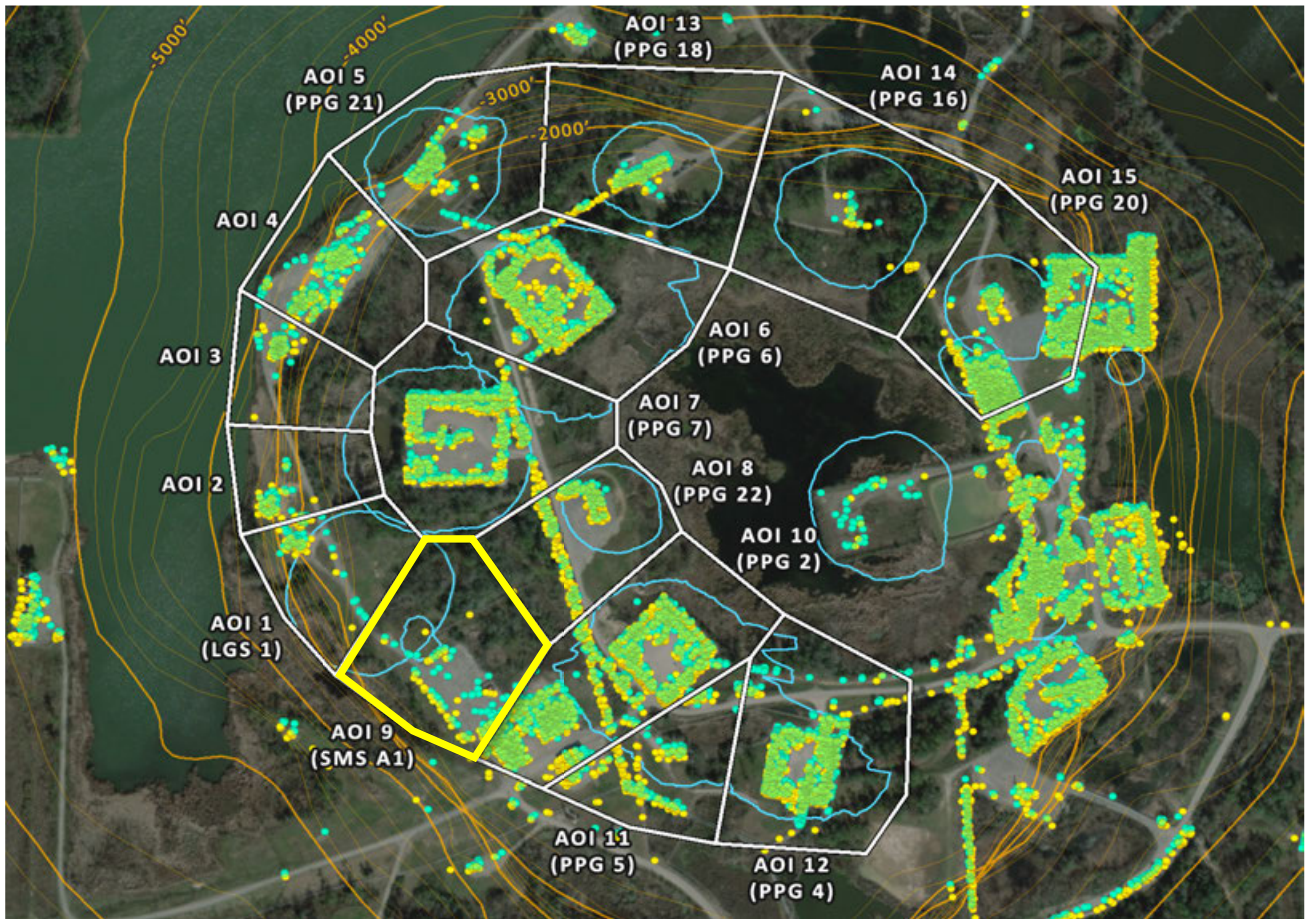
TSX-A (11/23/2025) Point Count: **187**



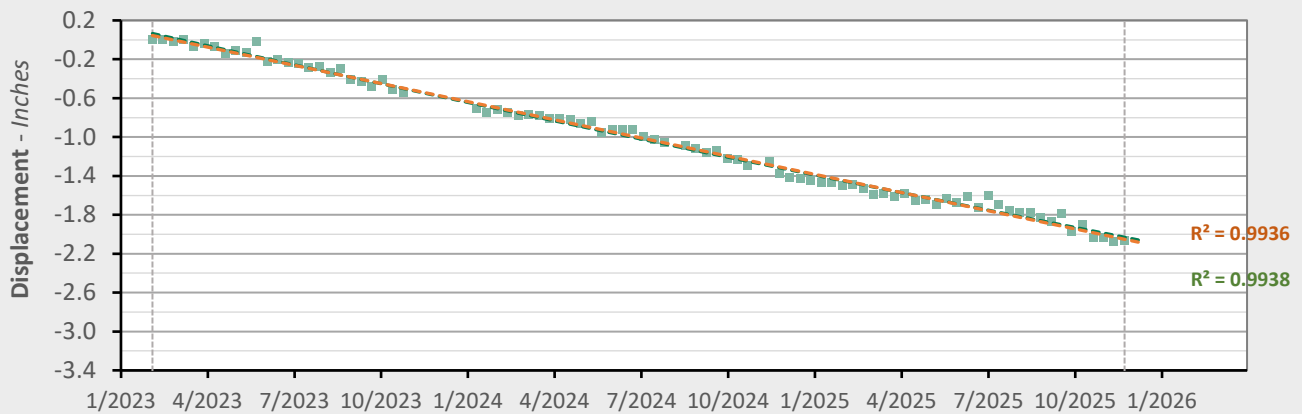
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.19 in/yr              | -1.13 in/yr             |
| Acceleration: | -0.04 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



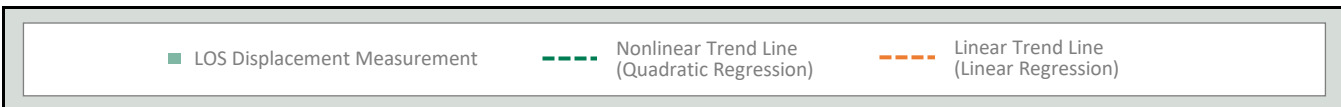
### AOI 9 (PPG A1) - Location Map



### AOI 9 (SMS A1) - Displacement Time Series TSX-A (11/23/2025) Point Count: 50



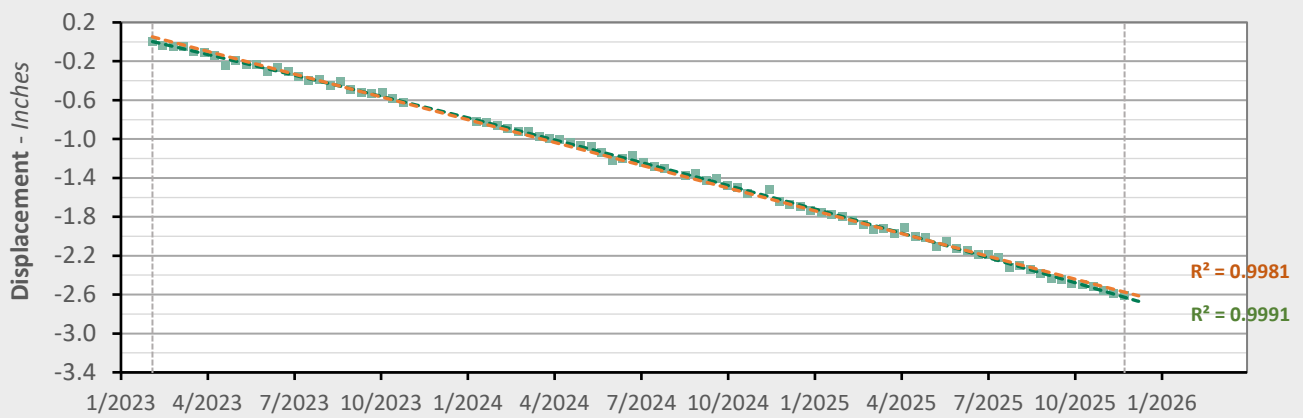
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.70 in/yr              | -0.75 in/yr             |
| Acceleration: | +0.03 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



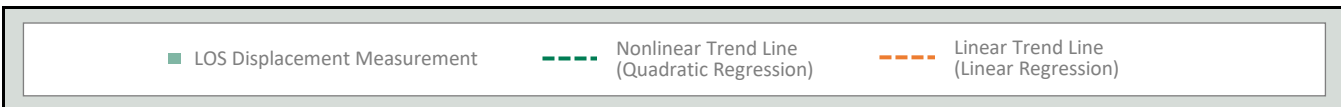
### AOI 10 (PPG 2) - Location Map



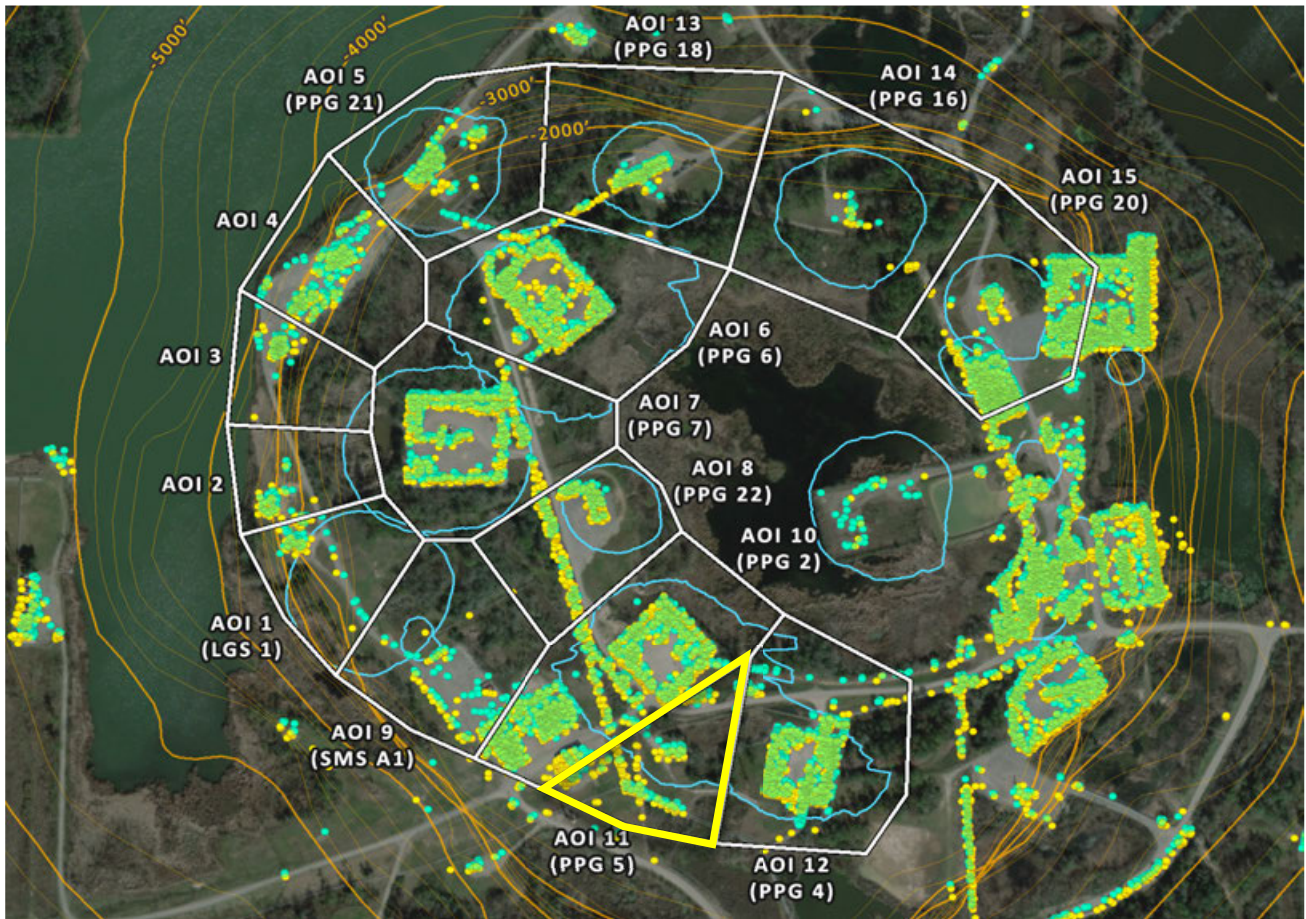
### AOI 10 (PPG 2) - Displacement Time Series TSX-A (11/23/2025) Point Count: 813



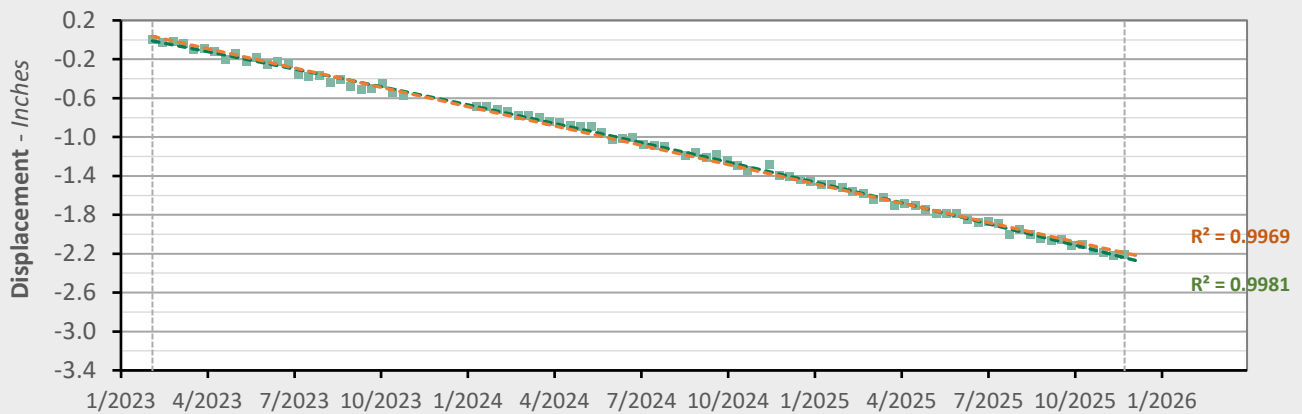
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.05 in/yr              | -0.94 in/yr             |
| Acceleration: | -0.08 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



### AOI 11 (PPG 5) - Location Map



### AOI 11 (PPG 5) - Displacement Time Series TSX-A (11/23/2025) Point Count: 154



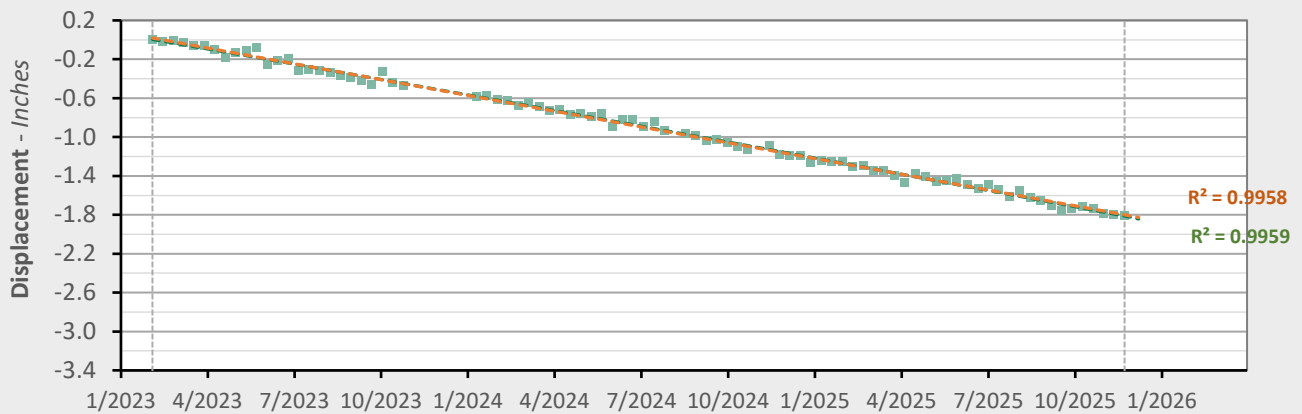
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.90 in/yr              | -0.79 in/yr             |
| Acceleration: | -0.08 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

■ LOS Displacement Measurement     
 - - - Nonlinear Trend Line (Quadratic Regression)     
 - - - Linear Trend Line (Linear Regression)

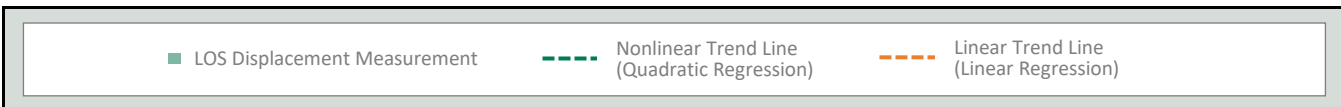
### AOI 12 (PPG 4) - Location Map



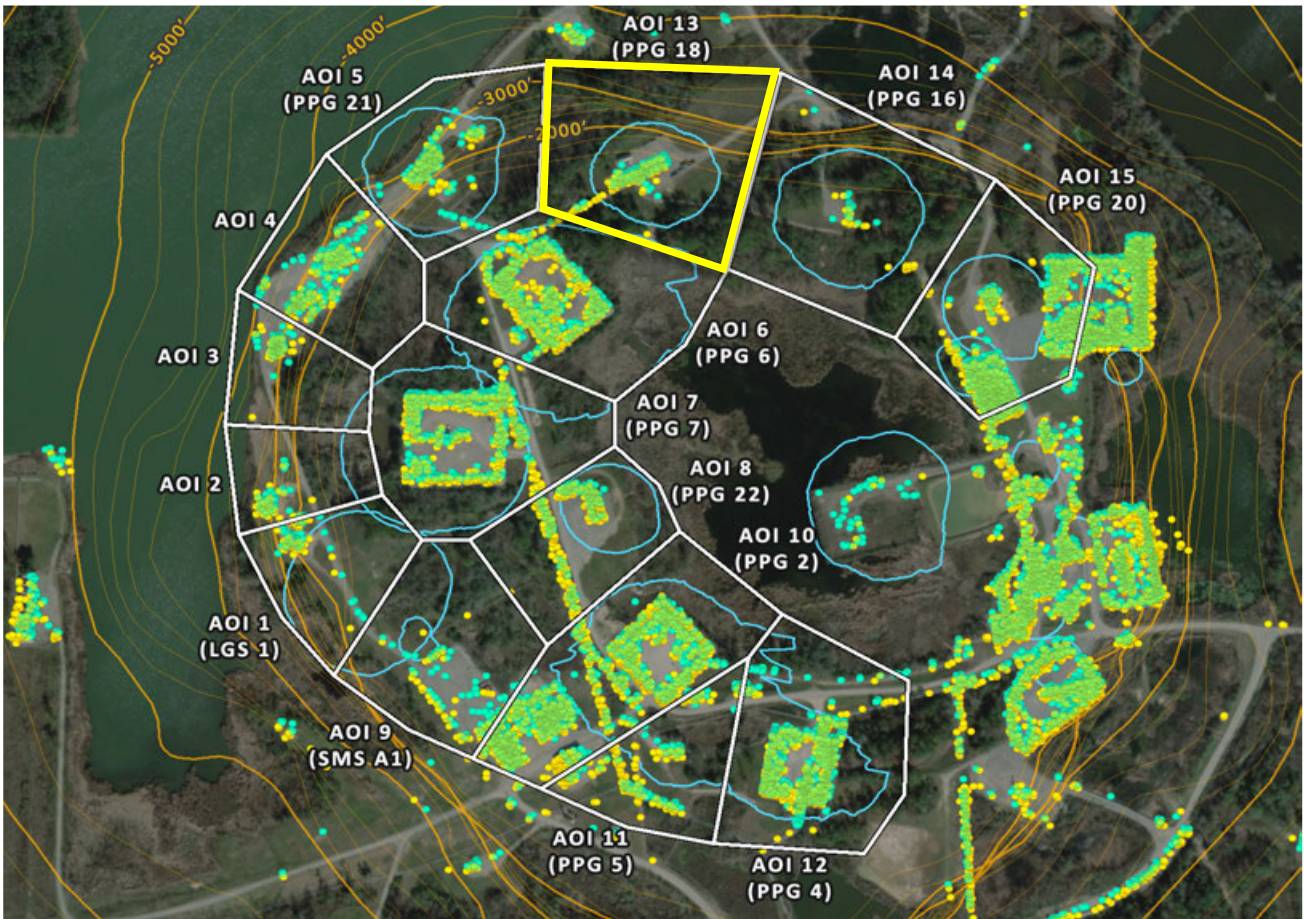
### AOI 12 (PPG 4) - Displacement Time Series TSX-A (11/23/2025) Point Count: 328



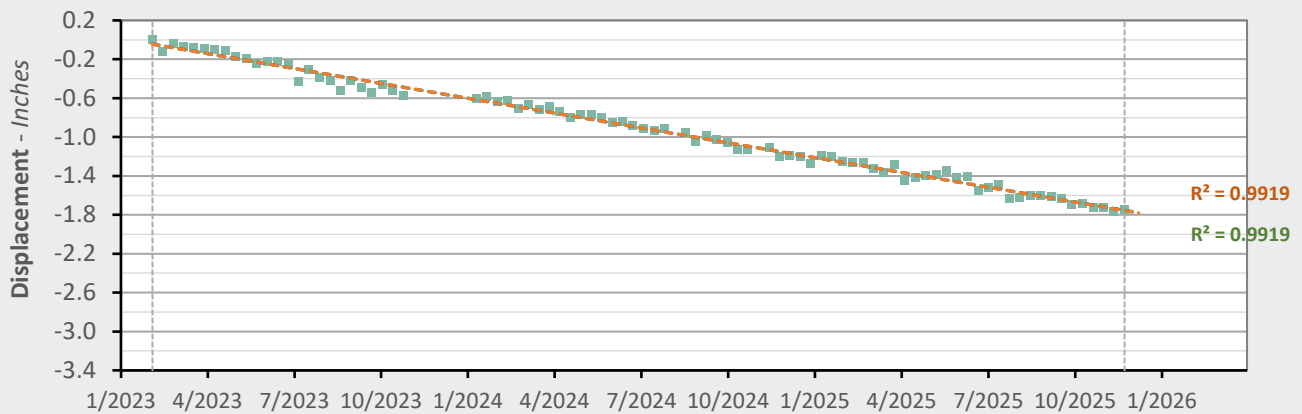
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.68 in/yr              | -0.65 in/yr             |
| Acceleration: | -0.02 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



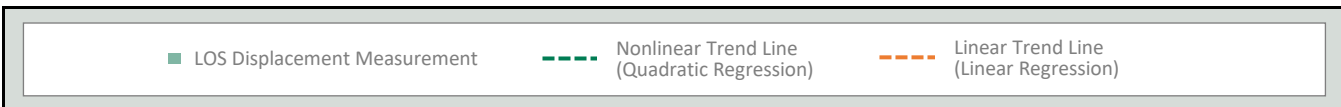
### AOI 13 (PPG 18) - Location Map



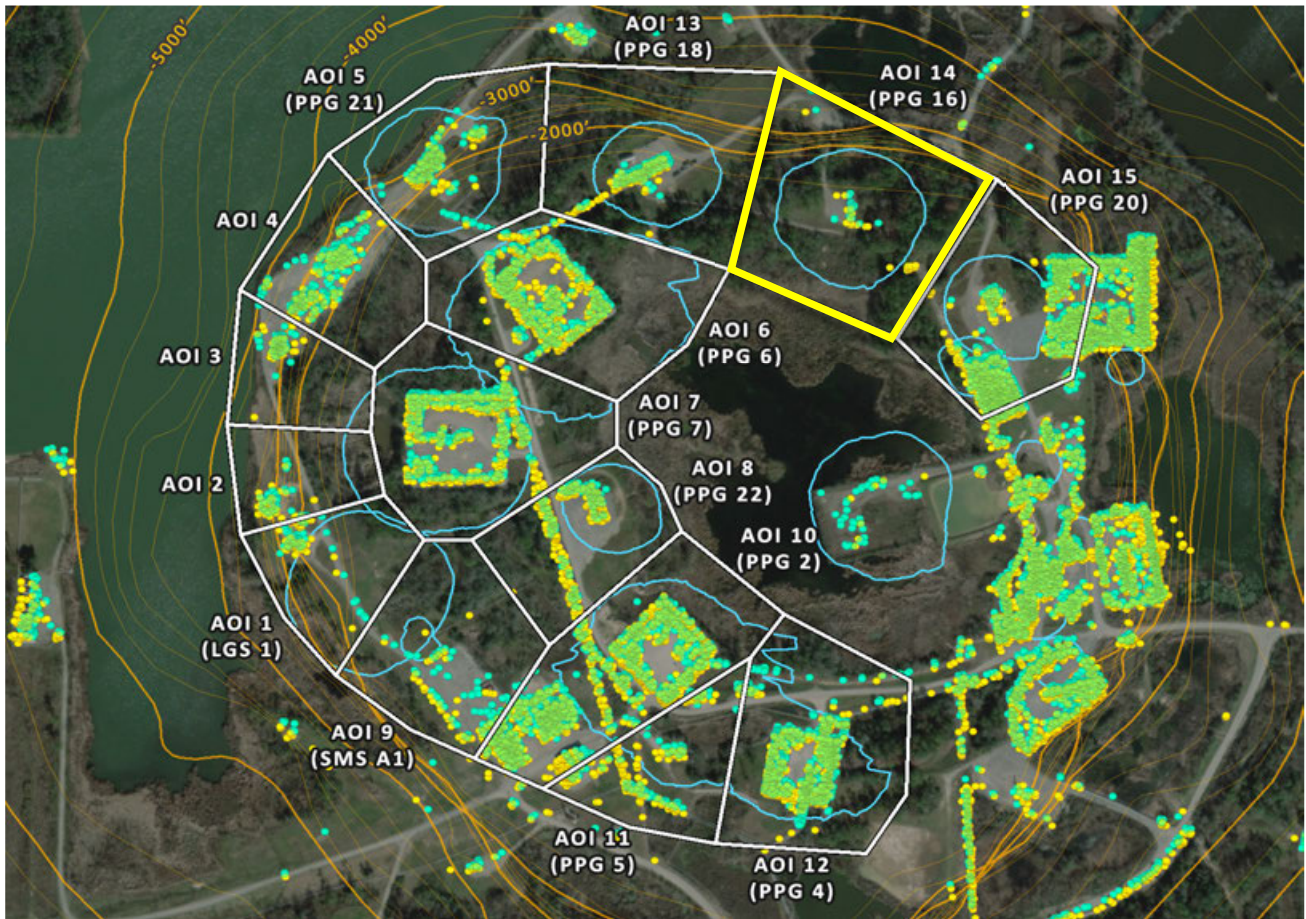
### AOI 13 (PPG 18) - Displacement Time Series TSX-A (11/23/2025) Point Count: 93



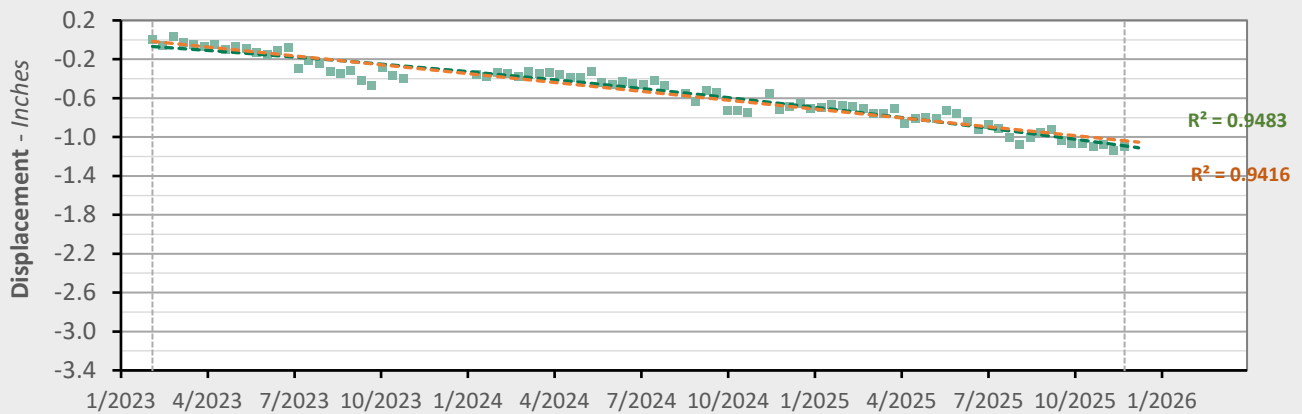
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.61 in/yr              | -0.61 in/yr             |
| Acceleration: | +0.00 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



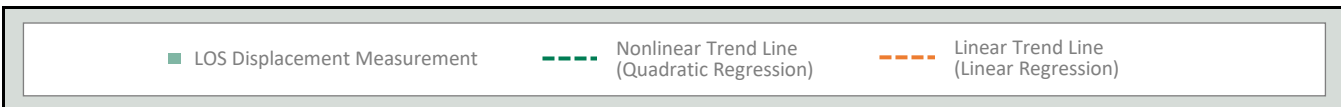
### AOI 14 (PPG 16) - Location Map



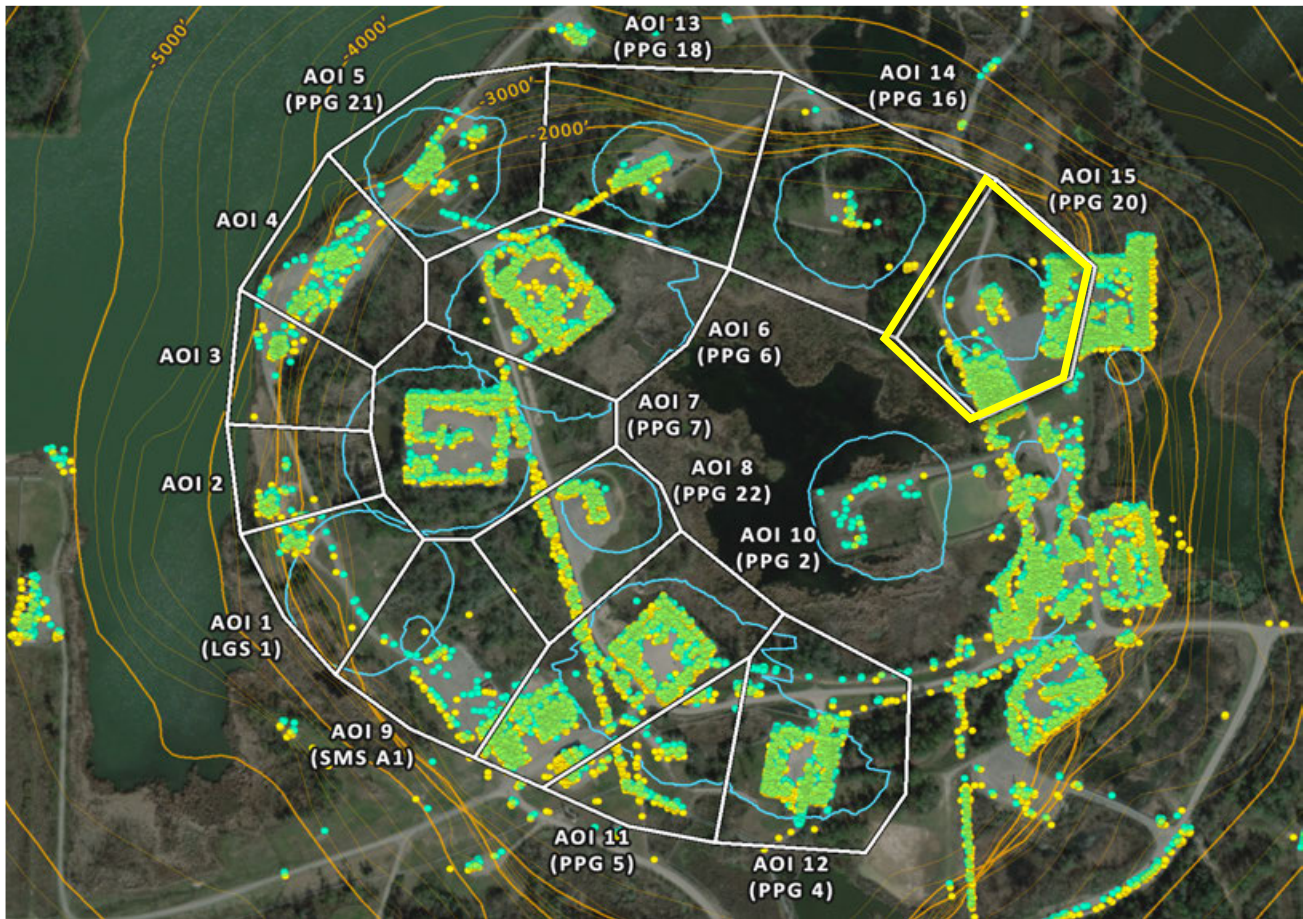
### AOI 14 (PPG 16) - Displacement Time Series TSX-A (11/23/2025) Point Count: 22



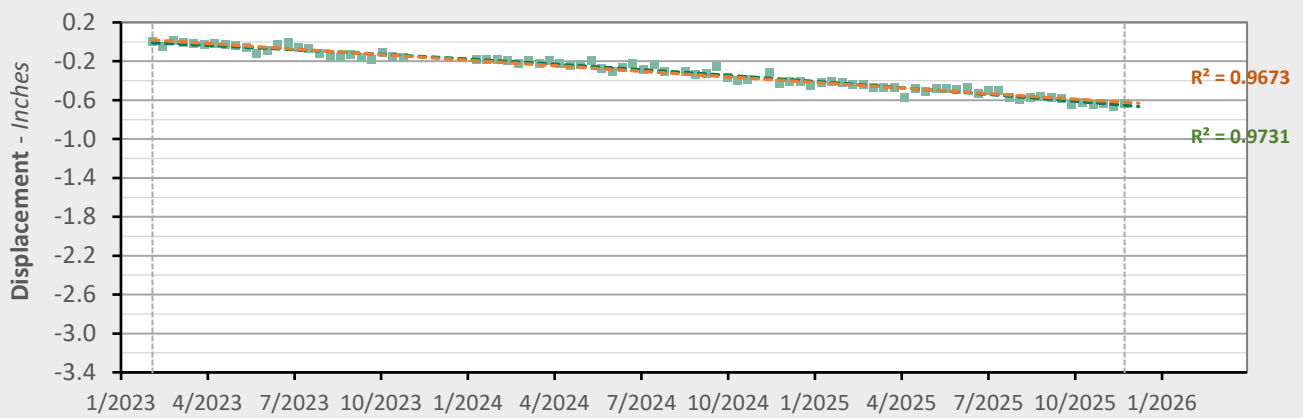
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.48 in/yr              | -0.36 in/yr             |
| Acceleration: | -0.08 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



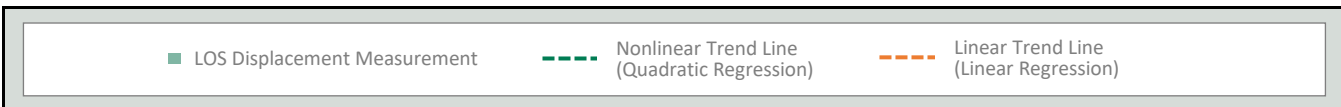
### AOI 15 (PPG 20) - Location Map



### AOI 15 (PPG 20) - Displacement Time Series TSX-A (11/23/2025) Point Count: 521



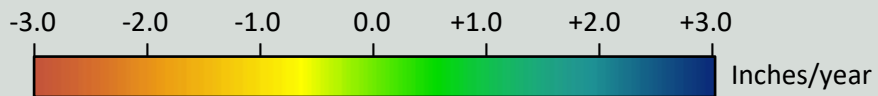
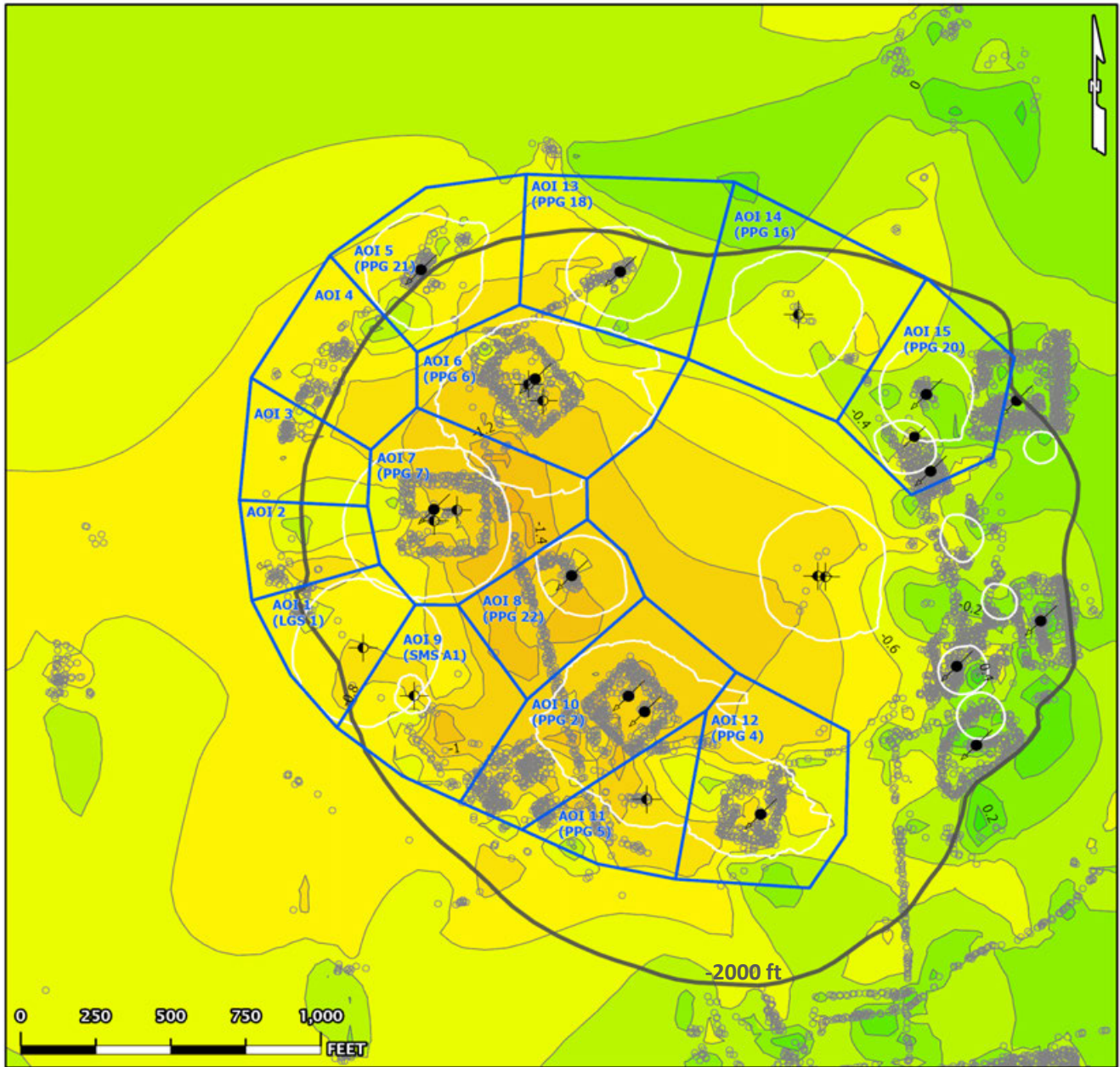
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.30 in/yr              | -0.23 in/yr             |
| Acceleration: | -0.05 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



**TSX-A Data (02/04/2023 - 11/23/2025)**

**Nonlinear Velocity Contours**

As of date: 11/23/2025

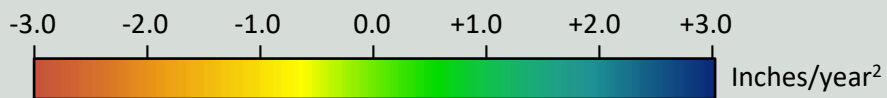
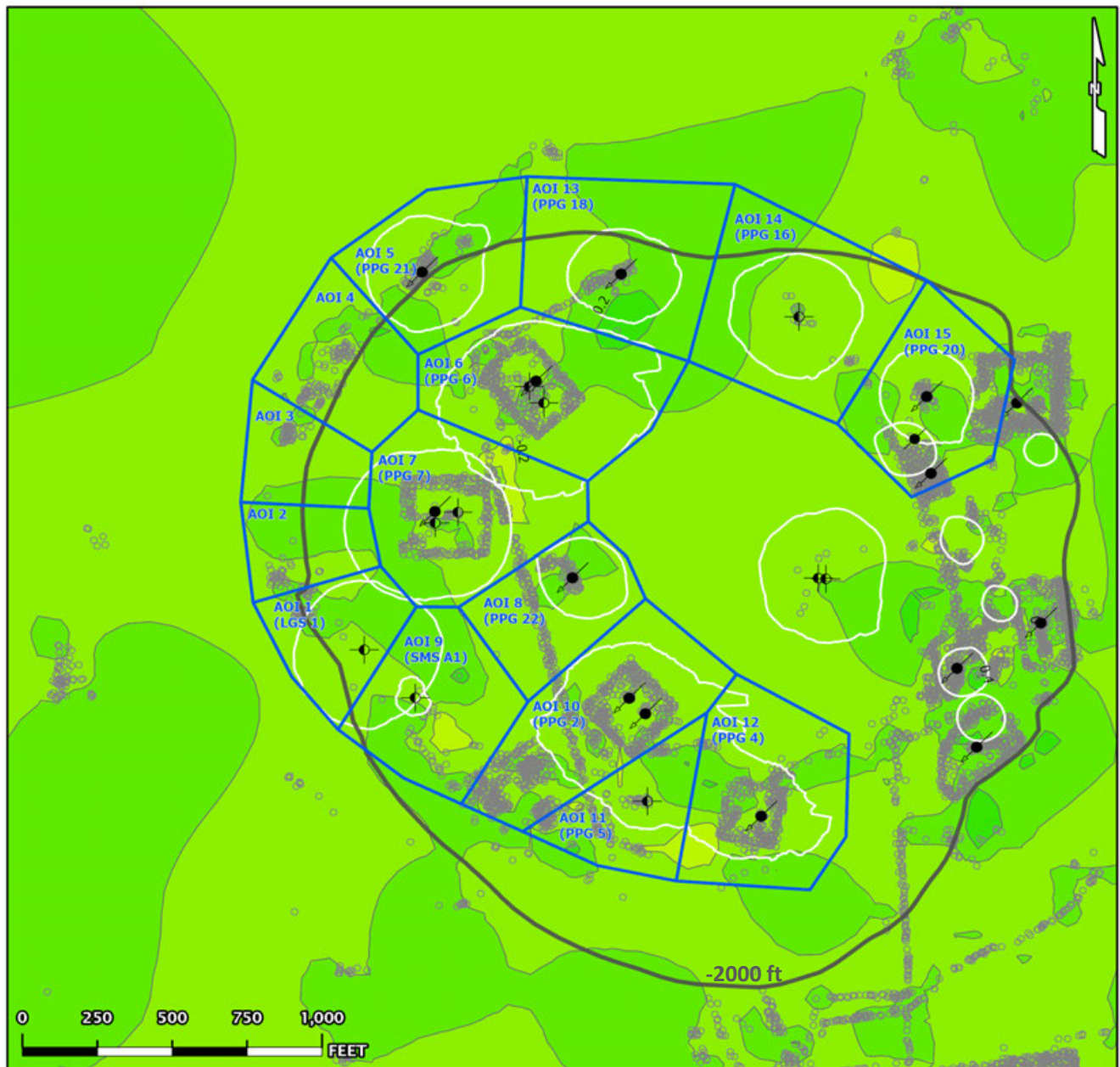


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**TSX-A Data (02/04/2023 - 11/23/2025)**

**Nonlinear Acceleration Contours**

Date range: 02/04/2023 - 11/23/2025

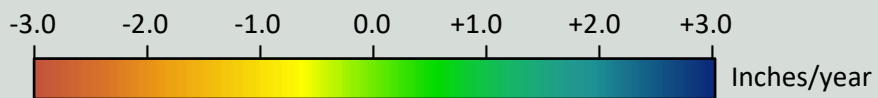
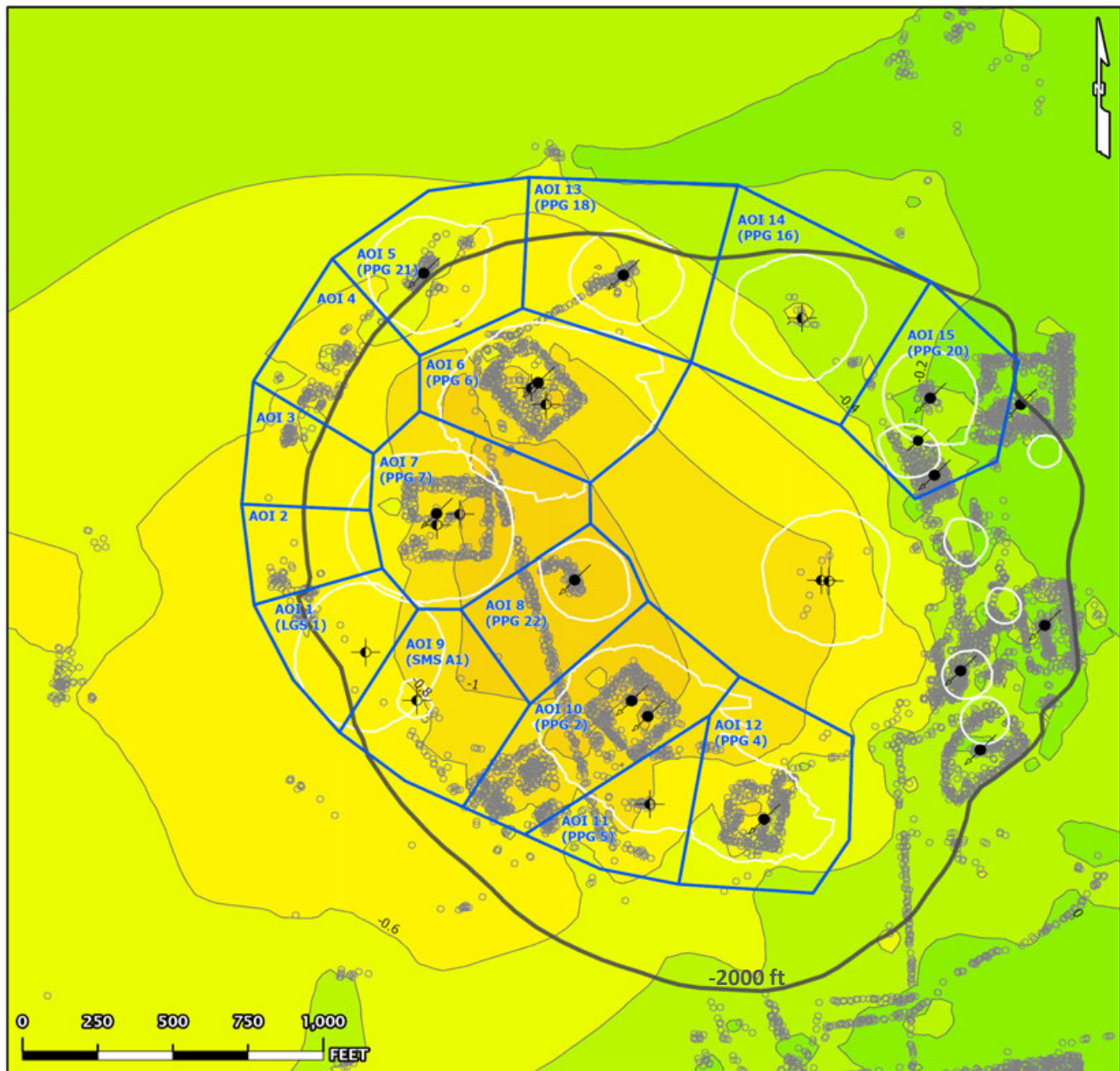


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**TSX-A Data (02/04/2023 - 11/23/2025)**

**Linear Velocity Contours**

Date range: 02/04/2023 - 11/23/2025

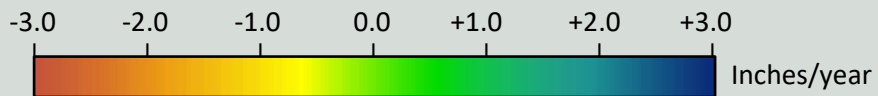


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**TSX-A Data (02/04/2023 - 11/23/2025)**

**Nonlinear Velocity Data Points**

As of date: 11/23/2025

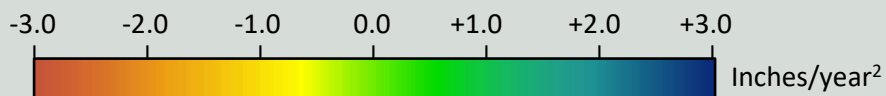


- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

### TSX-A Data (02/04/2023 - 11/23/2025)

#### Nonlinear Acceleration Data Points

Date range: 02/04/2023 - 11/23/2025

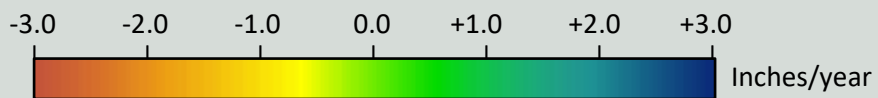


- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**TSX-A Data (02/04/2023 - 11/23/2025)**

**Linear Velocity Data Points**

Date range: 02/04/2023 - 11/23/2025



- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

## **ATTACHMENT C**

### **TSX/PAZ InSAR report - November 27, 2025**



# TSX/PAZ Satellite Update

Continuous InSAR Monitoring of  
Ground Displacement At Westlake  
Caverns and Western Dome Flank

## Sulphur Mines Salt Dome

Prepared for:  
**Westlake Chemical**

Prepared by:  
Lonquist Field Service, LLC  
8591 United Plaza Blvd., Suite 280  
Baton Rouge, LA 70809

| Dataset                               |
|---------------------------------------|
| Satellite Source                      |
| <b>TerraSAR-X - PAZ Constellation</b> |
| Most Recent Image Date                |
| <b>Thursday, November 27, 2025</b>    |

Analysis Report Date:  
**December 14, 2025**

| Dataset Information           |   |
|-------------------------------|---|
| Satellite Source              | TerraSAR-X - PAZ Constellation - Descending       |
| Revisit Frequency             | 4 and 7 days                                      |
| Most Recent Image Date        | Thursday, November 27, 2025                       |
| Dataset Image Count           | 178   |
| Dataset Time Range            | January 24, 2023 - November 27, 2025              |
| Dataset Length                | 2.84 Years  |
| Satellite Line-of-Sight (LOS) | 37° East of Vertical (Viewing site from the East) |

### Analysis Methodology

**Time Series Charts**  
Trend lines were calculated for the averaged displacement values within each AOI. Both a nonlinear (quadratic) and linear regression were applied to each AOI point group to identify rates of change in LOS displacement. These trends are displayed in the Time Series section of this report.

**Contour Maps**  
A nonlinear (quadratic) and linear trend was also calculated for each individual measurement point across the analysis region. Nonlinear trend values for each point were used to generate Velocity and Acceleration contour maps to convey the spatial distribution of the calculated movement. The linear trend values for each point (which lack an acceleration component) were used to generate an additional Velocity contour map. Maps depicting the individual data points colored by these trend values are also included in the last section of the report.

Negative velocity values indicate subsidence or westward movement and positive velocity indicates uplift or eastward movement. Negative acceleration values indicate increasing rates of subsidence, increasing westward movement, or slowing eastward movement and positive acceleration values indicate slowing rates of subsidence, slowing westward movement, or increasing eastward movement.

### Observations

To-date there have been no acute deviations from established subsidence trends in the areas investigated.

The time series charts show broadly consistent near-linear trends among the analysis AOIs. Acceleration values for the quadratic (non-linear) trend fit are negative in most AOIs (increasing negative displacement rates) but minor overall. A slight seasonal fluctuation is evident in most of the AOI trends.

The contour maps show the greatest negative displacement centered around the eastern central portion of the dome where the combination of subsidence and western horizontal movement (toward dome center) is expected to produce the greatest rate of movement away from the satellite's line of sight from the east.



