

**TSX/PAZ Satellite Update**  
**InSAR Subsidence**  
July 23, 2023

Longquist comment:

The PAZ satellite from the TSX/PAZ constellation (4 & 7-day revisit) passed by Sulphur on Sunday July 23. We received the dataset Tuesday and noted that a few of the review areas are showing measurements indicating an upward movement. We also noticed that the trend deviation from July 1<sup>st</sup> smoothed out after a few weeks of additional data was collected. This implies that the historical data is being re-interpreted by the algorithm that TREA uses with each update. We believe that due to the shorter time (smaller dataset) this re-interpretation has a larger effect on historical TSX/PAZ measurements than we see in the SNT data.

Also, no upward movement was observed in the same regions in the SNT data that was collected the following day. An email has been sent to TREA requesting some clarity on the confidence we should apply to new TSX/PAZ measurements and why the July 1<sup>st</sup> deviation moved up toward the trend in subsequent datasets.



# TSX/PAZ Constellation Update

## Continuous InSAR Monitoring of Ground Displacement Near Western Caverns and Dome Flank

Sulphur Dome  
Westlake Chemicals

July 23, 2023 Update



Date Signed: July 27, 2023  
Austin, TX

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**LONQUIST & CO. LLC**

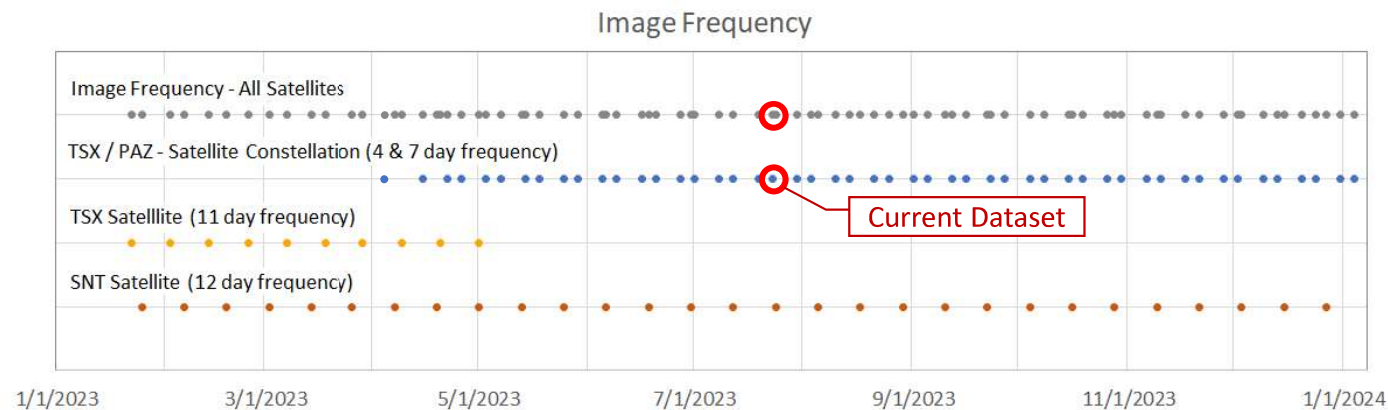
PETROLEUM  
ENGINEERS

ENERGY  
ADVISORS

# Parameters of InSAR Dataset and Collection Frequency

- Satellite Data Delivery Frequency as of April 2023:
  - Sentinel 1 (SNT) 12 days
  - TSX / PAZ Constellation 4 & 7 days
  - 3.96-day avg. frequency

	Sentinel-1	TerraSAR-X	TSX/PAZ Constellation	
			TerraSAR-X	PAZ
Mode / Resolution	16 x 65 ft	Spotlight (3 x 3 ft)	Spotlight (3 x 3 ft)	Spotlight (3 x 3 ft)
Track	T136	T29	T67	T120
Band (wavelength)	C-Band (2.32 in)	X-Band (1.22 in)	X-Band (1.22 in)	X-Band (1.22 in)
Nominal frequency	12- day	11- day	11- day	11- day
Orbit (LOS angle)	Ascending 43°	Descending 17°	Descending 37°	Descending 37°
Date range	04 Oct 2016 – 20 Jan 2024	16 Jun 2022 – 01 May 2023	24 Jan 2023 – 11 Jan 2024	28 Jan 2023 – 15 Jan 2024
Number of images	199	30	34	33