Date Signed: December 14, 2025  
Austin, Texas

Nathaniel L. Byars, P.E.  
Principal Engineer  
Louisiana License No. 40697

## InSAR Data Sources

### InSAR Data

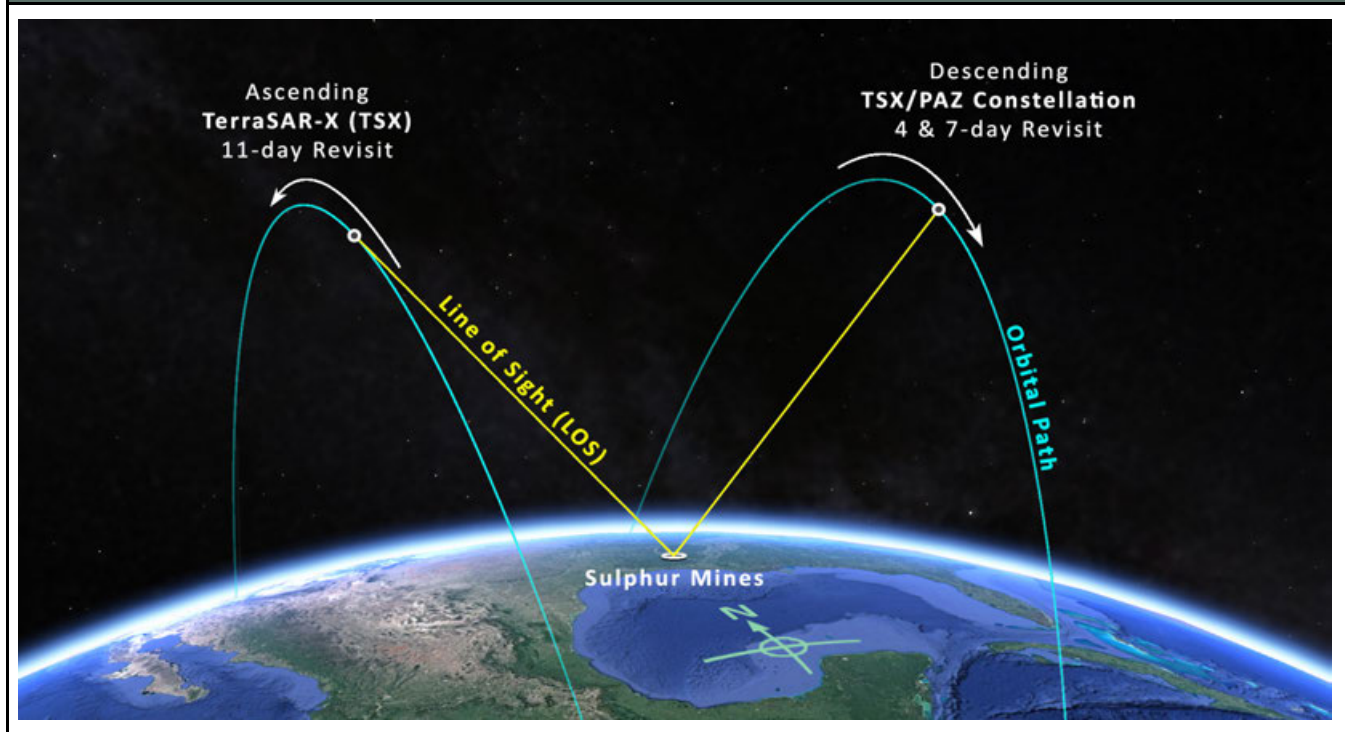
Interferometric Synthetic Aperture Radar (InSAR) is the most well established method to continually evaluate small, normally undetectable, ground movement over a large area. Radar imagery collected via satellites over successive orbital passes is used to identify and define measurement points on the ground. Objects or ground features providing a stable reflection of radar energy such as buildings, roads, and infrastructure produce the highest quality measurement points. InSAR analysis identifies the change in distance between the satellite and each measurement point over time relative to a stable reference point within the imaged area.

### Satellite Sources

Two InSAR datasets are being used to evaluate subsidence over the Sulphur Mines Salt Dome. These datasets provide Line-of-Sight (LOS) displacement measurements from both ascending and descending orbits. An ascending orbit denotes the satellite's longitudinal course from south to north as it passes over the site, while a descending orbit denotes the satellite is moving from north to south.

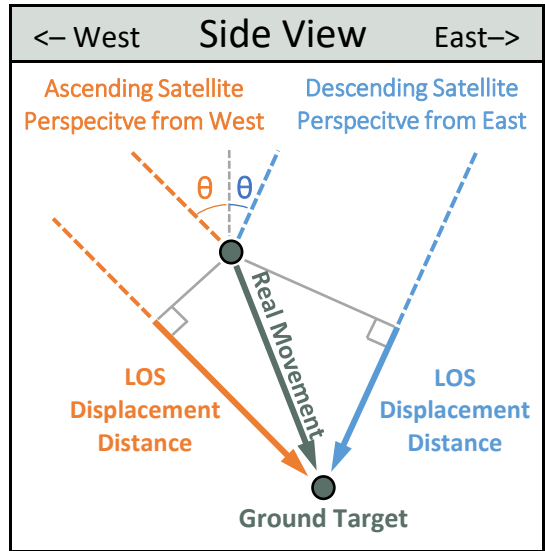
The first dataset comes from the high-resolution TerraSAR-X satellite on an ascending orbit track ("TSX-A") that captures data from the west of the site on an 11-day frequency. The second comes from a pair of high-resolution satellites that include the TerraSAR-X satellite and the PAZ satellite ("TSX/PAZ Constellation") which share the same descending orbit track and capture data from east of the site, each with an 11-day frequency. Their orbits are offset with the PAZ satellite passing over the site 4 days after the TSX satellite. Prior to May 2024, the ascending data was captured from a low-resolution Sentinel-1 satellite at a similar viewing angle to the TSX orbit. The transition to the ascending TSX track was made to increase data accuracy and measurement point density once a suitable data history had been gathered for trend analysis. The image below depicts the orbital paths of the current satellites in relation to the Sulphur Mines Salt Dome.

## Satellite Orbital Diagram



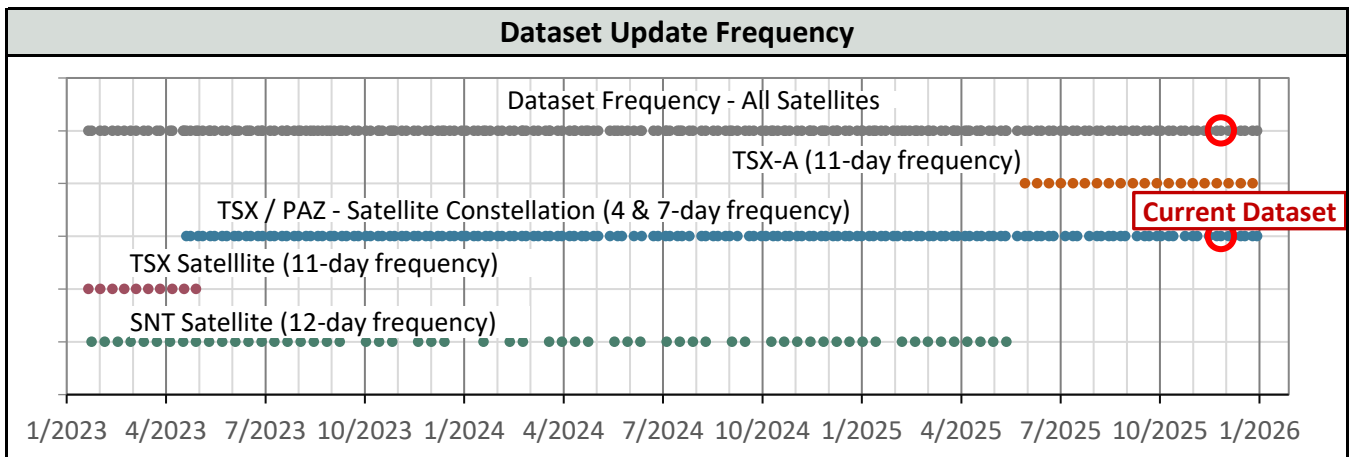
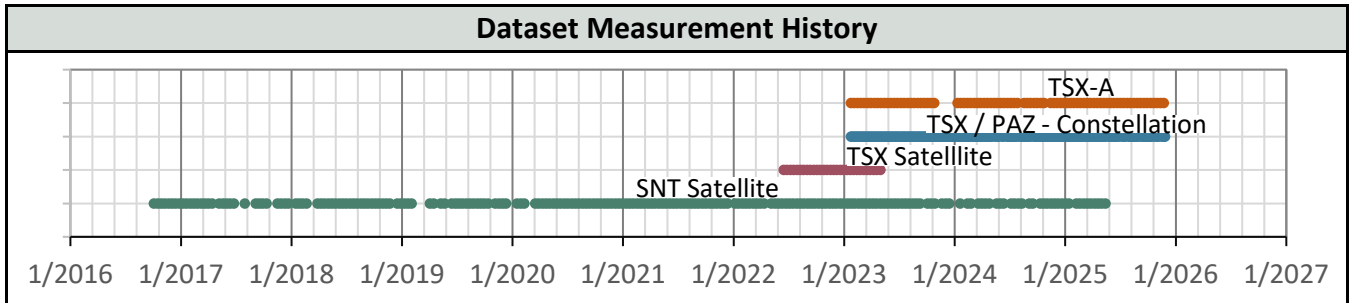
### InSAR Line-of-Site (LOS) Data

LOS displacement measurements refer to a change in distance between the satellite sensor and the ground target. Measurement positions on the west side of the Sulphur Dome are known to be experiencing some eastward movement toward the dome center due to the geometry of the subsidence basin. The InSAR satellites view the site from eastward and westward positions so LOS measurements are understood to convey a movement distance that is not purely vertical. The diagram to the right illustrates the geometric relationship between the theoretical Real movement of a ground target and LOS displacement measurements from two different satellite viewing directions.

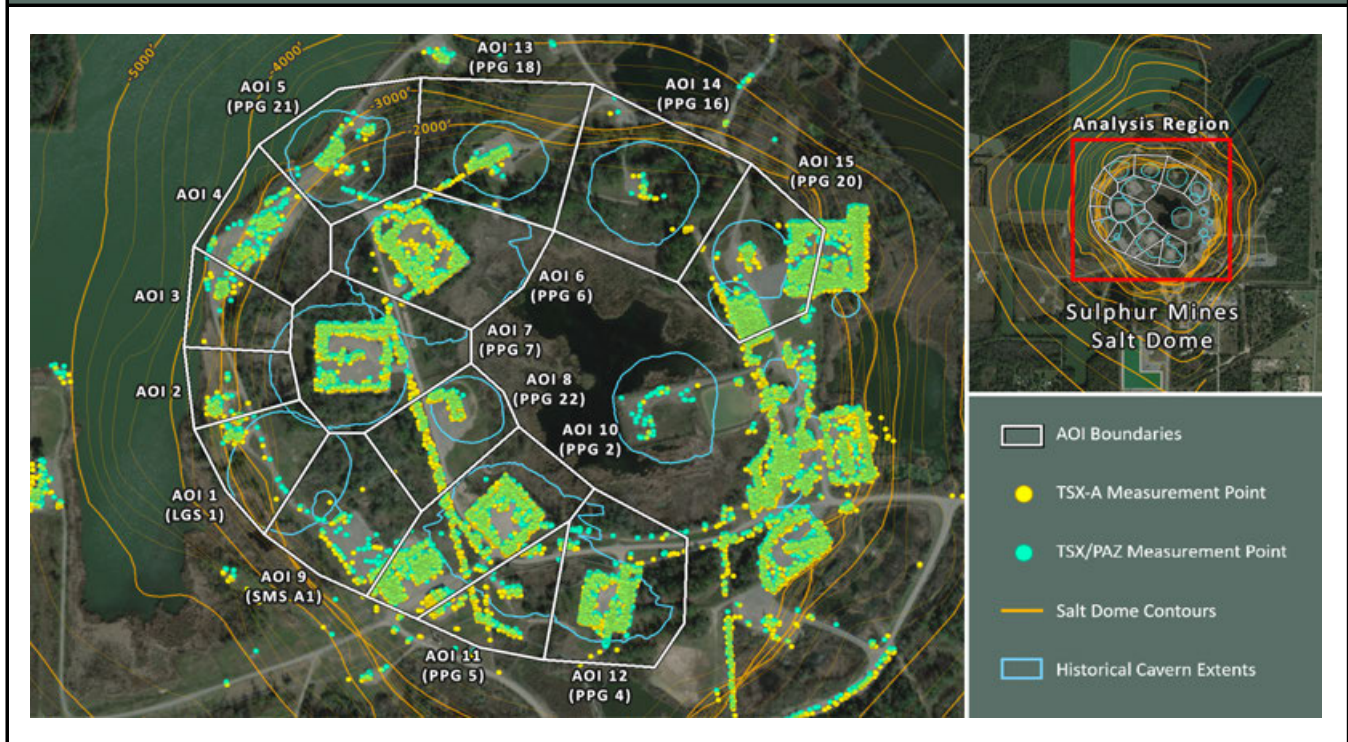


### Satellite Properties & Image Frequency

| Satellite and Data Properties                 | SNT              | TSX-A            | TSX/PAZ Constellation |
|---|------------------|------------------|-----------------------|
| <b>Band (Wavelength)</b>                      | C-band (2.32 in) | X-band (1.22 in) | X-band (1.22 in)      |
| <b>Track</b>                                  | T136             | T52              | T67 & T120            |
| <b>Pixel resolution</b>                       | 65 x 16 ft       | 3 x 3 ft         | 3 x 3 ft              |
| <b>Revisit frequency</b>                      | 12 days          | 11 days          | 4 & 7 days            |
| <b>Orbit (LOS Angle, <math>\theta</math>)</b> | Ascending (42°)  | Ascending (44°)  | Descending (37°)      |
| <b>Data Start Date</b>                        | 10/4/2016        | 2/4/2023         | 1/24/2023             |
| <b>Measurement error range</b>                | ± 0.20 in        | ± 0.06 in        | ± 0.07 in             |



## AOI Boundaries & InSAR Measurement Points

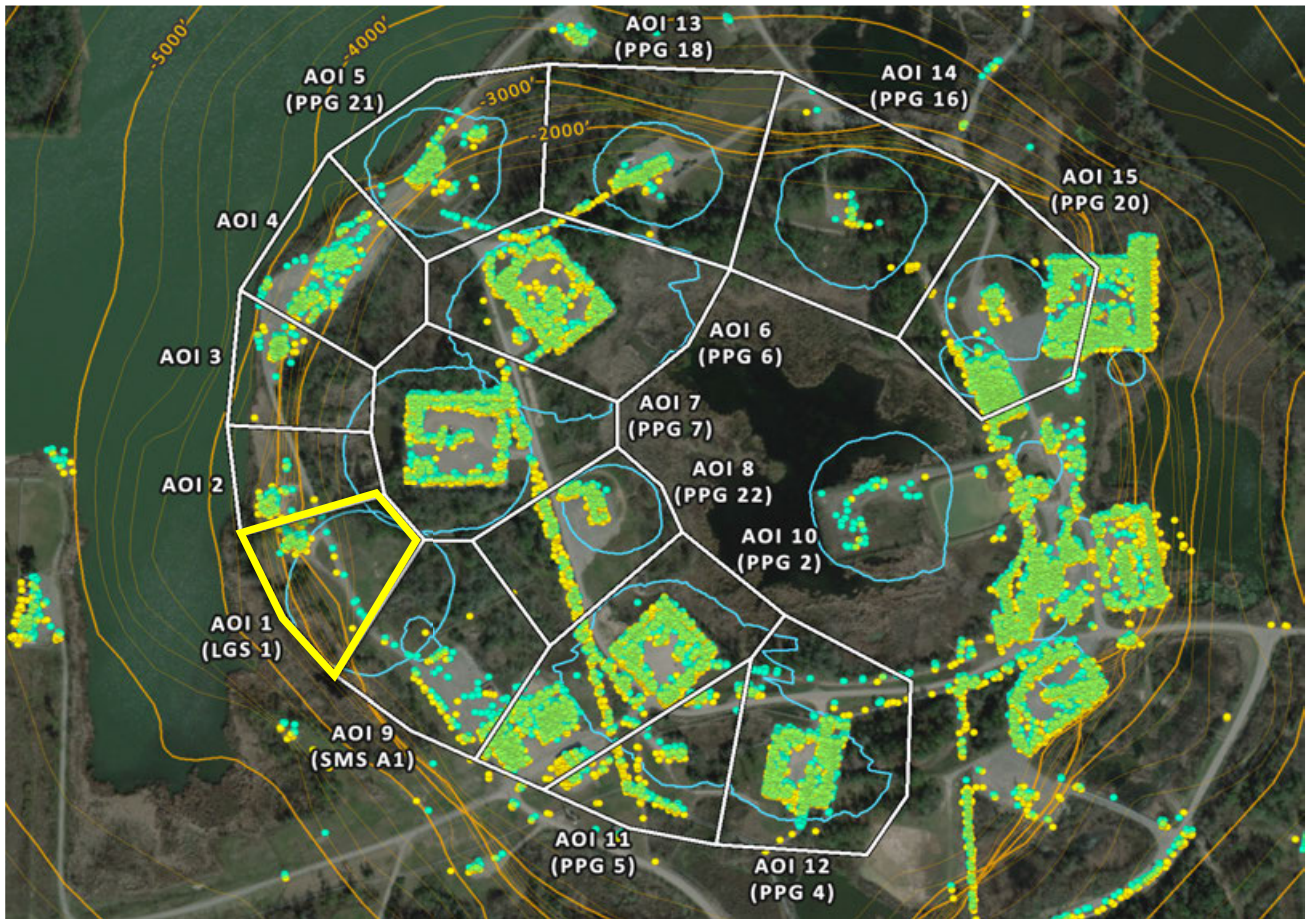


## Subsidence Monitoring Areas of Interest (AOIs)

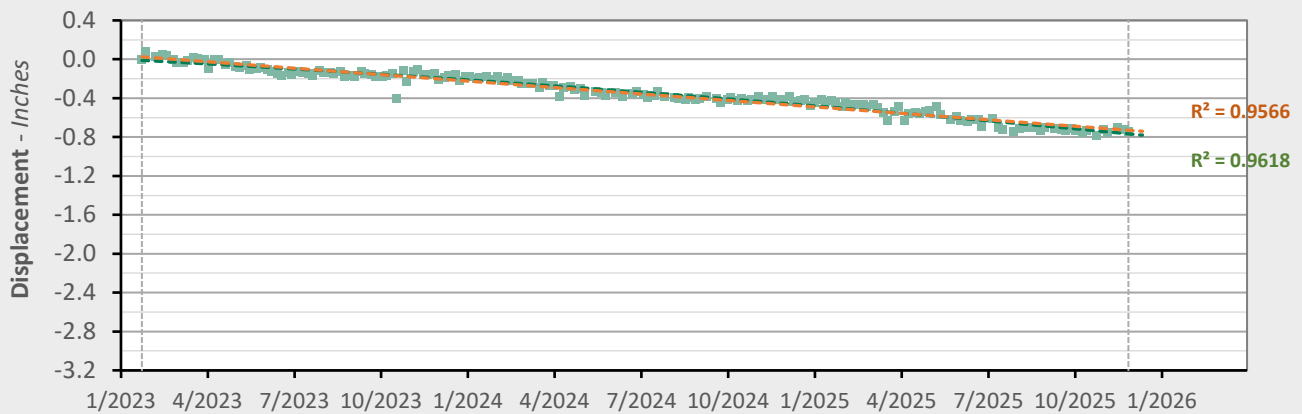
To visually convey and evaluate trend consistency for the displacement time series of each ground target, measurement points were grouped and their displacement values were averaged. The point groups are referred to as Areas of Interest (AOIs) in this analysis and their boundaries are depicted on the above map. The below table lists the trend values calculated in each AOI for the dataset evaluated in this report.

| AOI Name        | TSX/PAZ<br>(11/27/2025) | LOS Velocity (in/yr) |        | LOS Acceleration (in/yr <sup>2</sup> ) |        |
|-----------------|-------------------------|----------------------|--------|--|--------|
|                 | Point Count             | Nonlinear            | Linear | Nonlinear                              | Linear |
| AOI 1 (LGS 1)   | 59                      | -0.34                | -0.27  | -0.05                                  | 0.00   |
| AOI 2           | 40                      | -0.29                | -0.26  | -0.03                                  | 0.00   |
| AOI 3           | 65                      | -0.42                | -0.40  | -0.01                                  | 0.00   |
| AOI 4           | 218                     | -0.29                | -0.25  | -0.03                                  | 0.00   |
| AOI 5 (PPG 21)  | 120                     | -0.40                | -0.34  | -0.05                                  | 0.00   |
| AOI 6 (PPG 6)   | 383                     | -0.71                | -0.59  | -0.08                                  | 0.00   |
| AOI 7 (PPG 7)   | 368                     | -0.58                | -0.47  | -0.07                                  | 0.00   |
| AOI 8 (PPG 22)  | 121                     | -0.80                | -0.76  | -0.03                                  | 0.00   |
| AOI 9 (SMS A1)  | 74                      | -0.33                | -0.38  | +0.03                                  | 0.00   |
| AOI 10 (PPG 2)  | 815                     | -0.70                | -0.64  | -0.04                                  | 0.00   |
| AOI 11 (PPG 5)  | 125                     | -0.74                | -0.63  | -0.07                                  | 0.00   |
| AOI 12 (PPG 4)  | 524                     | -1.01                | -0.91  | -0.06                                  | 0.00   |
| AOI 13 (PPG 18) | 108                     | -0.49                | -0.51  | +0.01                                  | 0.00   |
| AOI 14 (PPG 16) | 18                      | -0.70                | -0.87  | +0.11                                  | 0.00   |
| AOI 15 (PPG 20) | 688                     | -1.15                | -1.04  | -0.07                                  | 0.00   |

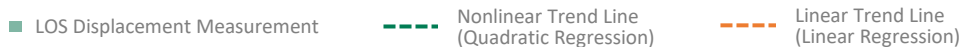
### AOI 1 (LGS 1) - Location Map



### AOI 1 (LGS 1) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 59



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.34 in/yr              | -0.27 in/yr             |
| Acceleration: | -0.05 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

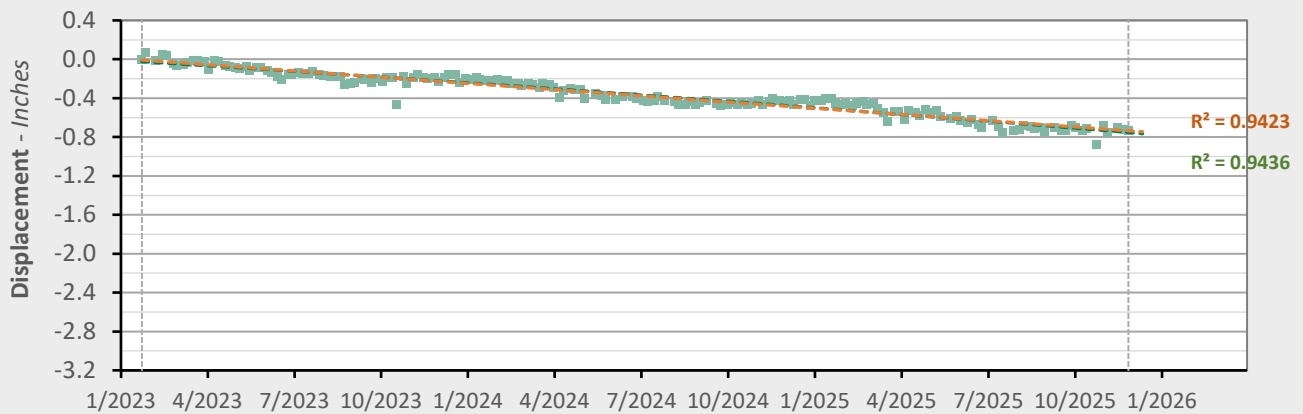


### AOI 2 - Location Map

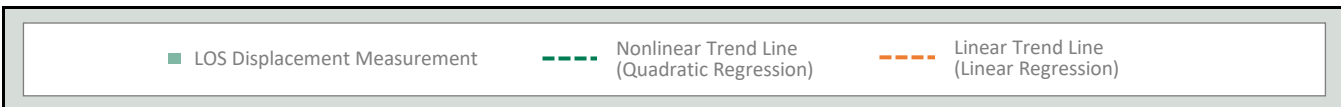


### AOI 2 - Displacement Time Series

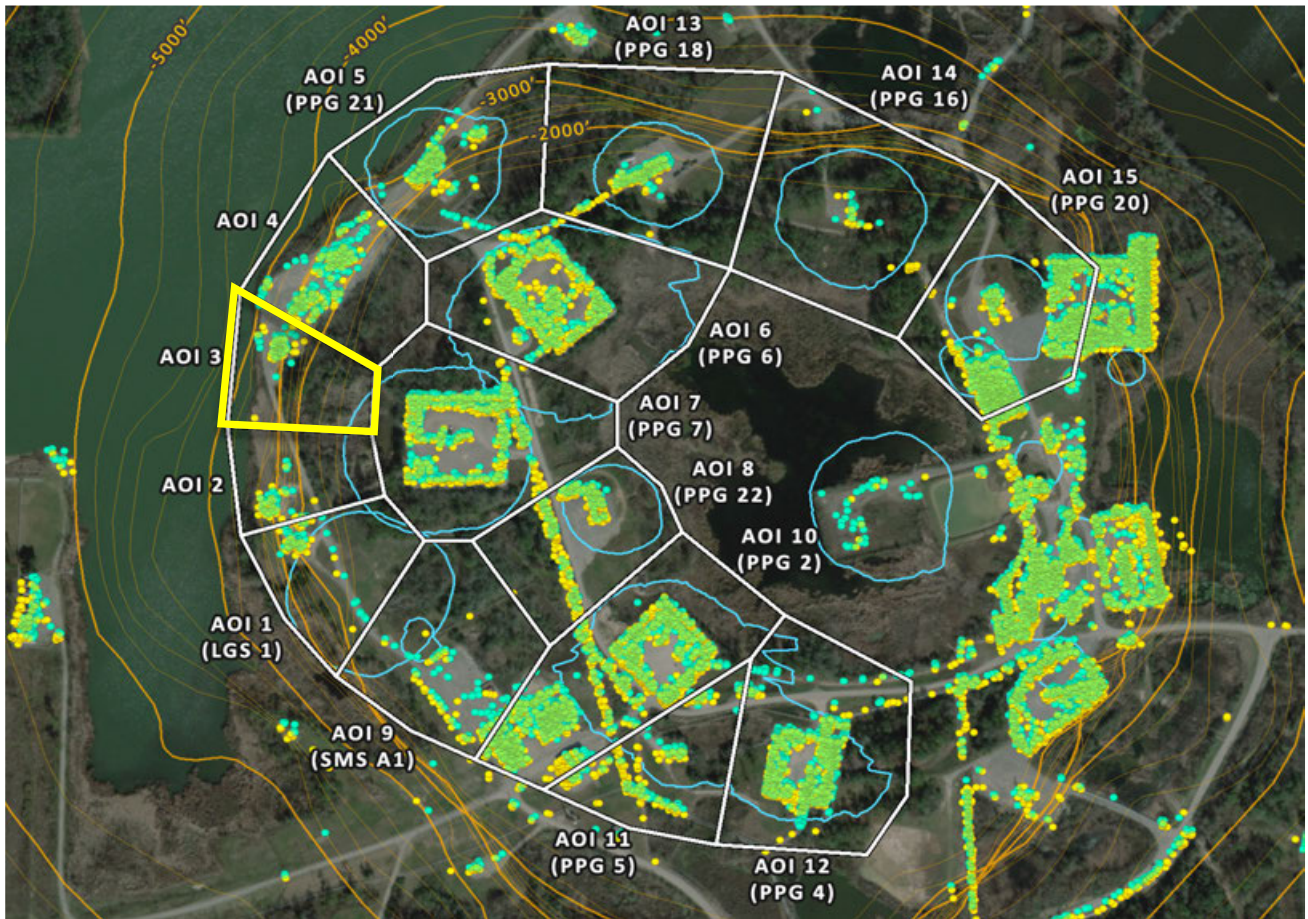
TSX/PAZ (11/27/2025) Point Count: 40



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.29 in/yr              | -0.26 in/yr             |
| Acceleration: | -0.03 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

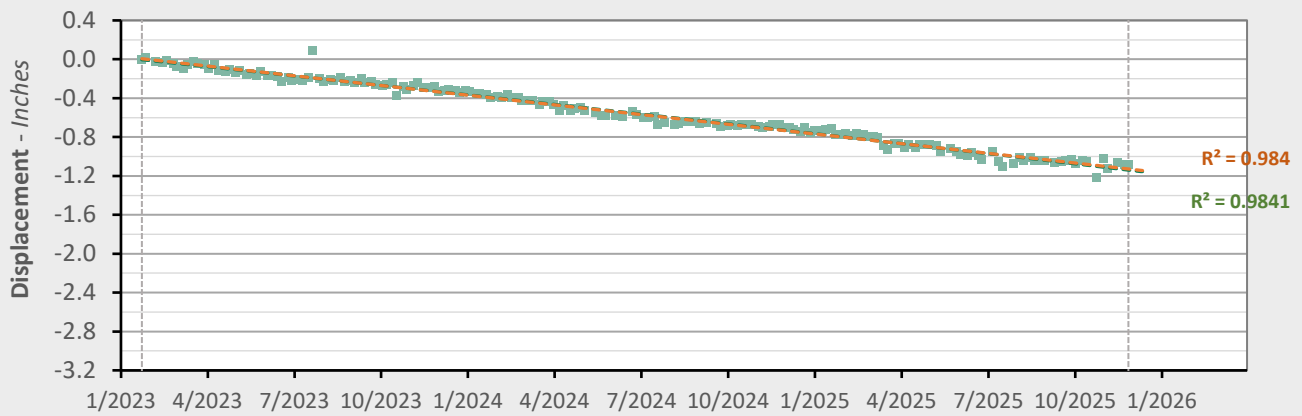


### AOI 3 - Location Map



### AOI 3 - Displacement Time Series

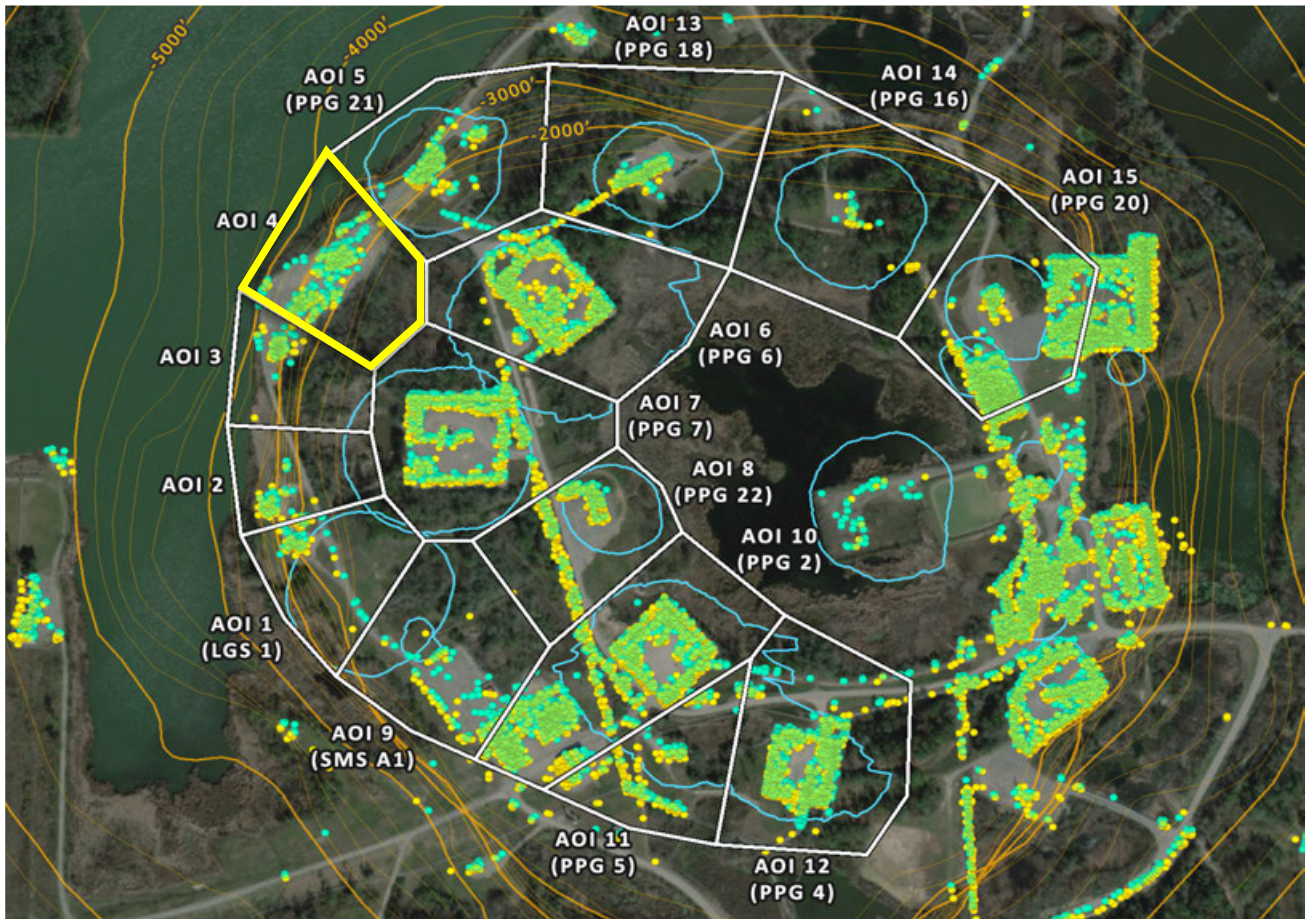
TSX/PAZ (11/27/2025) Point Count: 65



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.42 in/yr              | -0.40 in/yr             |
| Acceleration: | -0.01 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

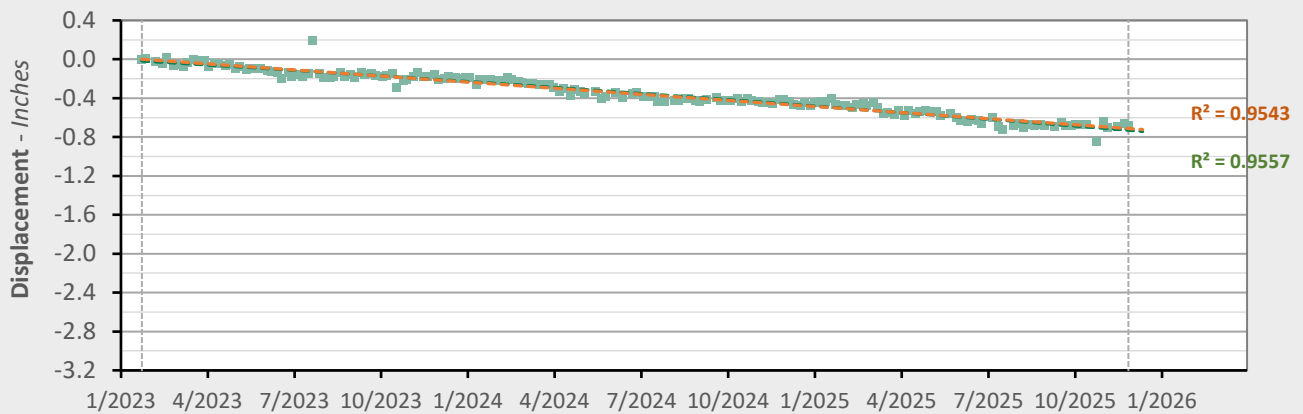
■ LOS Displacement Measurement    
 — Nonlinear Trend Line (Quadratic Regression)    
 - - - Linear Trend Line (Linear Regression)

### AOI 4 - Location Map

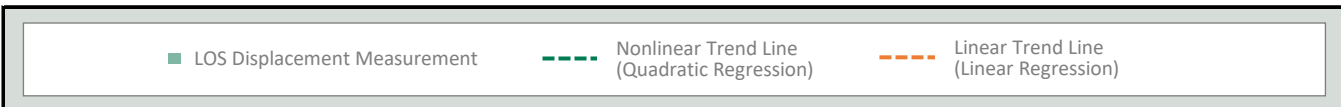


### AOI 4 - Displacement Time Series

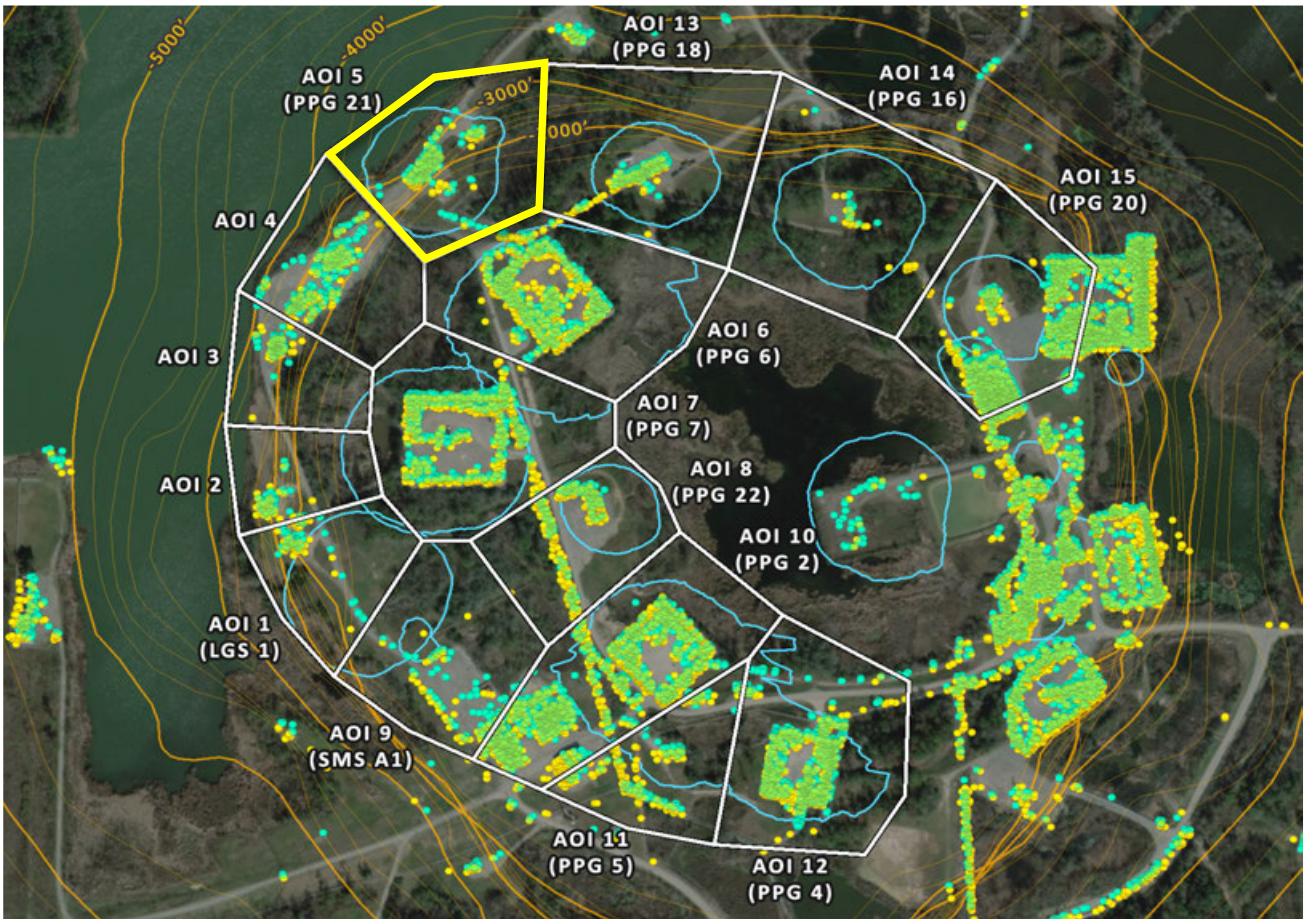
TSX/PAZ (11/27/2025) Point Count: **218**



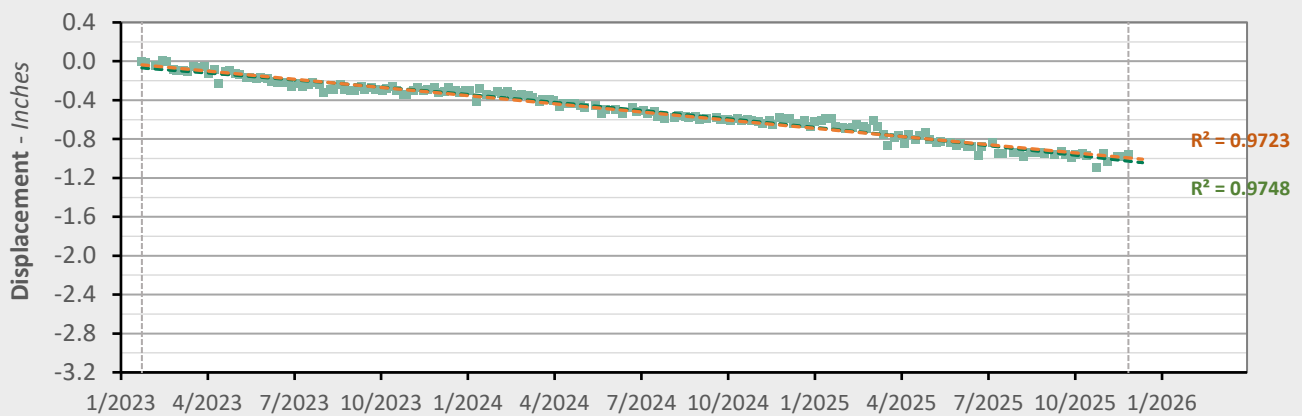
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.29 in/yr              | -0.25 in/yr             |
| Acceleration: | -0.03 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



### AOI 5 (PPG 21) - Location Map



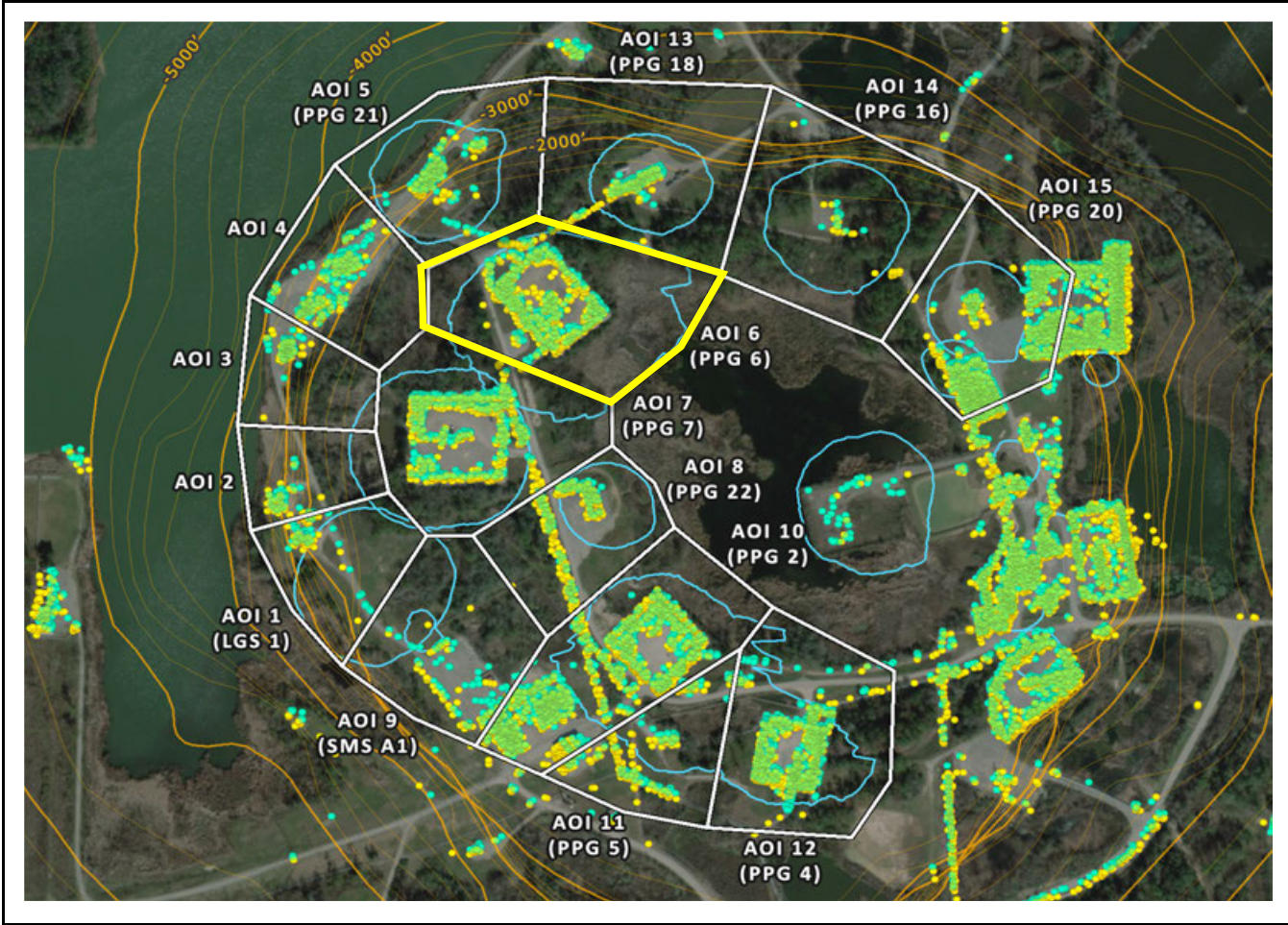
### AOI 5 (PPG 21) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 120



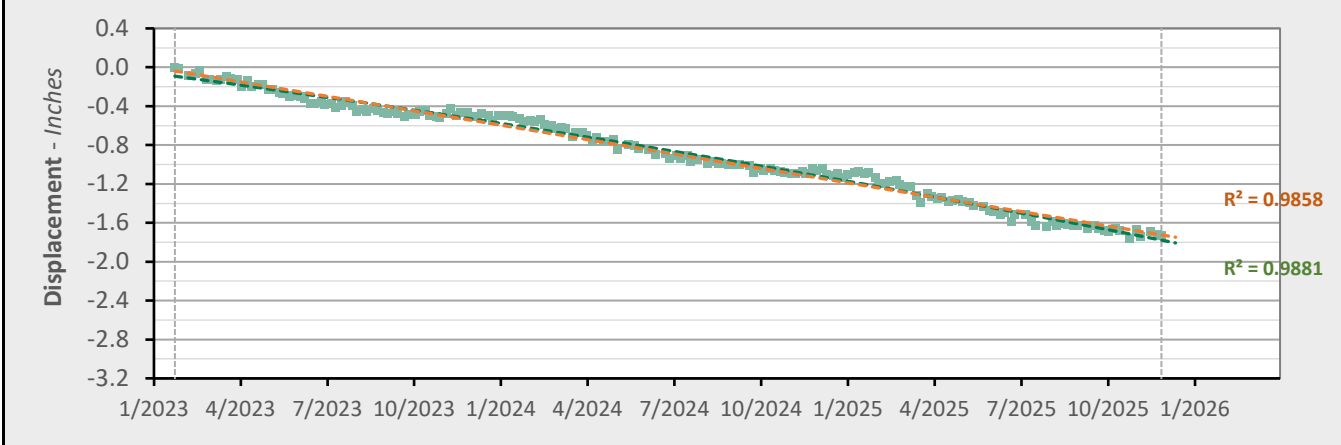
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.40 in/yr              | -0.34 in/yr             |
| Acceleration: | -0.05 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

■ LOS Displacement Measurement    
 - - - Nonlinear Trend Line (Quadratic Regression)    
 - - - Linear Trend Line (Linear Regression)

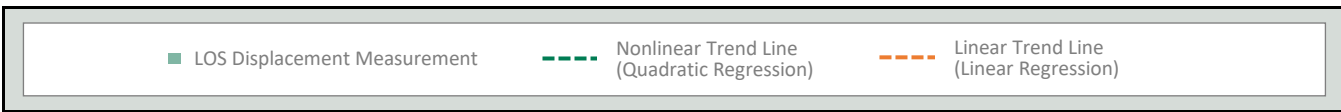
### AOI 6 (PPG 6) - Location Map



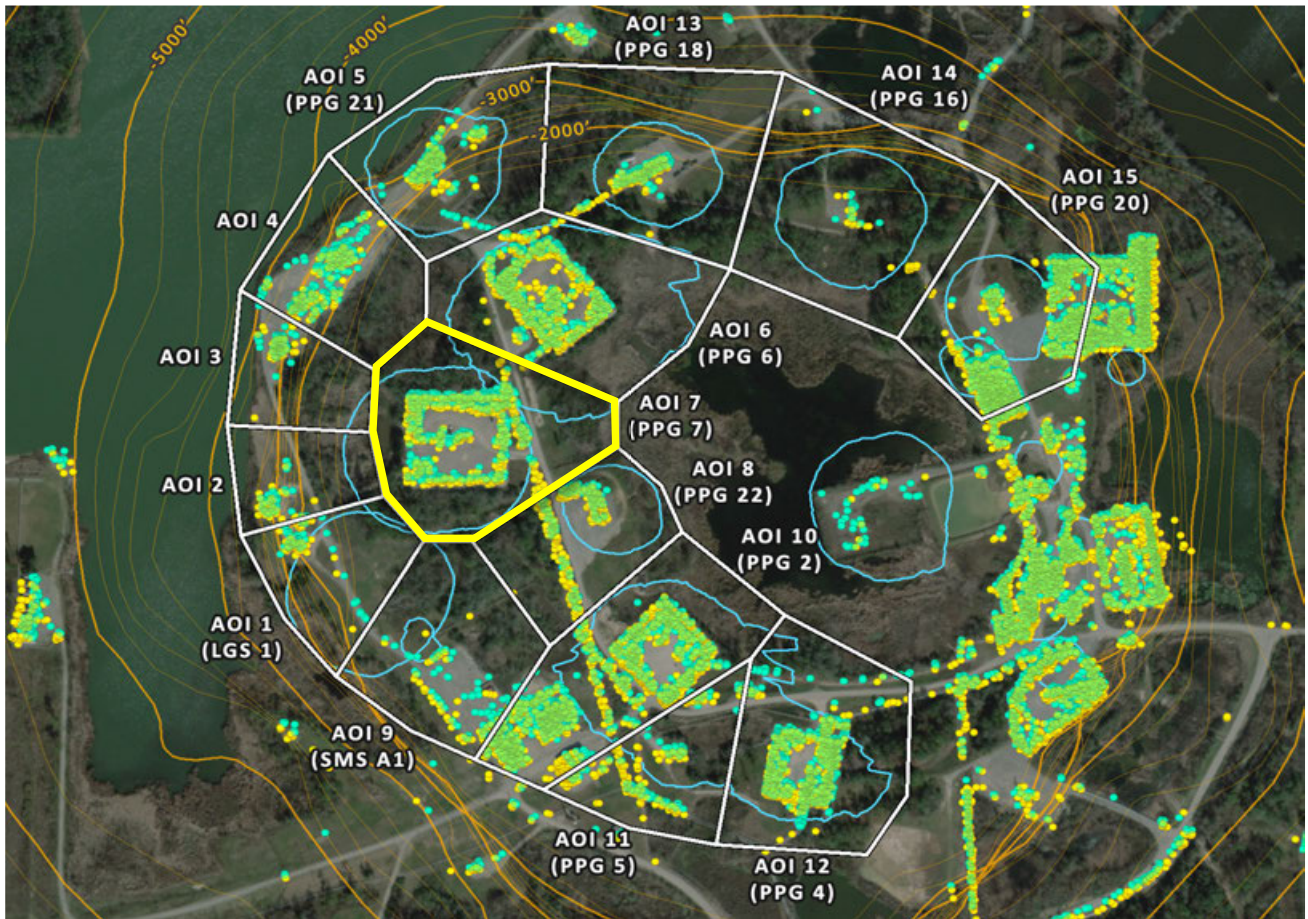
### AOI 6 (PPG 6) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 383



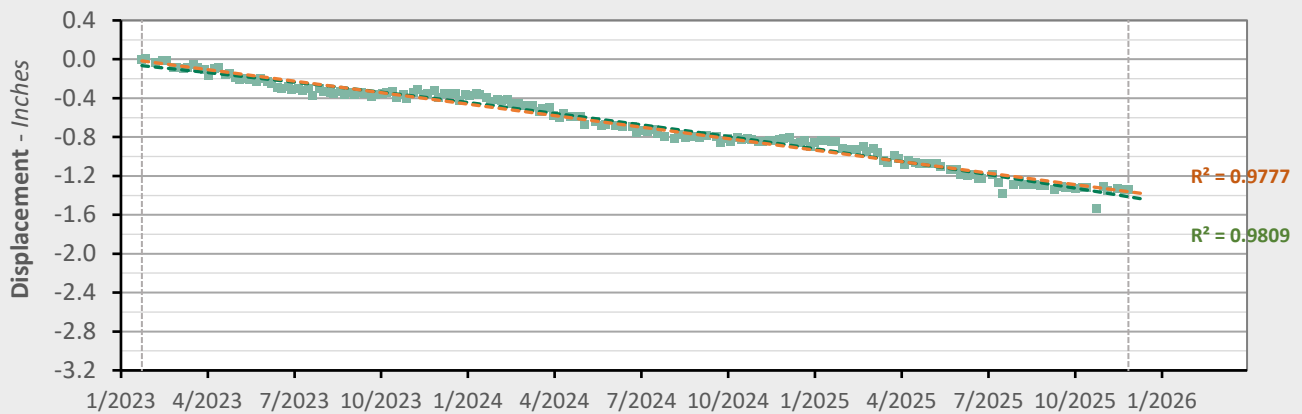
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.71 in/yr              | -0.59 in/yr             |
| Acceleration: | -0.08 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



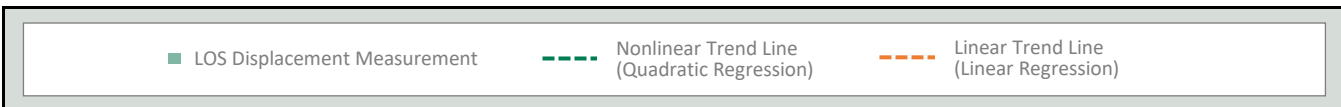
### AOI 7 (PPG 7) - Location Map



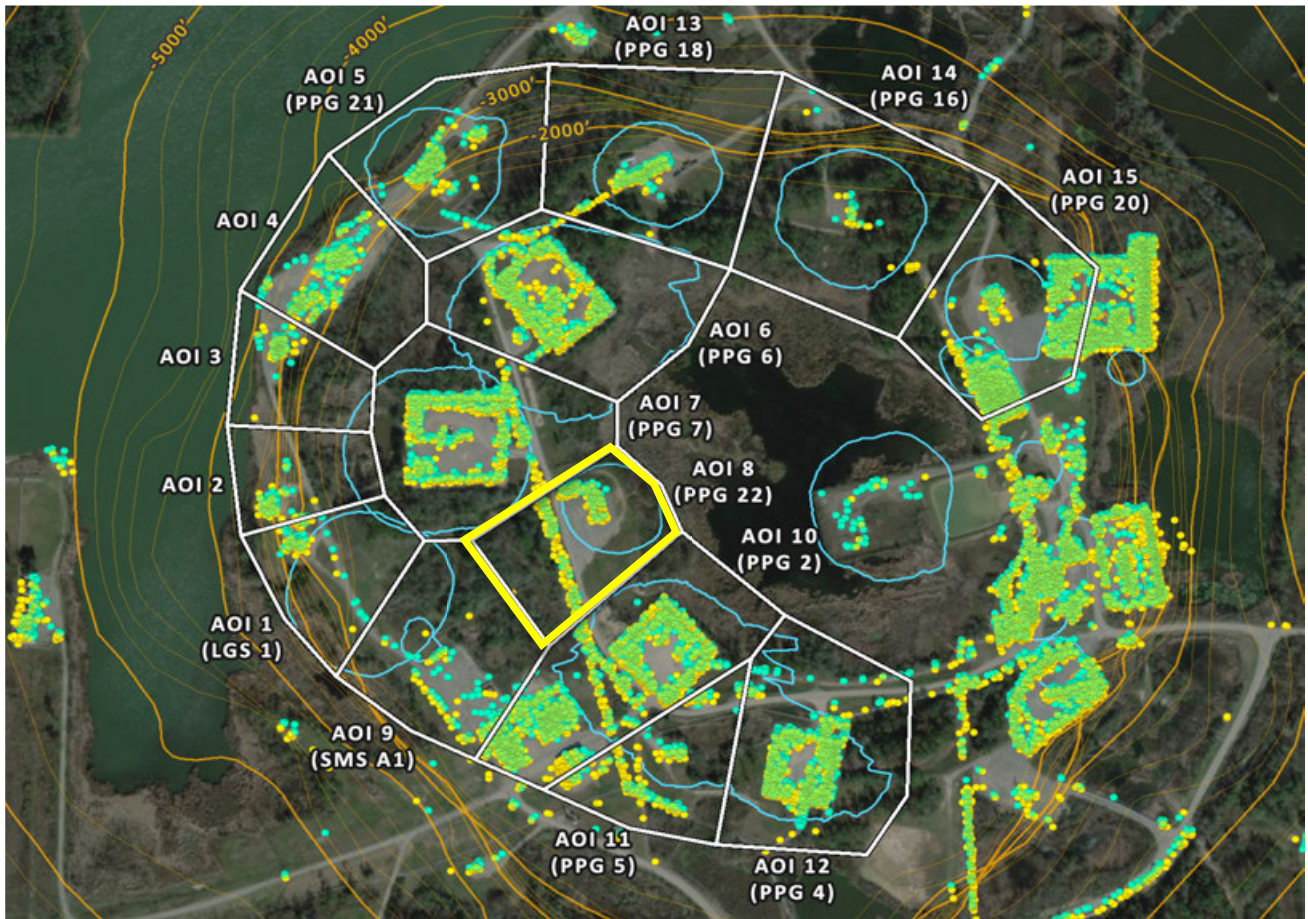
### AOI 7 (PPG 7) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 368



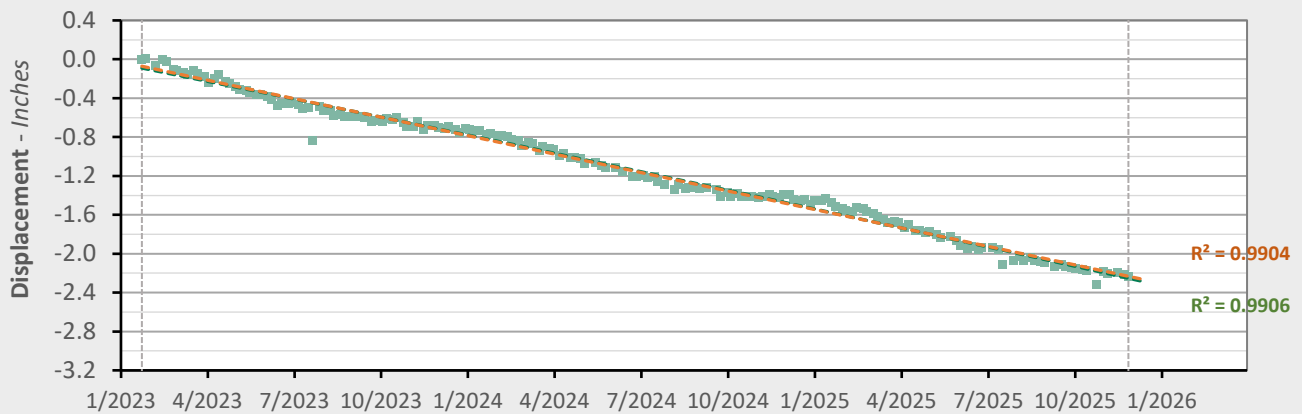
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.58 in/yr              | -0.47 in/yr             |
| Acceleration: | -0.07 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



### AOI 8 (PPG 22) - Location Map



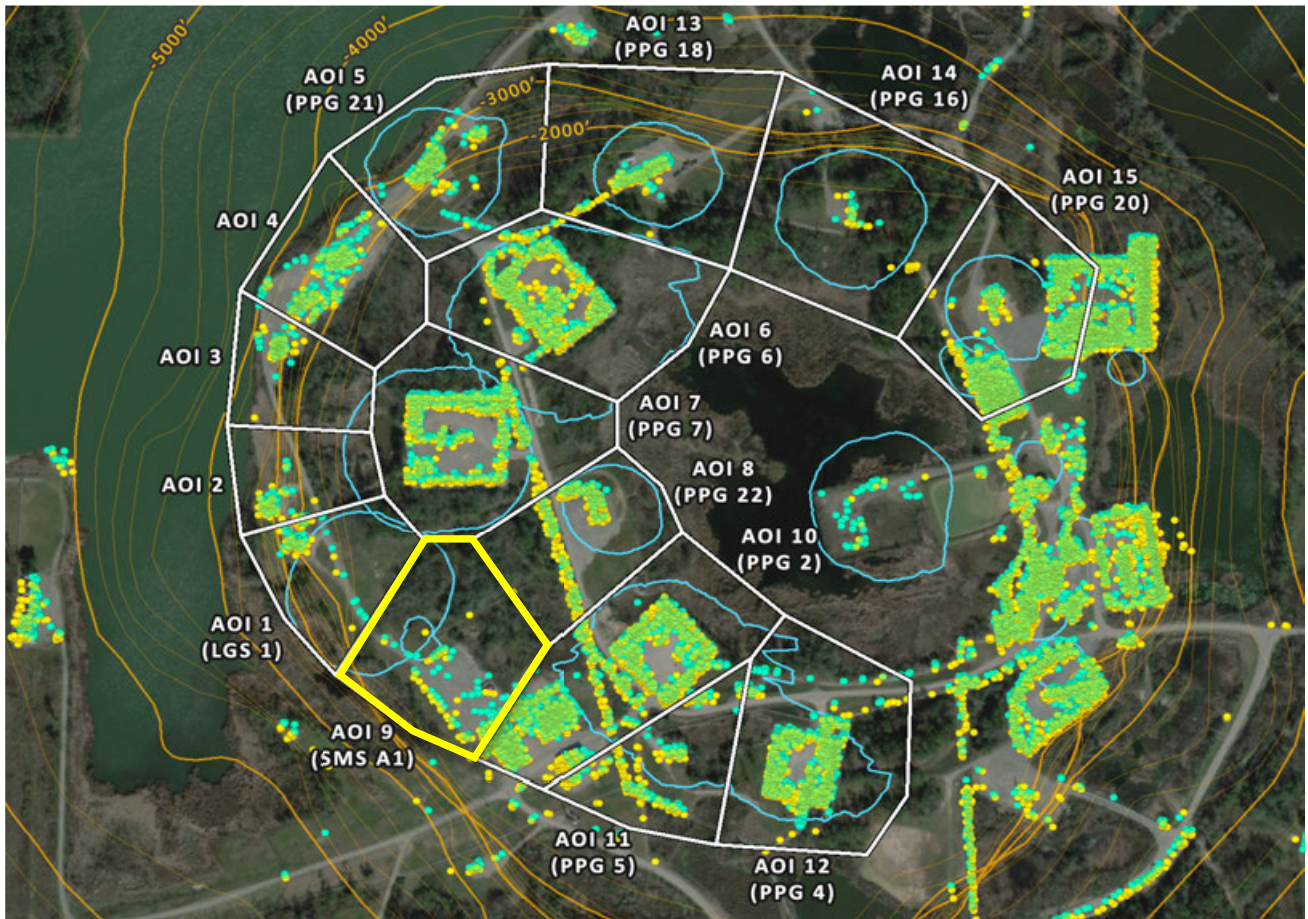
### AOI 8 (PPG 22) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 121



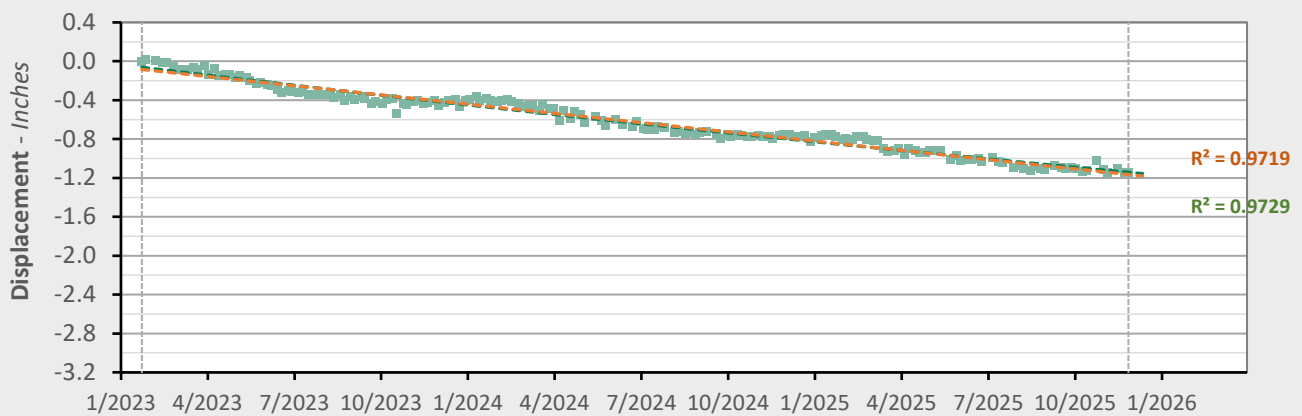
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.80 in/yr              | -0.76 in/yr             |
| Acceleration: | -0.03 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

■ LOS Displacement Measurement     
 - - - Nonlinear Trend Line (Quadratic Regression)     
 - - - Linear Trend Line (Linear Regression)

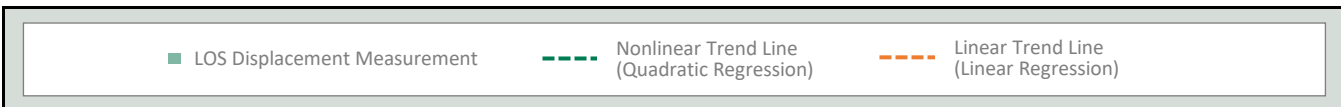
### AOI 9 (PPG A1) - Location Map



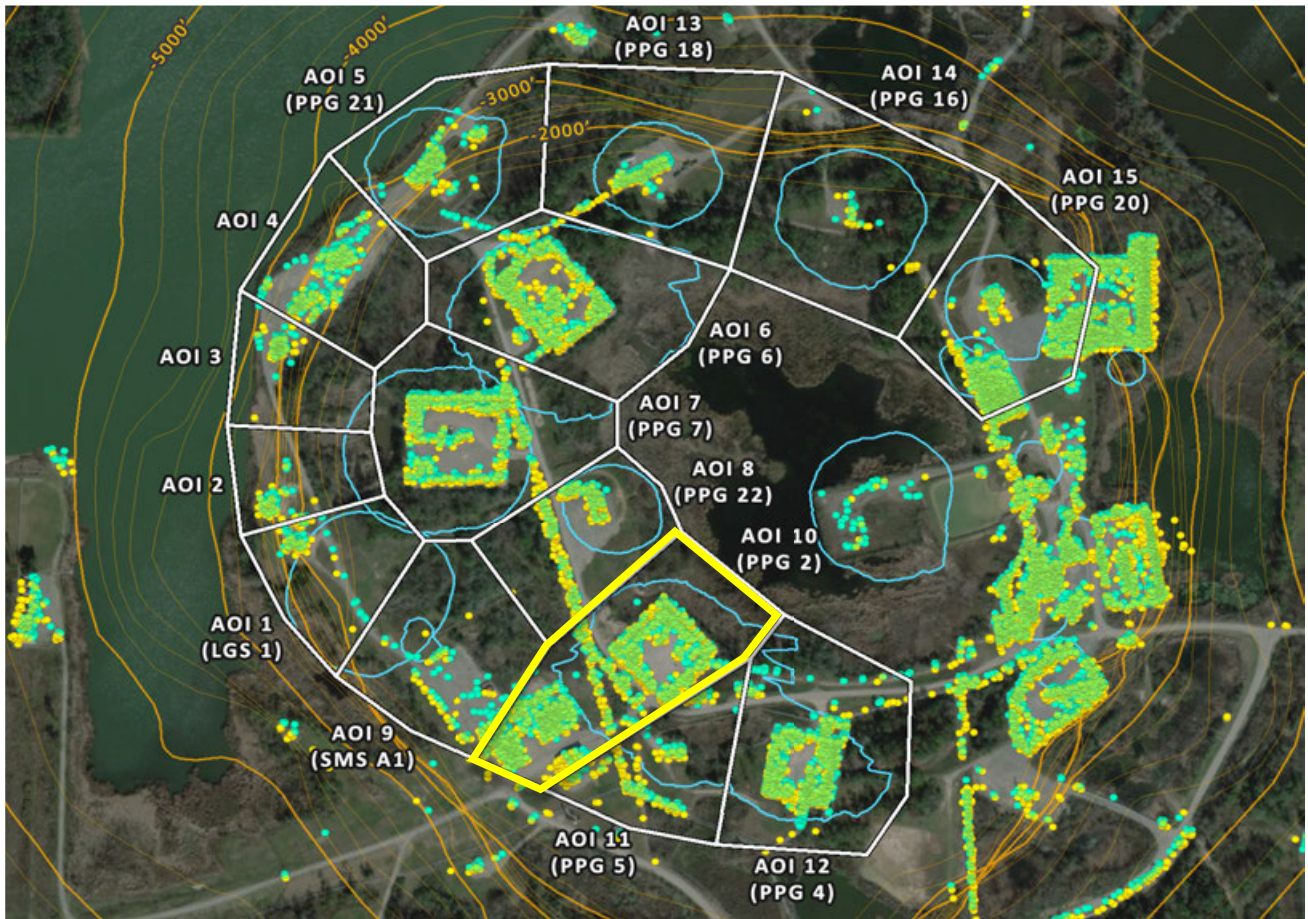
### AOI 9 (SMS A1) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 74



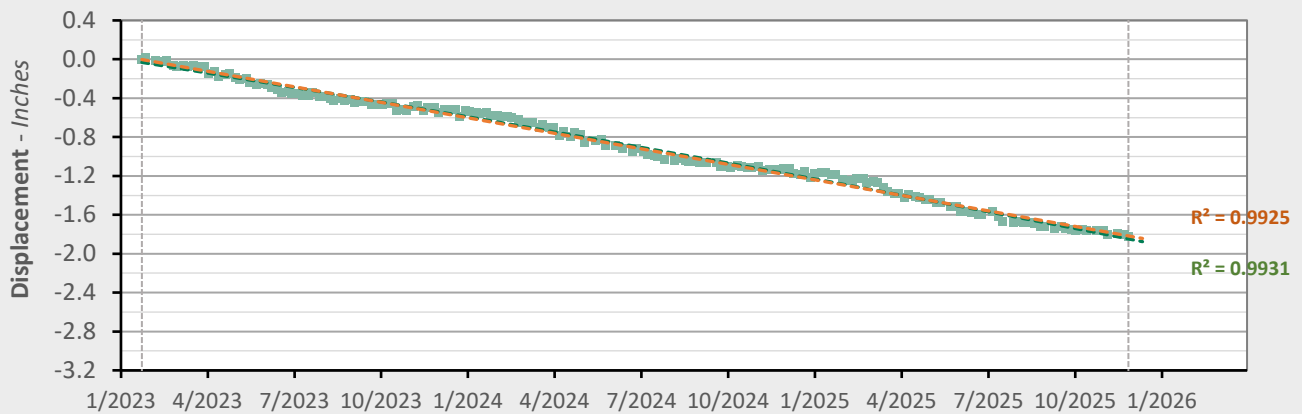
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.33 in/yr              | -0.38 in/yr             |
| Acceleration: | +0.03 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



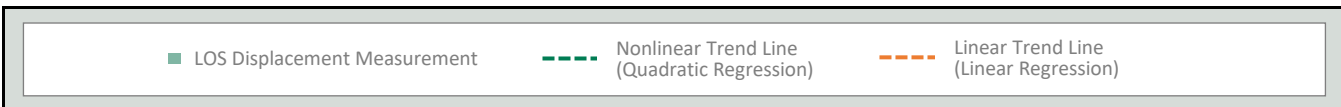
### AOI 10 (PPG 2) - Location Map



### AOI 10 (PPG 2) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 815



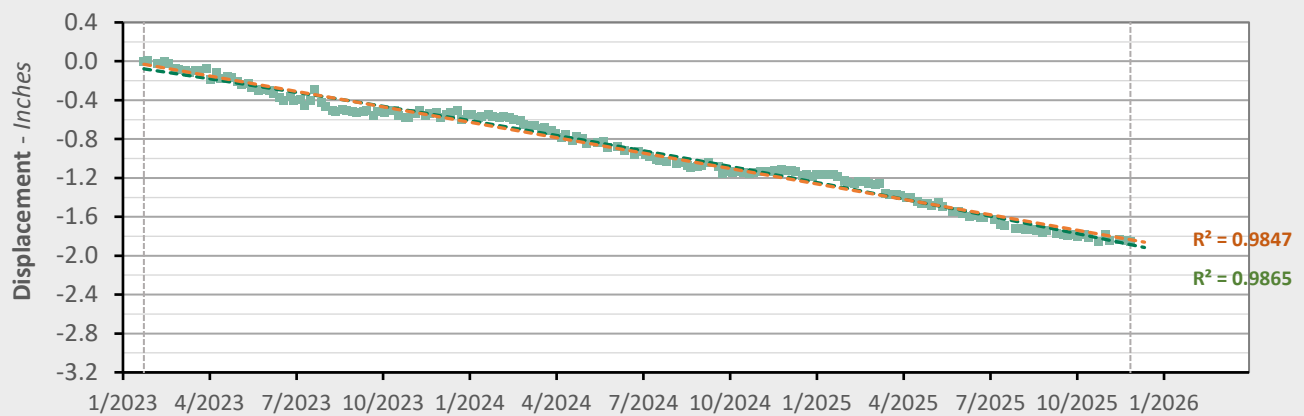
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.70 in/yr              | -0.64 in/yr             |
| Acceleration: | -0.04 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



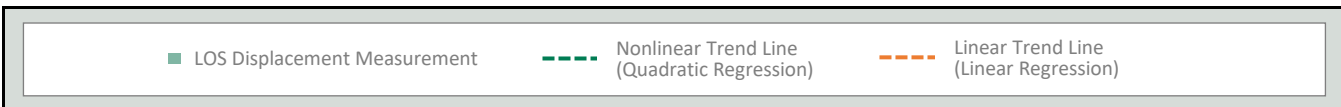
### AOI 11 (PPG 5) - Location Map



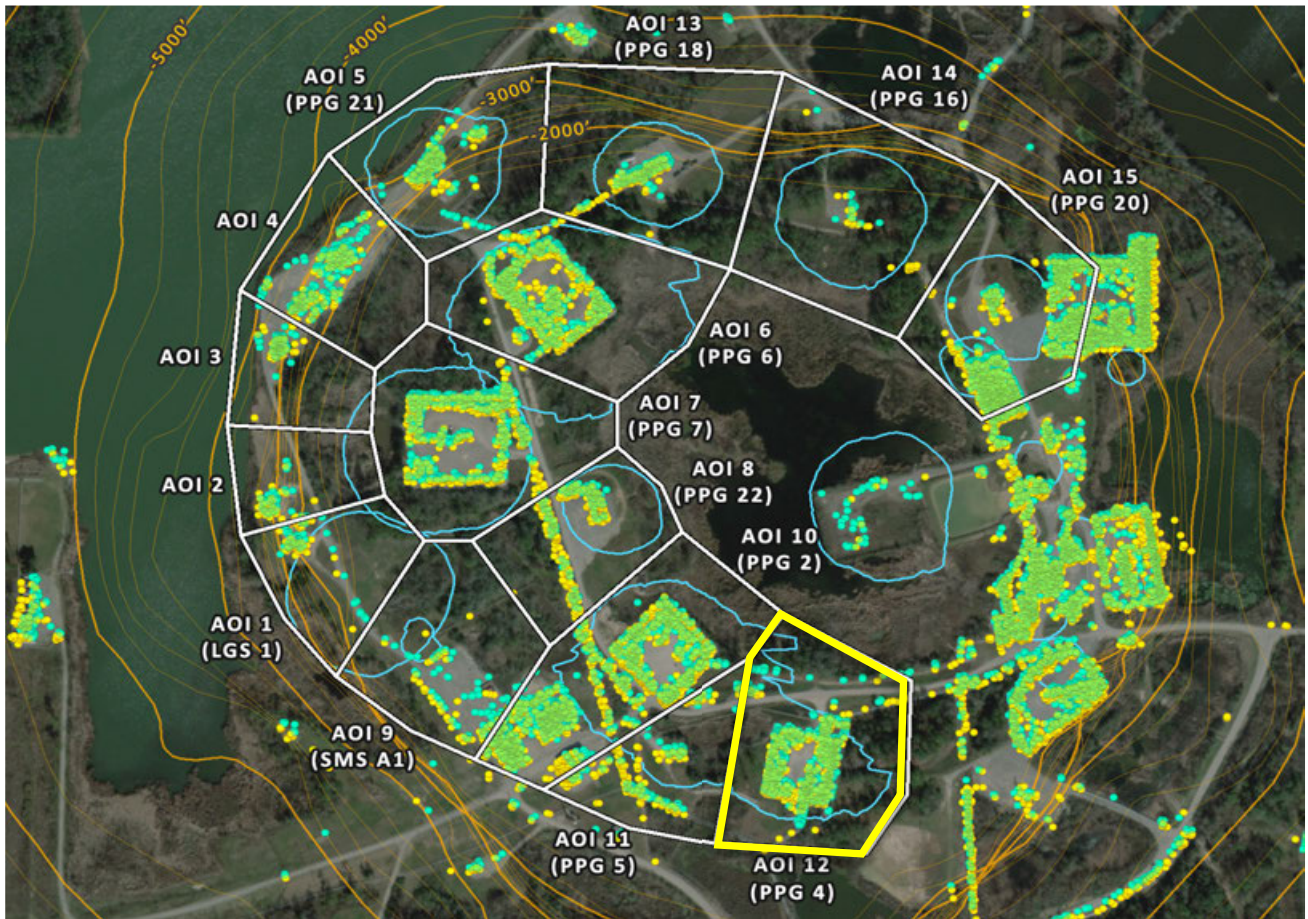
### AOI 11 (PPG 5) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 125



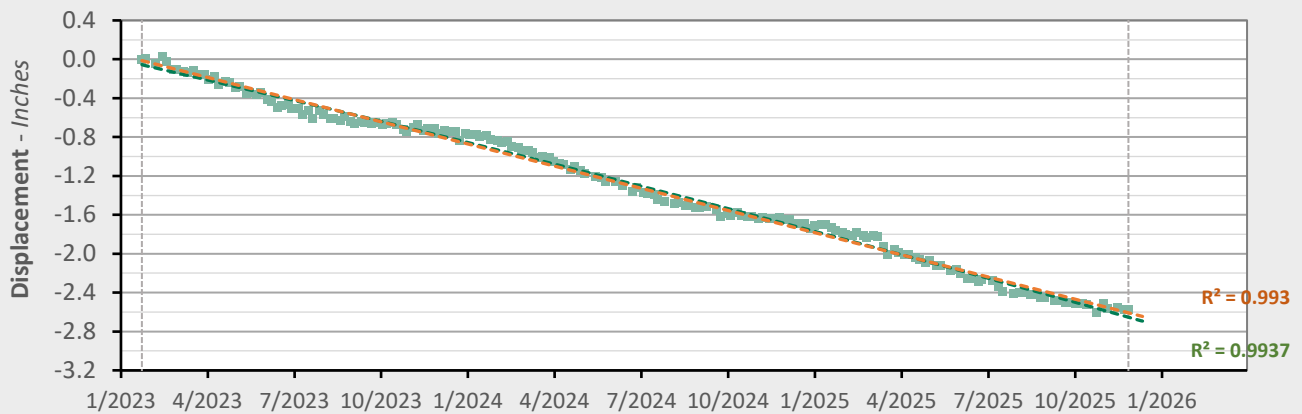
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.74 in/yr              | -0.63 in/yr             |
| Acceleration: | -0.07 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



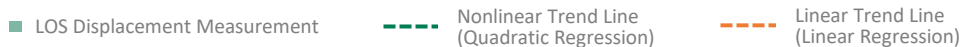
### AOI 12 (PPG 4) - Location Map



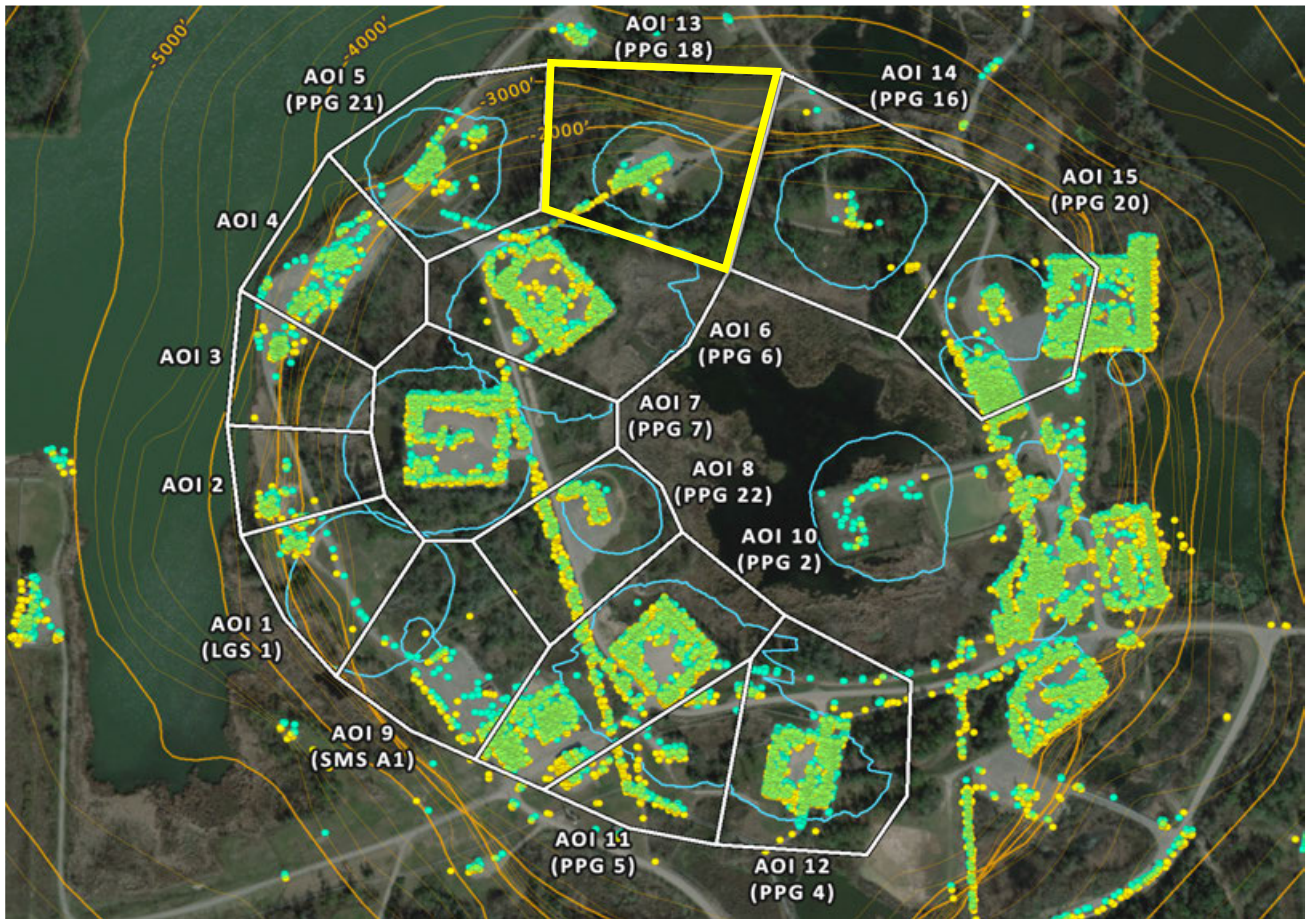
### AOI 12 (PPG 4) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 524



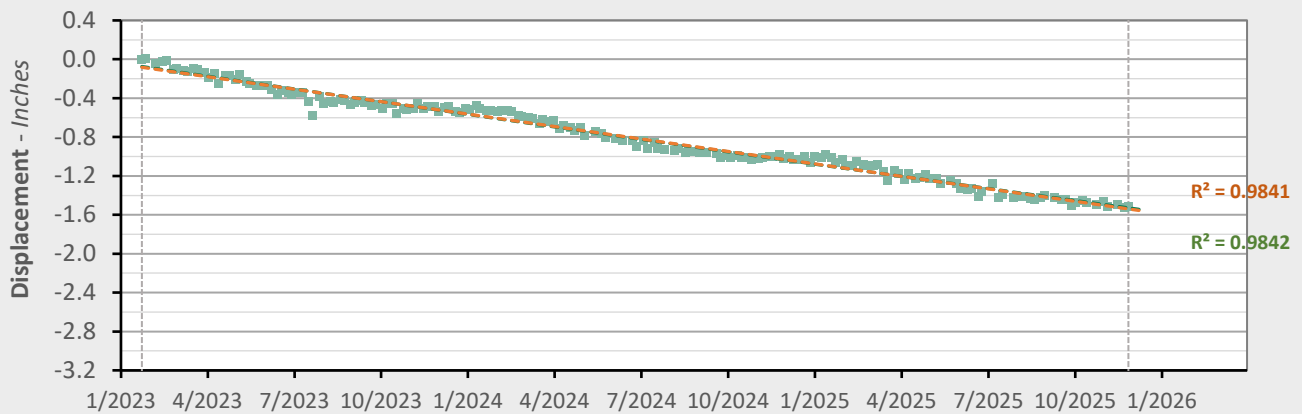
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.01 in/yr              | -0.91 in/yr             |
| Acceleration: | -0.06 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



### AOI 13 (PPG 18) - Location Map



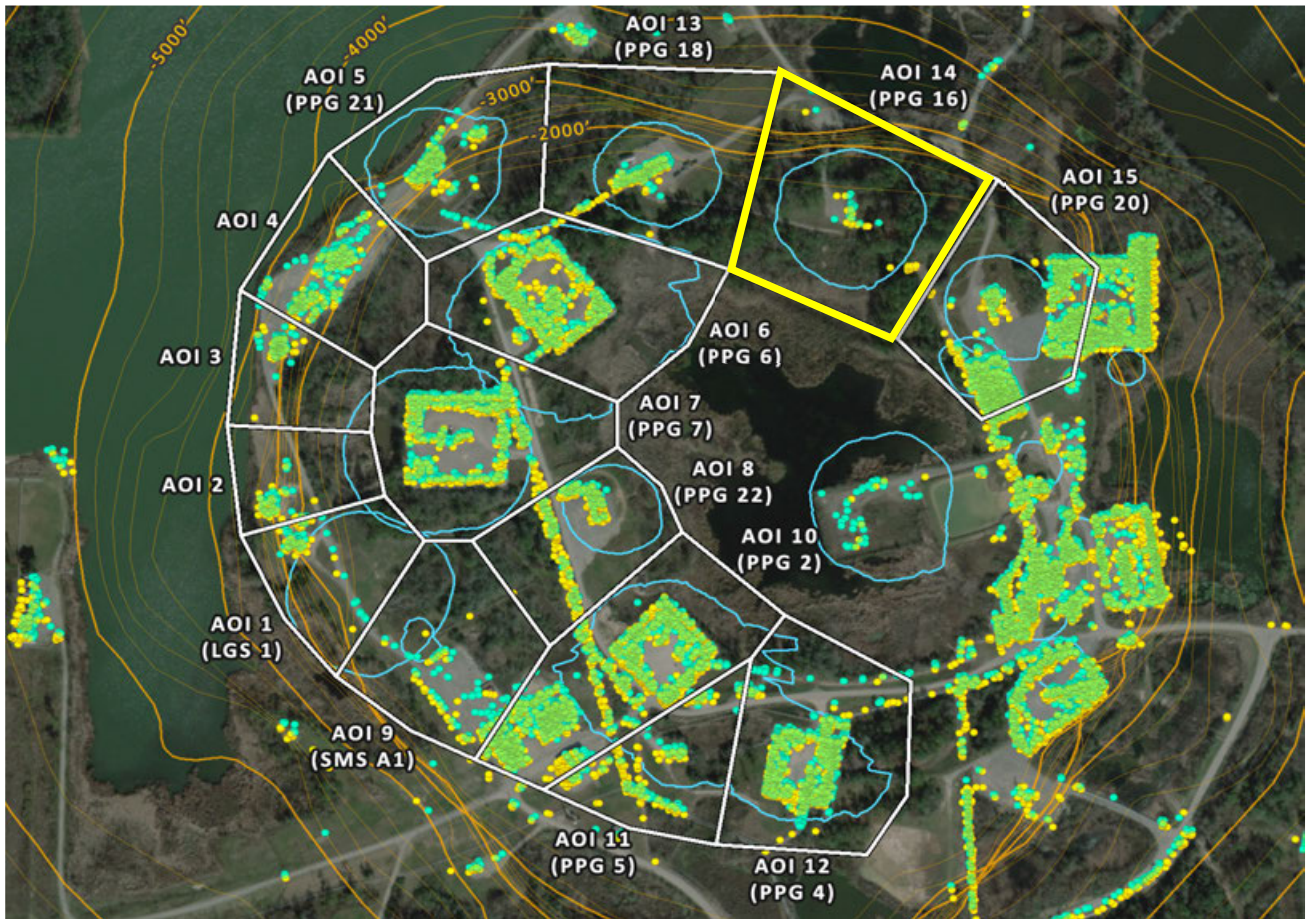
### AOI 13 (PPG 18) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 108



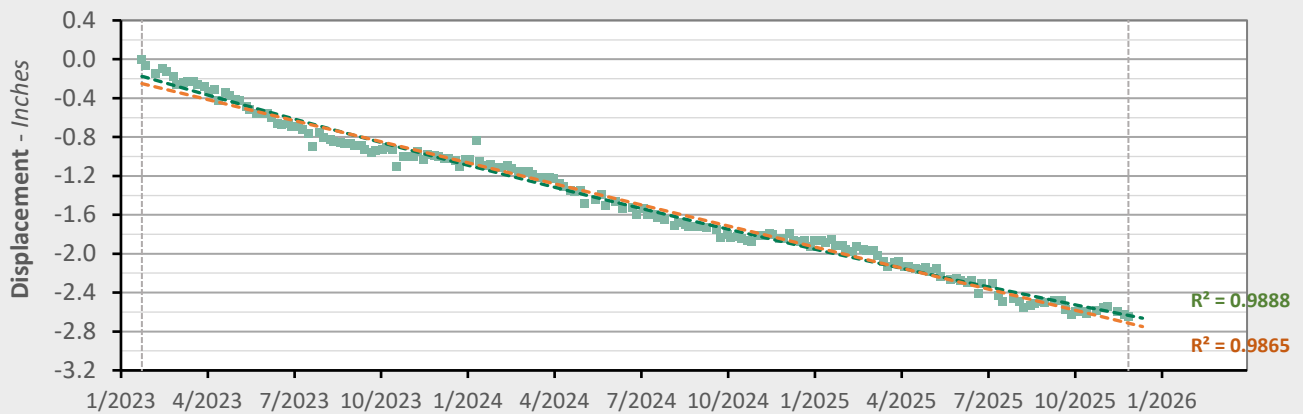
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.49 in/yr              | -0.51 in/yr             |
| Acceleration: | +0.01 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

■ LOS Displacement Measurement    
 - - - Nonlinear Trend Line (Quadratic Regression)    
 - - - Linear Trend Line (Linear Regression)

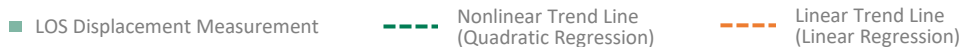
### AOI 14 (PPG 16) - Location Map



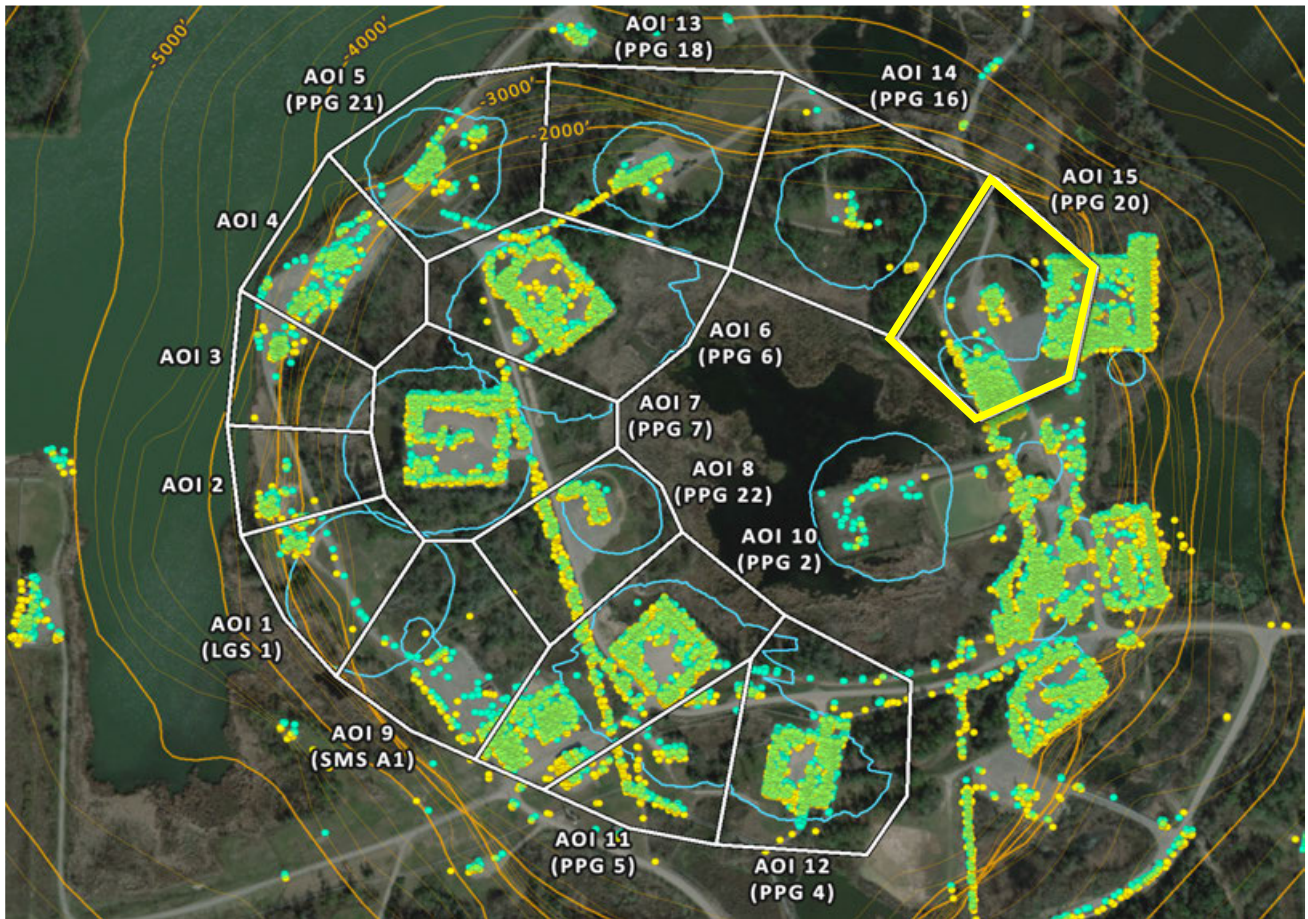
### AOI 14 (PPG 16) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 18



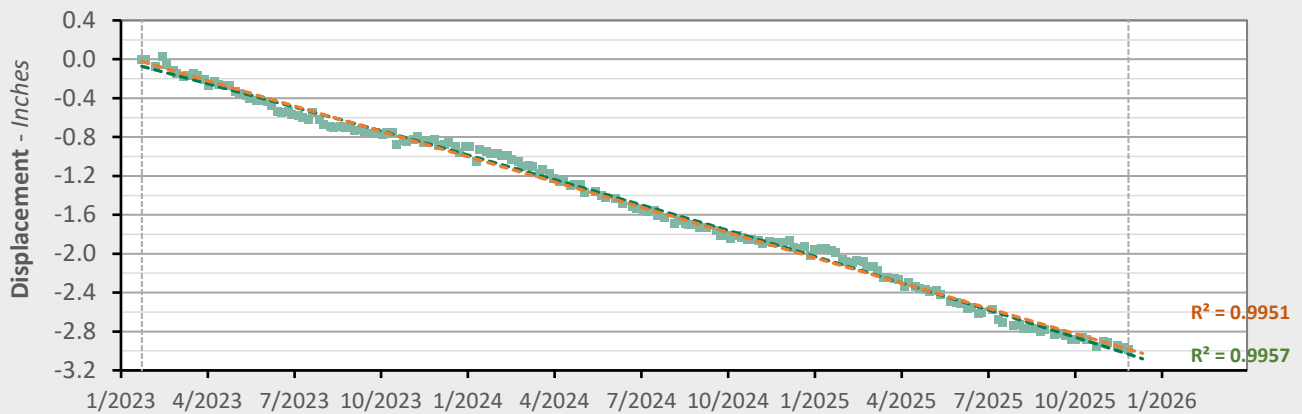
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.70 in/yr              | -0.87 in/yr             |
| Acceleration: | +0.11 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



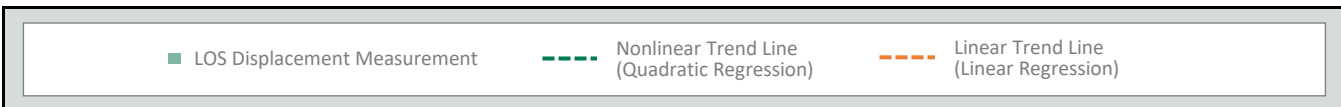
### AOI 15 (PPG 20) - Location Map



### AOI 15 (PPG 20) - Displacement Time Series TSX/PAZ (11/27/2025) Point Count: 688



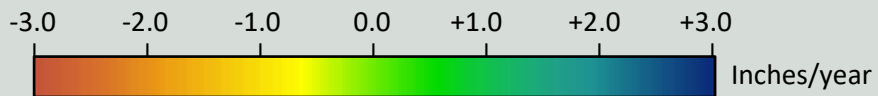
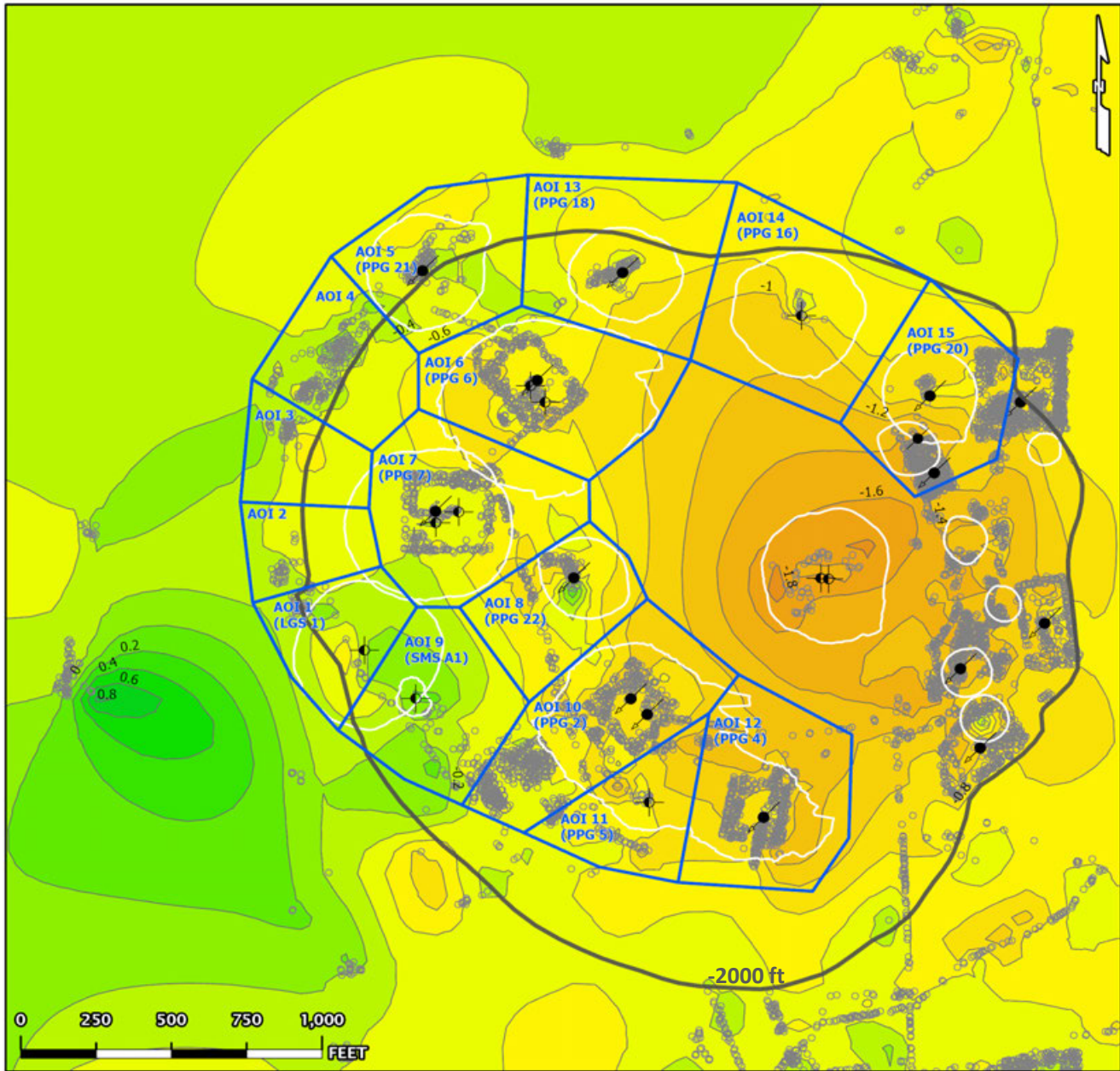
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.15 in/yr              | -1.04 in/yr             |
| Acceleration: | -0.07 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



**TSX/PAZ Data (01/24/2023 - 11/27/2025)**

**Nonlinear Velocity Contours**

As of date: 11/27/2025

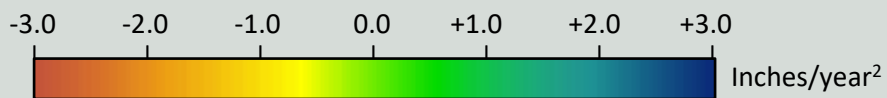
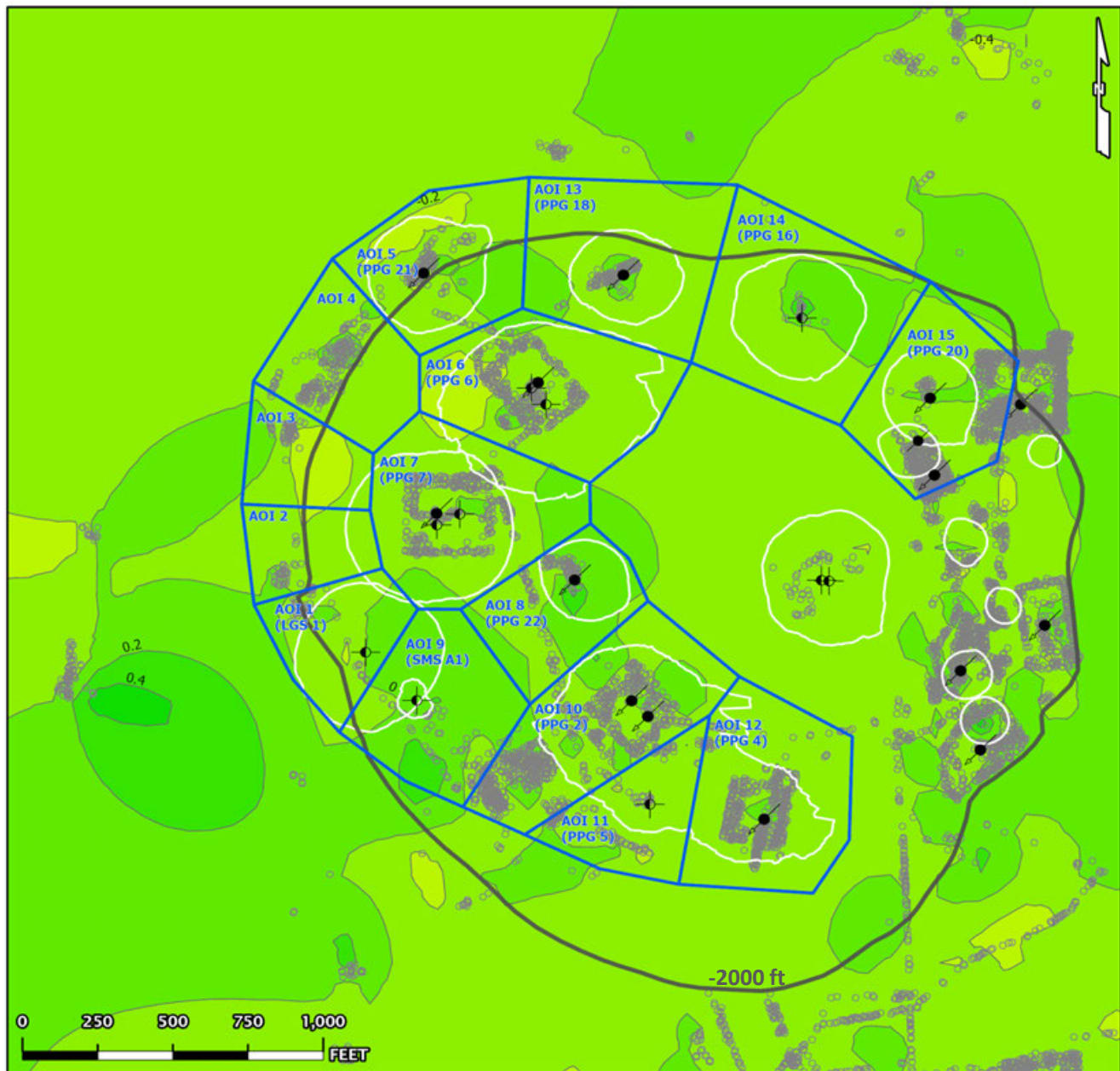


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**TSX/PAZ Data (01/24/2023 - 11/27/2025)**

**Nonlinear Acceleration Contours**

Date range: 01/24/2023 - 11/27/2025

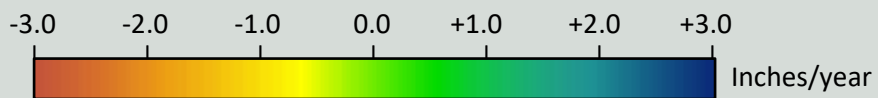
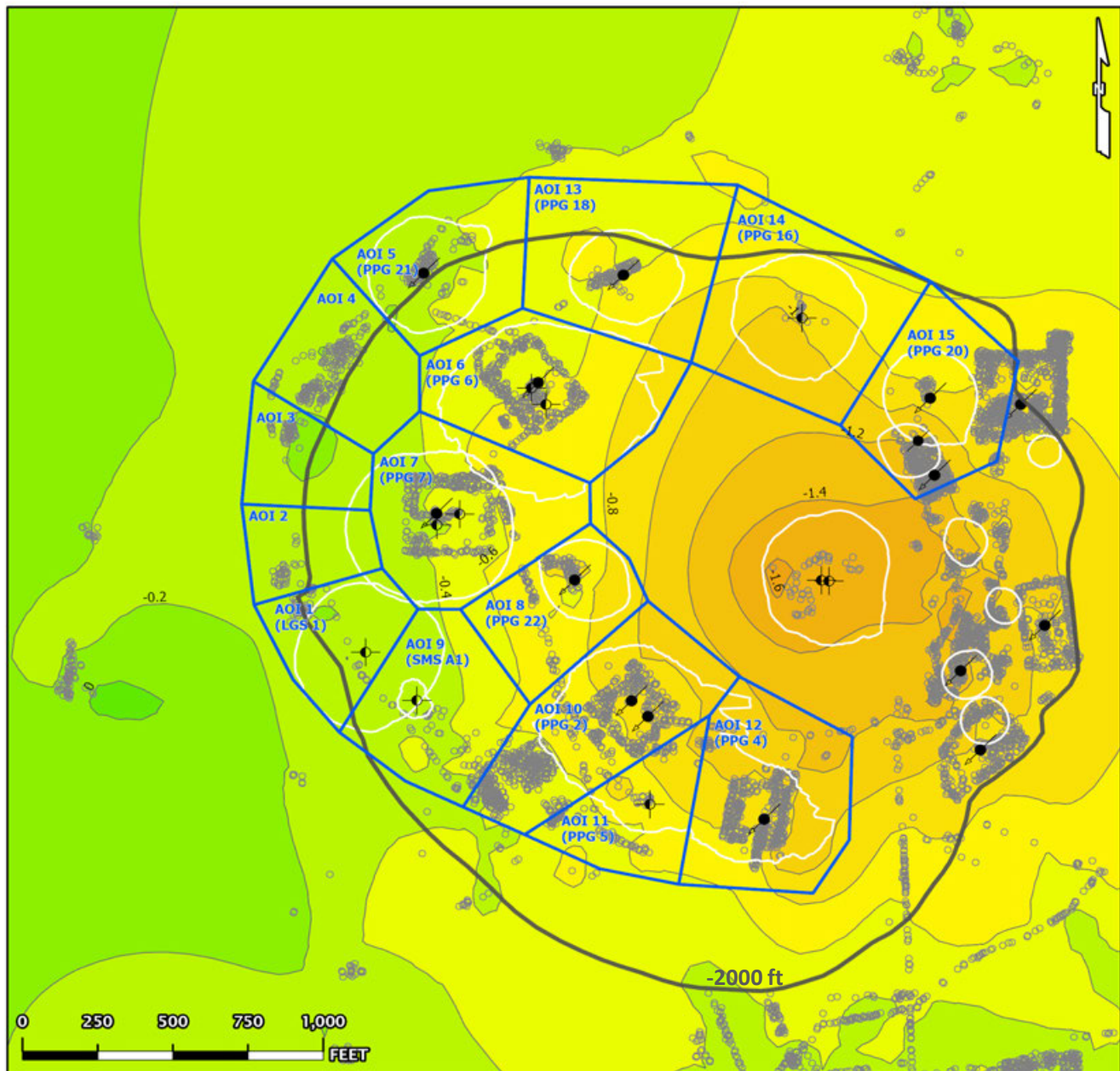


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**TSX/PAZ Data (01/24/2023 - 11/27/2025)**

**Linear Velocity Contours**

Date range: 01/24/2023 - 11/27/2025

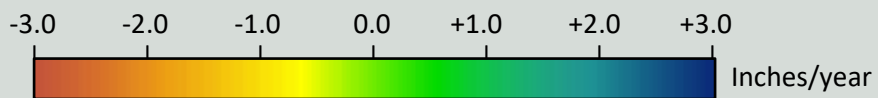


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**TSX/PAZ Data (01/24/2023 - 11/27/2025)**

**Nonlinear Velocity Data Points**

As of date: 11/27/2025

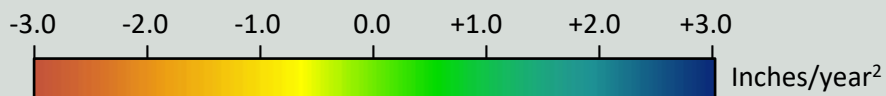


- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**TSX/PAZ Data (01/24/2023 - 11/27/2025)**

**Nonlinear Acceleration Data Points**

Date range: 01/24/2023 - 11/27/2025

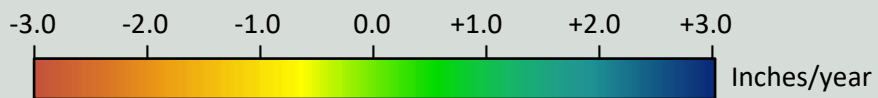


- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**TSX/PAZ Data (01/24/2023 - 11/27/2025)**

**Linear Velocity Data Points**

Date range: 01/24/2023 - 11/27/2025



- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

## **ATTACHMENT D**

### **Vertical & East-West 2D InSAR report - November 27, 2025**



# Vertical & E-W 2D Update

Continuous InSAR Monitoring of  
Ground Displacement At Westlake  
Caverns and Western Dome Flank

## Sulphur Mines Salt Dome

Prepared for:  
**Westlake Chemical**

Prepared by:  
Lonquist Field Service, LLC  
8591 United Plaza Blvd., Suite 280  
Baton Rouge, LA 70809

| Dataset                                     |
|---|
| Satellite Source                            |
| <b>TSX-Ascending and TSX/PAZ-Descending</b> |
| Most Recent Image Date                      |
| <b>Thursday, November 27, 2025</b>          |

Analysis Report Date:  
**December 15, 2025**

| Dataset Information    |                                      |
|------------------------|--------------------------------------|
| Satellite Source       | TSX-Ascending and TSX/PAZ-Descending |
| Update Frequency       | 11 days                              |
| Most Recent Image Date | Thursday, November 27, 2025          |
| Dataset Image Count    | 174                                  |
| Dataset Time Range     | February 4, 2023 - November 27, 2025 |
| Dataset Length         | 2.81 Years                           |
| Measurement Directions | Vertical and East-West               |

### Analysis Methodology

**Time Series Charts**  
Trend lines were calculated for the averaged vertical and east-west displacement values within each AOI. Both a nonlinear (quadratic) and linear regression were applied to each AOI point group to identify rates of change in 2D displacement. These trends are displayed in the Time Series section of this report.