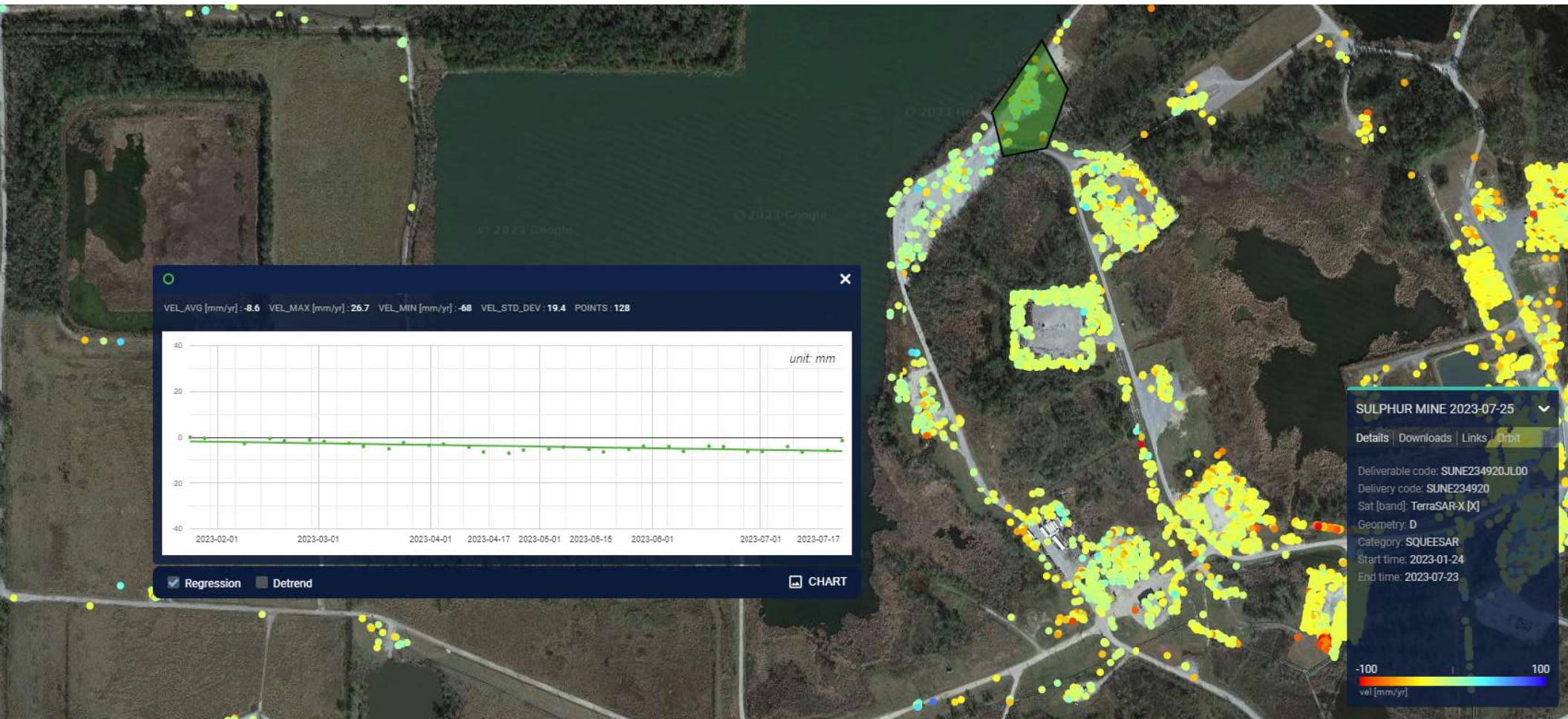


## Overview and Monitoring History

- Beginning in late January, ground displacement over the western portion of the Sulphur Mines Salt Dome has been evaluated following the delivery of each dataset update from TRE-Altamira
- An automated process and set of deliverables to convey the results of the datasets is being developed that will evaluate multiple factors including trend consistency and mapped acceleration of ground displacement
- Current updates are focused on the review of time series charts of averaged data for selections of points around the dome and caverns on the western flank
- The TSX/PAZ satellite constellation (4 & 7-day revisit) passed by Sulphur on Sunday July 23, 2023
- The following slides present the time series and associated linear trends for each location evaluated from this dataset
- To-date there has been no material deviation from the established subsidence trends in the areas investigated