**Contour Maps**  
A nonlinear (quadratic) and linear trend was also calculated for each individual measurement point across the analysis region. Nonlinear trend values for each point were used to generate Velocity and Acceleration contour maps to convey the spatial distribution of the calculated movement. The linear trend values for each point (which lack an acceleration component) were used to generate an additional Velocity contour map. Maps depicting the individual data points colored by these trend values are also included following the

**Rate Interpretation**  
For the vertical data, positive velocity values indicate uplift and negative velocity values indicate subsidence. Positive acceleration values indicate increasing rates of uplift or slowing rates of subsidence, while negative acceleration values indicate slowing rates of uplift or increasing rates of subsidence. For the east-west data, positive velocity values indicate eastward horizontal movement and negative velocity values indicate westward horizontal movement. Positive acceleration values indicate increasing rates of eastward movement or decreasing rates of westward movement, while negative acceleration values indicate increasing rates of westward movement or decreasing rates of eastward movement.

### Observations

To-date there have been no acute deviations from established subsidence trends in the areas investigated.

The calculated vertical displacement values indicate that subsidence is occurring with near-linear trends in all AOIs, with the greatest rates occurring in the central portions of the dome. Minor negative vertical acceleration (increasing subsidence) is more prominent among the AOIs than positive acceleration but acceleration values are minor overall.

The calculated east-west displacement values generally indicate near-linear horizontal movement toward the dome center with the greatest rates of eastward movement occurring in the western AOIs and the greatest rates of westward movement occurring in the easternmost AOIs. Minor negative (westward) acceleration is present in most of the nonlinear AOI trends.



Date Signed: December 15, 2025  
Austin, Texas

Nathaniel L. Byars, P.E.  
Principal Engineer  
Louisiana License No. 40697

## InSAR Data Sources

### InSAR Data

Interferometric Synthetic Aperture Radar (InSAR) is the most well established method to continually evaluate small, normally undetectable, ground movement over a large area. Radar imagery collected via satellites over successive orbital passes is used to identify and define measurement points on the ground. Objects or ground features providing a stable reflection of radar energy such as buildings, roads, and infrastructure produce the highest quality measurement points. InSAR analysis identifies the change in distance between the satellite and each measurement point over time relative to a stable reference point within the imaged area.

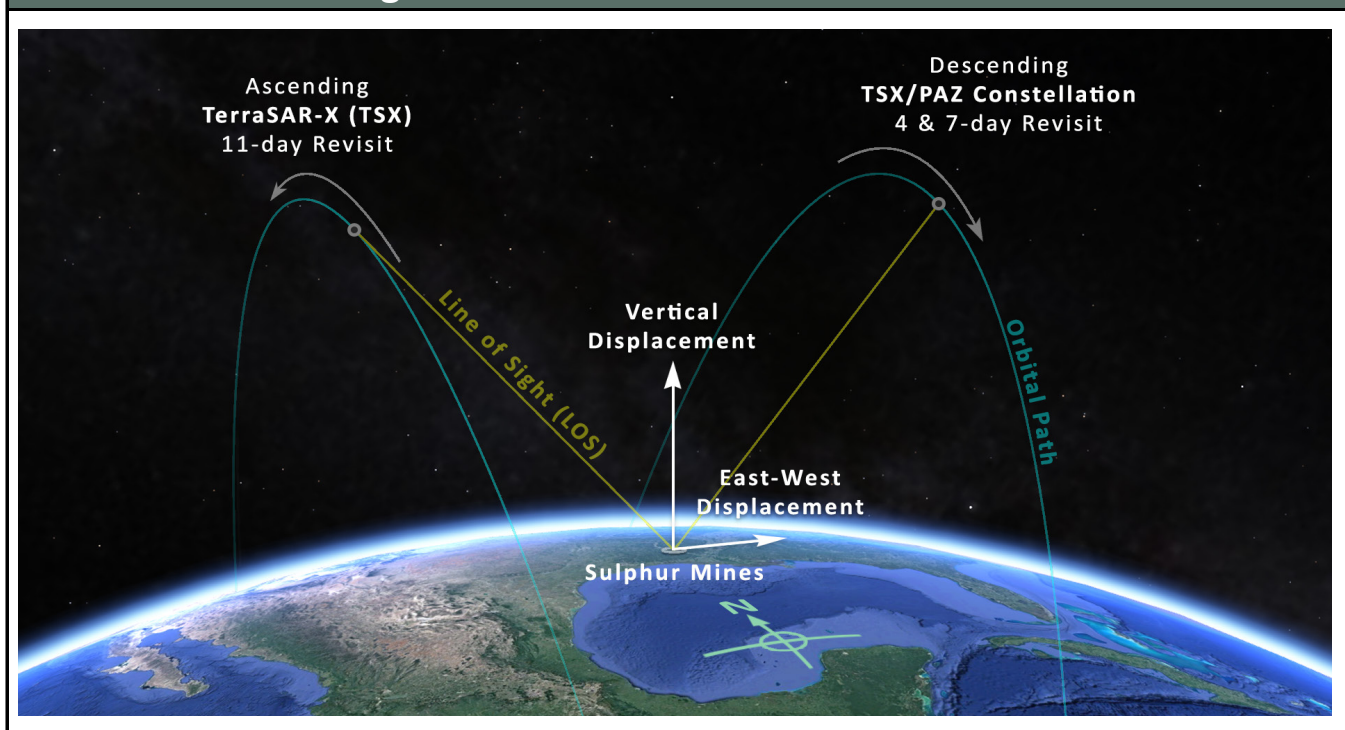
### Satellite Sources

Two InSAR datasets are being used to evaluate subsidence over the Sulphur Mines Salt Dome. These datasets provide Line-of-Sight (LOS) displacement measurements from both ascending and descending orbits. An ascending orbit denotes the satellite's longitudinal course from south to north as it passes over the site, while a descending orbit denotes the satellite is moving from north to south.

The first dataset comes from the high-resolution TerraSAR-X satellite on an ascending orbit track ("TSX-A") that captures data from the west of the site on an 11-day frequency. The second comes from a pair of high-resolution satellites that include the TerraSAR-X satellite and the PAZ satellite ("TSX/PAZ Constellation") which share the same descending orbit track and capture data from east of the site, each with an 11-day frequency. Their orbits are offset with the PAZ satellite passing over the site 4 days after the TSX satellite.

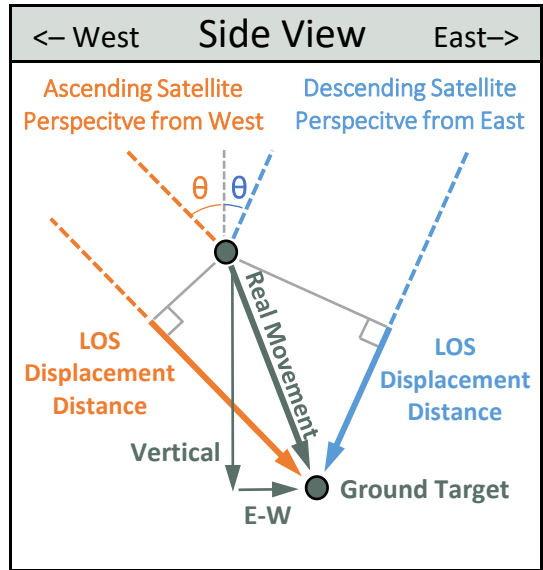
Each instance of data capture in either the TSX-A or TSX/PAZ constellation is used to generate two-dimensional ("2D") displacement values in the vertical and east-west directions for each measurement point within the 2D data grid. The image below depicts the orbital paths of the current satellites in relation to the Sulphur Mines Salt Dome as well as the 2D components of the calculated displacement. Prior to May 2024, the ascending data for the 2D calculations was captured from a low-resolution Sentinel-1 satellite at a similar viewing angle to the TSX orbit.

## Satellite Orbital Diagram



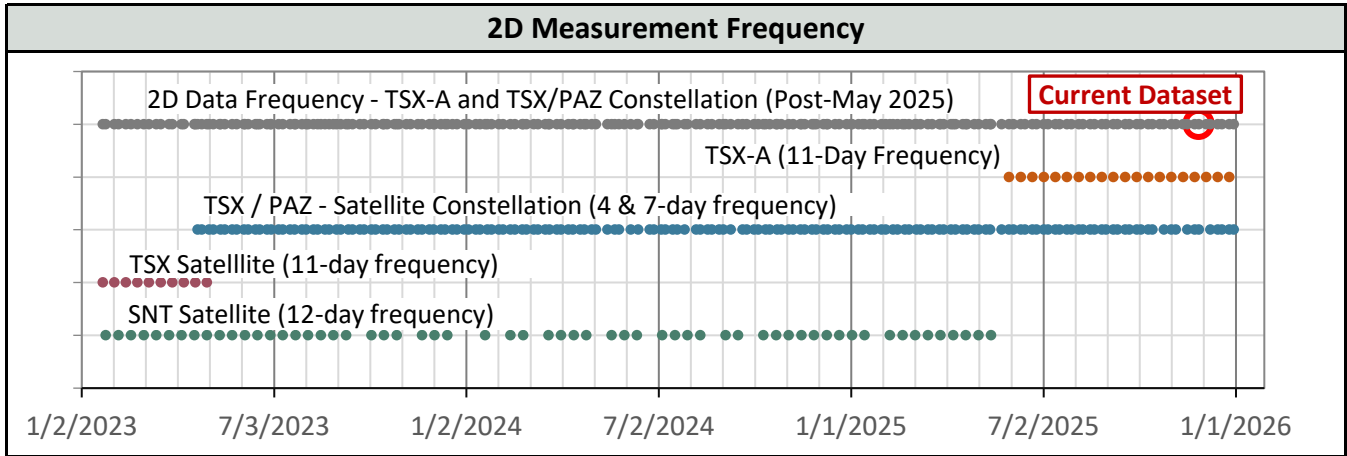
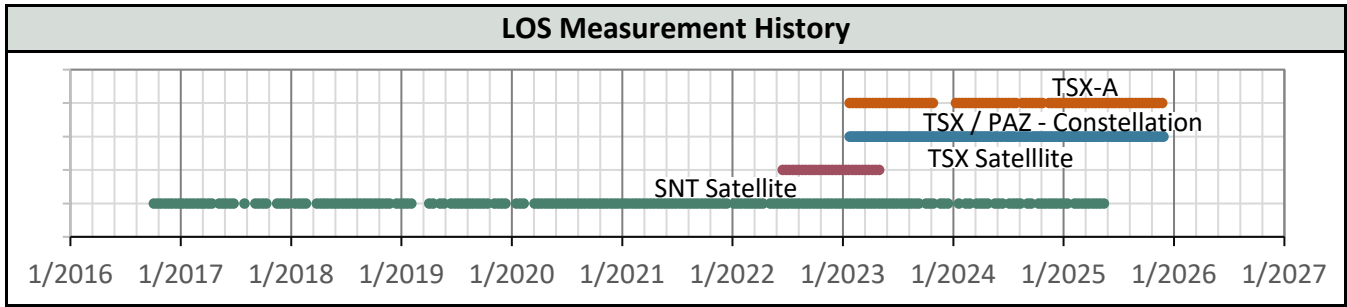
### InSAR 2D Vertical and East-West Data

LOS (line-of-sight) displacement measurements, which refer to a change in distance between the satellite sensor and the ground target, are used to triangulate the real movement along the 2D plane defined by the satellite positions and the ground target. The diagram to the right illustrates the geometric relationship between the Real Movement of a ground target, the LOS displacement measurements from two different satellite viewing directions, and the resulting vertical and east-west components of calculated 2D displacement. Ground targets are not consistent between LOS datasets so these calculations are performed on averaged LOS data within 33-ft square cells. One 2D measurement point is generated within each cell where data from both LOS sources are present.

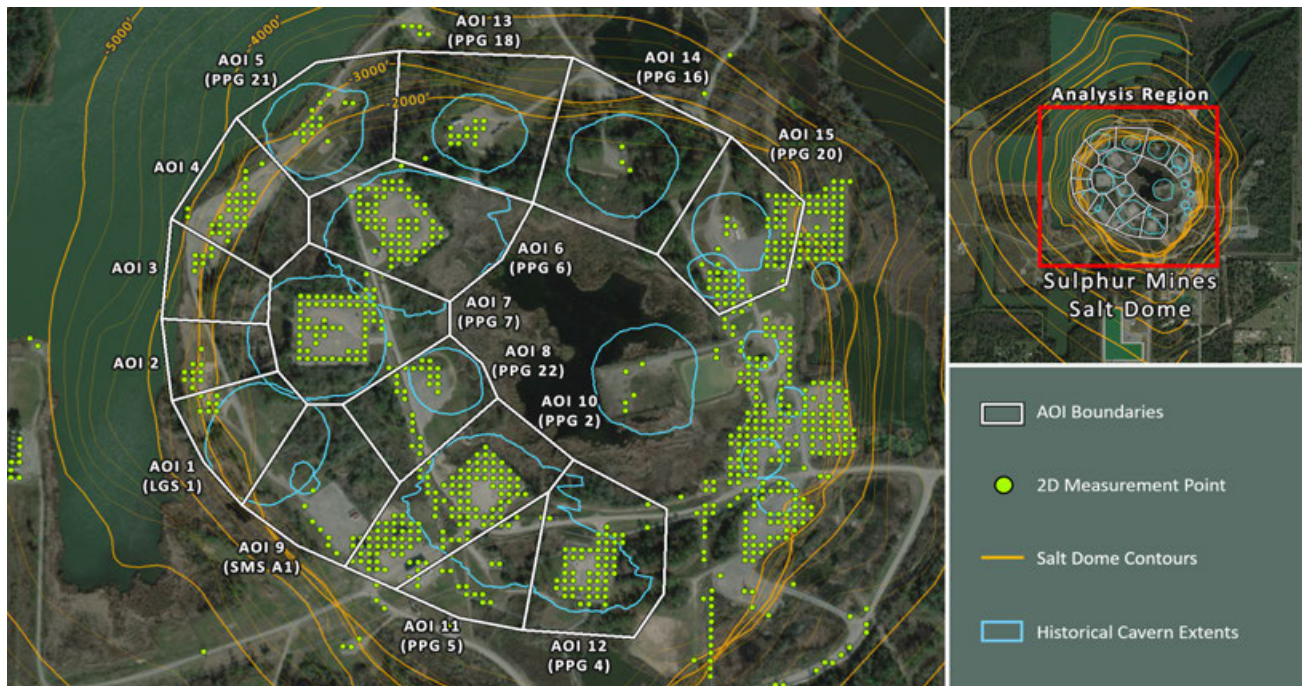


### Satellite Properties & Image Frequency

| Satellite and Data Properties | TSX-A                    | TSX/PAZ Constellation     |
|-------------------------------|--------------------------|---------------------------|
| Band (Wavelength)             | X-band (1.22 in)         | X-band (1.22 in)          |
| Track                         | T52                      | T67 & T120                |
| Pixel resolution              | 3 x 3 ft                 | 3 x 3 ft                  |
| Revisit frequency             | 11 days                  | 4 & 7 days                |
| Orbit (LOS Angle, $\theta$ )  | Ascending ( $44^\circ$ ) | Descending ( $37^\circ$ ) |
| Data Start Date               | 2/4/2023                 | 1/24/2023                 |
| Measurement error range       | $\pm 0.06$ in            | $\pm 0.07$ in             |



### AOI Boundaries & 2D InSAR Measurement Points

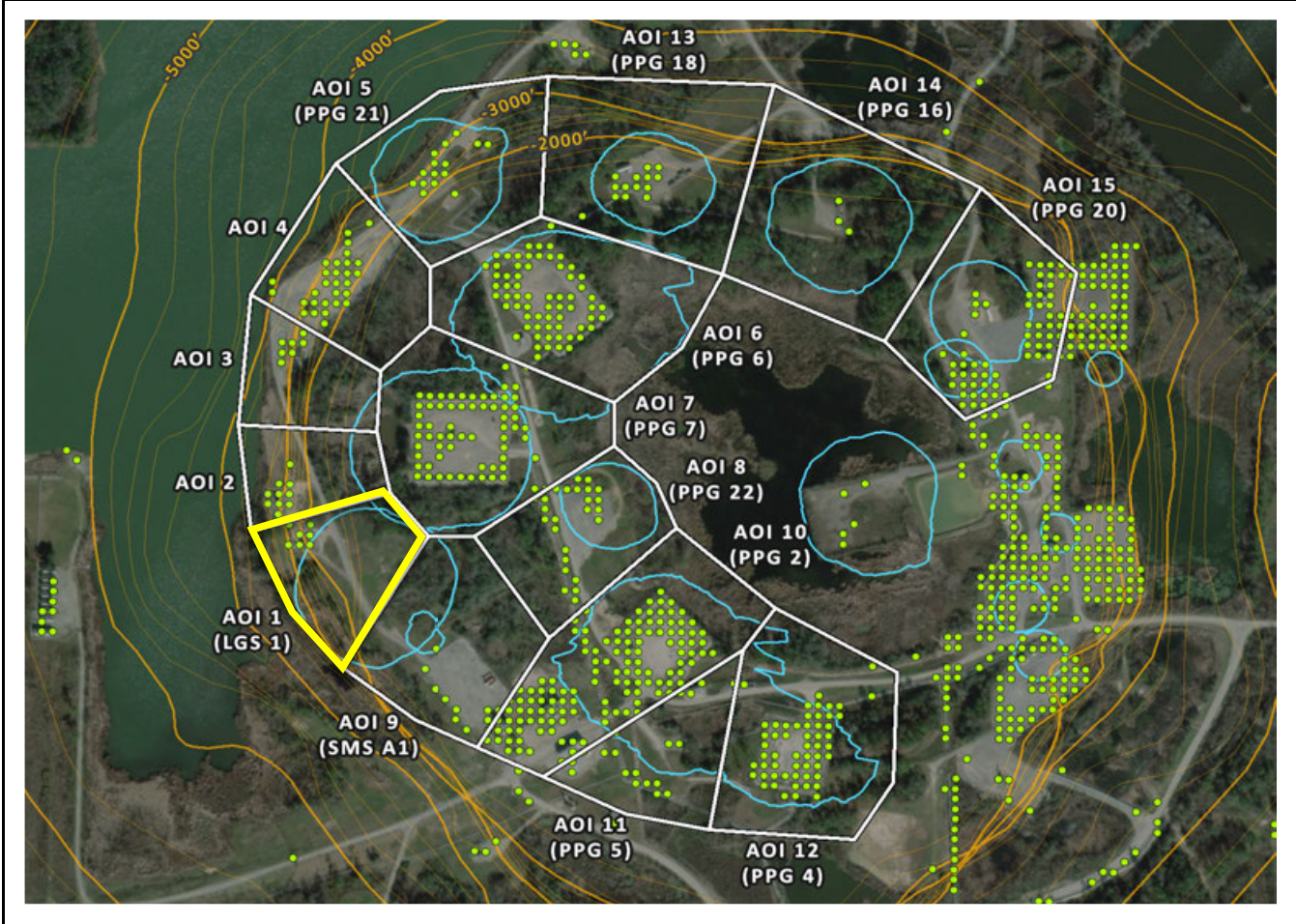


### Subsidence Monitoring Areas of Interest (AOIs)

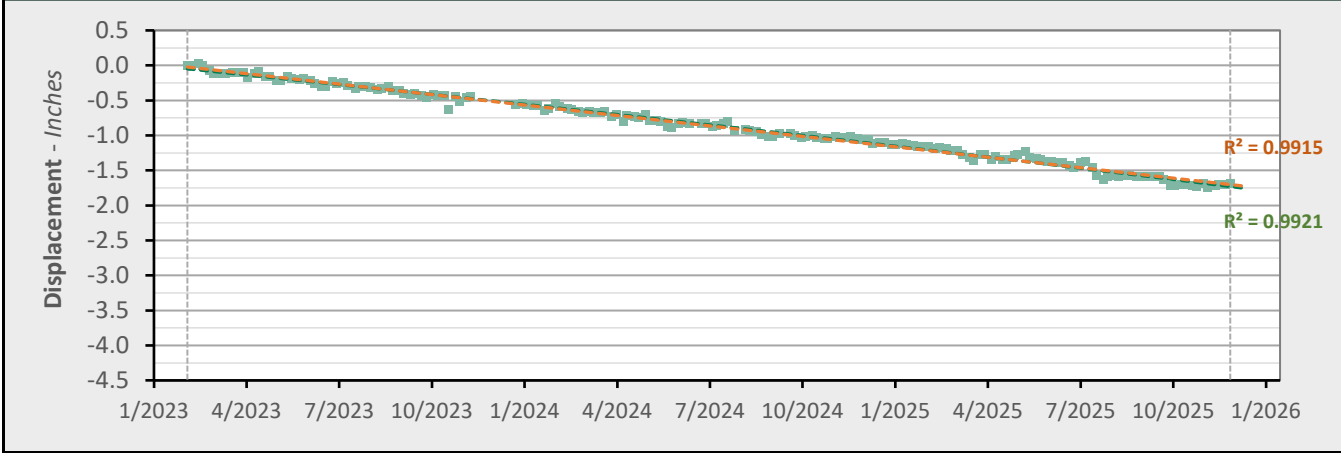
To visually convey and evaluate trend consistency for the Vertical displacement time series of each ground target, measurement points were grouped and their displacement values were averaged. The point groups are referred to as Areas of Interest (AOIs) in this analysis and their boundaries are depicted on the above map. The below table lists the Vertical trend values calculated in each AOI for the dataset evaluated in this report.

| AOI Name        | Vertical (11/27/2025) | Vertical Velocity (in/yr) |        | Vertical Acceleration (in/yr <sup>2</sup> ) |        |
|-----------------|-----------------------|---------------------------|--------|---|--------|
|                 | Point Count           | Nonlinear                 | Linear | Nonlinear                                   | Linear |
| AOI 1 (LGS 1)   | 9                     | -0.65                     | -0.60  | -0.04                                       | 0.00   |
| AOI 2           | 10                    | -0.58                     | -0.60  | +0.02                                       | 0.00   |
| AOI 3           | 7                     | -0.56                     | -0.55  | -0.00                                       | 0.00   |
| AOI 4           | 28                    | -0.57                     | -0.55  | -0.01                                       | 0.00   |
| AOI 5 (PPG 21)  | 16                    | -0.57                     | -0.55  | -0.01                                       | 0.00   |
| AOI 6 (PPG 6)   | 66                    | -1.04                     | -0.92  | -0.08                                       | 0.00   |
| AOI 7 (PPG 7)   | 68                    | -1.04                     | -0.93  | -0.08                                       | 0.00   |
| AOI 8 (PPG 22)  | 26                    | -1.26                     | -1.21  | -0.04                                       | 0.00   |
| AOI 9 (SMS A1)  | 11                    | -0.53                     | -0.76  | +0.16                                       | 0.00   |
| AOI 10 (PPG 2)  | 122                   | -1.13                     | -1.05  | -0.06                                       | 0.00   |
| AOI 11 (PPG 5)  | 20                    | -1.07                     | -0.94  | -0.09                                       | 0.00   |
| AOI 12 (PPG 4)  | 55                    | -1.09                     | -1.04  | -0.03                                       | 0.00   |
| AOI 13 (PPG 18) | 13                    | -0.65                     | -0.73  | +0.06                                       | 0.00   |
| AOI 14 (PPG 16) | 2                     | -0.87                     | -0.84  | -0.02                                       | 0.00   |
| AOI 15 (PPG 20) | 61                    | -0.93                     | -0.84  | -0.07                                       | 0.00   |

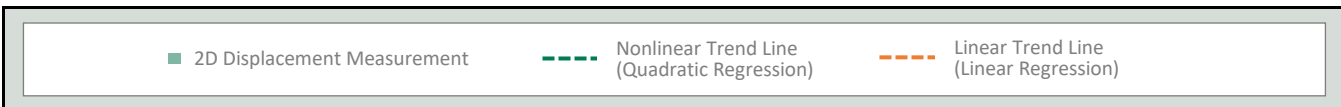
### AOI 1 (LGS 1) - Location Map



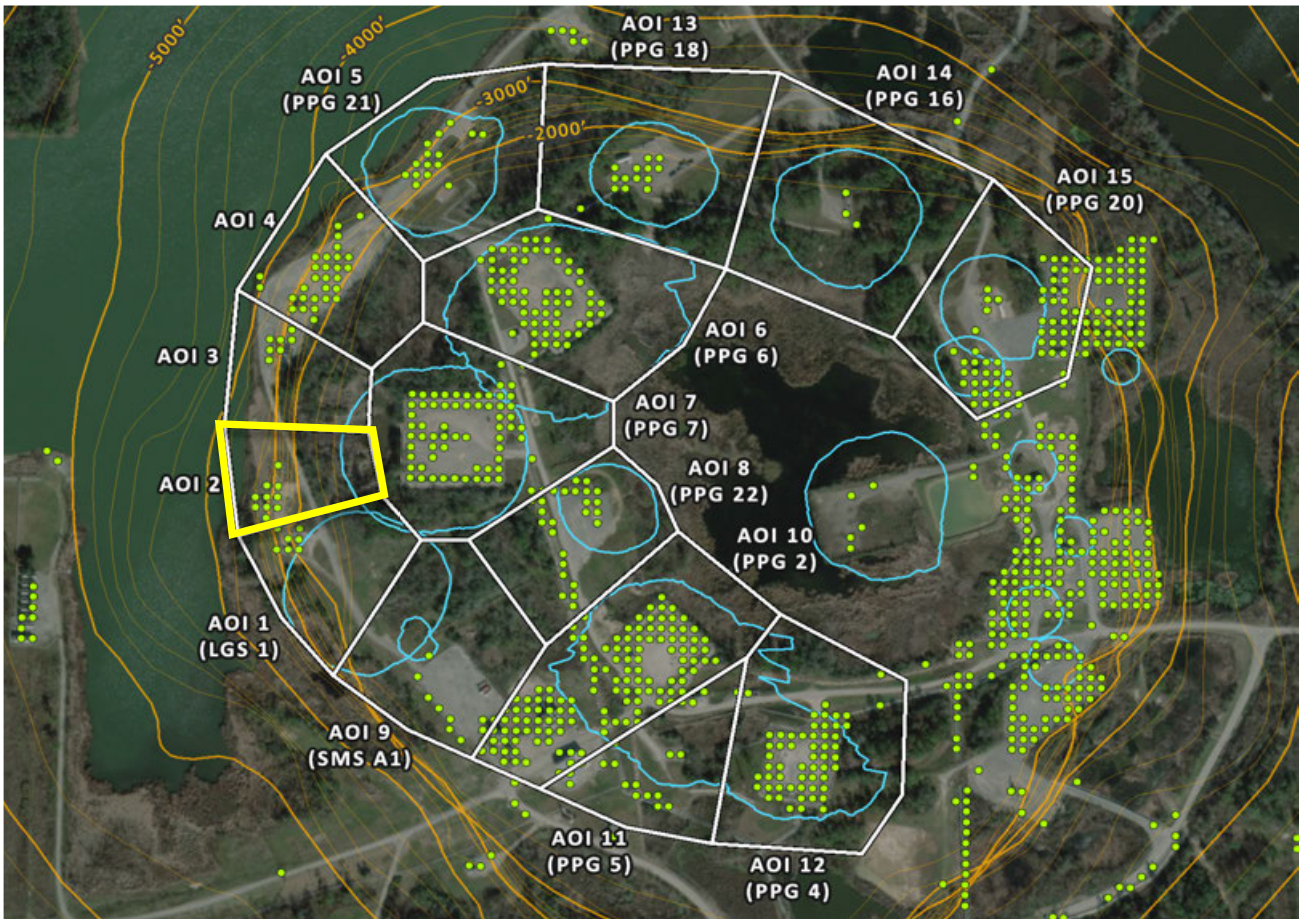
### AOI 1 (LGS 1) - Vertical Time Series Vertical (11/27/2025) Point Count: 9



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.65 in/yr              | -0.60 in/yr             |
| Acceleration: | -0.04 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

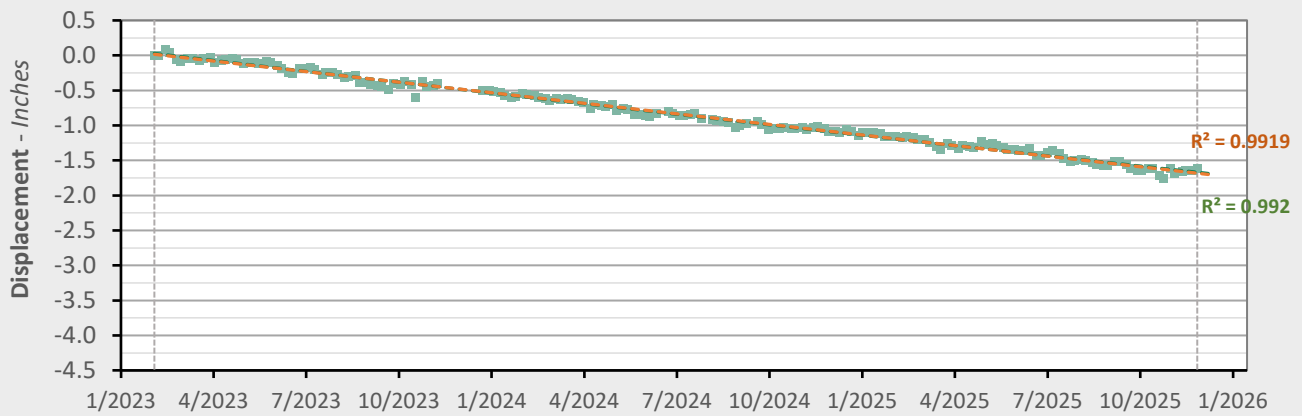


### AOI 2 - Location Map

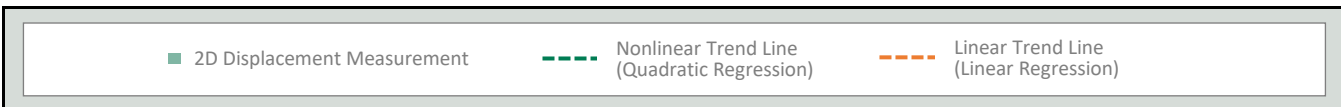


### AOI 2 - Vertical Time Series

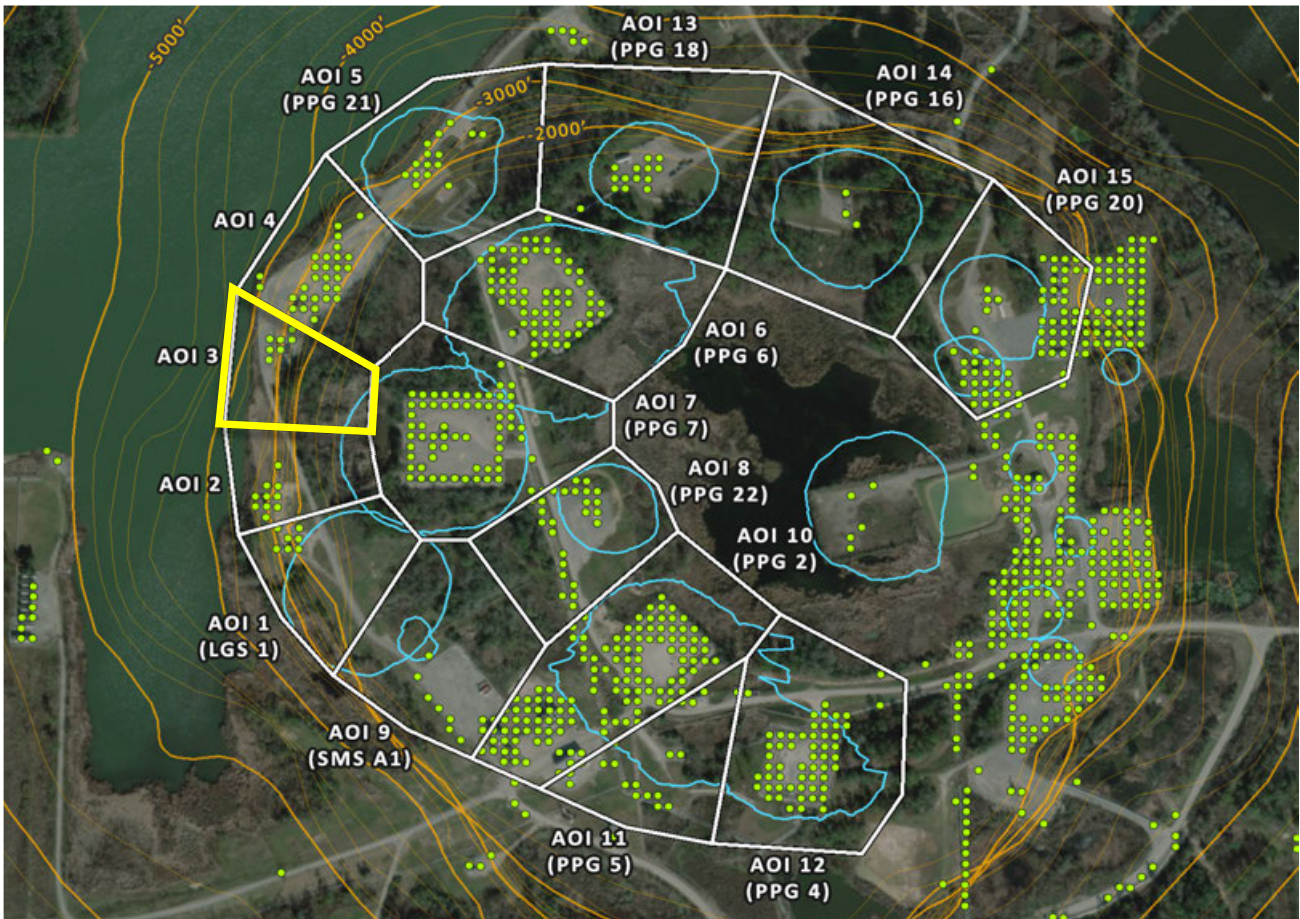
Vertical (11/27/2025) Point Count: **10**



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.58 in/yr              | -0.60 in/yr             |
| Acceleration: | +0.02 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

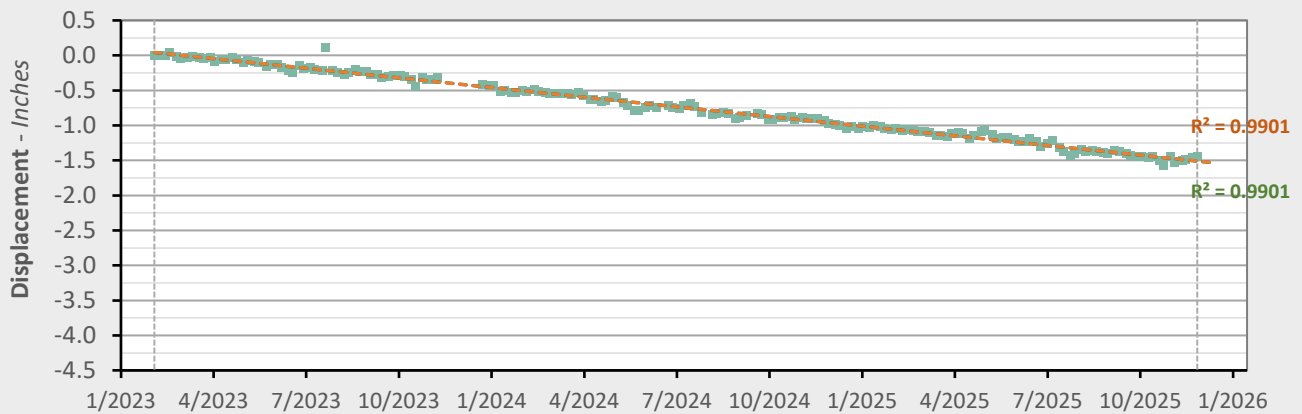


### AOI 3 - Location Map

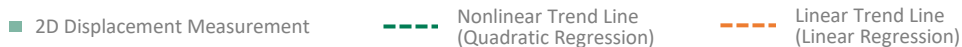


### AOI 3 - Vertical Time Series

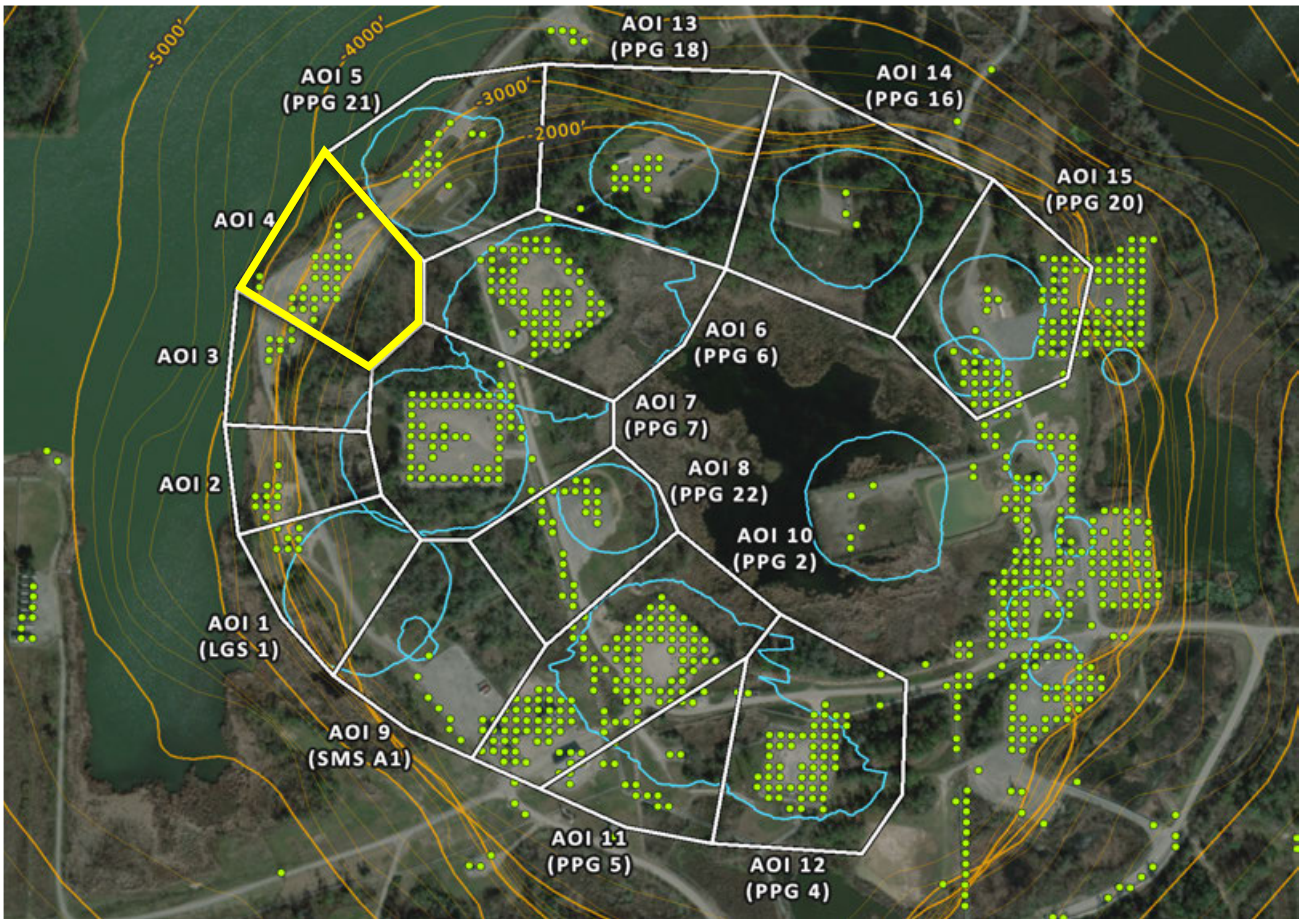
Vertical (11/27/2025) Point Count: **7**



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.56 in/yr              | -0.55 in/yr             |
| Acceleration: | -0.00 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

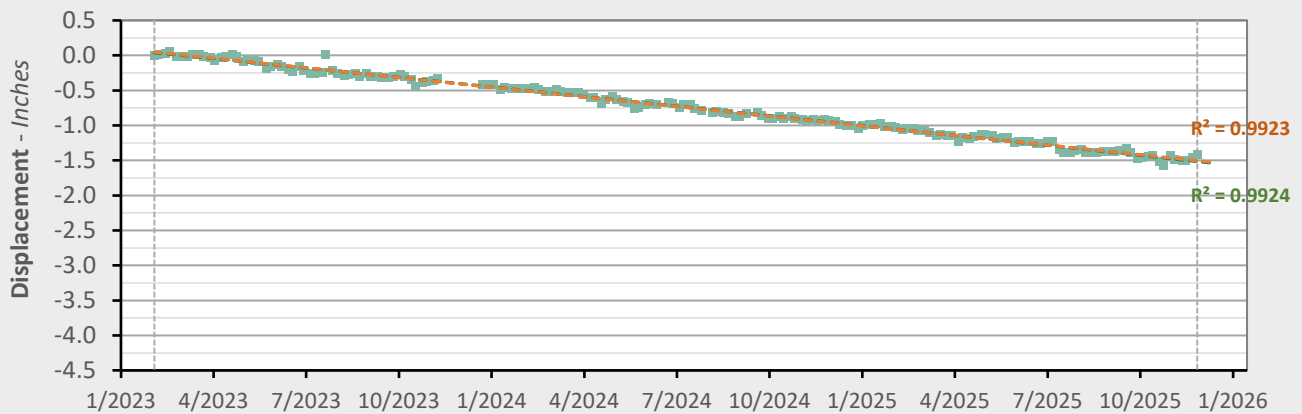


### AOI 4 - Location Map

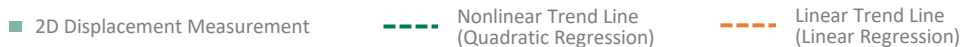


### AOI 4 - Vertical Time Series

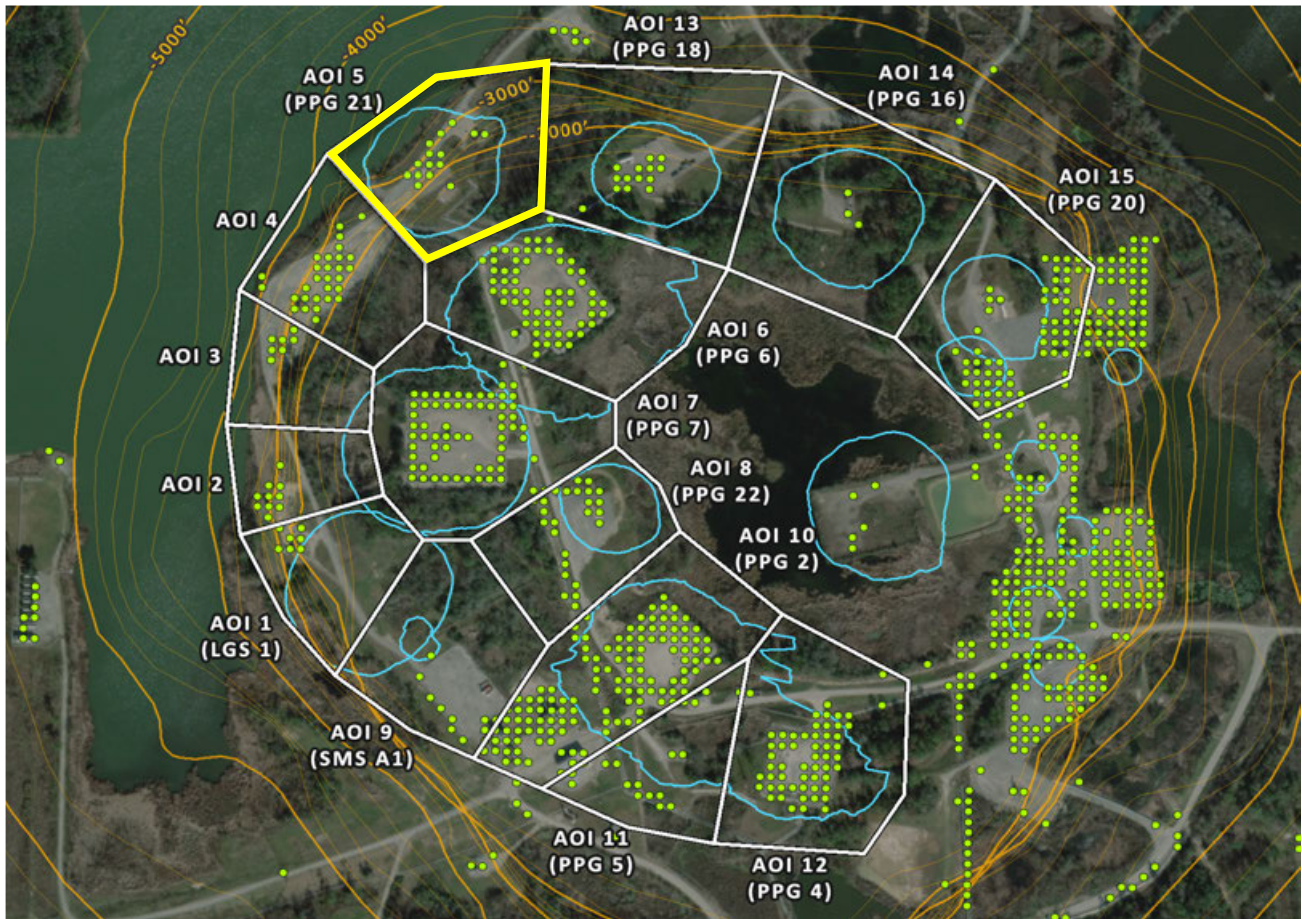
Vertical (11/27/2025) Point Count: **28**