# TSX/PAZ Constellation – July 23, 2023 Update

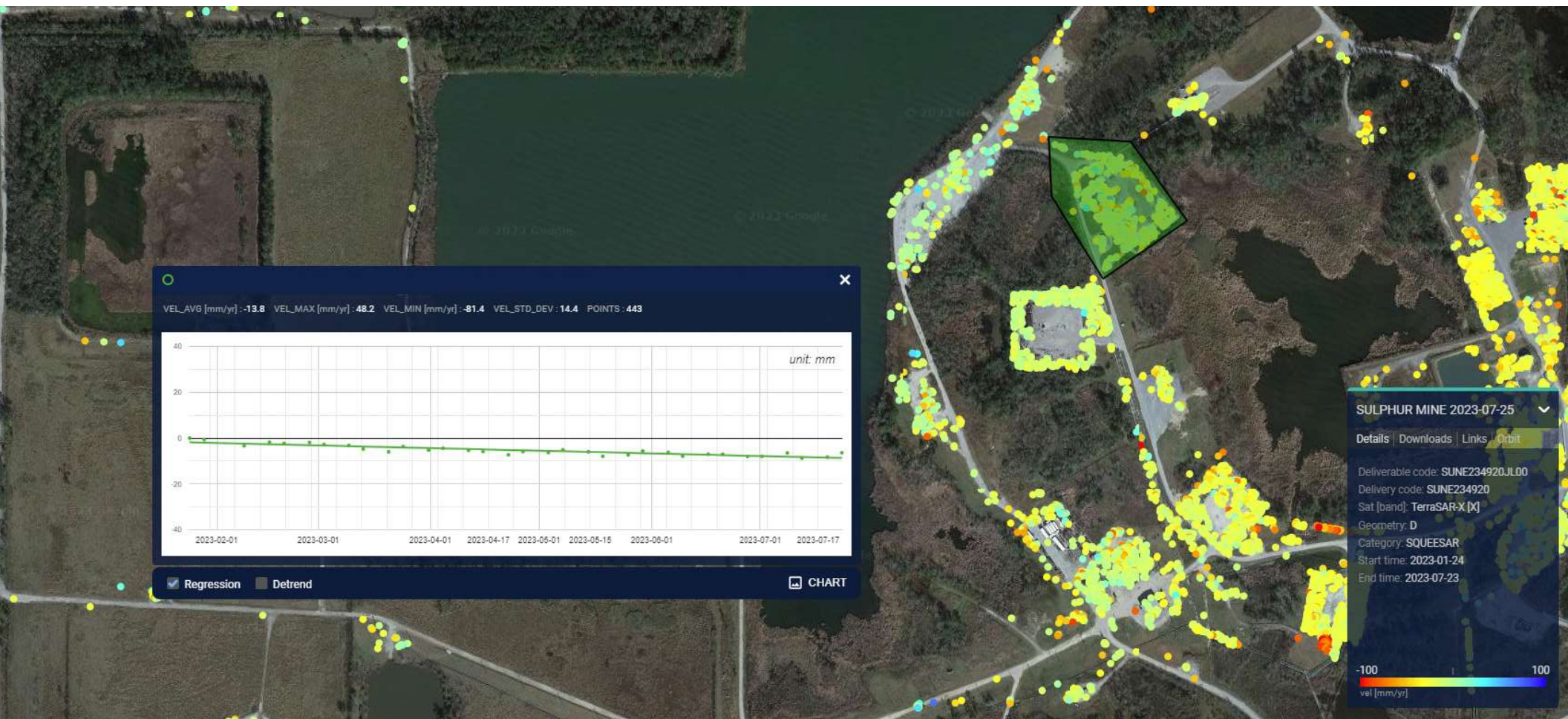
# PPG 21



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Continuous Monitoring of Ground Subsidence

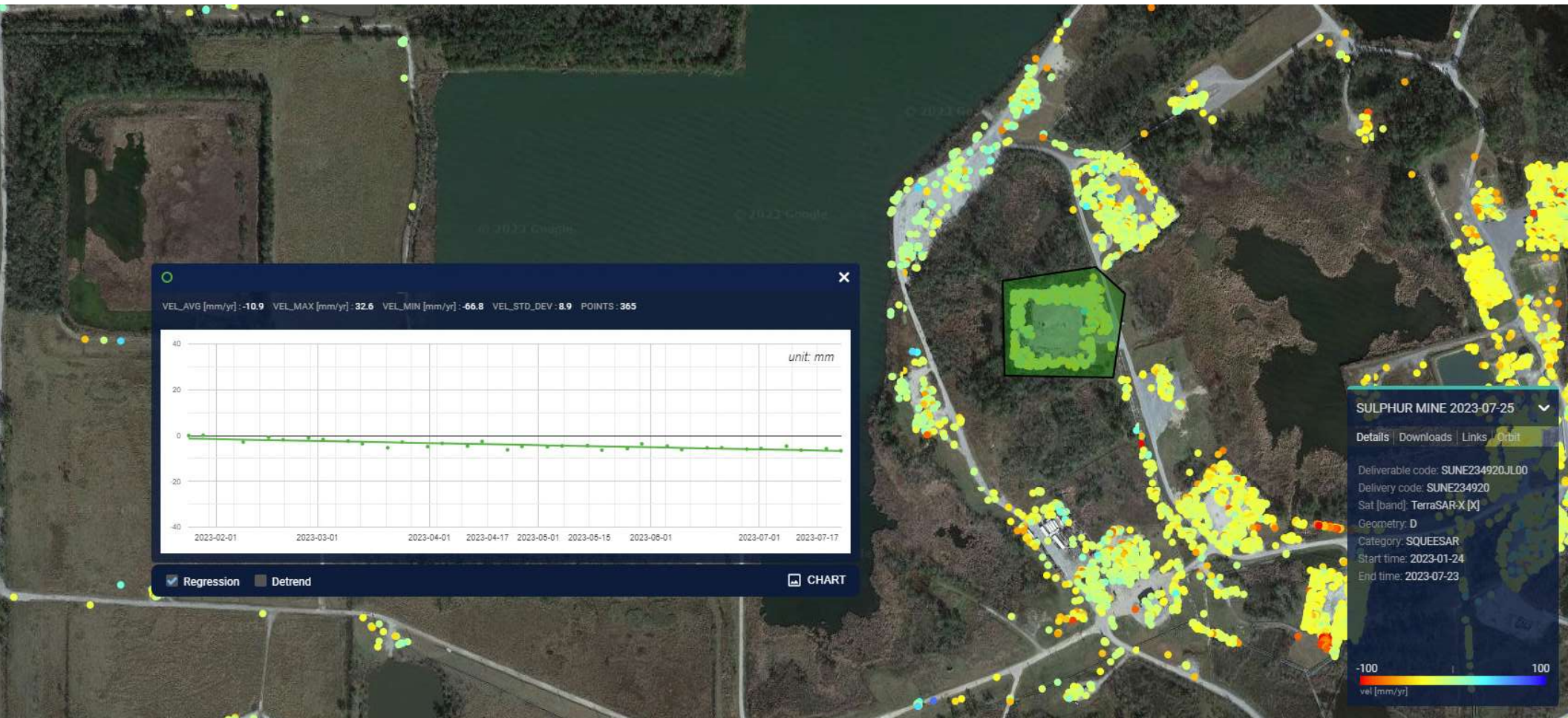
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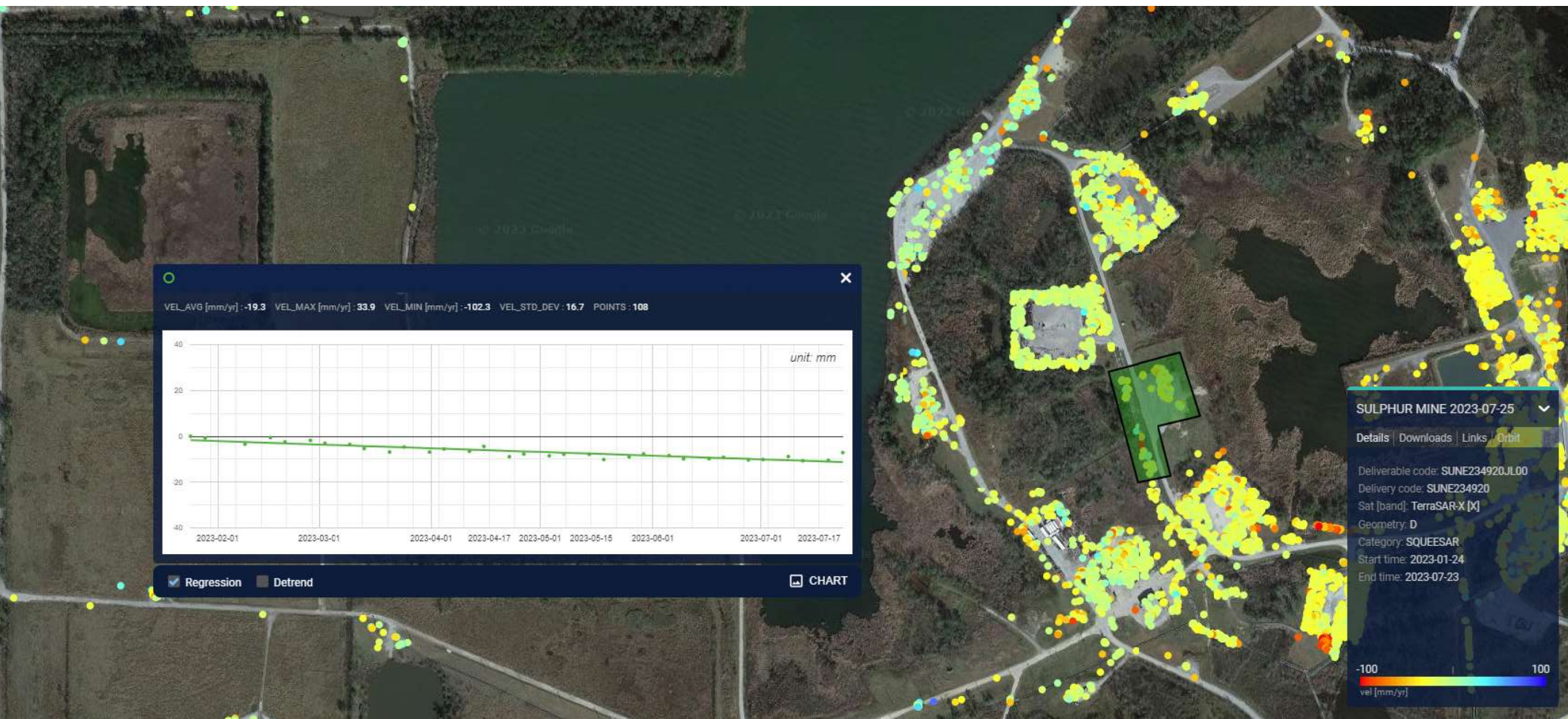