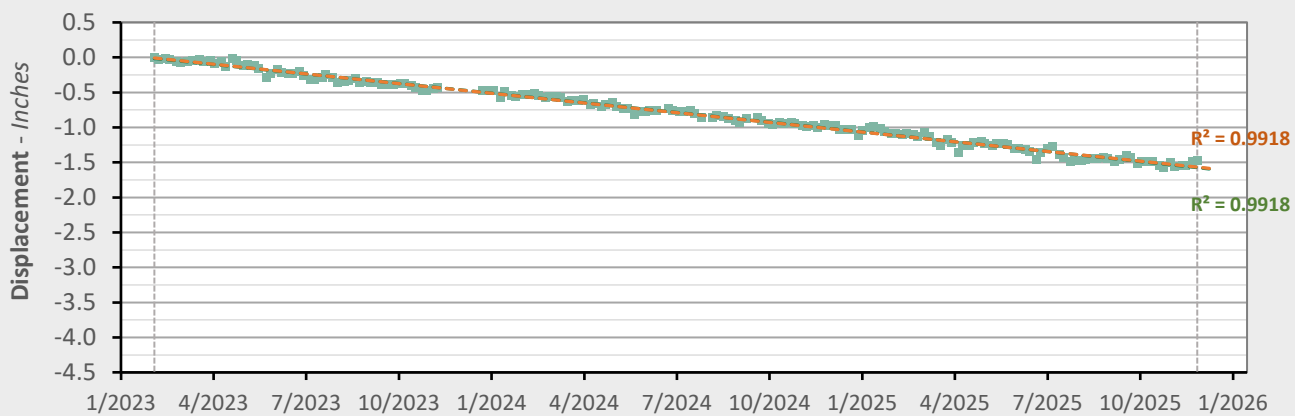
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.57 in/yr              | -0.55 in/yr             |
| Acceleration: | -0.01 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



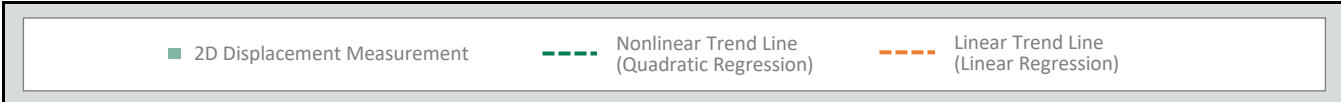
### AOI 5 (PPG 21) - Location Map



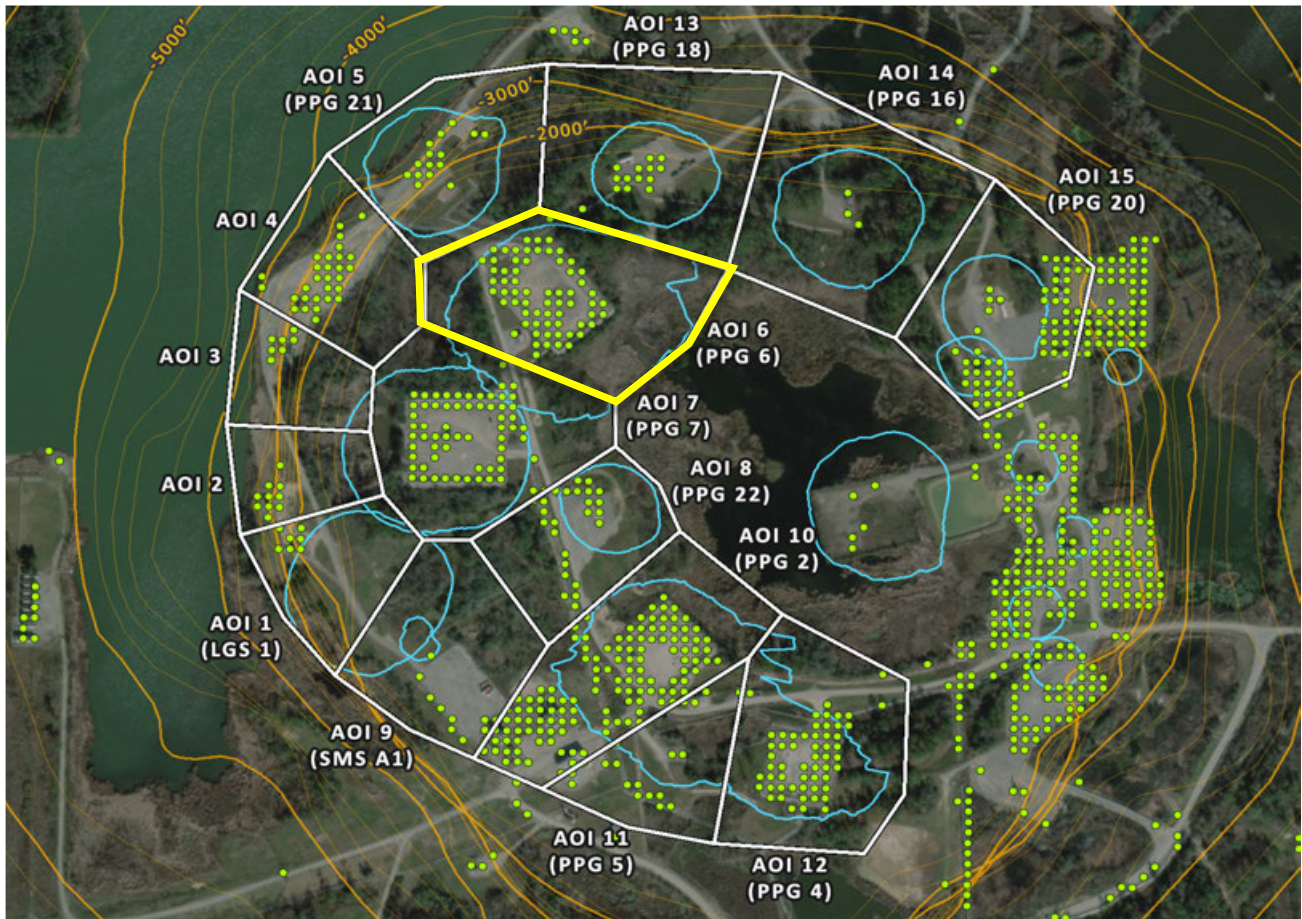
### AOI 5 (PPG 21) - Vertical Time Series Vertical (11/27/2025) Point Count: 16



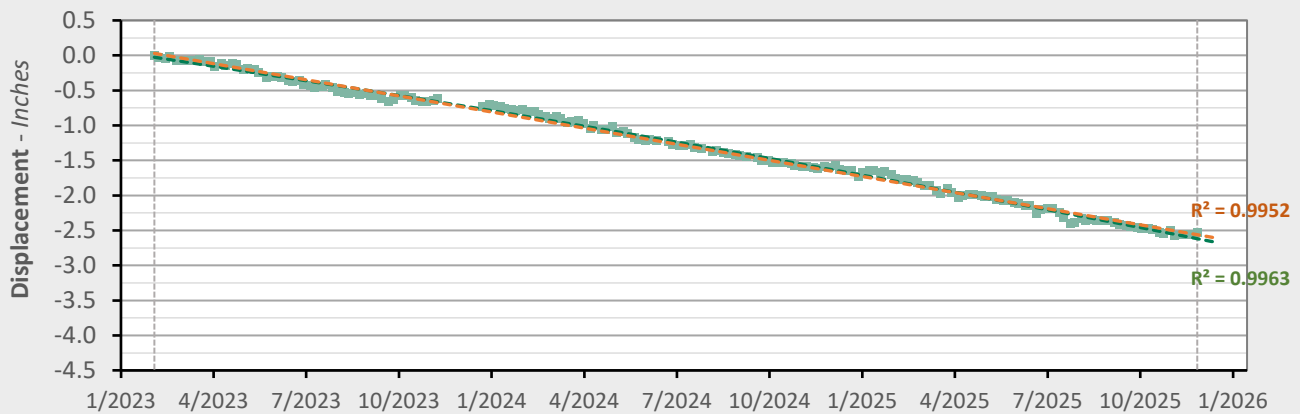
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.57 in/yr              | -0.55 in/yr             |
| Acceleration: | -0.01 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



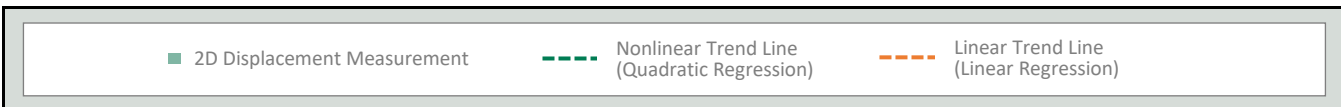
### AOI 6 (PPG 6) - Location Map



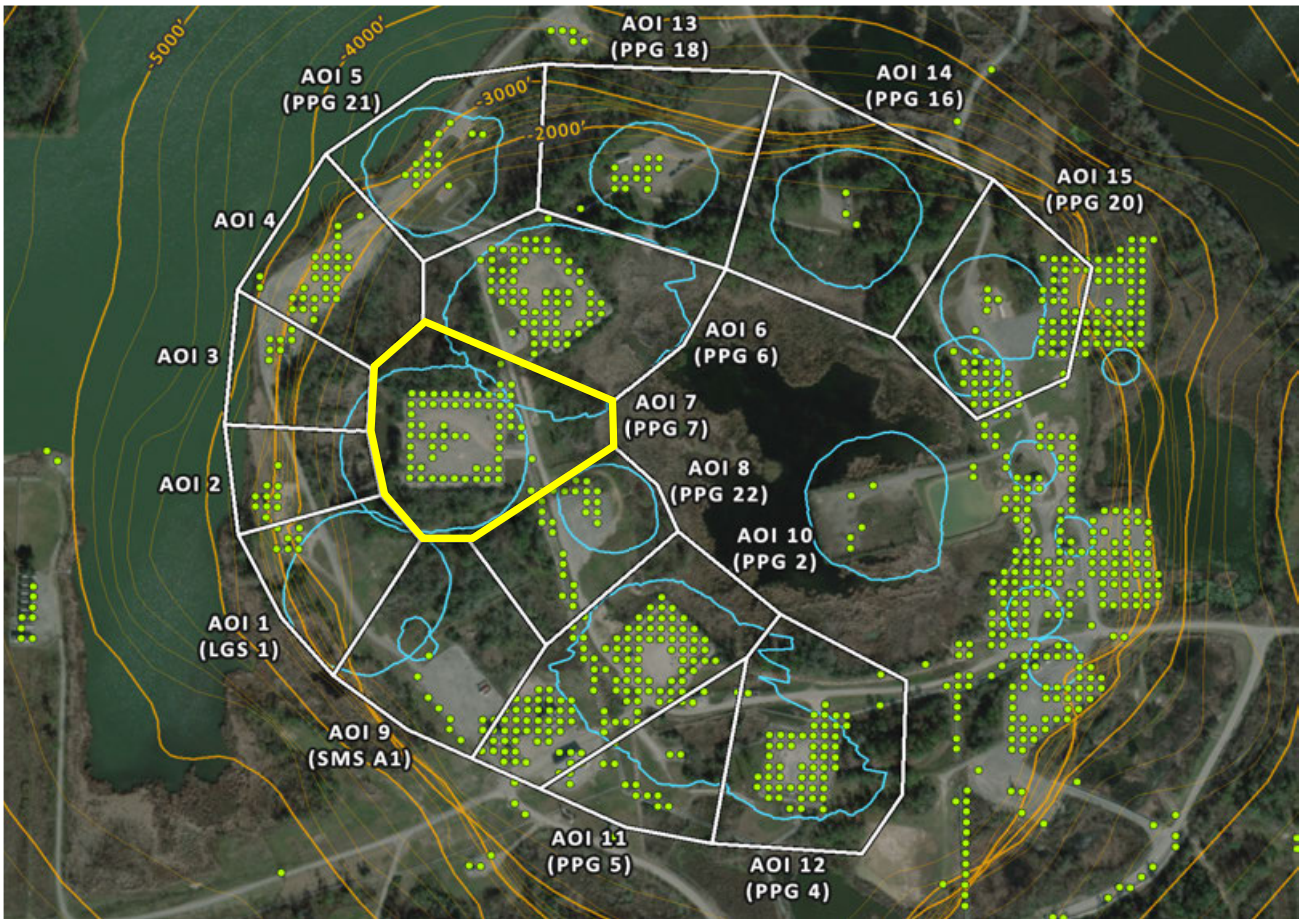
### AOI 6 (PPG 6) - Vertical Time Series Vertical (11/27/2025) Point Count: 66



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.04 in/yr              | -0.92 in/yr             |
| Acceleration: | -0.08 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

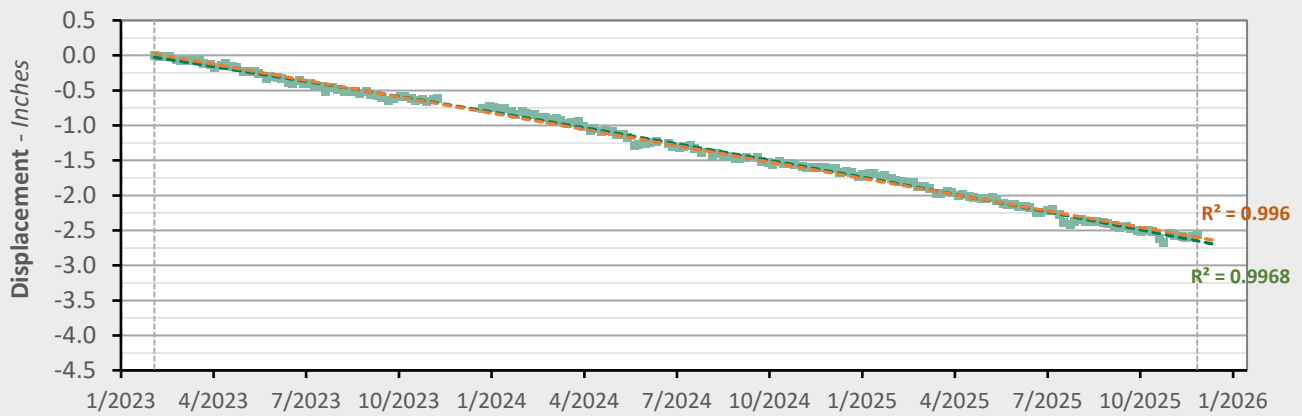


### AOI 7 (PPG 7) - Location Map



### AOI 7 (PPG 7) - Vertical Time Series

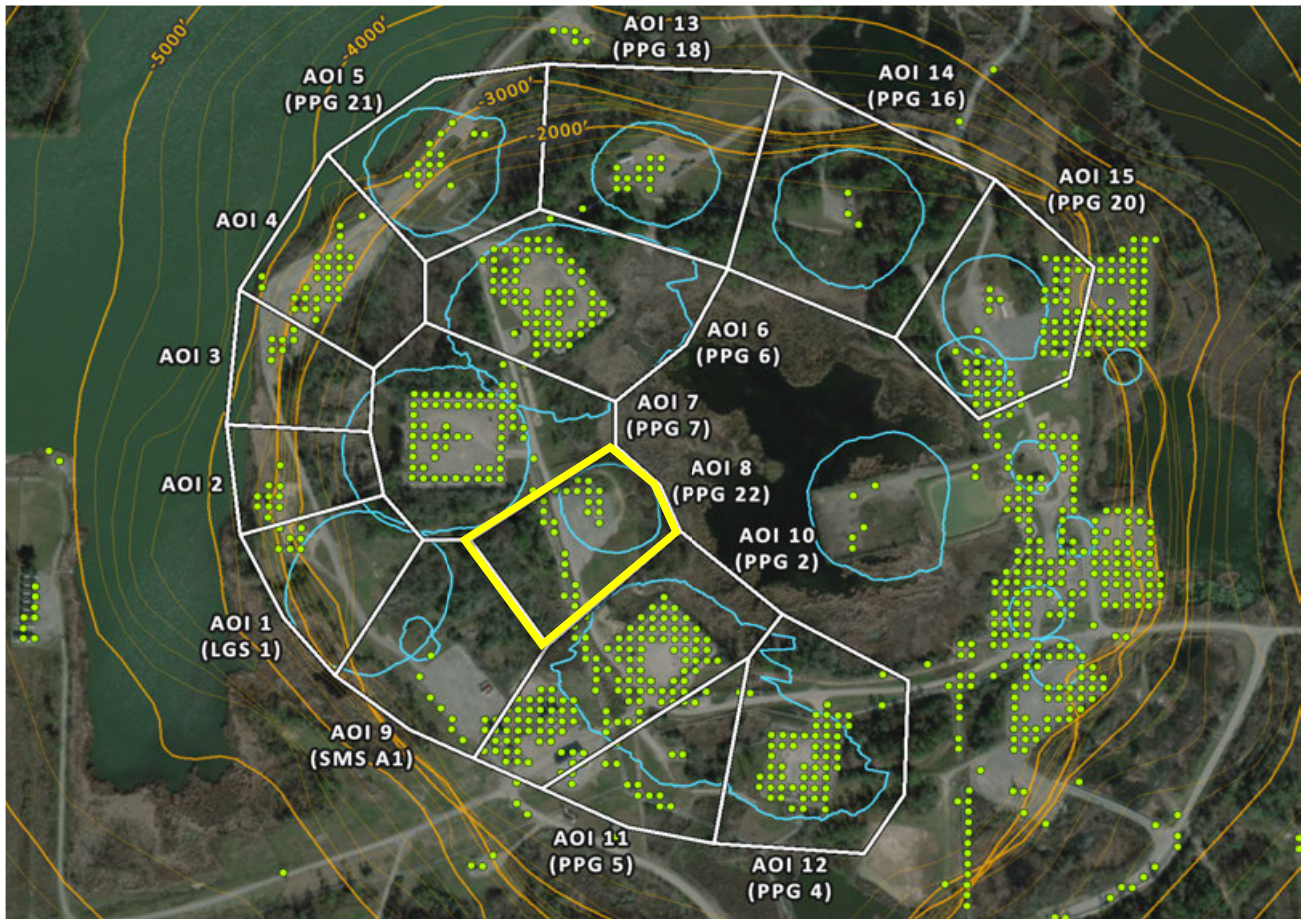
Vertical (11/27/2025) Point Count: **68**



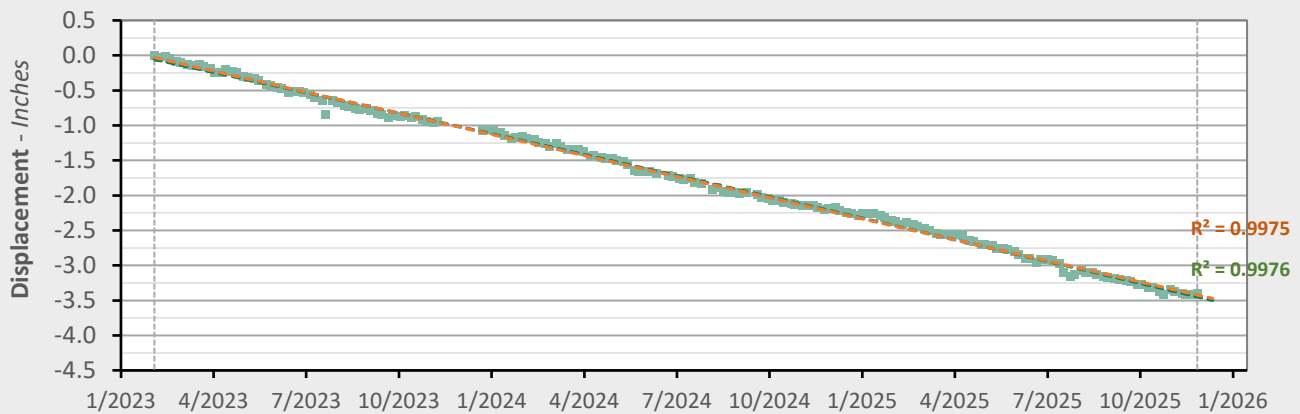
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.04 in/yr              | -0.93 in/yr             |
| Acceleration: | -0.08 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

- 2D Displacement Measurement
- - - Nonlinear Trend Line (Quadratic Regression)
- - - Linear Trend Line (Linear Regression)

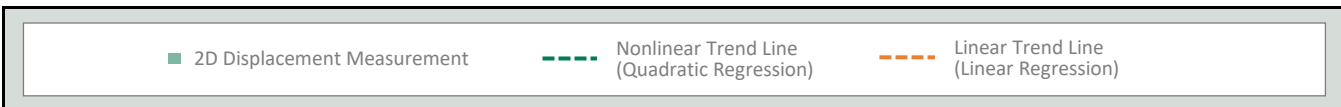
### AOI 8 (PPG 22) - Location Map



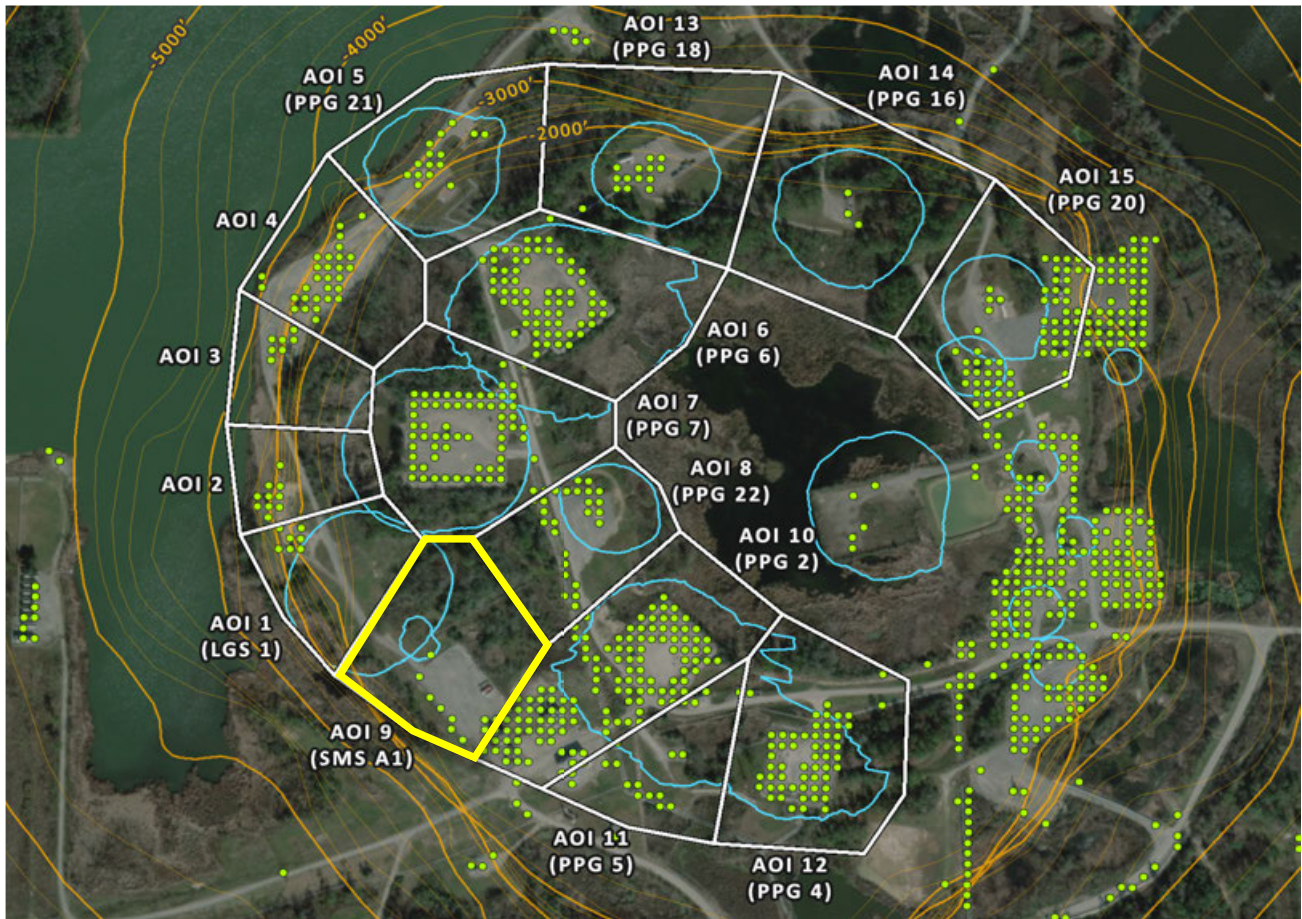
### AOI 8 (PPG 22) - Vertical Time Series Vertical (11/27/2025) Point Count: 26



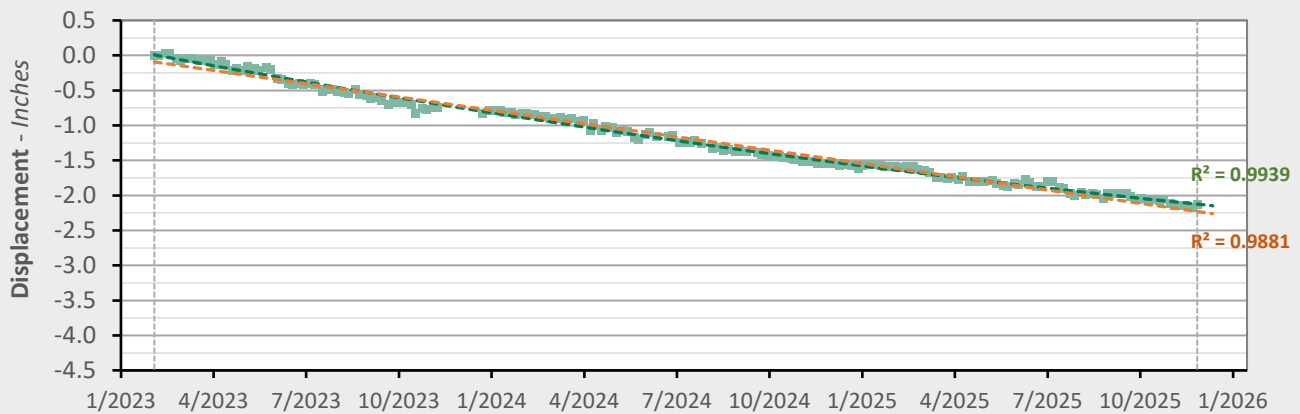
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.26 in/yr              | -1.21 in/yr             |
| Acceleration: | -0.04 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



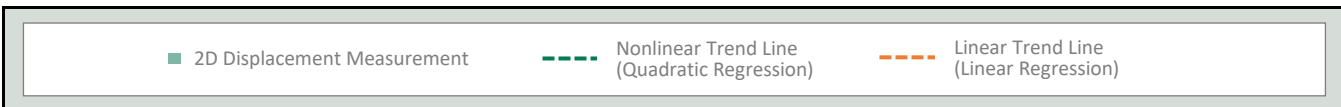
### AOI 9 (PPG A1) - Location Map



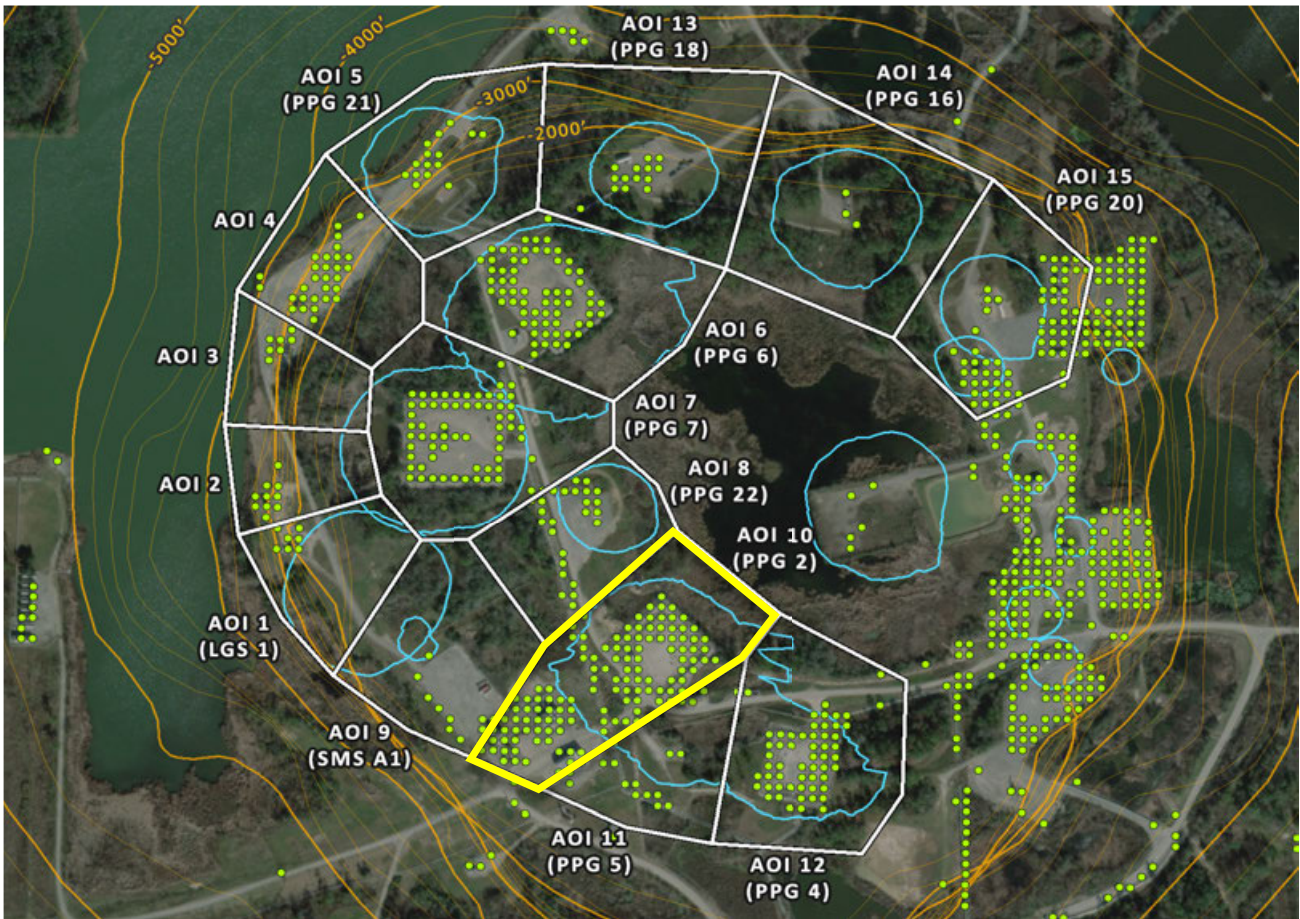
### AOI 9 (SMS A1) - Vertical Time Series Vertical (11/27/2025) Point Count: 11



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.53 in/yr              | -0.76 in/yr             |
| Acceleration: | +0.16 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

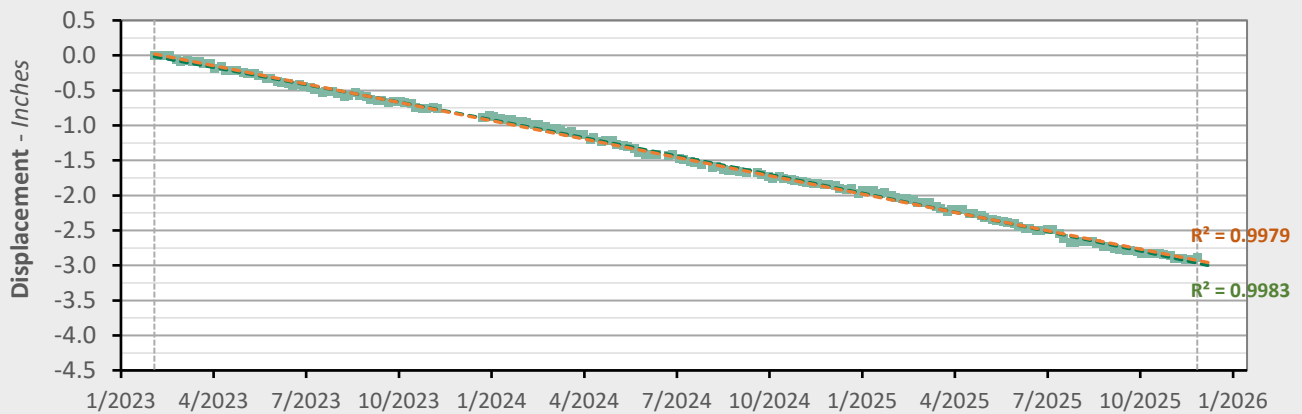


### AOI 10 (PPG 2) - Location Map

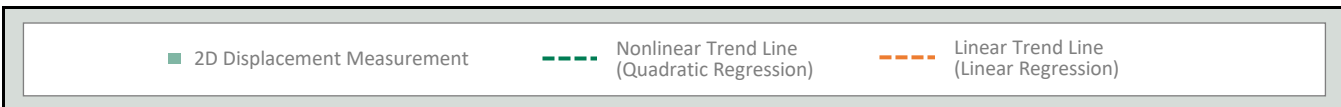


### AOI 10 (PPG 2) - Vertical Time Series

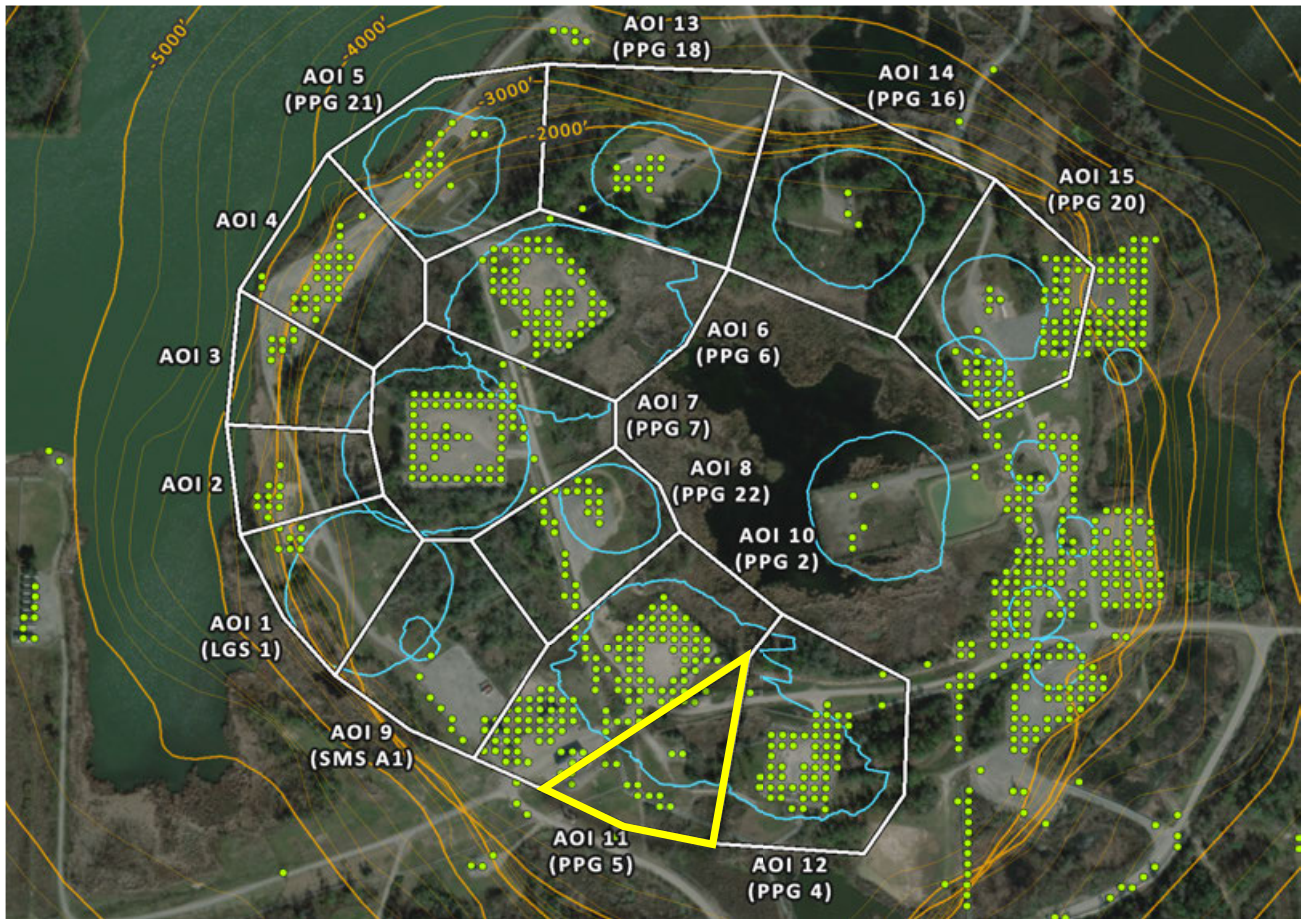
Vertical (11/27/2025) Point Count: **122**



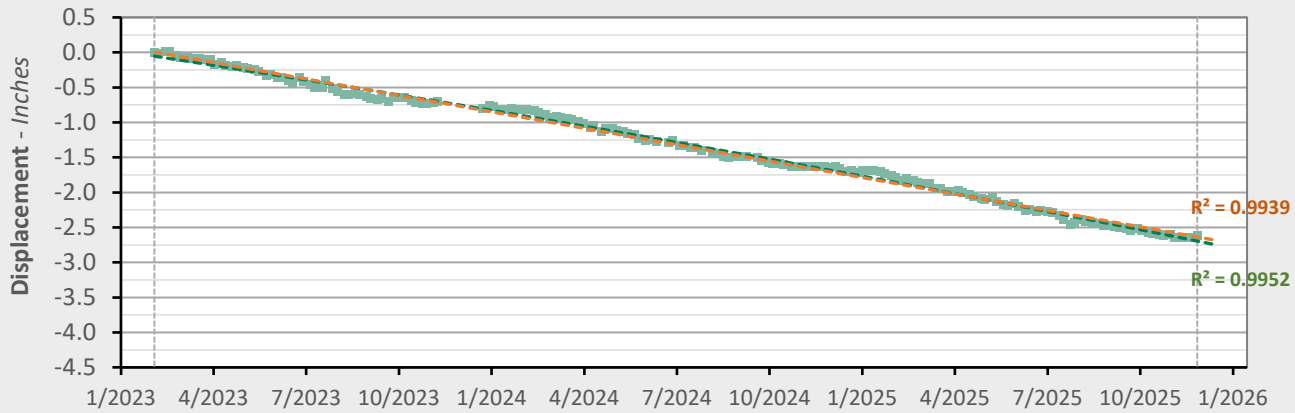
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.13 in/yr              | -1.05 in/yr             |
| Acceleration: | -0.06 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



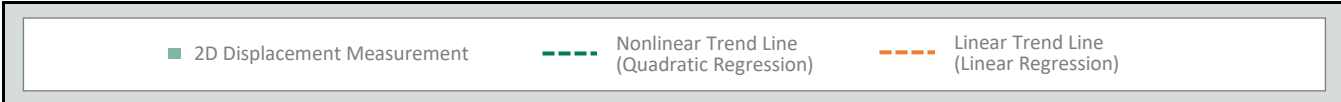
### AOI 11 (PPG 5) - Location Map



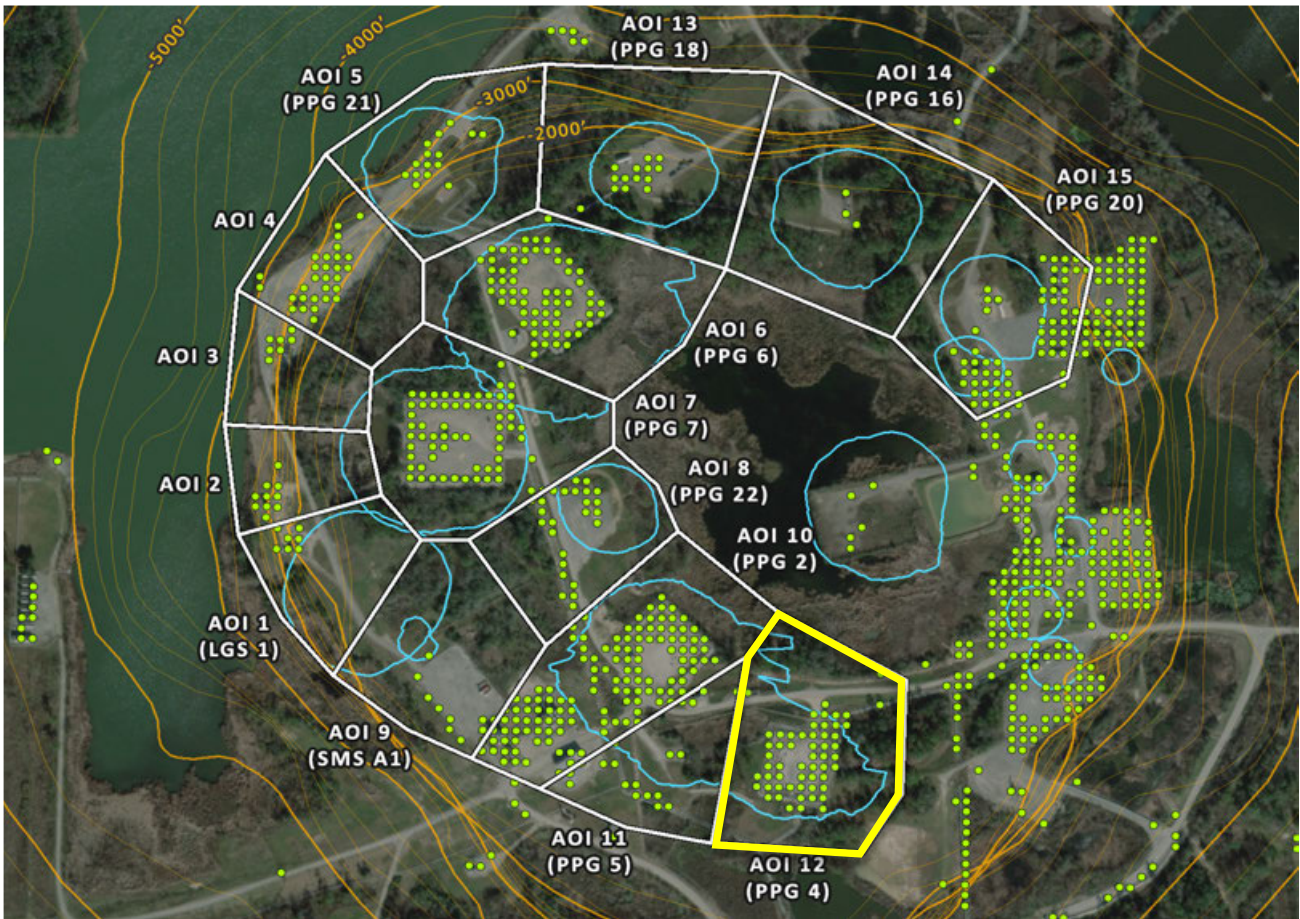
### AOI 11 (PPG 5) - Vertical Time Series Vertical (11/27/2025) Point Count: 20



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.07 in/yr              | -0.94 in/yr             |
| Acceleration: | -0.09 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

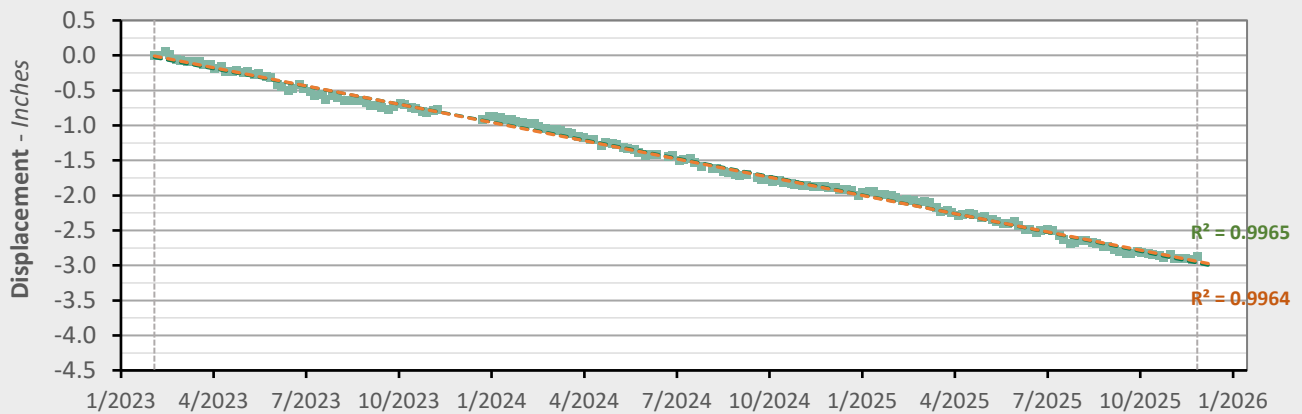


### AOI 12 (PPG 4) - Location Map



### AOI 12 (PPG 4) - Vertical Time Series

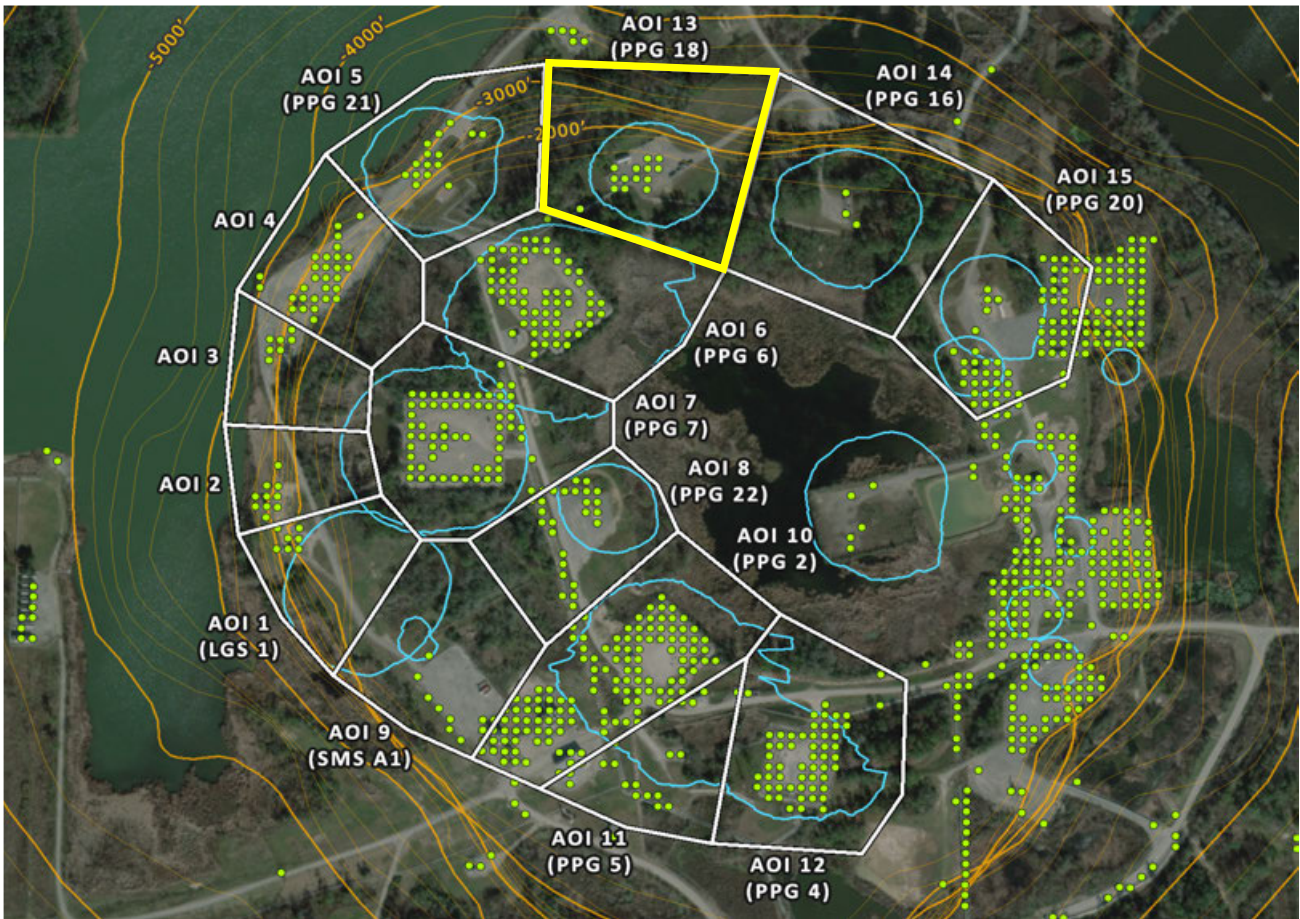
Vertical (11/27/2025) Point Count: **55**



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -1.09 in/yr              | -1.04 in/yr             |
| Acceleration: | -0.03 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

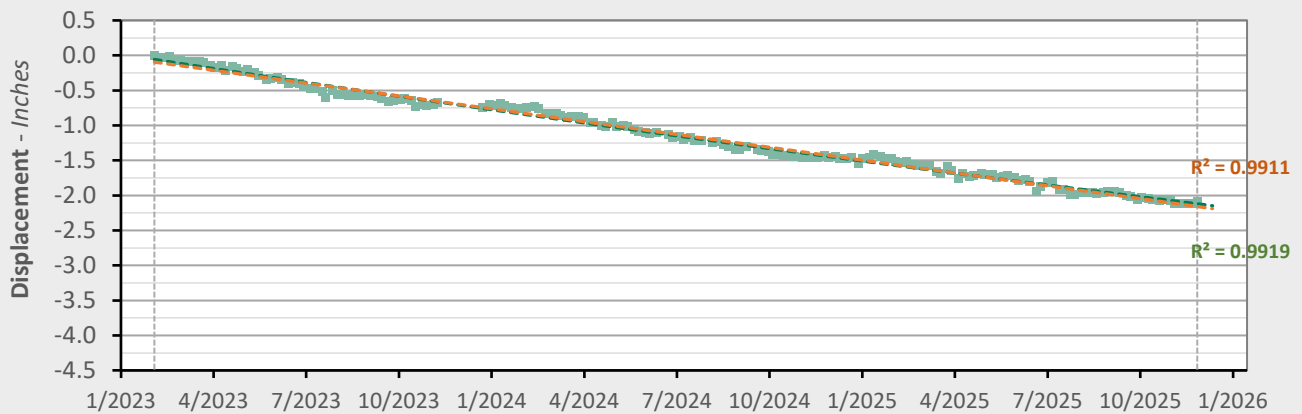
■ 2D Displacement Measurement     
 - - - Nonlinear Trend Line (Quadratic Regression)     
 - - - Linear Trend Line (Linear Regression)