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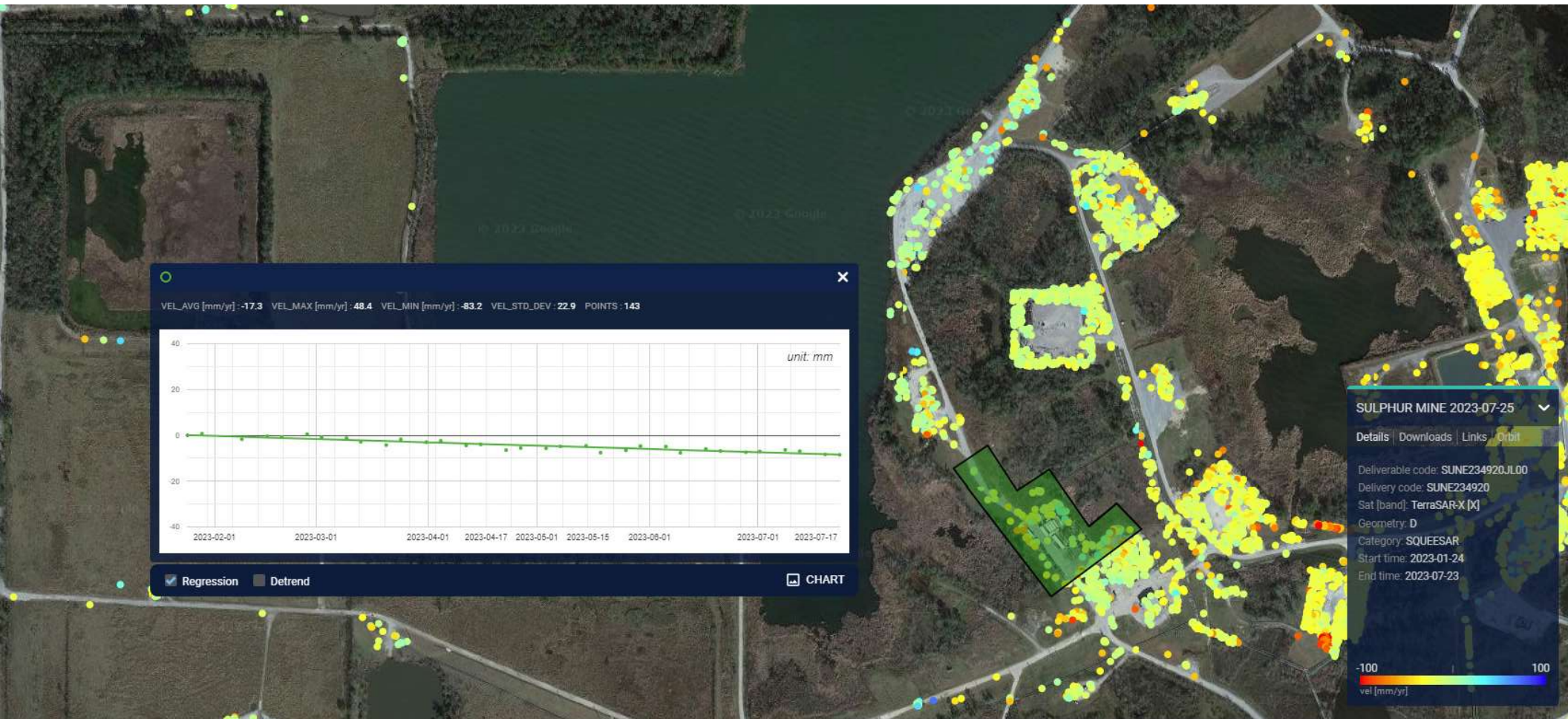