### AOI 13 (PPG 18) - Location Map



### AOI 13 (PPG 18) - Vertical Time Series

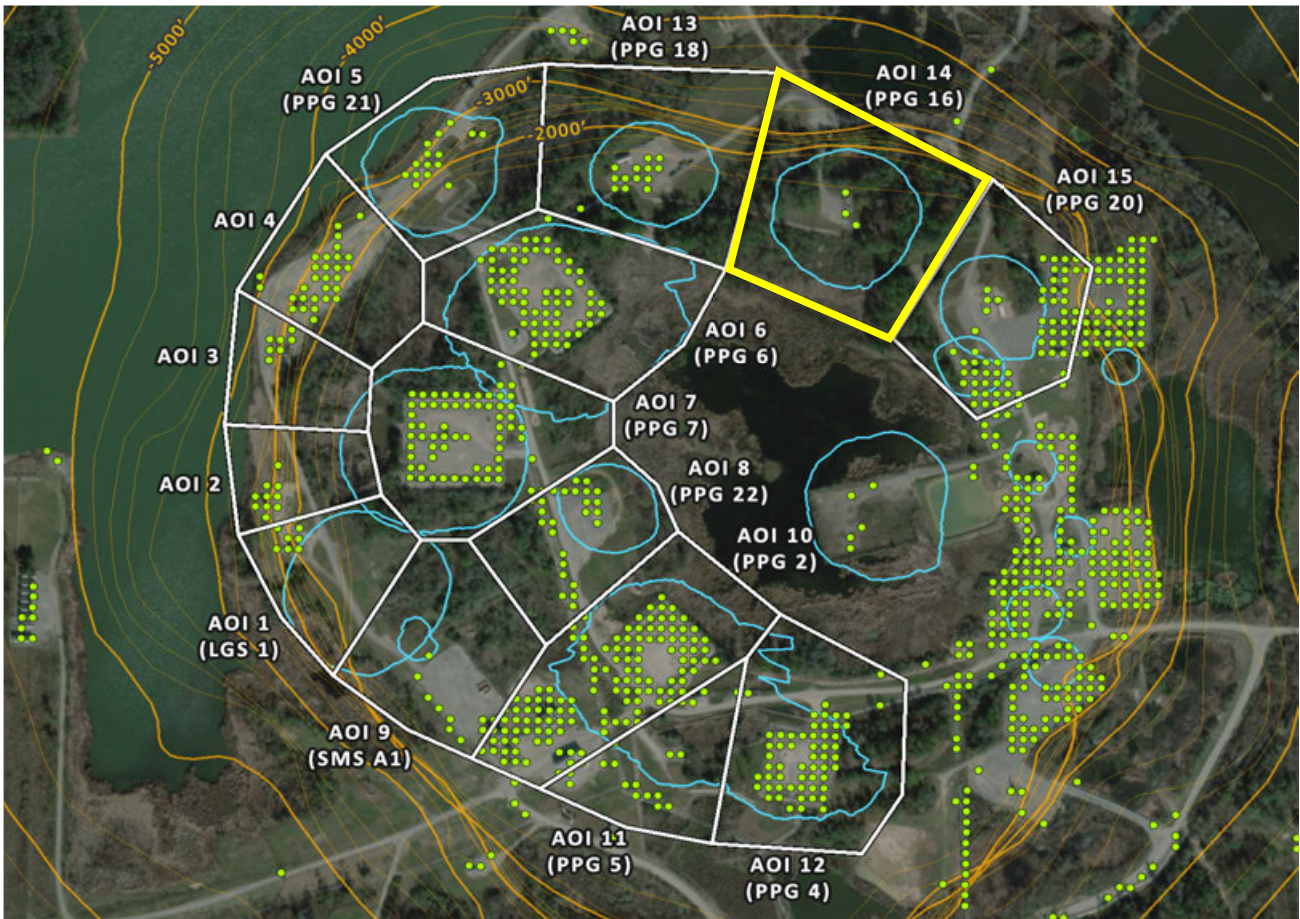
Vertical (11/27/2025) Point Count: **13**



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.65 in/yr              | -0.73 in/yr             |
| Acceleration: | +0.06 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

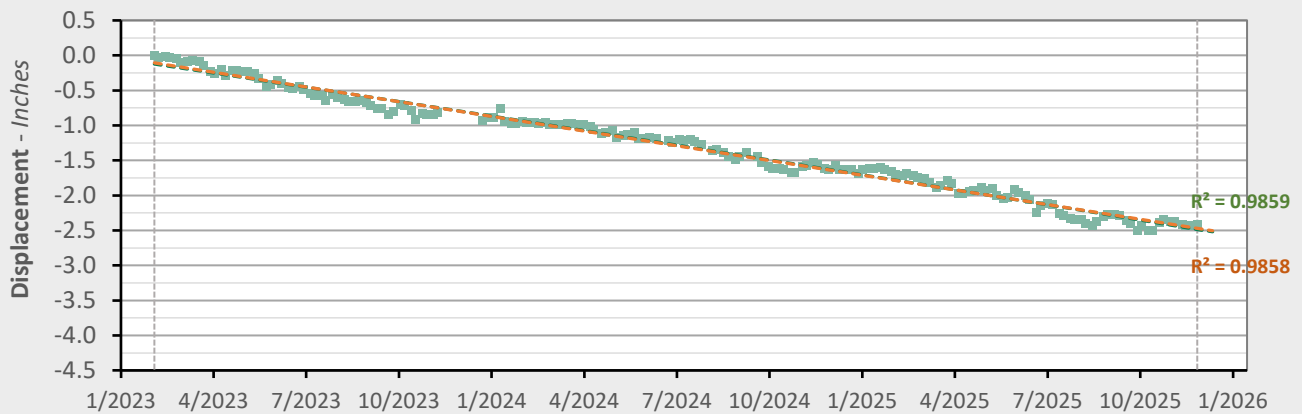
- 2D Displacement Measurement
- - - Nonlinear Trend Line (Quadratic Regression)
- - - Linear Trend Line (Linear Regression)

### AOI 14 (PPG 16) - Location Map



### AOI 14 (PPG 16) - Vertical Time Series

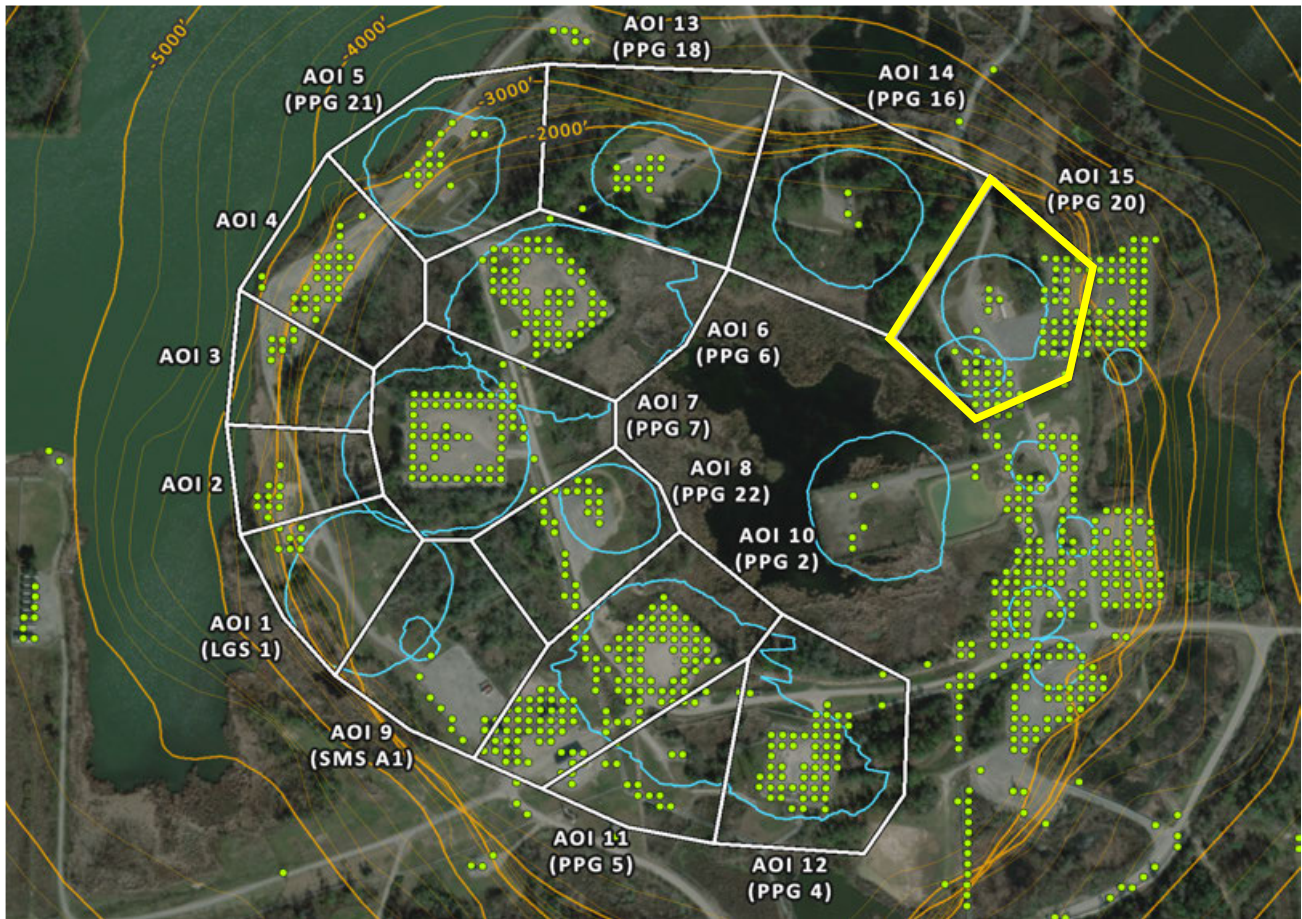
Vertical (11/27/2025) Point Count: 2



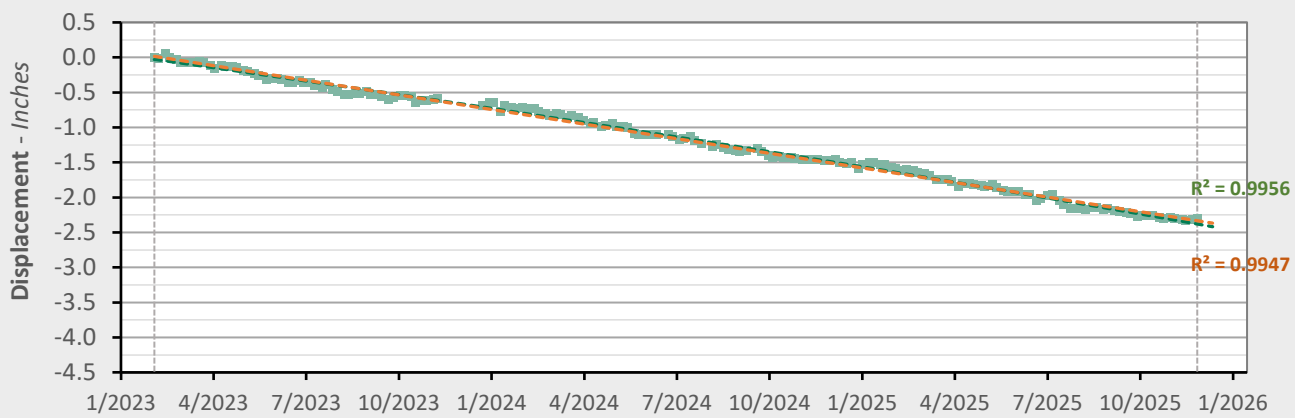
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.87 in/yr              | -0.84 in/yr             |
| Acceleration: | -0.02 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

■ 2D Displacement Measurement     
 - - - Nonlinear Trend Line (Quadratic Regression)     
 - - - Linear Trend Line (Linear Regression)

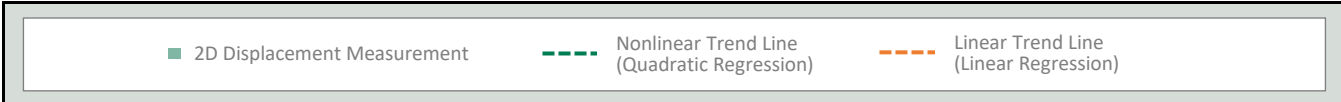
### AOI 15 (PPG 20) - Location Map



### AOI 15 (PPG 20) - Vertical Time Series Vertical (11/27/2025) Point Count: 61



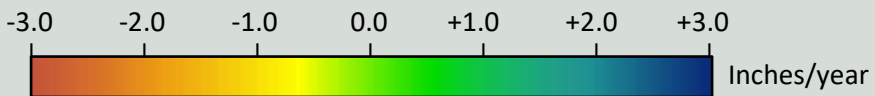
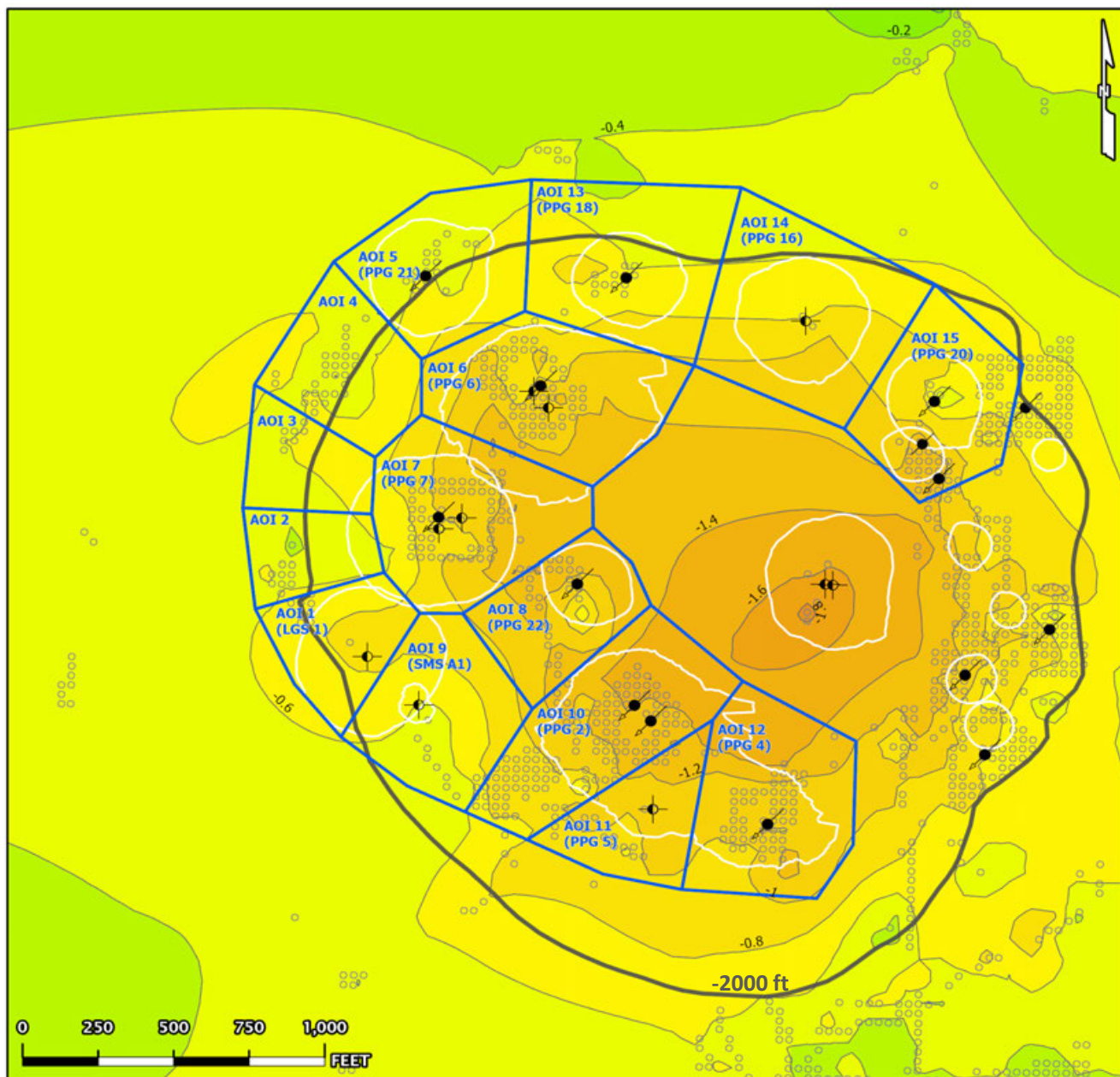
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.93 in/yr              | -0.84 in/yr             |
| Acceleration: | -0.07 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



### Vertical Data (02/04/2023 - 11/27/2025)

#### Nonlinear Velocity Contours

As of date: 11/27/2025

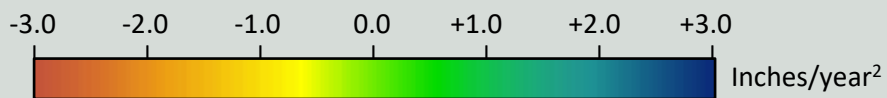
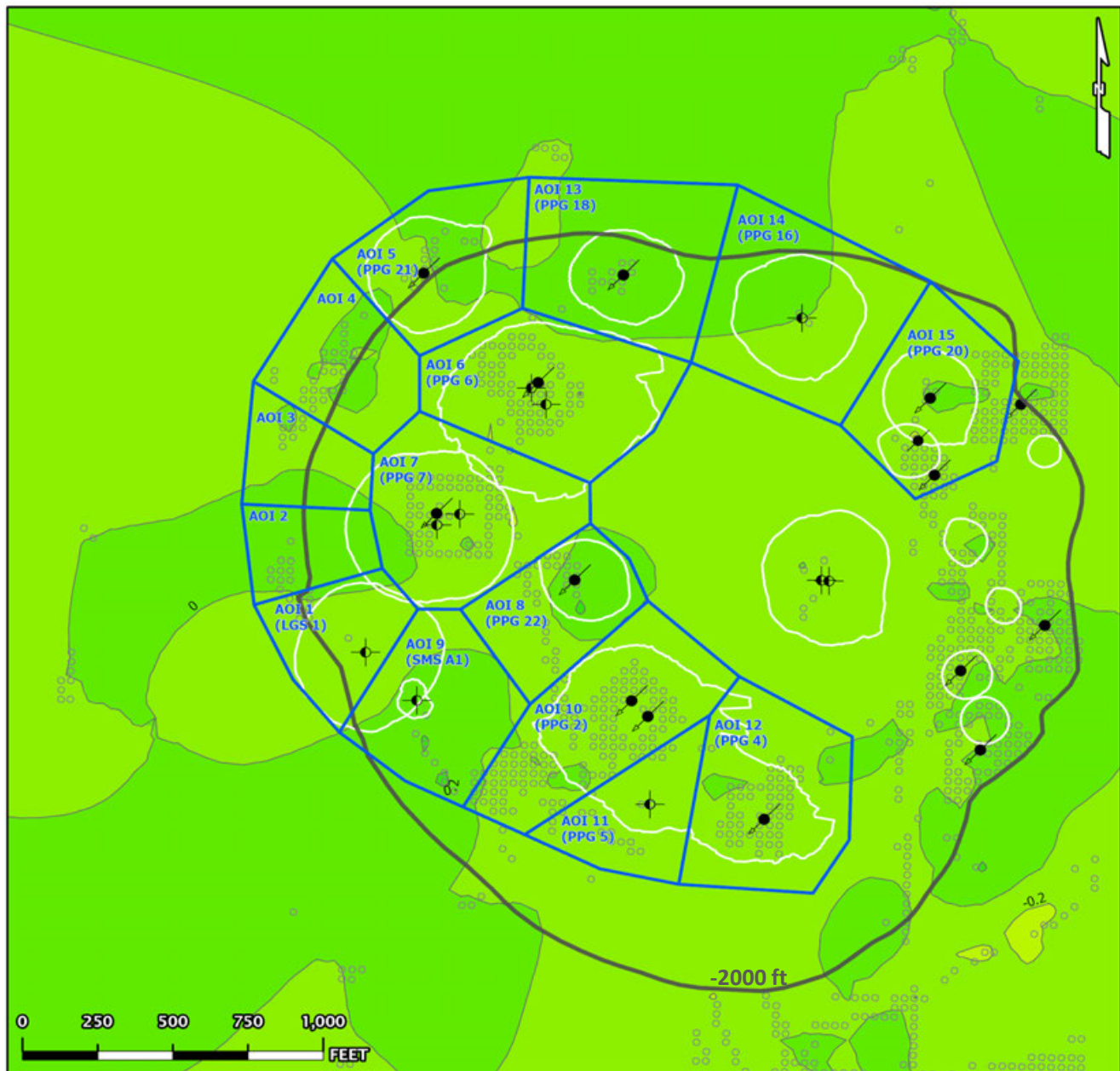


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

### Vertical Data (02/04/2023 - 11/27/2025)

#### Nonlinear Acceleration Contours

Date range: 02/04/2023 - 11/27/2025

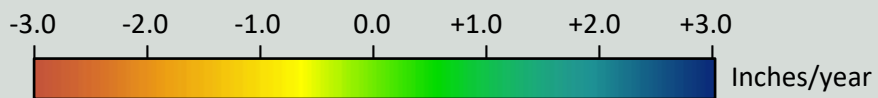
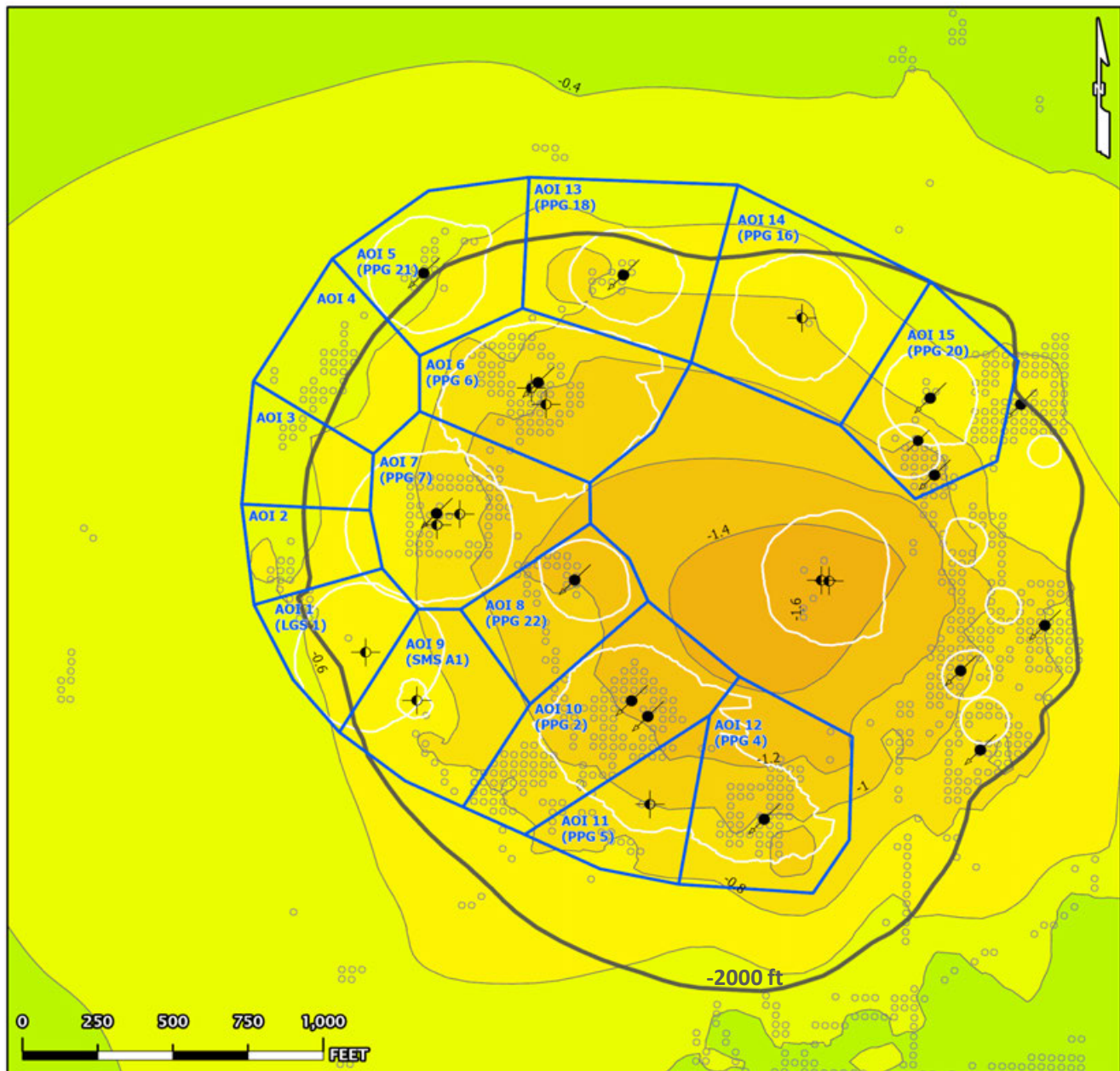


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**Vertical Data (02/04/2023 - 11/27/2025)**

**Linear Velocity Contours**

Date range: 02/04/2023 - 11/27/2025

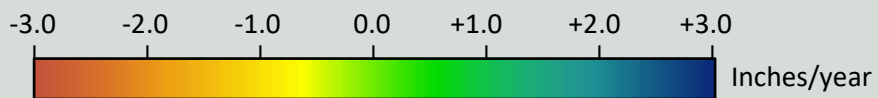
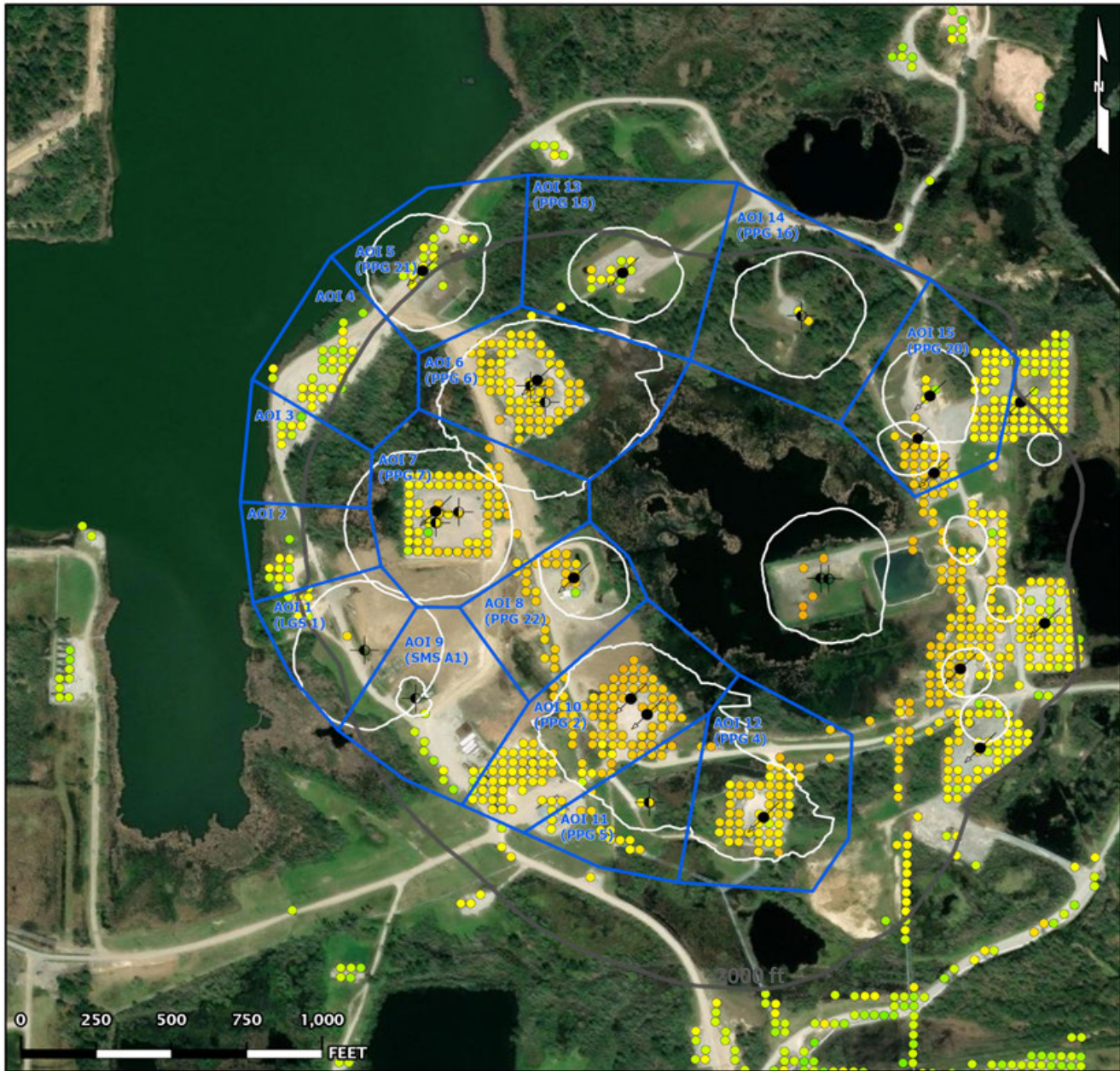


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**Vertical Data (02/04/2023 - 11/27/2025)**

**Nonlinear Velocity Data Points**

As of date: 11/27/2025

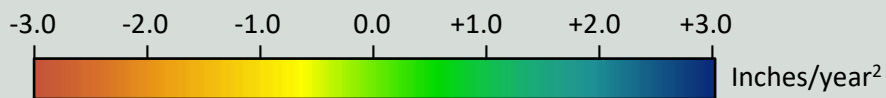
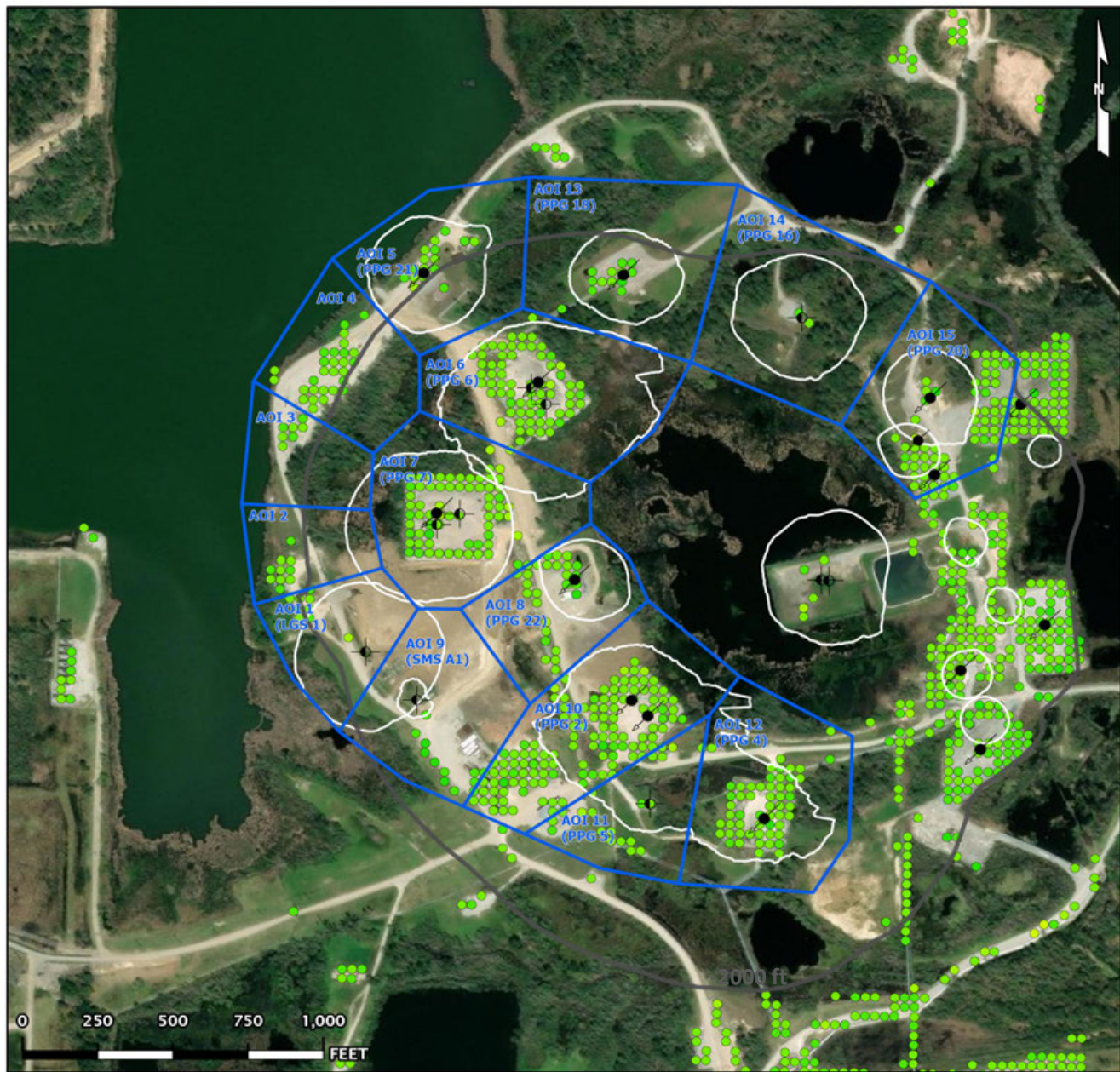


- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**Vertical Data (02/04/2023 - 11/27/2025)**

**Nonlinear Acceleration Data Points**

Date range: 02/04/2023 - 11/27/2025

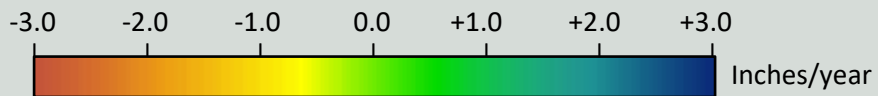
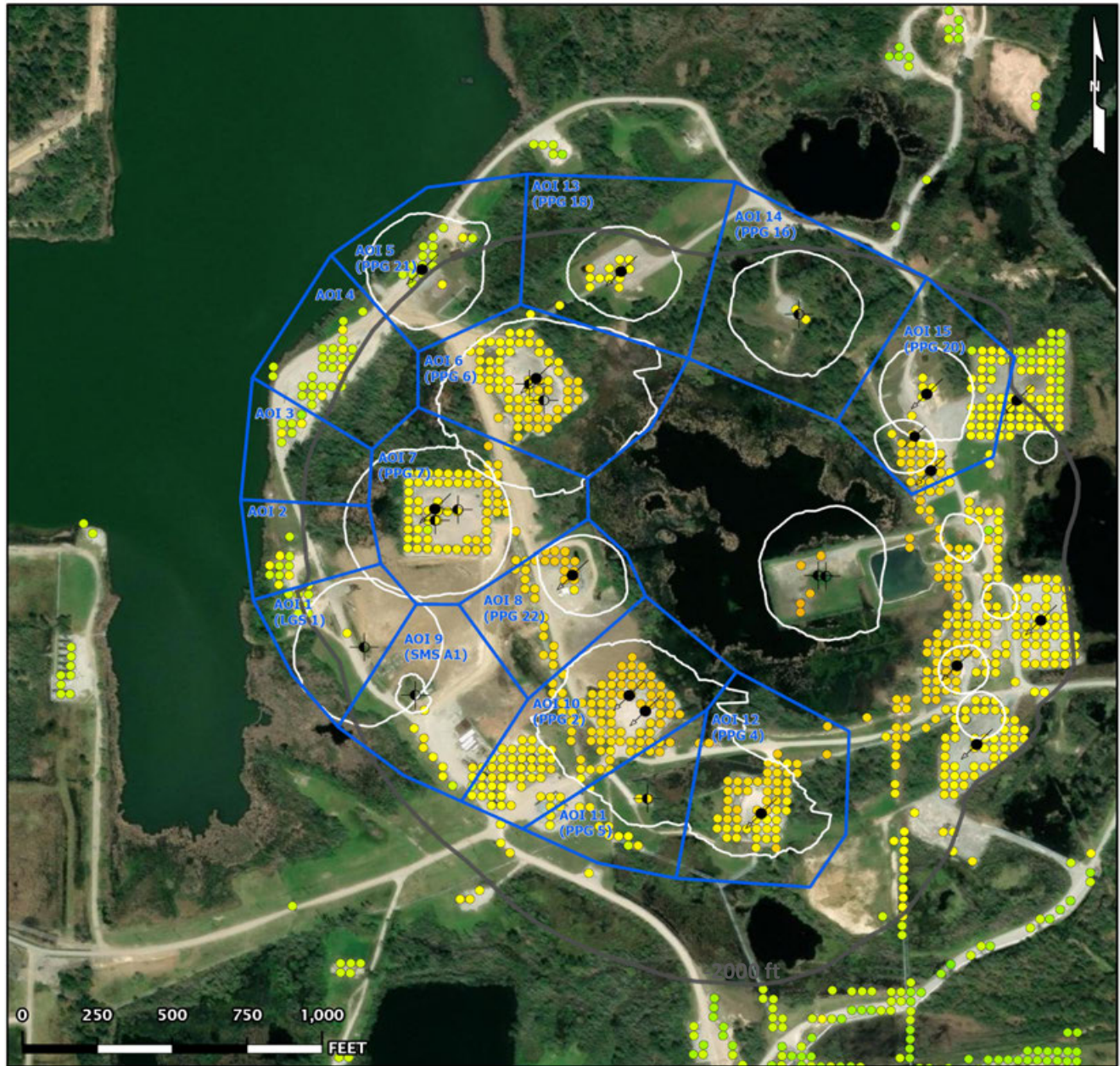


- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**Vertical Data (02/04/2023 - 11/27/2025)**

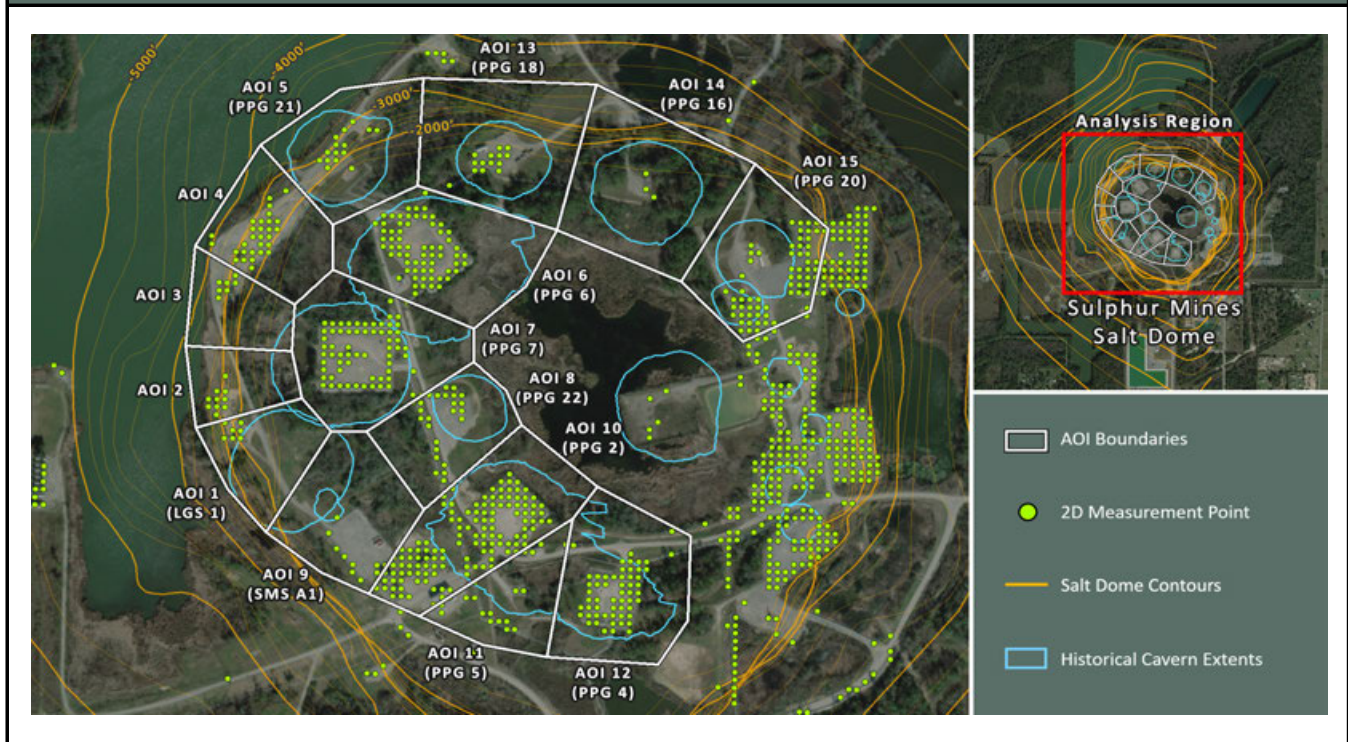
**Linear Velocity Data Points**

Date range: 02/04/2023 - 11/27/2025



- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

## AOI Boundaries & 2D InSAR Measurement Points

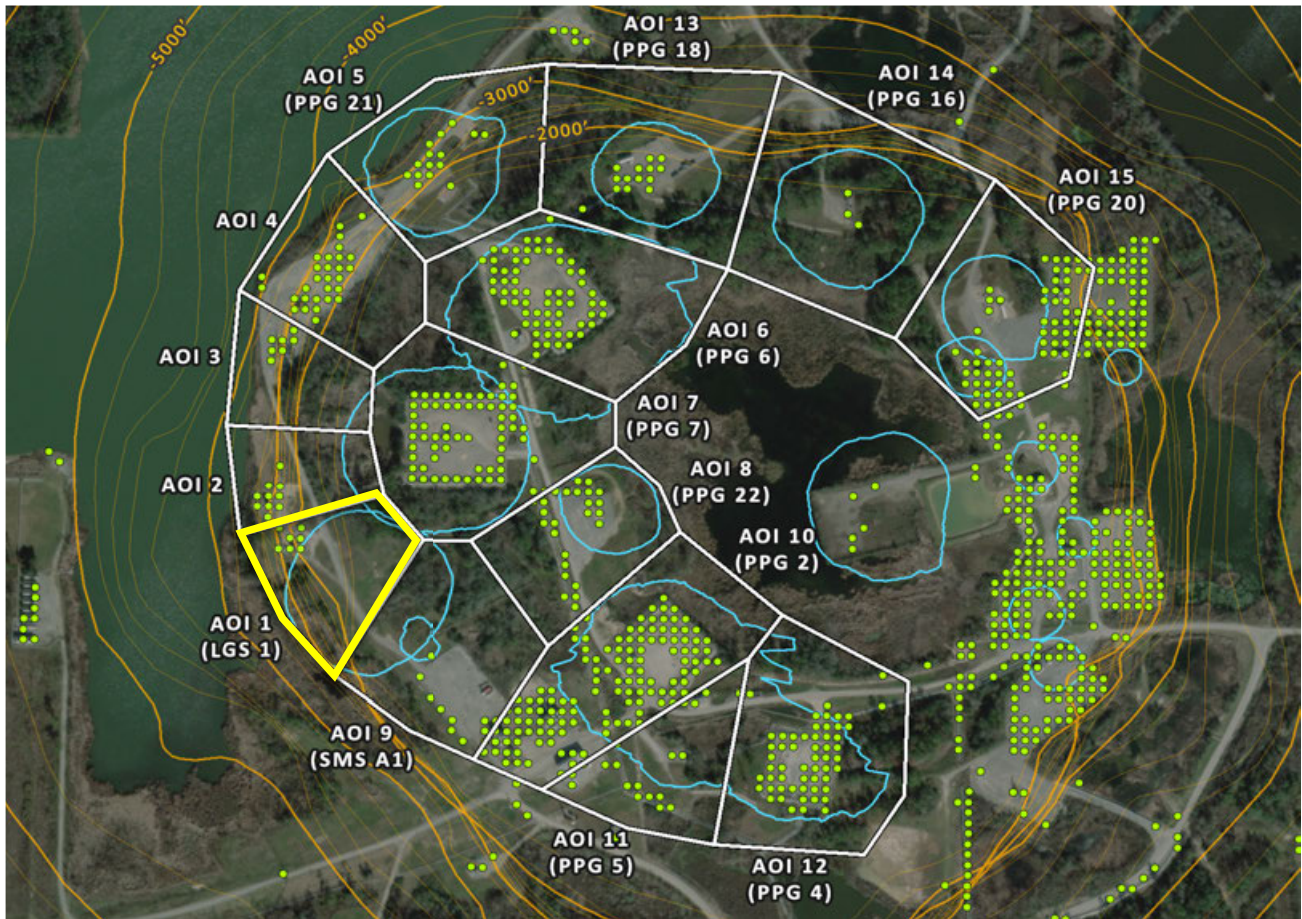


## Subsidence Monitoring Areas of Interest (AOIs)

To visually convey and evaluate trend consistency for the East-West displacement time series of each ground target, measurement points were grouped and their displacement values were averaged. The point groups are referred to as Areas of Interest (AOIs) in this analysis and their boundaries are depicted on the above map. The below table lists the East-West trend values calculated in each AOI for the dataset evaluated in this report.

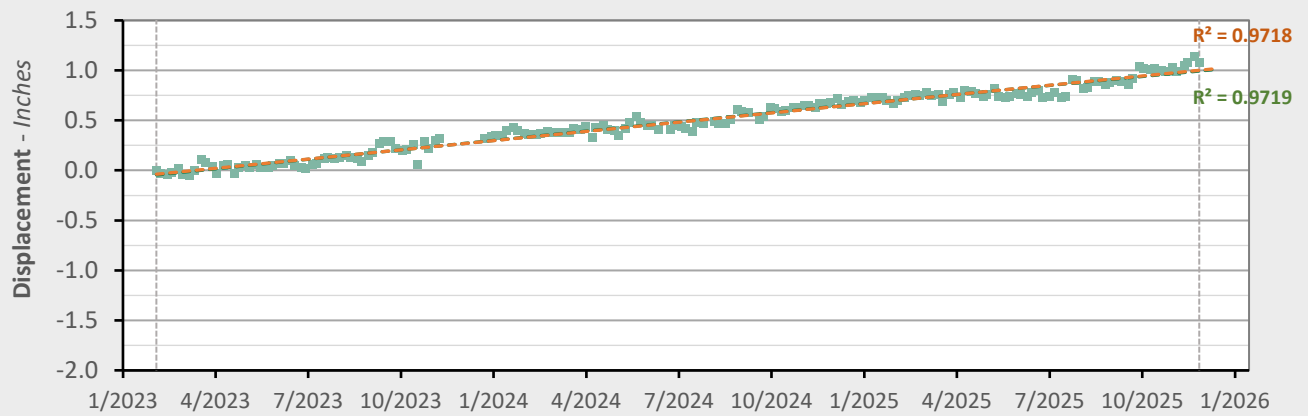
| AOI Name        | East-West (11/27/2025) | East-West Velocity (in/yr) |        | East-West Acceleration (in/yr <sup>2</sup> ) |        |
|-----------------|------------------------|----------------------------|--------|--|--------|
|                 | Point Count            | Nonlinear                  | Linear | Nonlinear                                    | Linear |
| AOI 1 (LGS 1)   | 9                      | +0.36                      | +0.37  | -0.01  | 0.00   |
| AOI 2           | 10                     | +0.31                      | +0.39  | -0.06  | 0.00   |
| AOI 3           | 7                      | +0.27                      | +0.32  | -0.04  | 0.00   |
| AOI 4           | 28                     | +0.27                      | +0.32  | -0.04  | 0.00   |
| AOI 5 (PPG 21)  | 16                     | +0.15                      | +0.20  | -0.04  | 0.00   |
| AOI 6 (PPG 6)   | 66                     | +0.20                      | +0.25  | -0.03  | 0.00   |
| AOI 7 (PPG 7)   | 68                     | +0.43                      | +0.45  | -0.01  | 0.00   |
| AOI 8 (PPG 22)  | 26                     | +0.39                      | +0.40  | -0.00  | 0.00   |
| AOI 9 (SMS A1)  | 11                     | +0.39                      | +0.31  | +0.05  | 0.00   |
| AOI 10 (PPG 2)  | 122                    | +0.29                      | +0.27  | +0.02  | 0.00   |
| AOI 11 (PPG 5)  | 20                     | +0.17                      | +0.17  | -0.00  | 0.00   |
| AOI 12 (PPG 4)  | 55                     | -0.26                      | -0.17  | -0.06  | 0.00   |
| AOI 13 (PPG 18) | 13                     | +0.11                      | +0.11  | -0.00  | 0.00   |
| AOI 14 (PPG 16) | 2                      | -0.31                      | -0.33  | +0.01  | 0.00   |
| AOI 15 (PPG 20) | 61                     | -0.58                      | -0.56  | -0.01  | 0.00   |

### AOI 1 (LGS 1) - Location Map

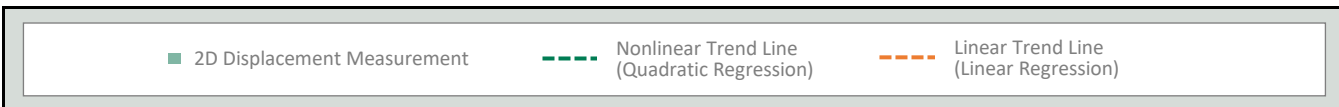


### AOI 1 (LGS 1) - East-West Time Series

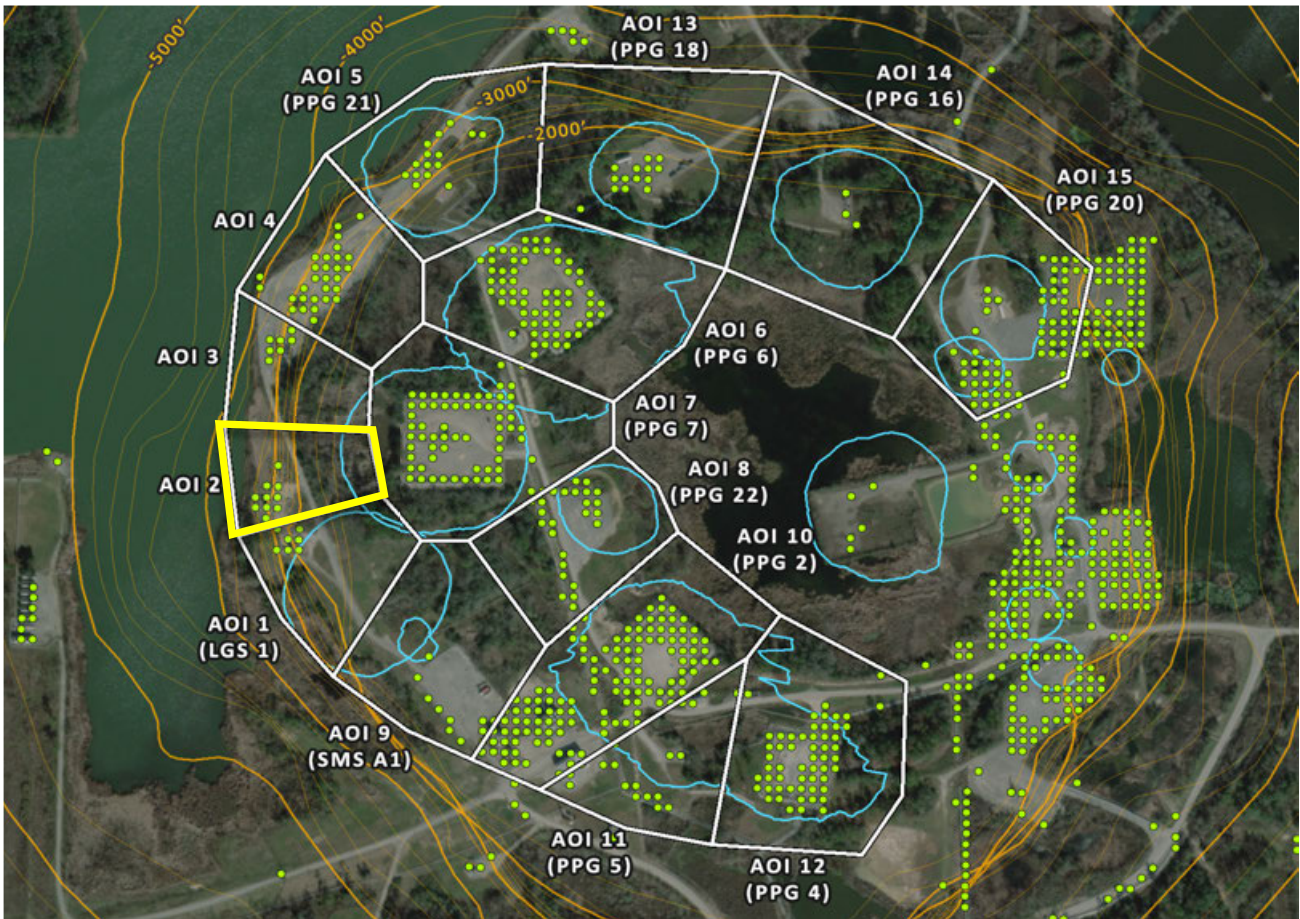
E-W (11/27/2025) Point Count: 9



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.36 in/yr              | +0.37 in/yr             |
| Acceleration: | -0.01 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