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# AOI #1

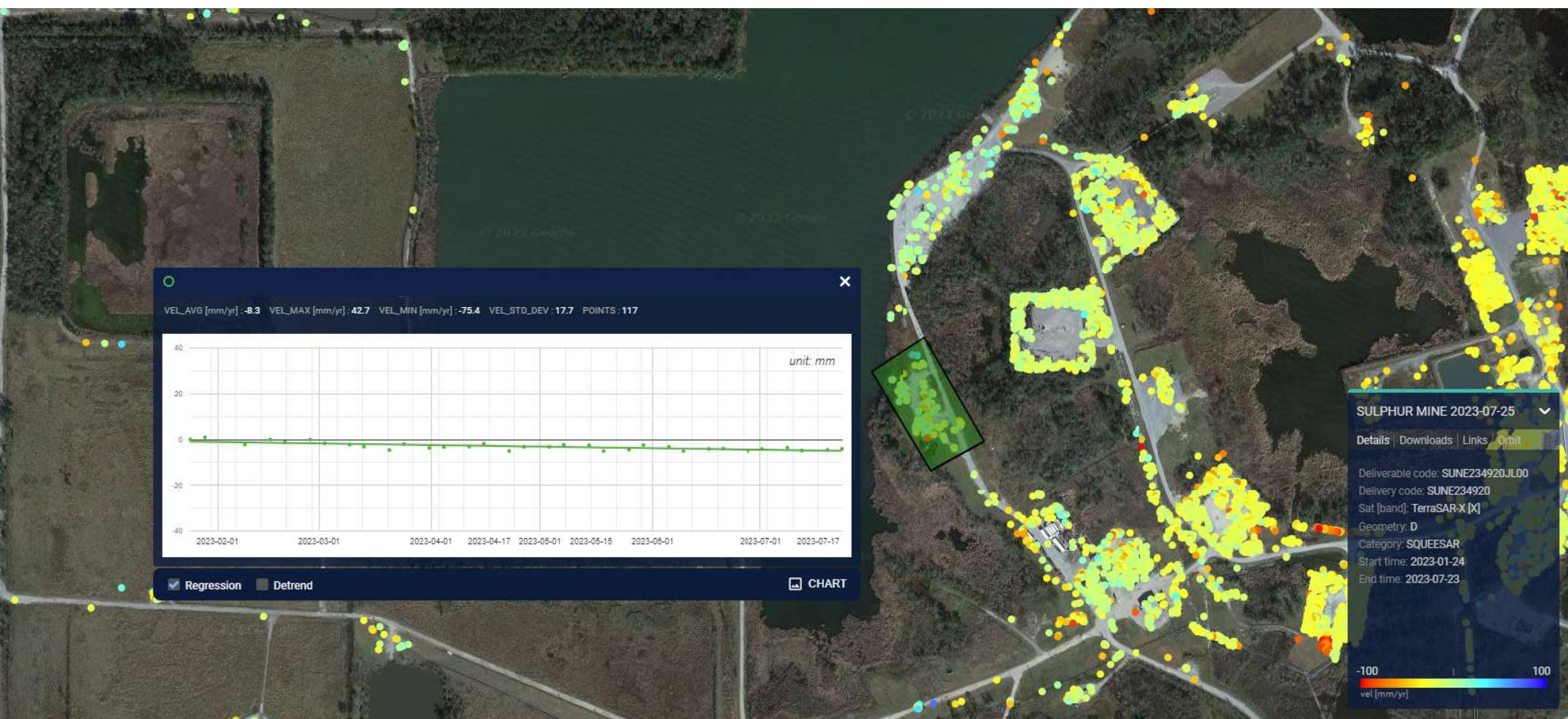


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## AOI #2

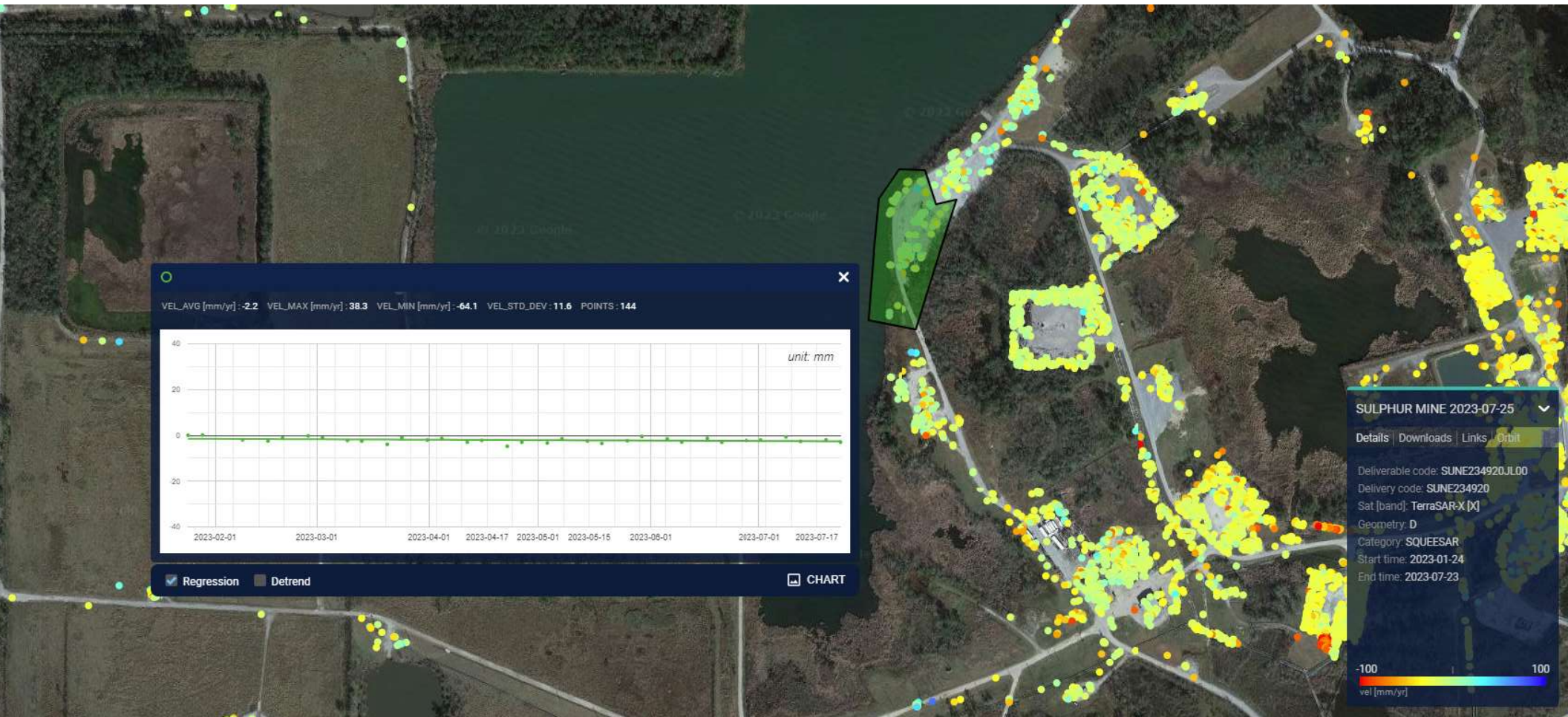


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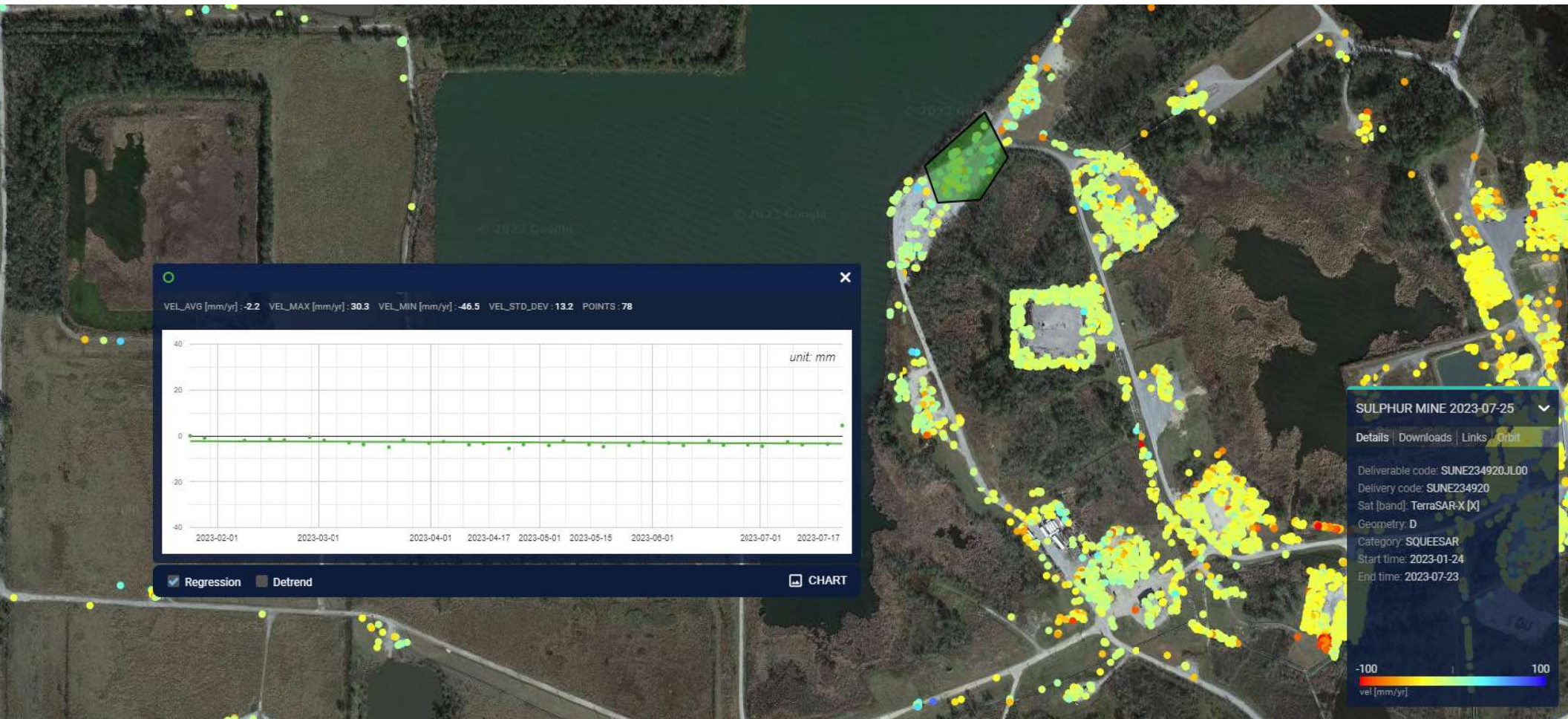
# AOI #3



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# AOI #4



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