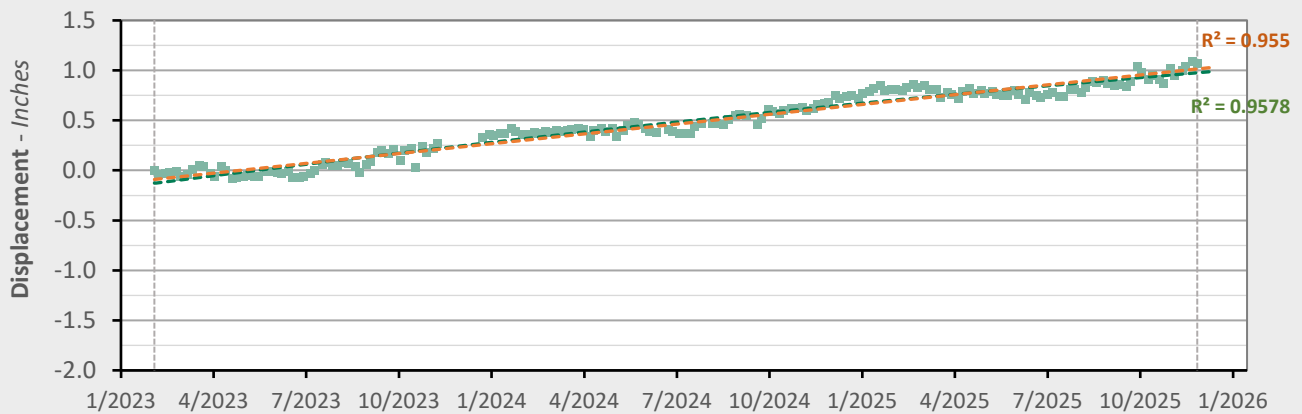


### AOI 2 - Location Map

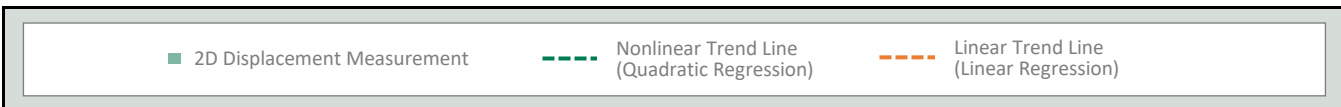


### AOI 2 - East-West Time Series

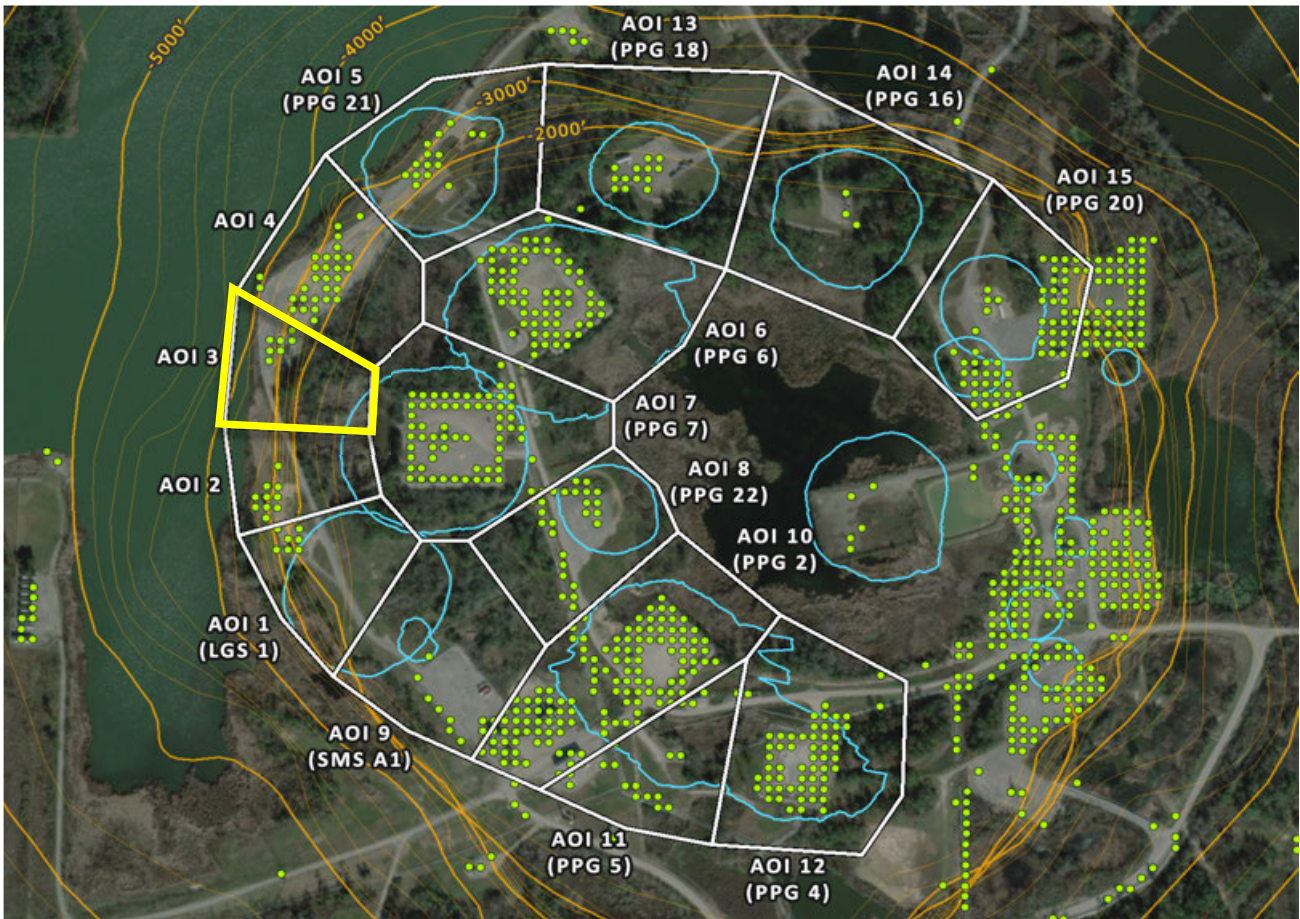
E-W (11/27/2025) Point Count: **10**



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.31 in/yr              | +0.39 in/yr             |
| Acceleration: | -0.06 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

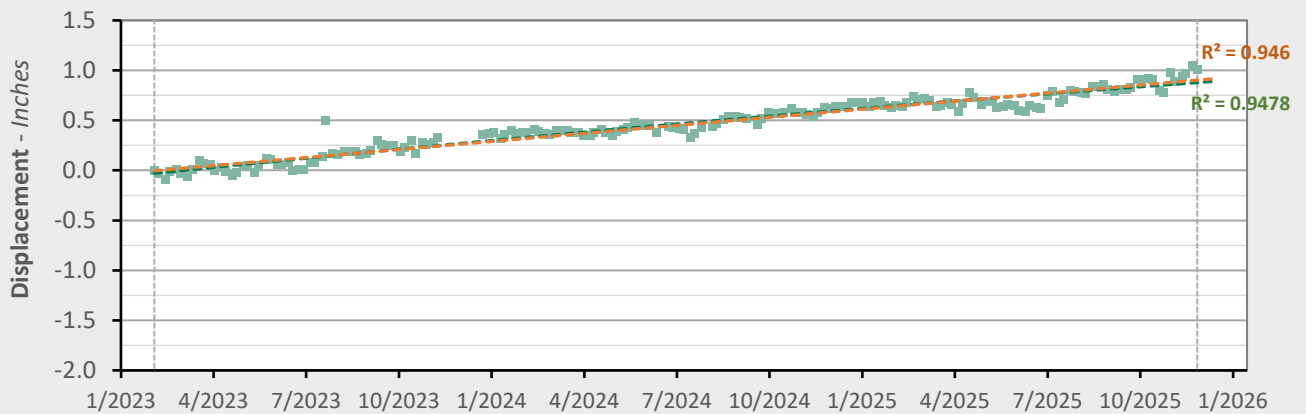


### AOI 3 - Location Map

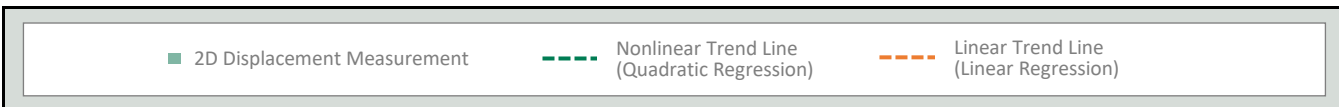


### AOI 3 - East-West Time Series

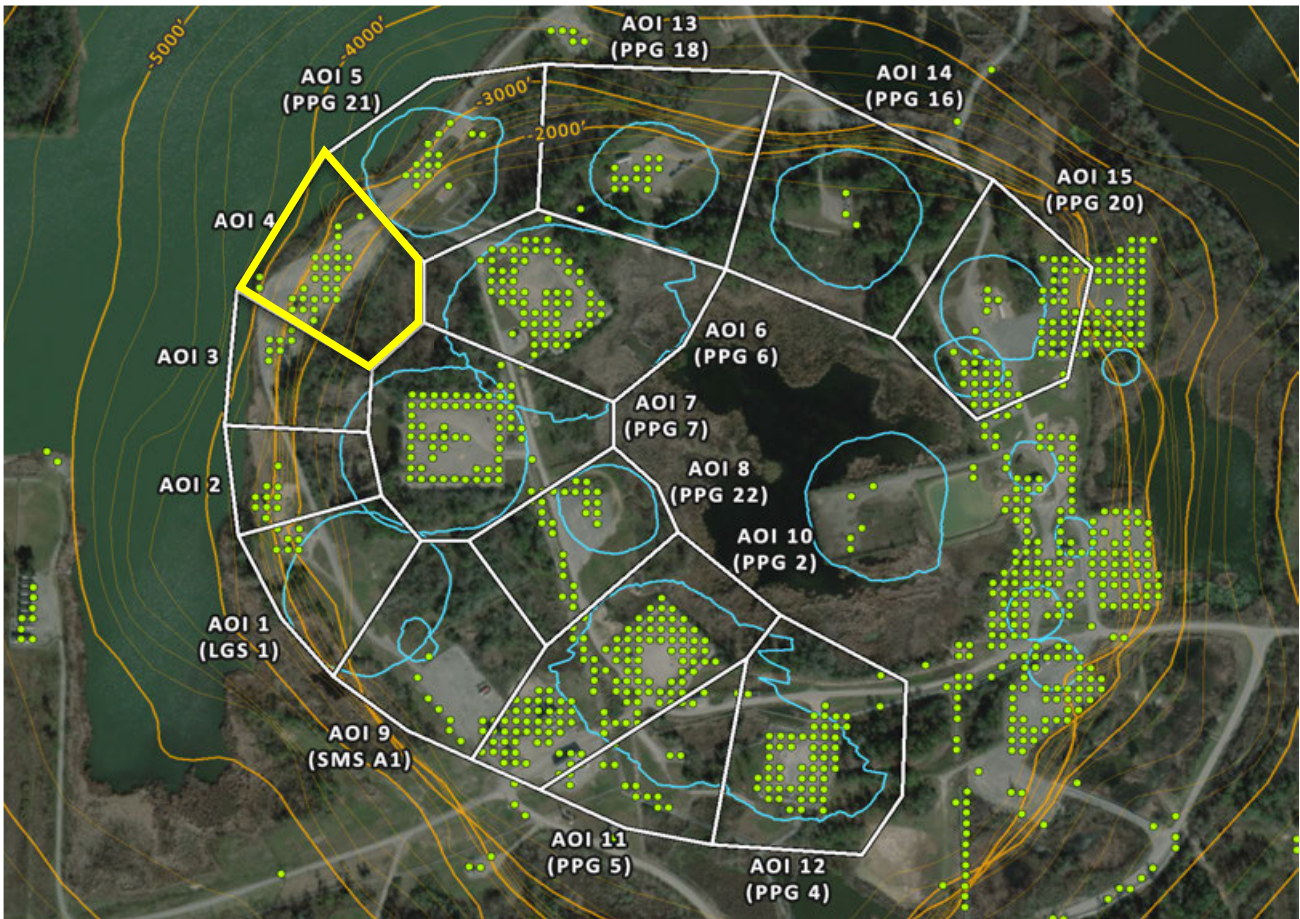
E-W (11/27/2025) Point Count: **7**



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.27 in/yr              | +0.32 in/yr             |
| Acceleration: | -0.04 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

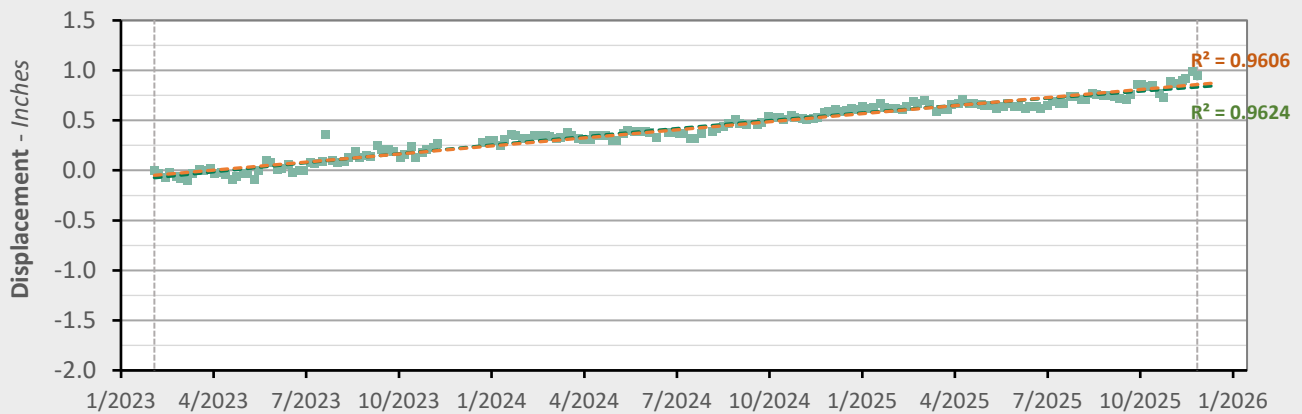


### AOI 4 - Location Map

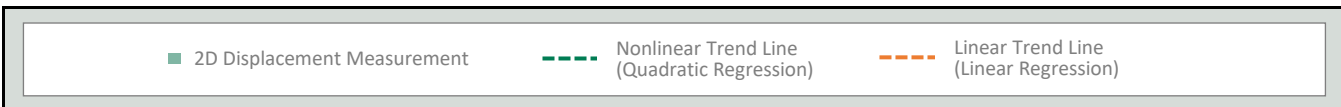


### AOI 4 - East-West Time Series

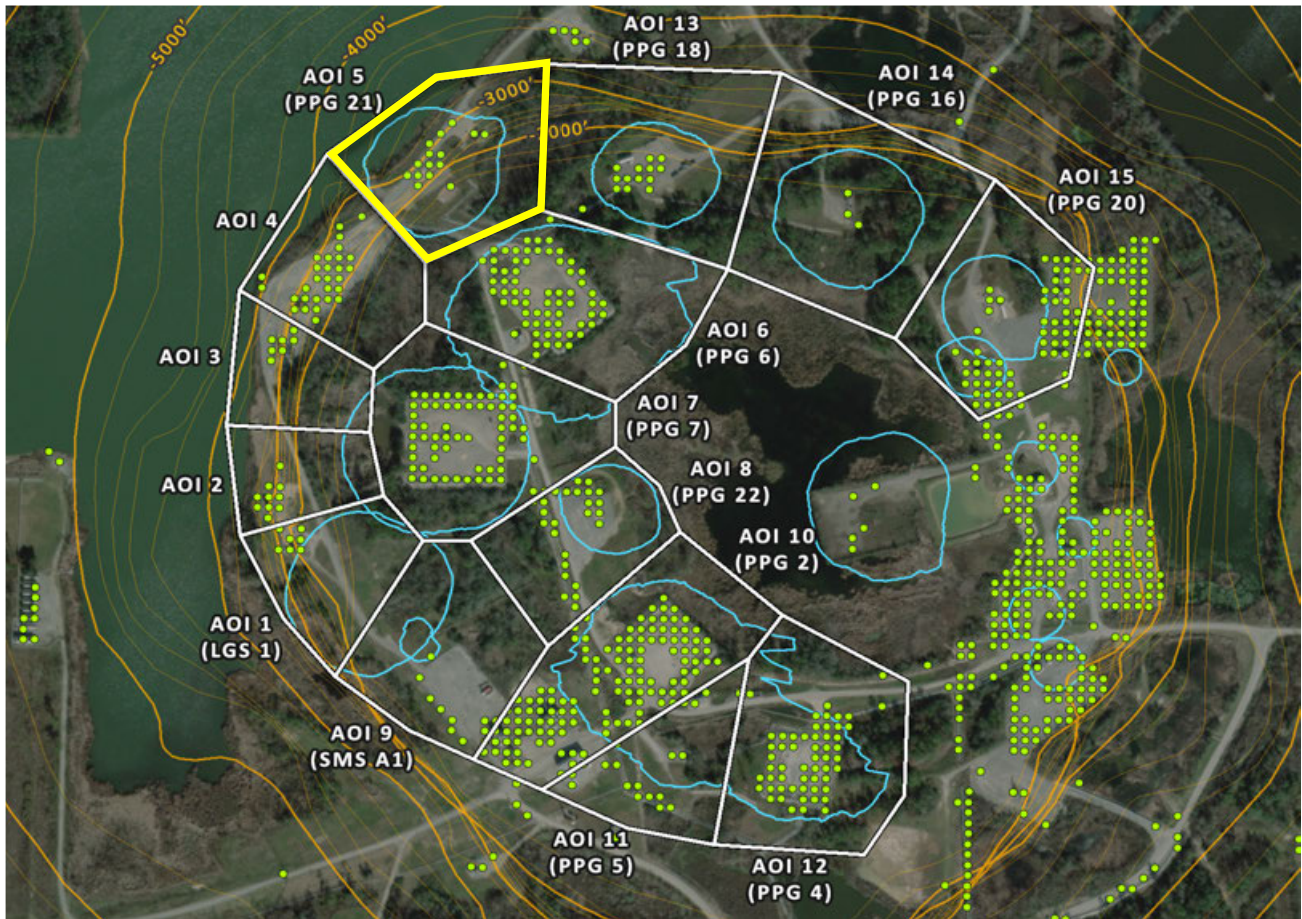
E-W (11/27/2025) Point Count: **28**



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.27 in/yr              | +0.32 in/yr             |
| Acceleration: | -0.04 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

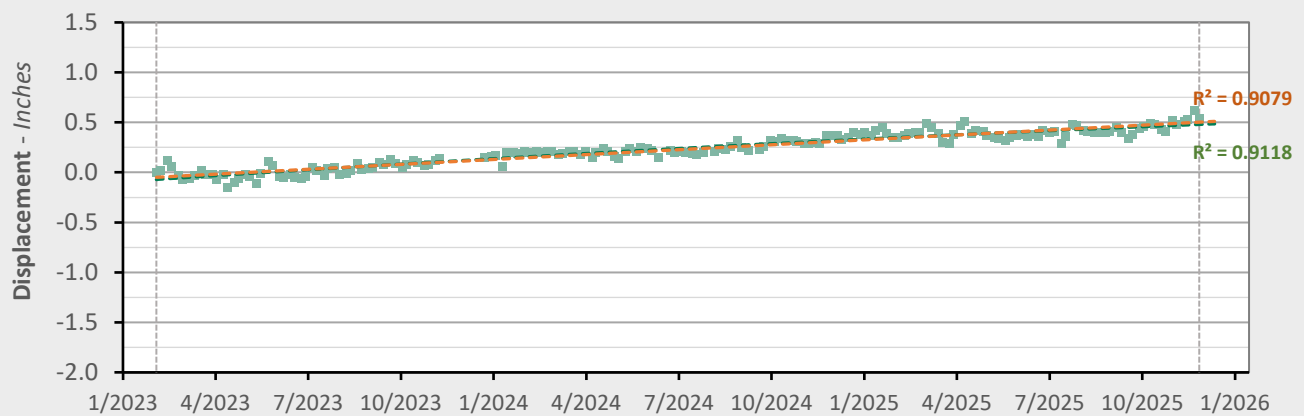


### AOI 5 (PPG 21) - Location Map



### AOI 5 (PPG 21) - East-West Time Series

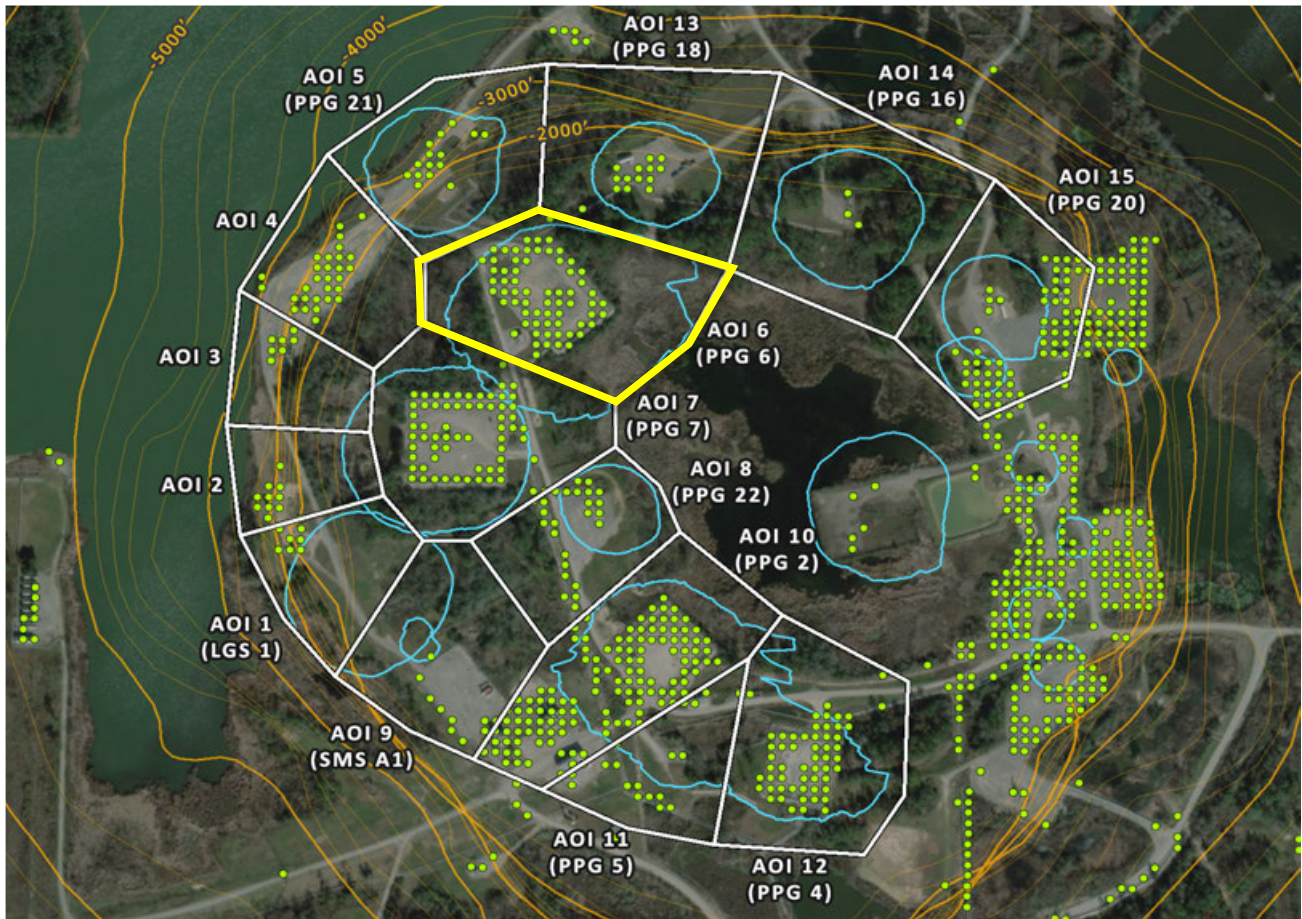
E-W (11/27/2025) Point Count: 16



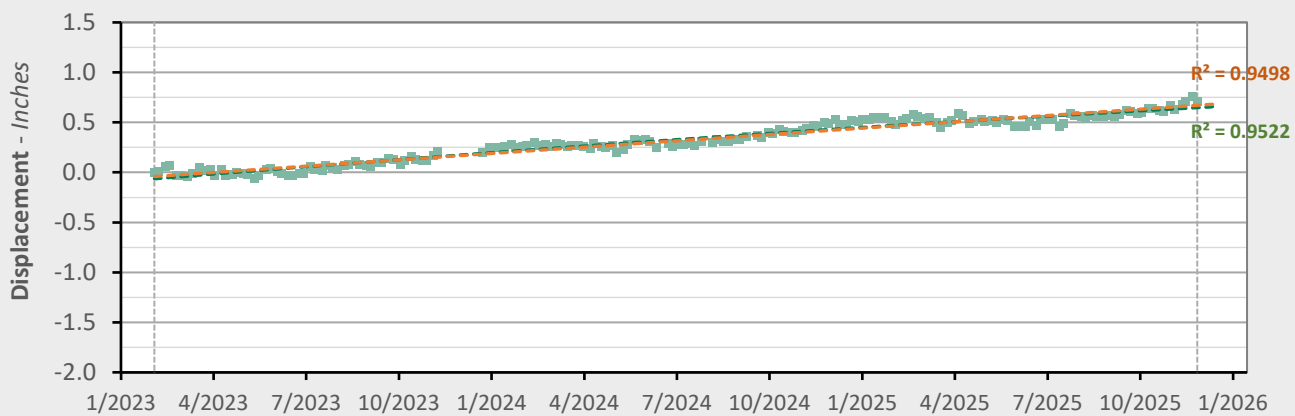
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.15 in/yr              | +0.20 in/yr             |
| Acceleration: | -0.04 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

■ 2D Displacement Measurement    
 - - - Nonlinear Trend Line (Quadratic Regression)    
 - - - Linear Trend Line (Linear Regression)

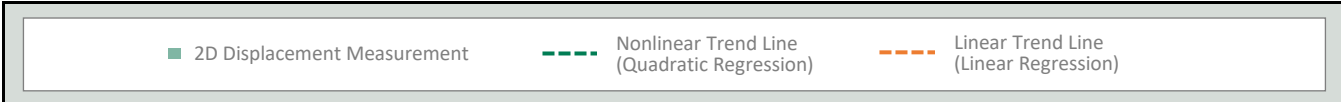
### AOI 6 (PPG 6) - Location Map



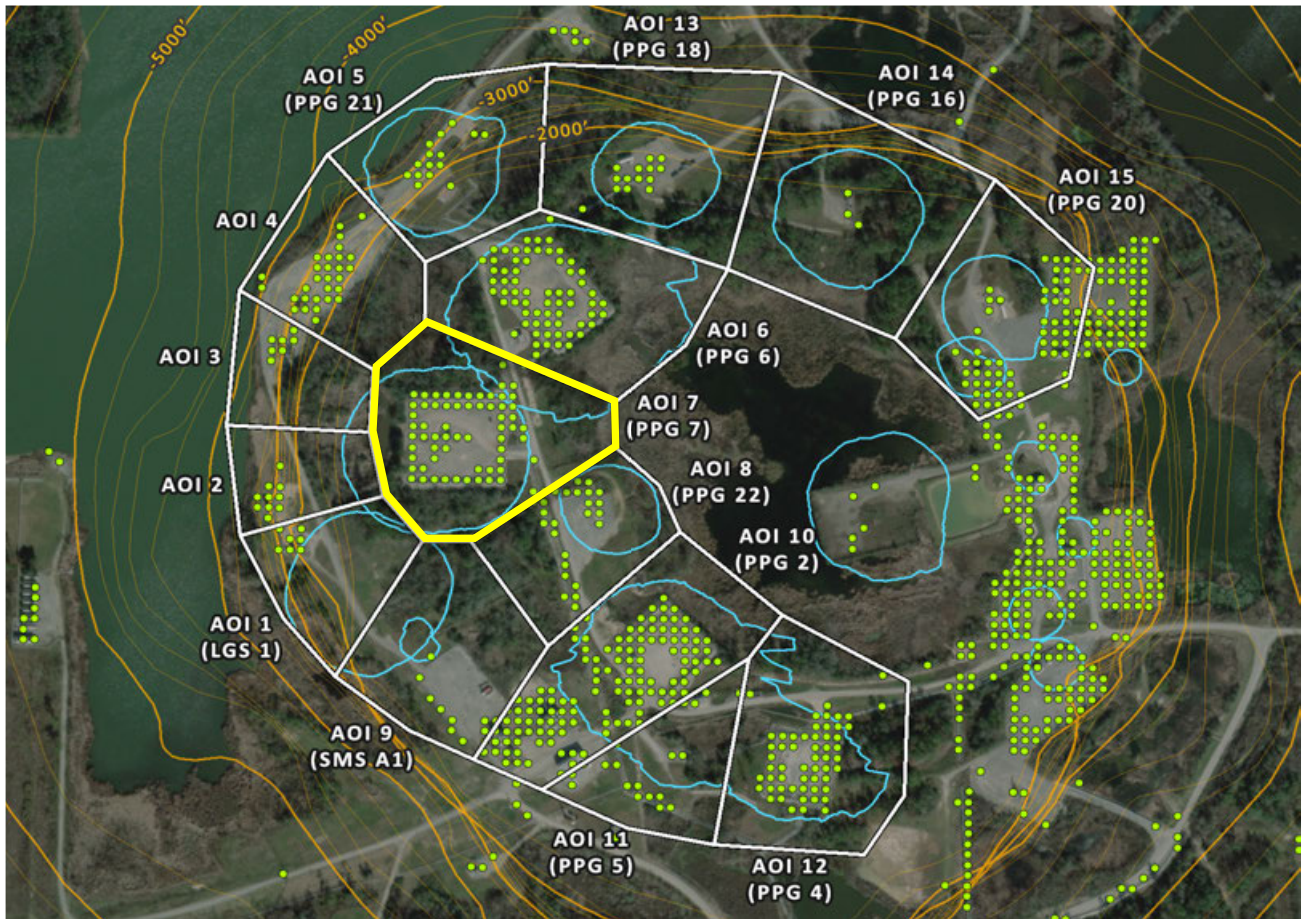
### AOI 6 (PPG 6) - East-West Time Series E-W (11/27/2025) Point Count: 66



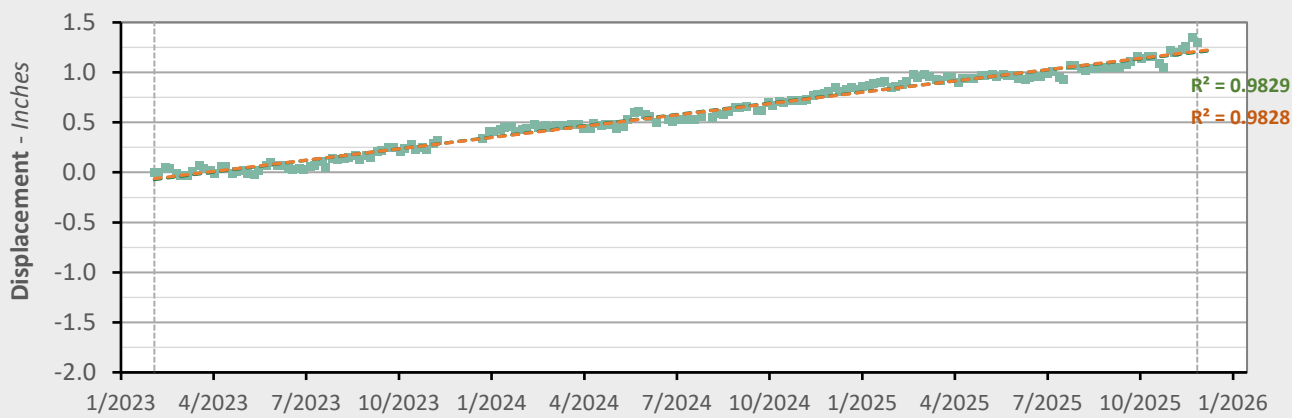
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.20 in/yr              | +0.25 in/yr             |
| Acceleration: | -0.03 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



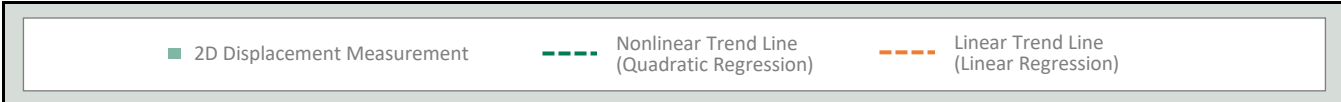
### AOI 7 (PPG 7) - Location Map



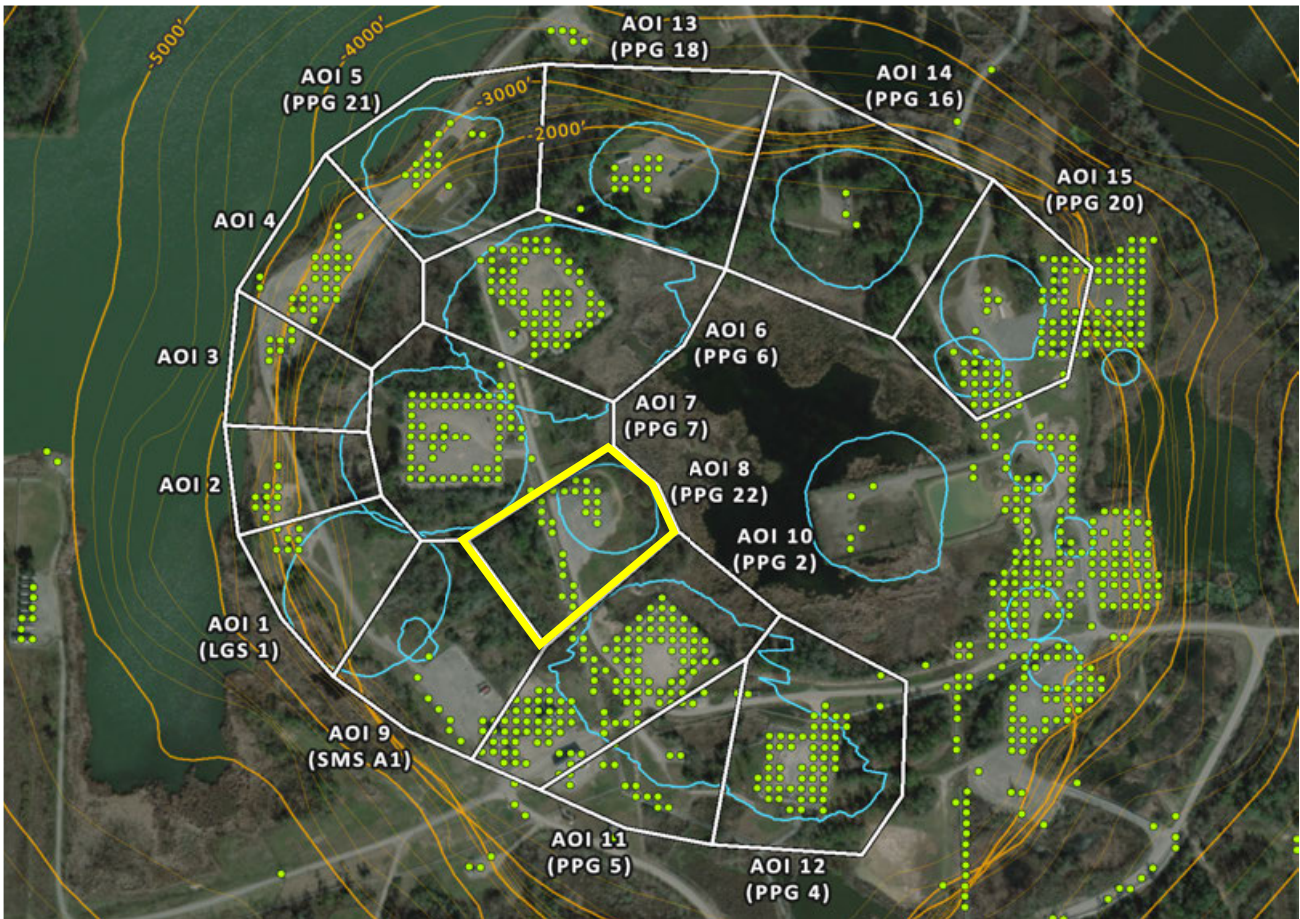
### AOI 7 (PPG 7) - East-West Time Series E-W (11/27/2025) Point Count: 68



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.43 in/yr              | +0.45 in/yr             |
| Acceleration: | -0.01 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

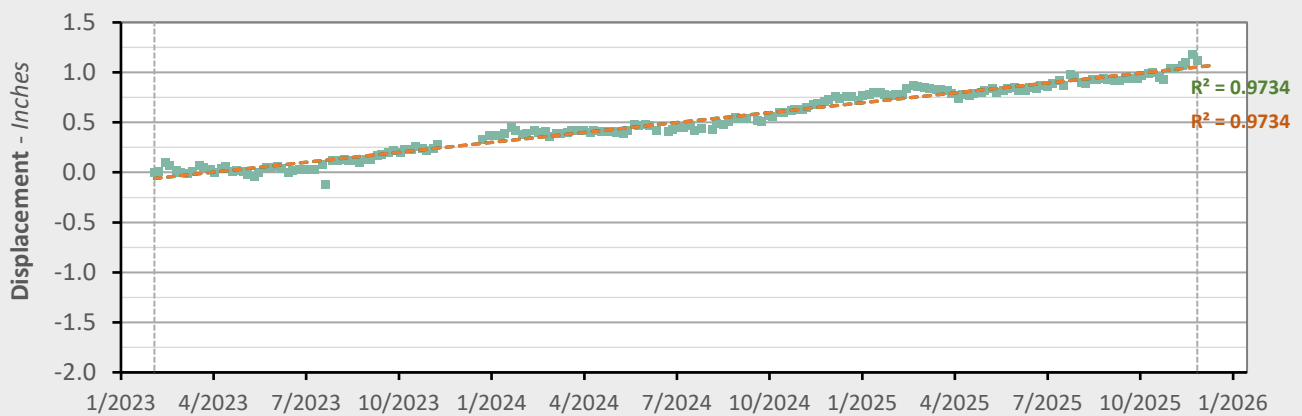


### AOI 8 (PPG 22) - Location Map

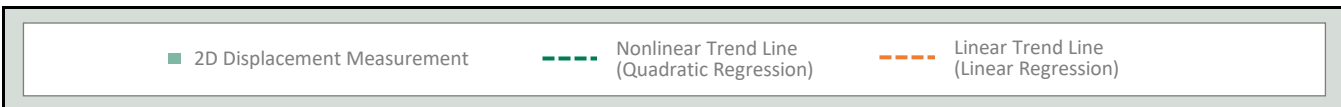


### AOI 8 (PPG 22) - East-West Time Series

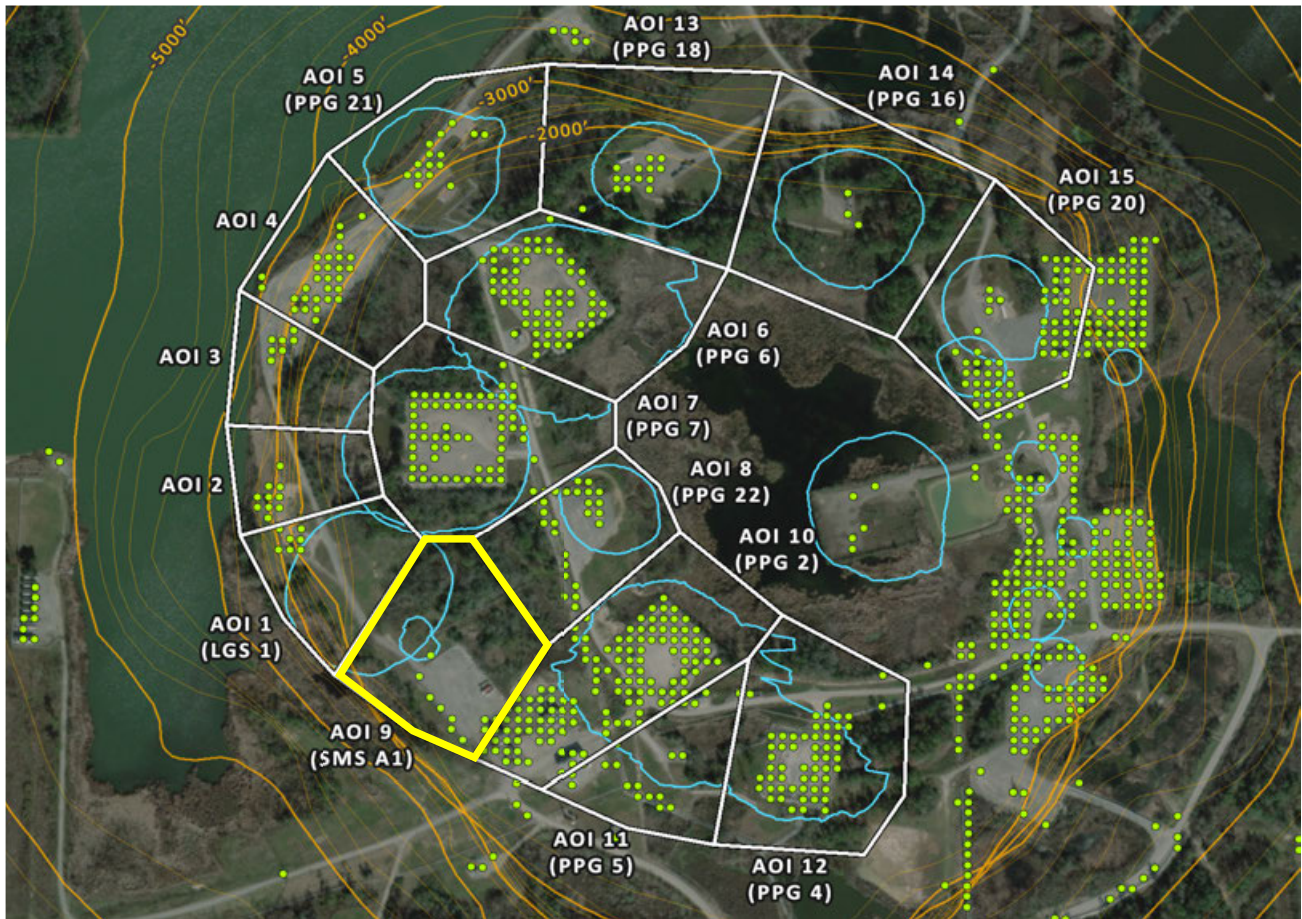
E-W (11/27/2025) Point Count: 26



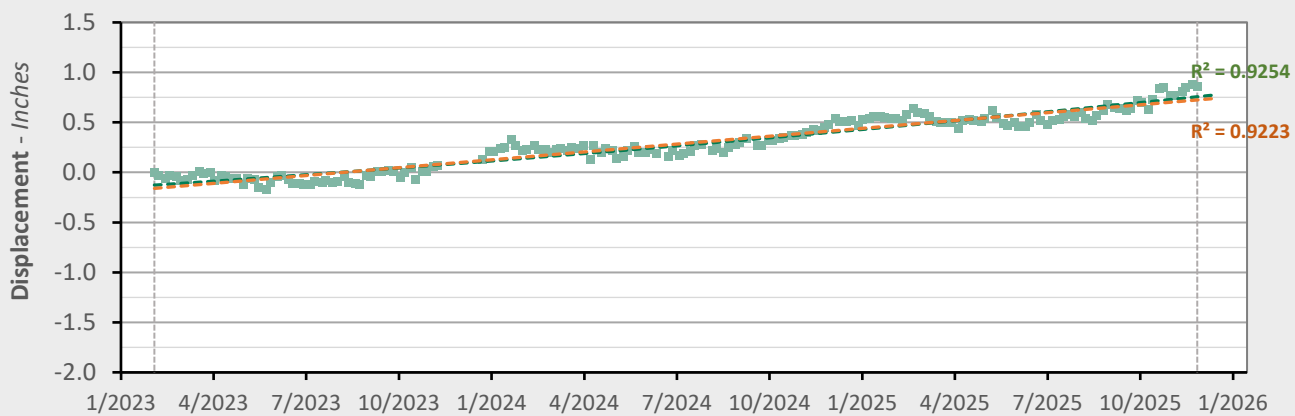
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.39 in/yr              | +0.40 in/yr             |
| Acceleration: | -0.00 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



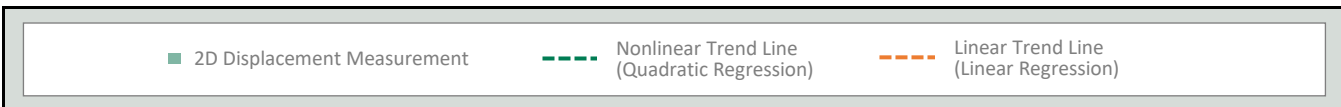
### AOI 9 (PPG A1) - Location Map



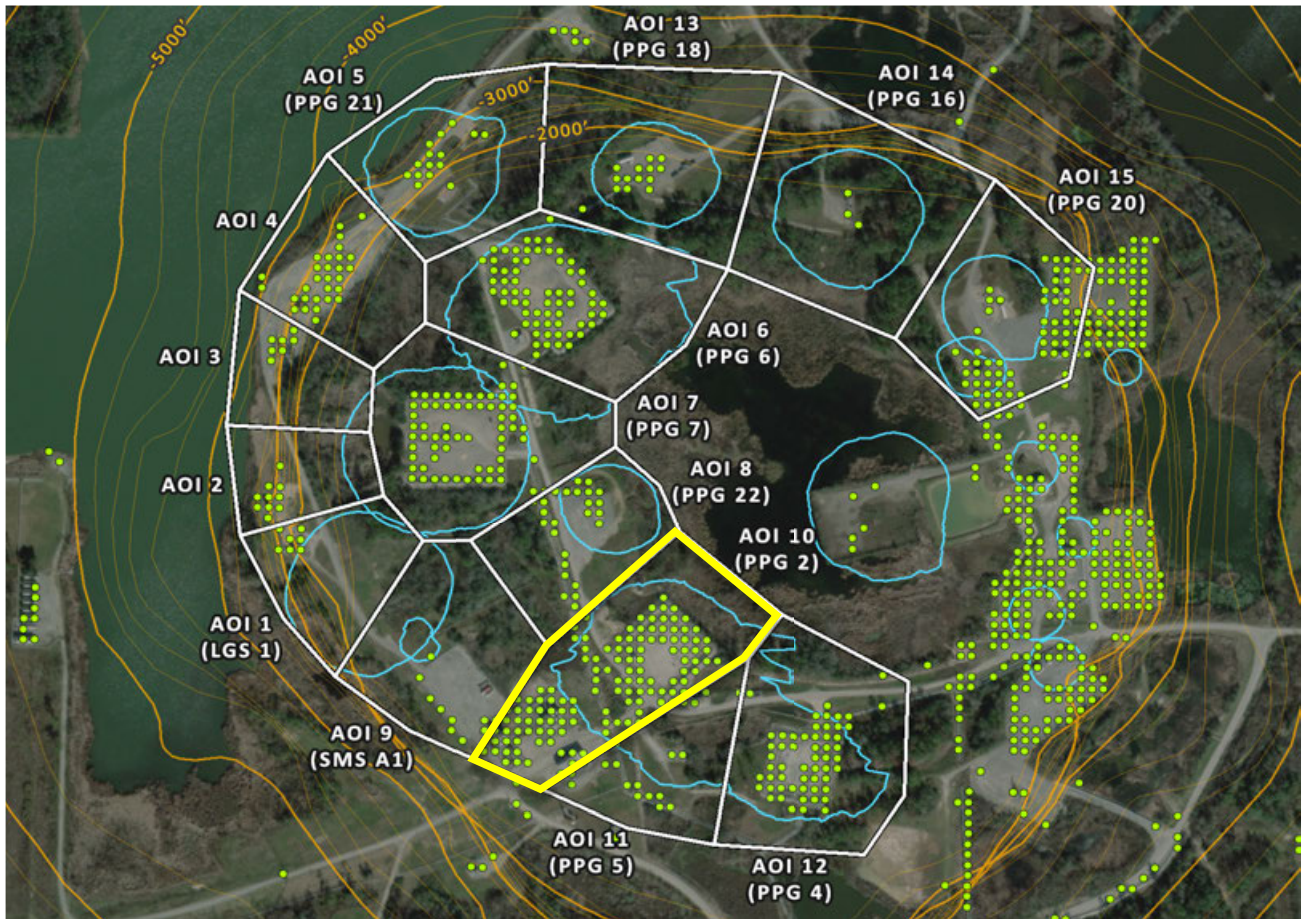
### AOI 9 (SMS A1) - East-West Time Series E-W (11/27/2025) Point Count: 11



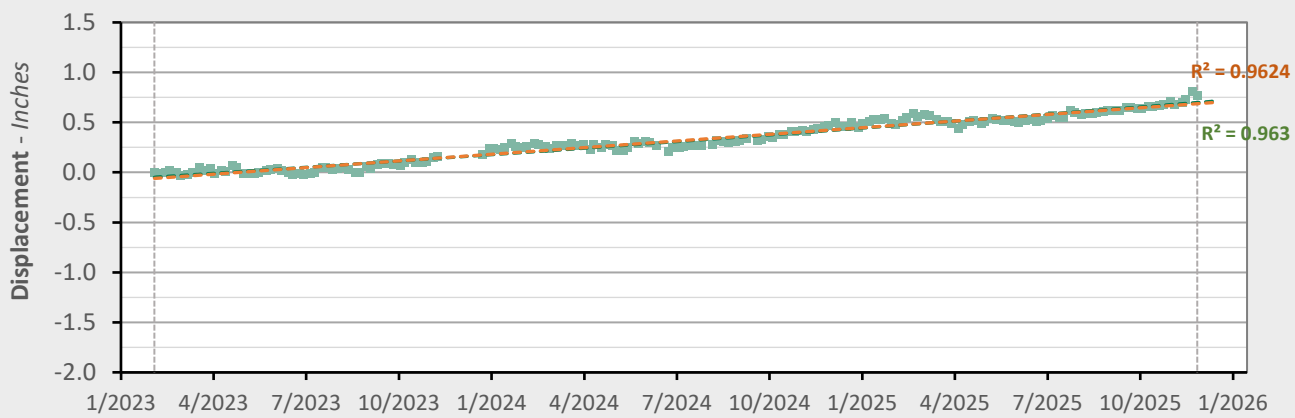
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.39 in/yr              | +0.31 in/yr             |
| Acceleration: | +0.05 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



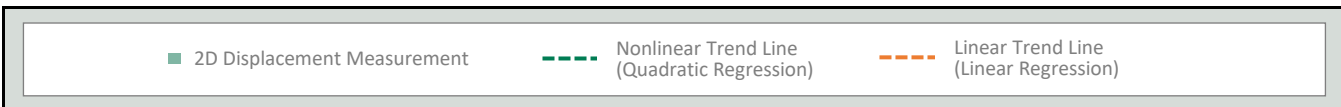
### AOI 10 (PPG 2) - Location Map



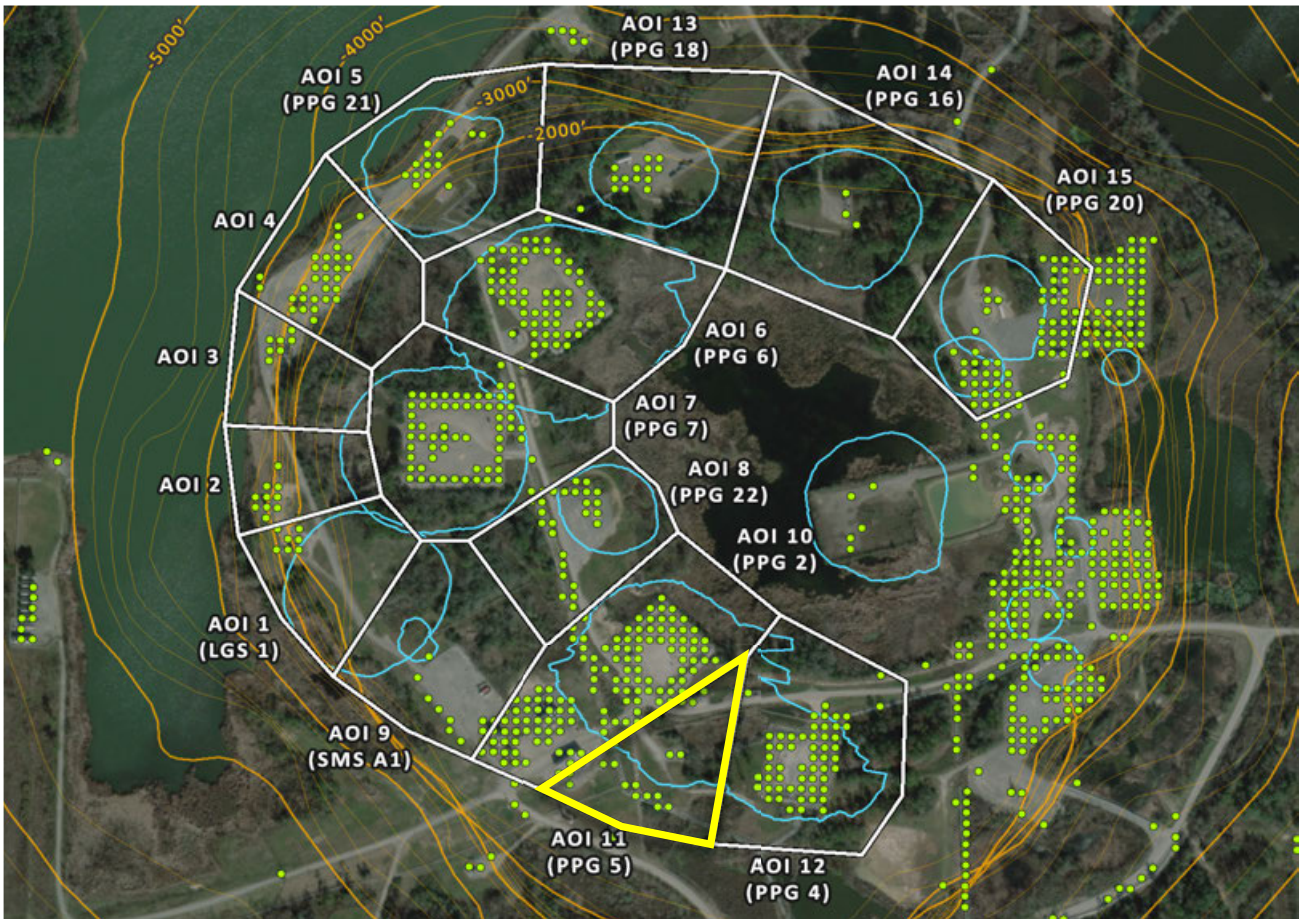
### AOI 10 (PPG 2) - East-West Time Series E-W (11/27/2025) Point Count: 122



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.29 in/yr              | +0.27 in/yr             |
| Acceleration: | +0.02 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

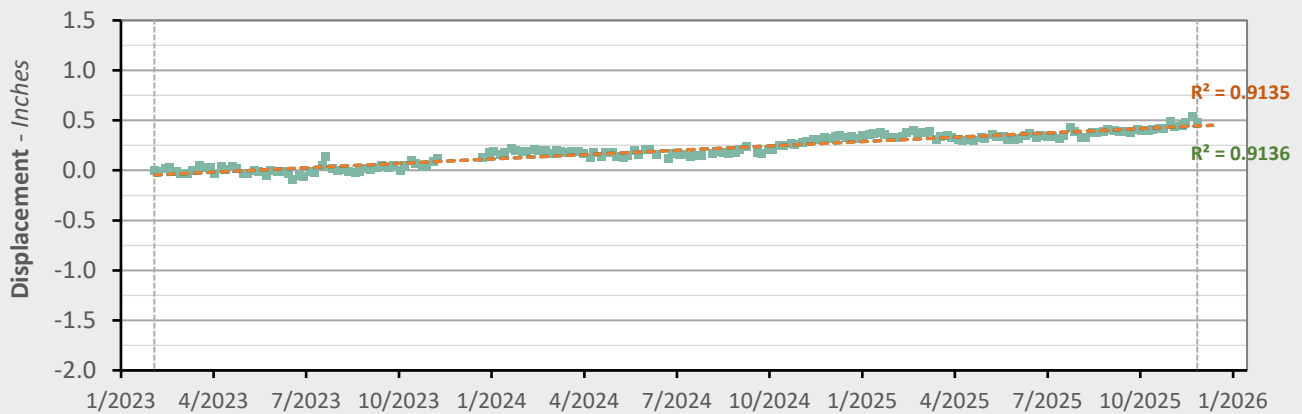


### AOI 11 (PPG 5) - Location Map



### AOI 11 (PPG 5) - East-West Time Series

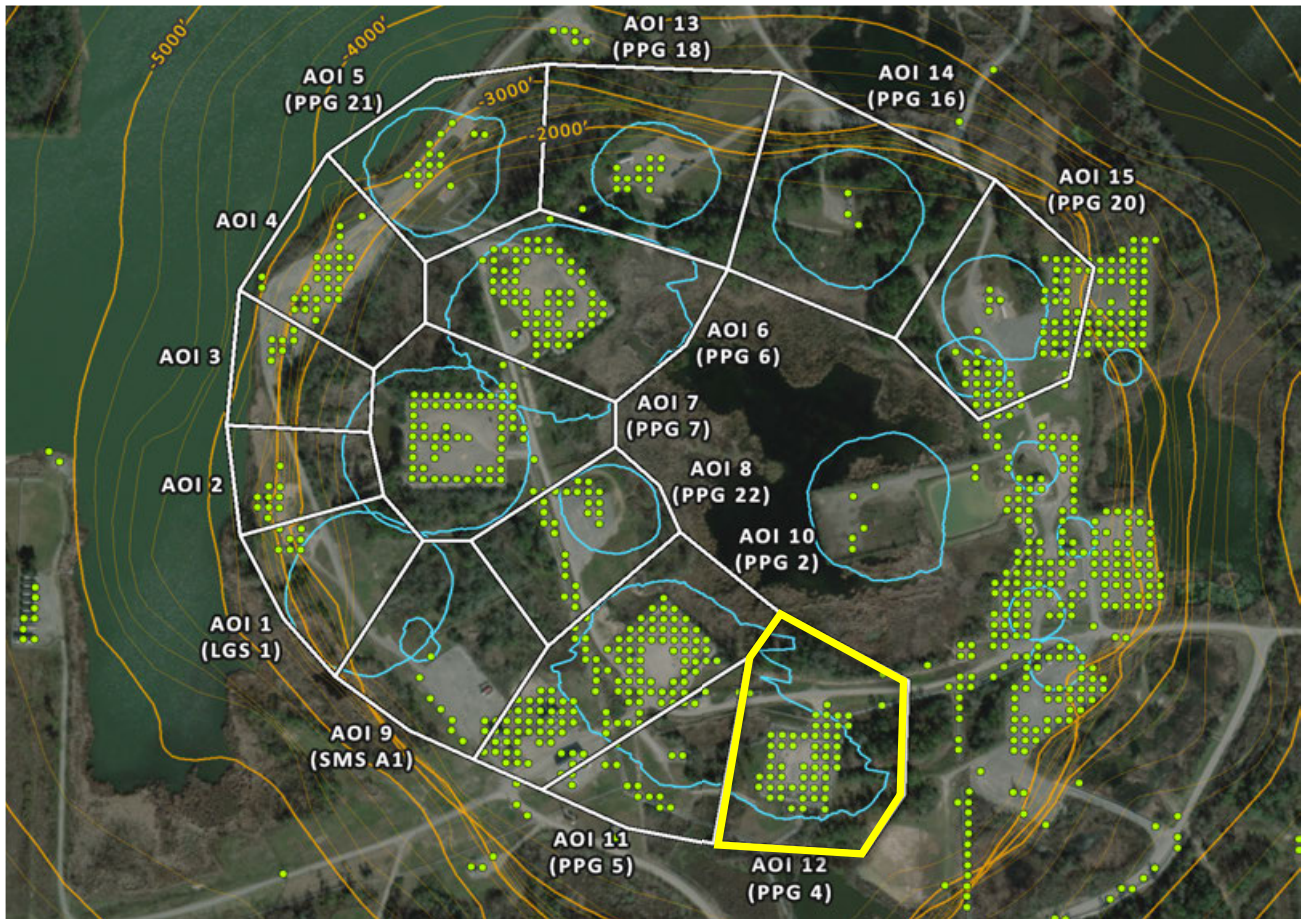
E-W (11/27/2025) Point Count: 20



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.17 in/yr              | +0.17 in/yr             |
| Acceleration: | -0.00 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

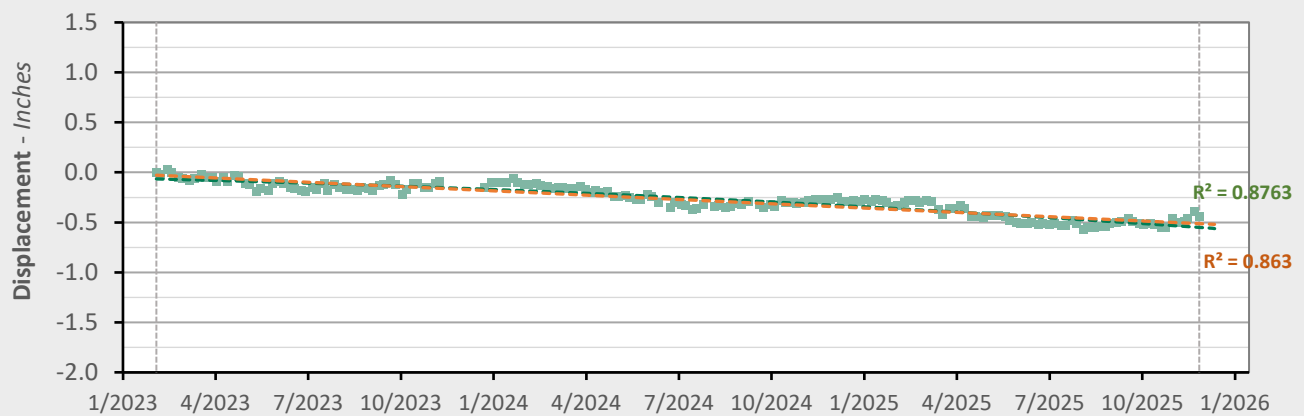
■ 2D Displacement Measurement     
 - - - Nonlinear Trend Line (Quadratic Regression)     
 - - - Linear Trend Line (Linear Regression)

### AOI 12 (PPG 4) - Location Map



### AOI 12 (PPG 4) - East-West Time Series

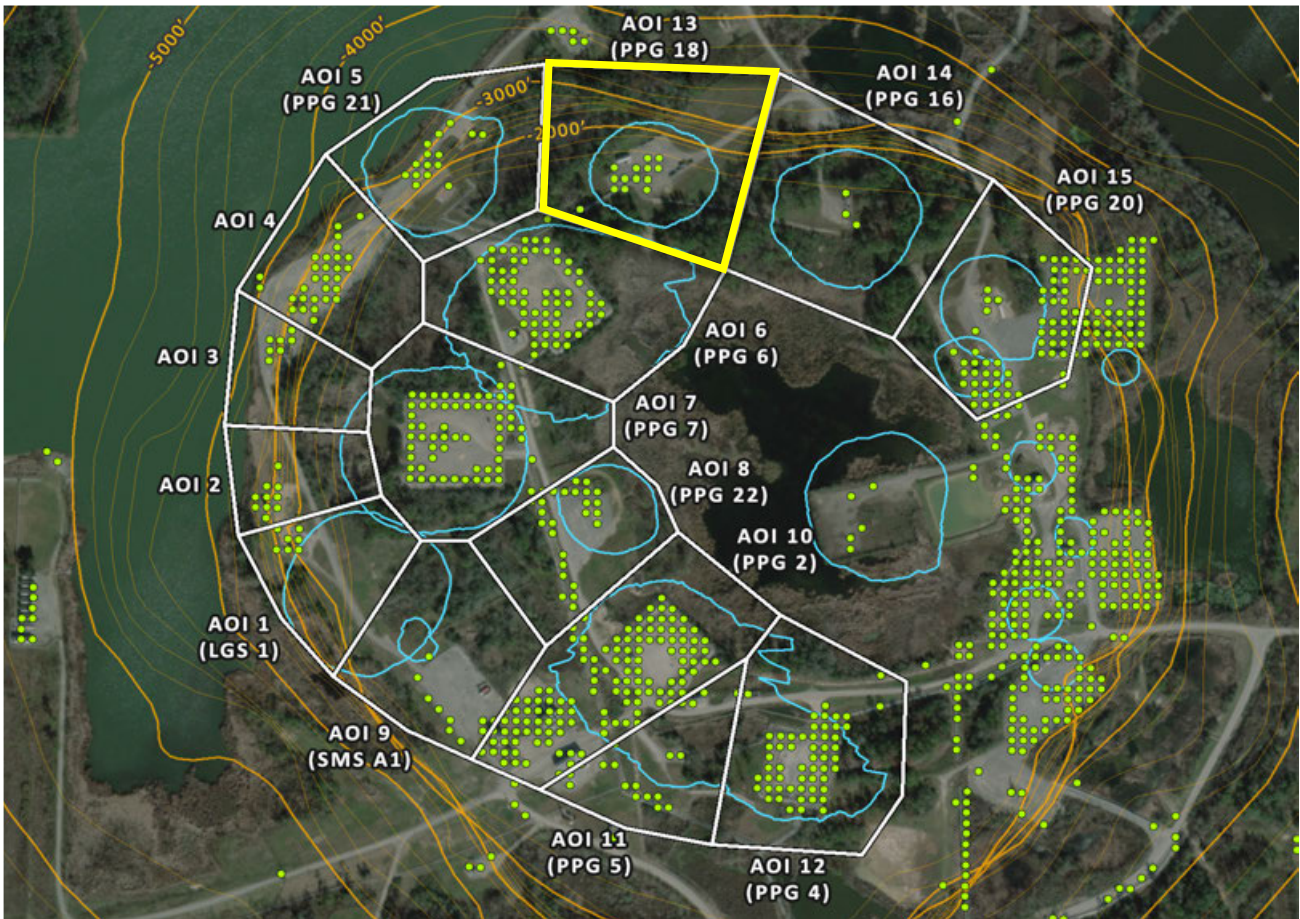
E-W (11/27/2025) Point Count: 55



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.26 in/yr              | -0.17 in/yr             |
| Acceleration: | -0.06 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

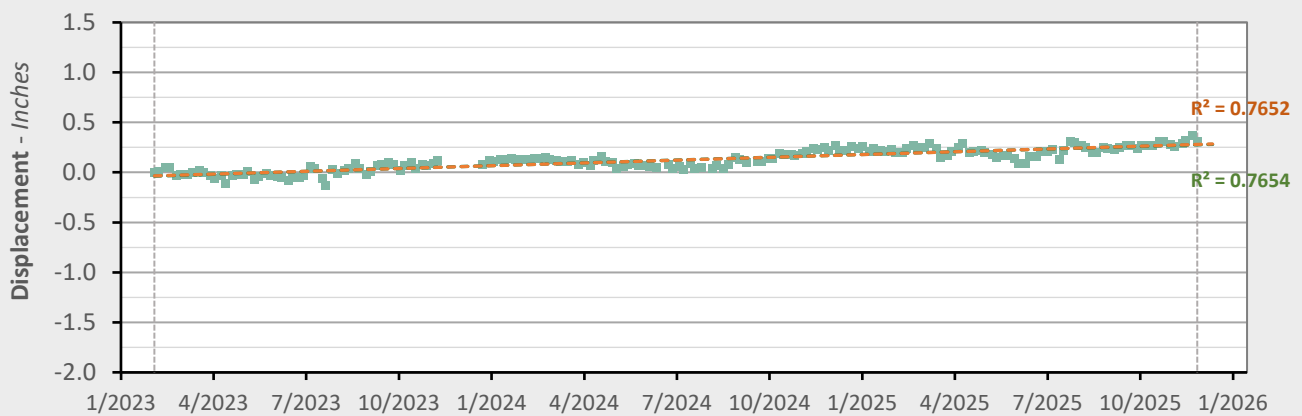
■ 2D Displacement Measurement     
 - - - Nonlinear Trend Line (Quadratic Regression)     
 - - - Linear Trend Line (Linear Regression)

### AOI 13 (PPG 18) - Location Map

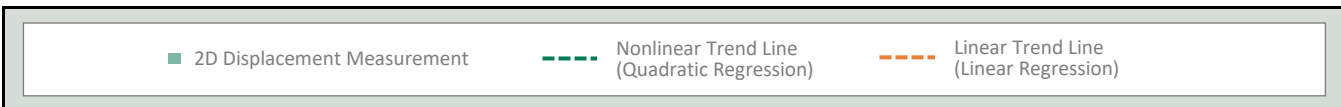


### AOI 13 (PPG 18) - East-West Time Series

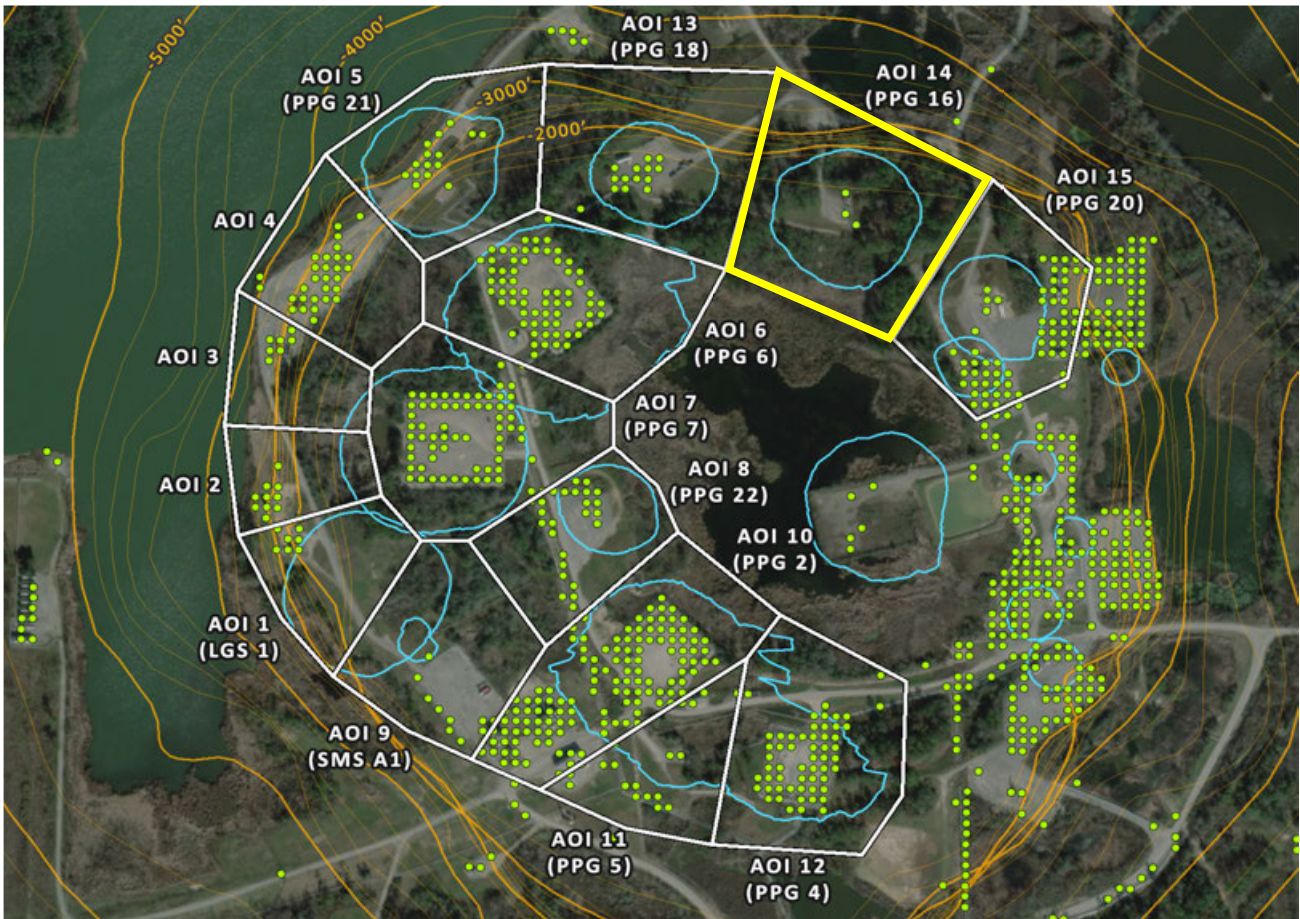
E-W (11/27/2025) Point Count: **13**



|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | +0.11 in/yr              | +0.11 in/yr             |
| Acceleration: | -0.00 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

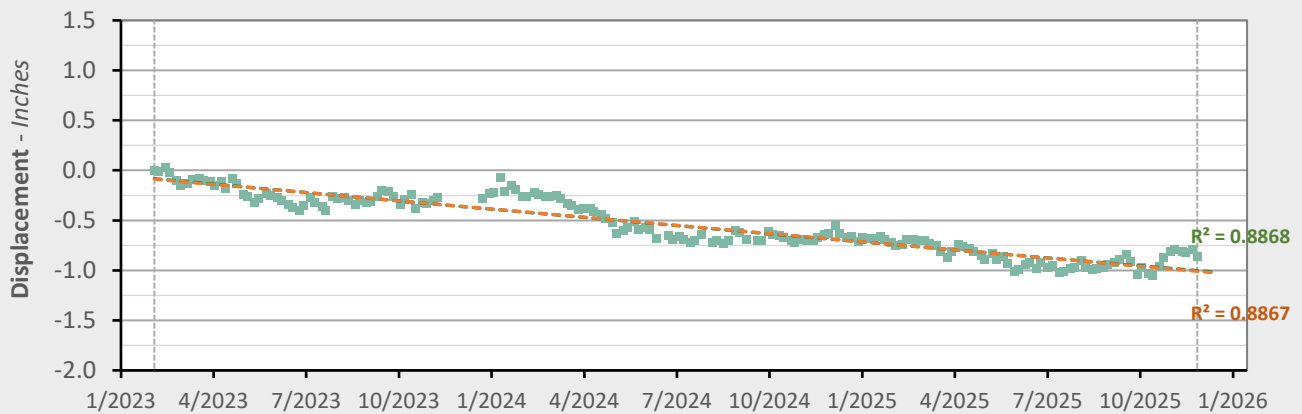


### AOI 14 (PPG 16) - Location Map



### AOI 14 (PPG 16) - East-West Time Series

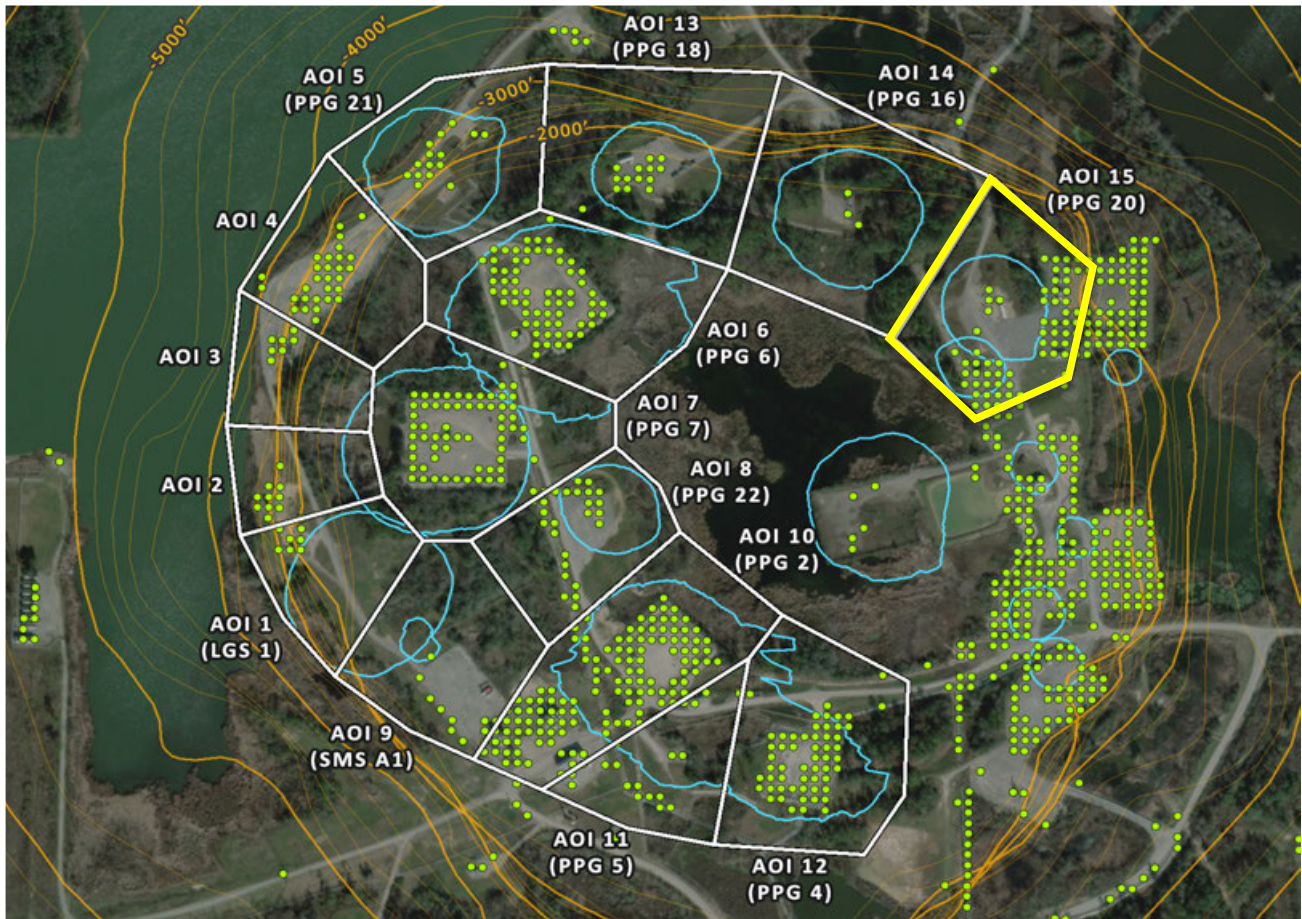
E-W (11/27/2025) Point Count: 2



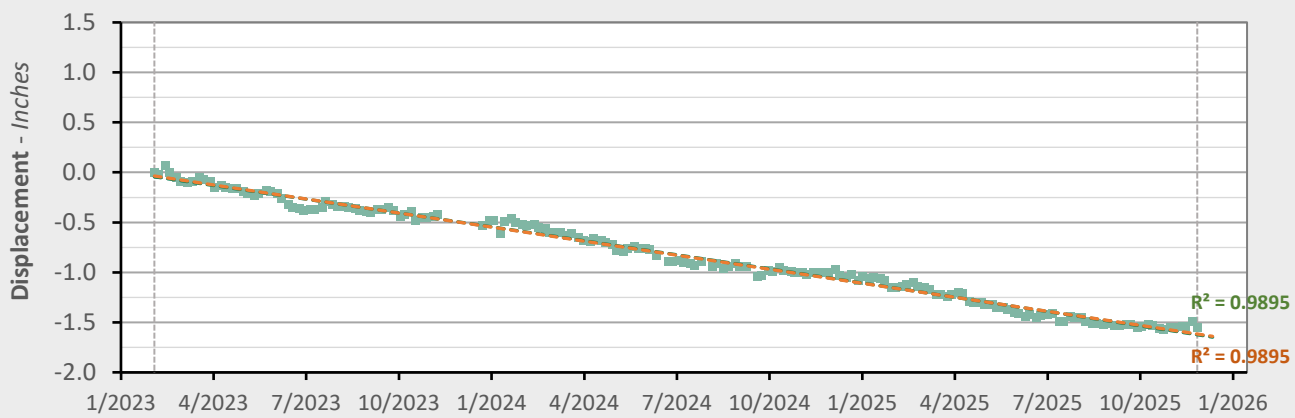
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.31 in/yr              | -0.33 in/yr             |
| Acceleration: | +0.01 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |

■ 2D Displacement Measurement     
 - - - Nonlinear Trend Line (Quadratic Regression)     
 - - - Linear Trend Line (Linear Regression)

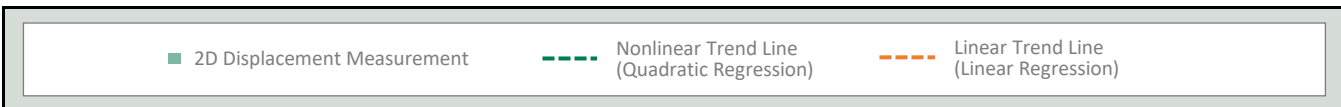
**AOI 15 (PPG 20) - Location Map**



**AOI 15 (PPG 20) - East-West Time Series** E-W (11/27/2025) Point Count: **61**



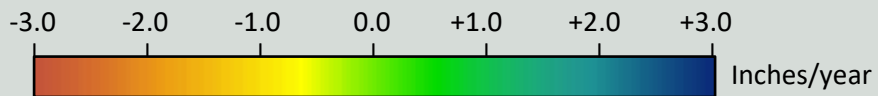
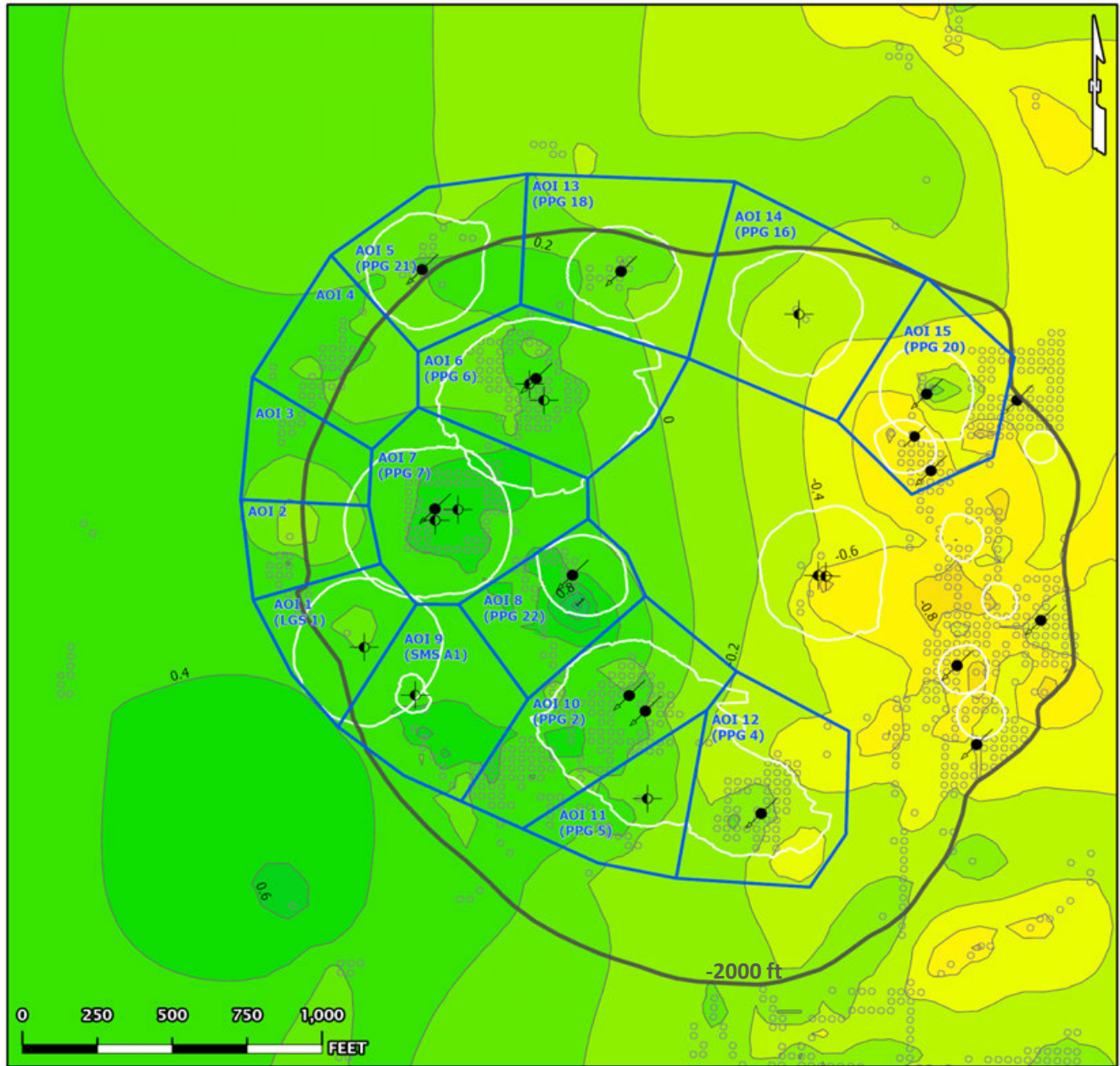
|               | Nonlinear Trend          | Linear Trend            |
|---------------|--------------------------|-------------------------|
| Velocity:     | -0.58 in/yr              | -0.56 in/yr             |
| Acceleration: | -0.01 in/yr <sup>2</sup> | 0.00 in/yr <sup>2</sup> |



**East-West Data (02/04/2023 - 11/27/2025)**

**Nonlinear Velocity Contours**

As of date: 11/27/2025

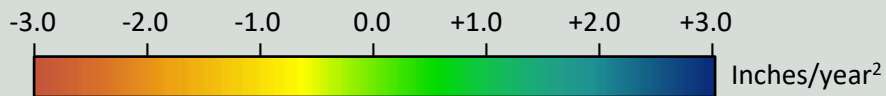
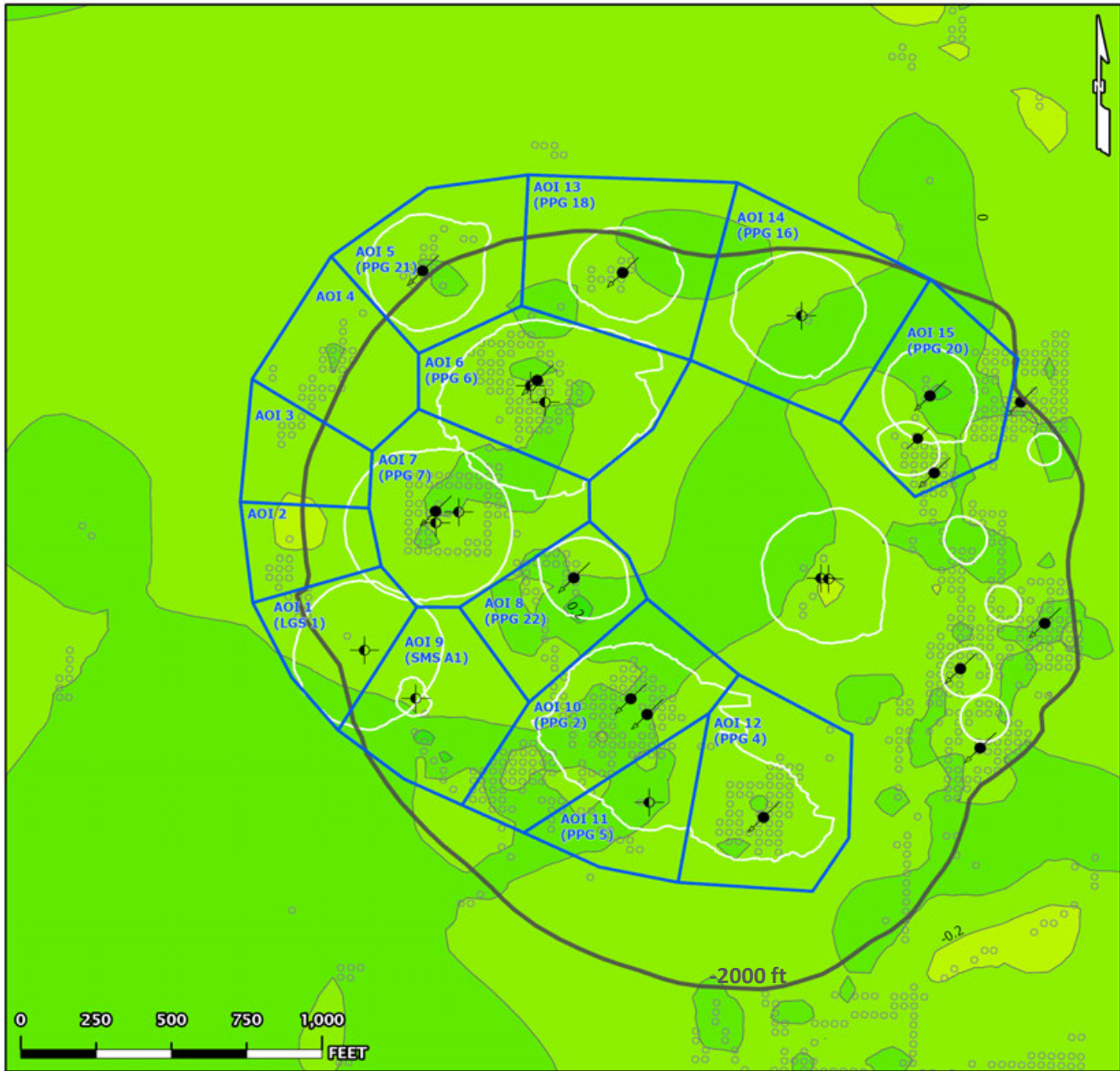


- AOI Boundary
- Historical Cavern Extent
- Top of Dome (-2000 ft Contour)
- InSAR LOS Measurement Point
- Contour (0.2)
- Cavern Well Surface Locations
  - 09 - Active - Injection
  - 29 - Dry and Plugged

### East-West Data (02/04/2023 - 11/27/2025)

#### Nonlinear Acceleration Contours

Date range: 02/04/2023 - 11/27/2025

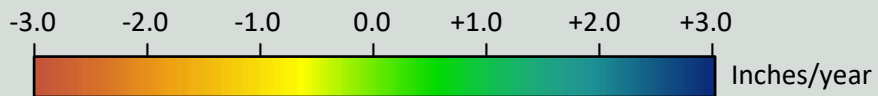
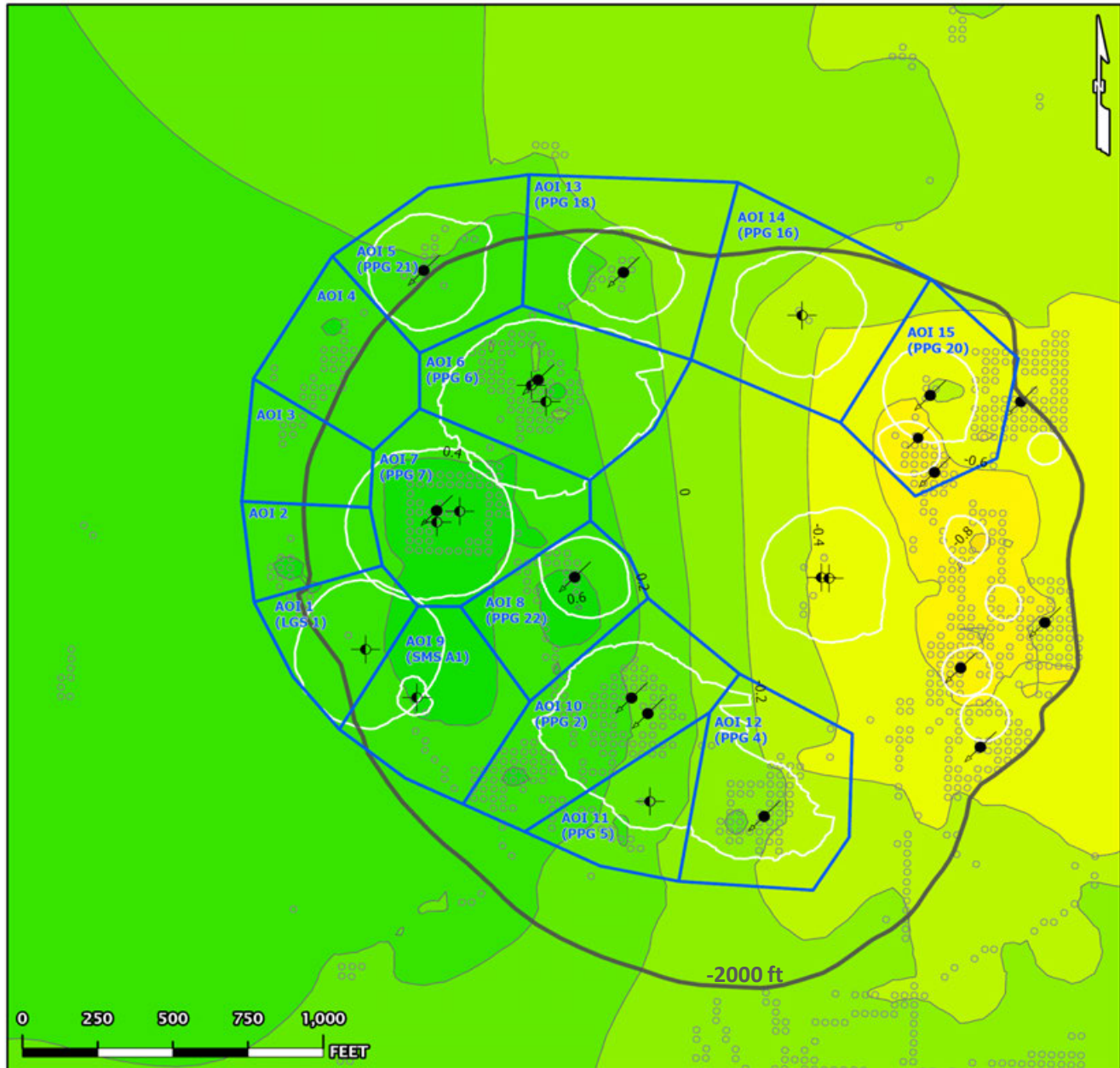


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**East-West Data (02/04/2023 - 11/27/2025)**

**Linear Velocity Contours**

Date range: 02/04/2023 - 11/27/2025

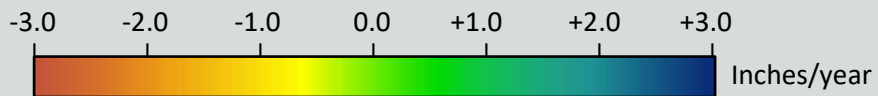
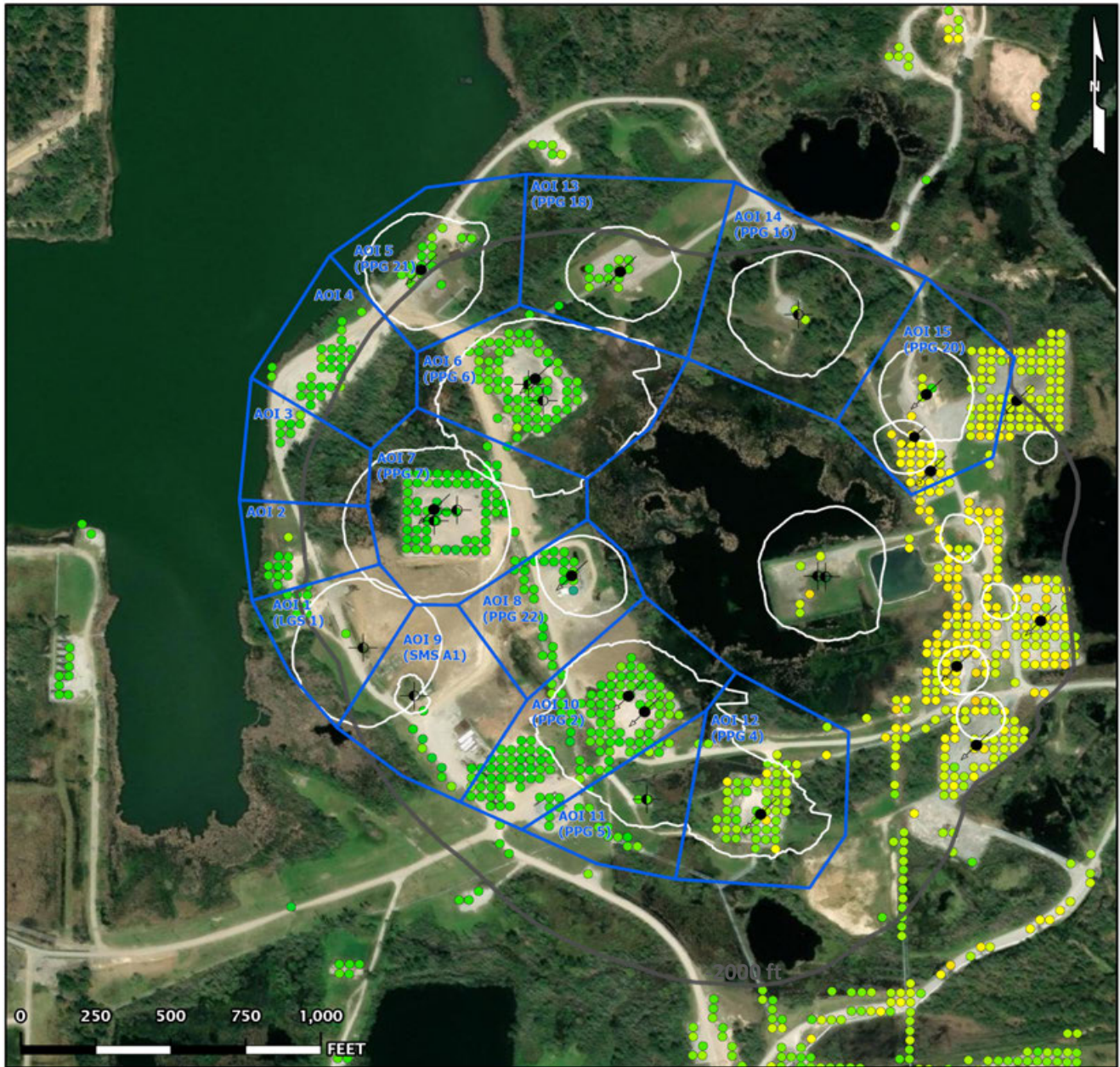


- AOI Boundary
  - InSAR LOS Measurement Point
  - Contour (0.2)
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

**East-West Data (02/04/2023 - 11/27/2025)**

**Nonlinear Velocity Data Points**

As of date: 11/27/2025

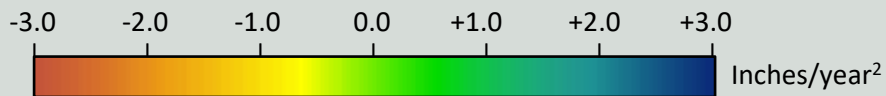
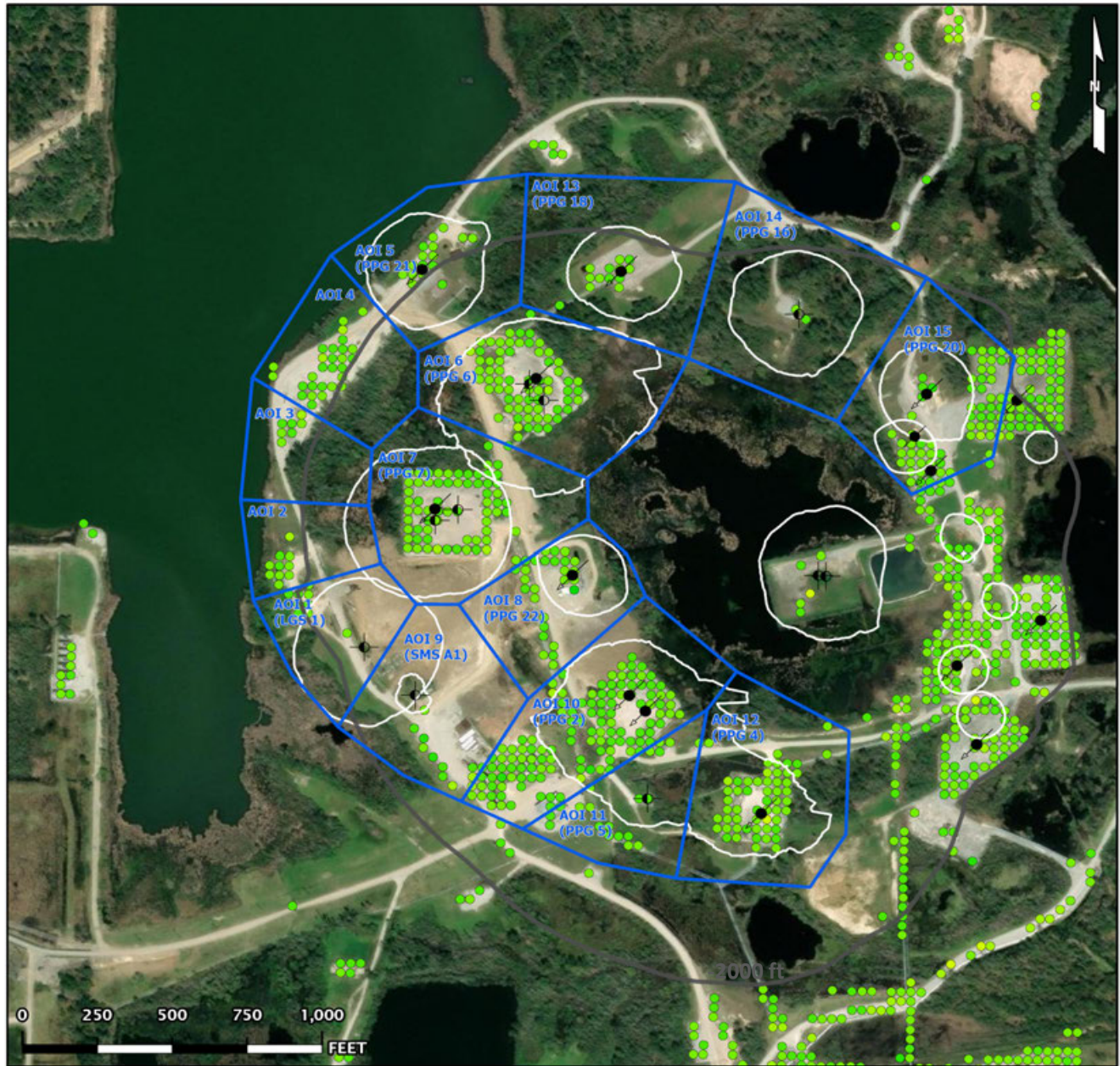


- AOI Boundary
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
  - InSAR LOS Measurement Point
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

### East-West Data (02/04/2023 - 11/27/2025)

#### Nonlinear Acceleration Data Points

Date range: 02/04/2023 - 11/27/2025

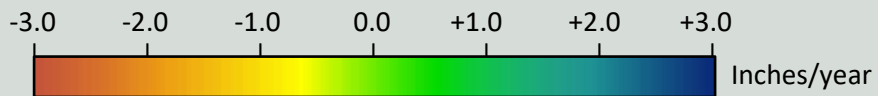
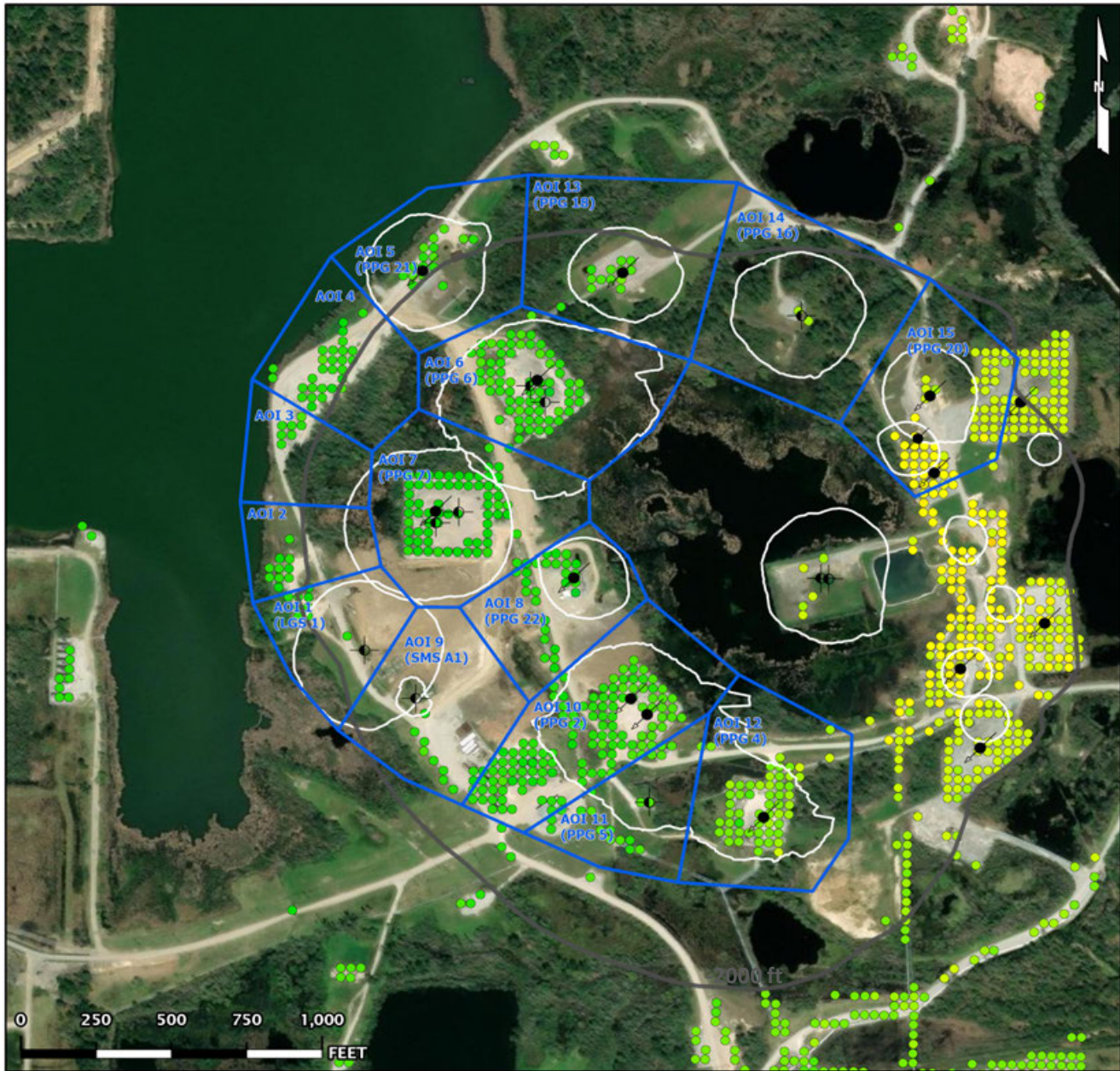


- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged

### East-West Data (02/04/2023 - 11/27/2025)

#### Linear Velocity Data Points

Date range: 02/04/2023 - 11/27/2025



- AOI Boundary
  - InSAR LOS Measurement Point
  - Historical Cavern Extent
  - Top of Dome (-2000 ft Contour)
- Cavern Well Surface Locations
- 09 - Active - Injection
  - 29 - Dry and Plugged