

**TSX/PAZ Satellite
Update InSAR
Subsidence
September 1, 2023**

Longquist comment:

"The TSX satellite from the TSX/PAZ constellation (4 & 7-day revisit) passed by Sulphur on Friday September 1. We received the dataset today and noted that the new data point generally indicates a flattening or slight upward change from the last data point 7 days prior (8/25/2023). The attached time series plots have been prepared for reference.

If the downward trend had continued or been magnified I would recommend a deeper review of this data, but given this observation I would expect that review to result in similar observations to those presented last week. I'm proposing that we wait to receive the PAZ data (9/5/2023) on Thursday of this week, and then use these two latest datapoints to perform contour mapping, and further trend analysis. This will include investigation at a broader distance from our AOI's since I feel there is some relevance in observing similar trend deviation at distant unrelated locations in the data extent. I am also planning to reach out to TREA to present our observations and see if they can provide any additional guidance or clarification."



TSX/PAZ Constellation Update

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

Sulphur Dome
Westlake Chemicals

September 1, 2023 Update



Date Signed: September 3, 2023
Austin, TX

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LONQUIST & CO. LLC

PETROLEUM
ENGINEERS

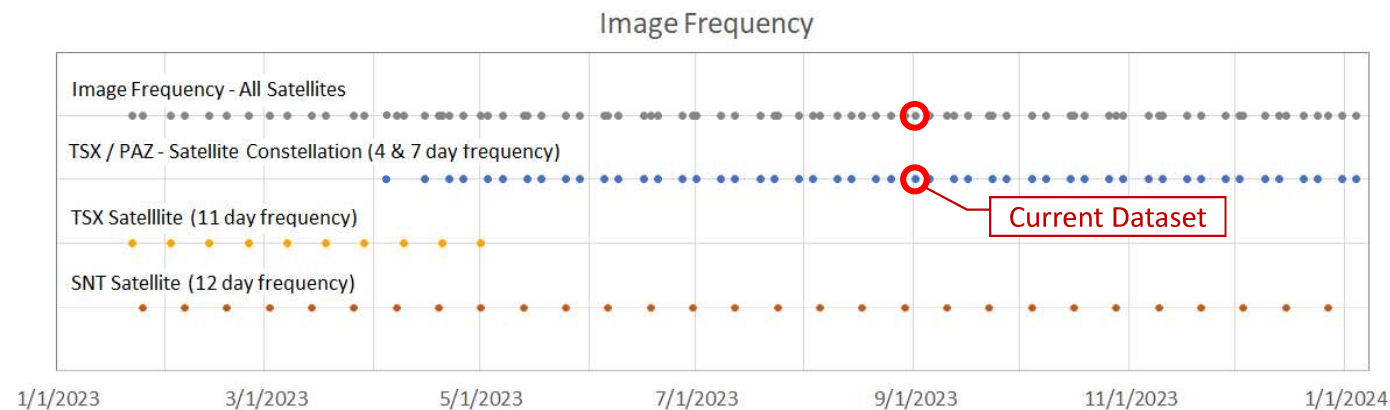
ENERGY
ADVISORS

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

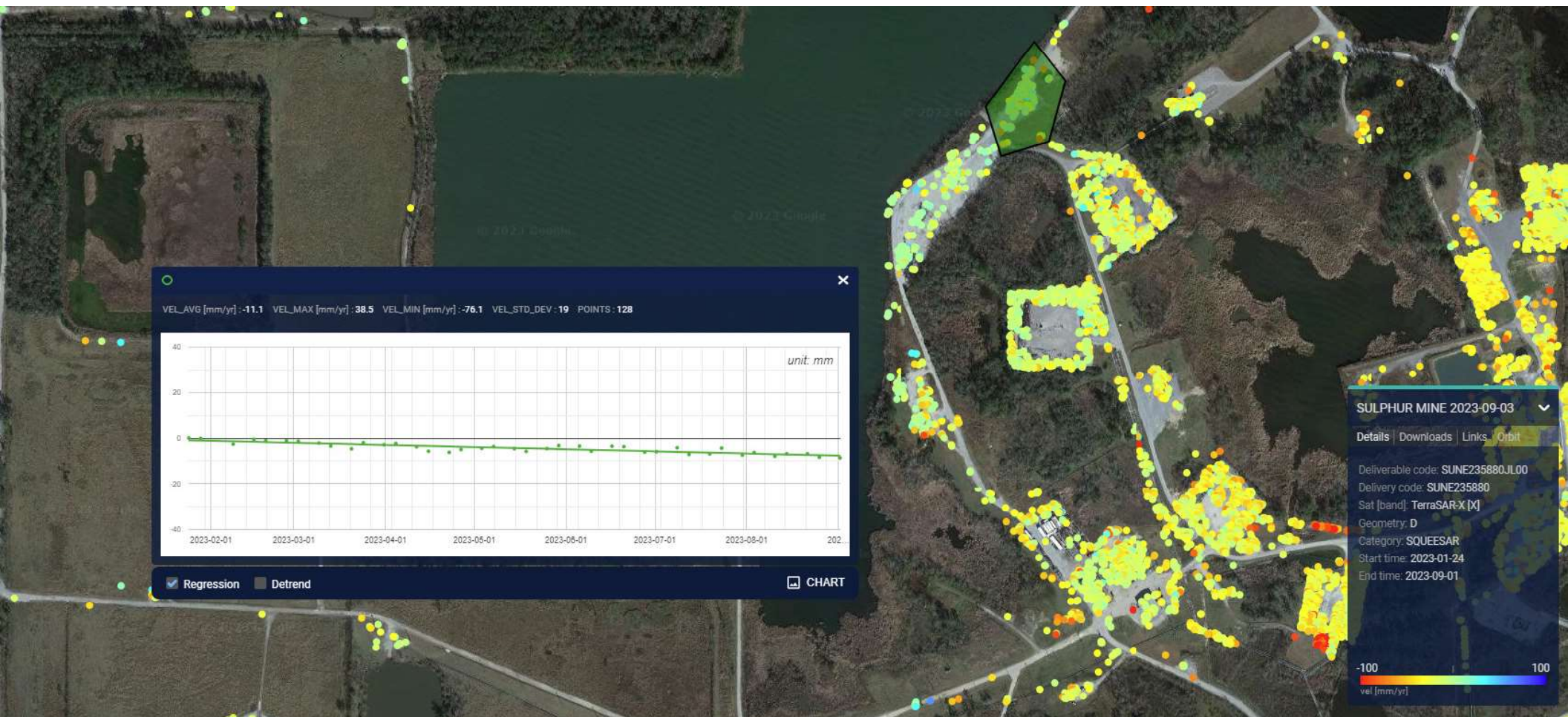


Overview and Monitoring History

- 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 considered 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 Friday September 1, 2023
- The following slides present the time series and associated linear trends for each location evaluated from this dataset
- The prior few updates from the TSX/PAZ satellite constellation appear to show a slight increase in downward displacement rates in most of the review areas, although this increase has been noted in other areas far from the western dome flank. Additional evaluation is planned to further define the apparent trend deviation

TSX/PAZ Constellation – September 1, 2023 Update

PPG 21

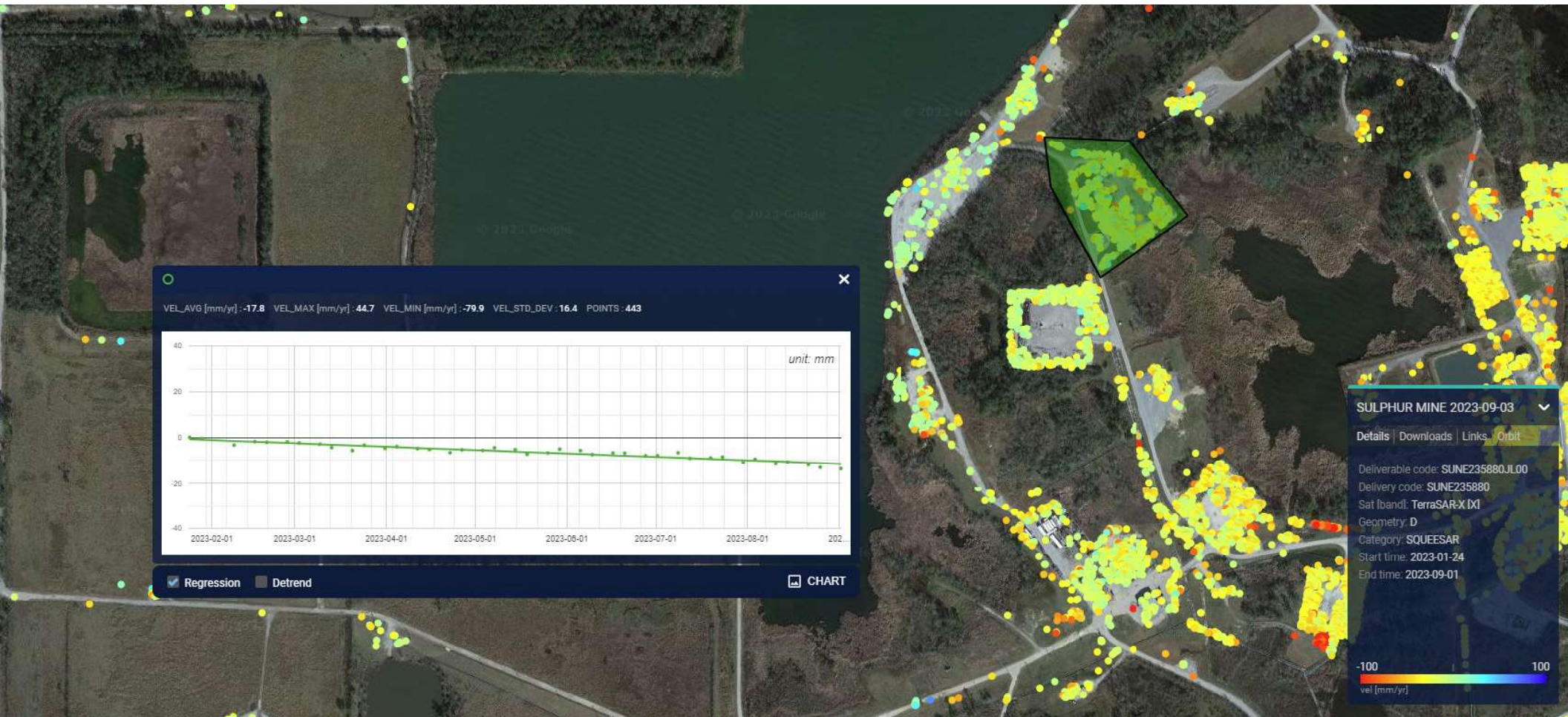


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PPG 6

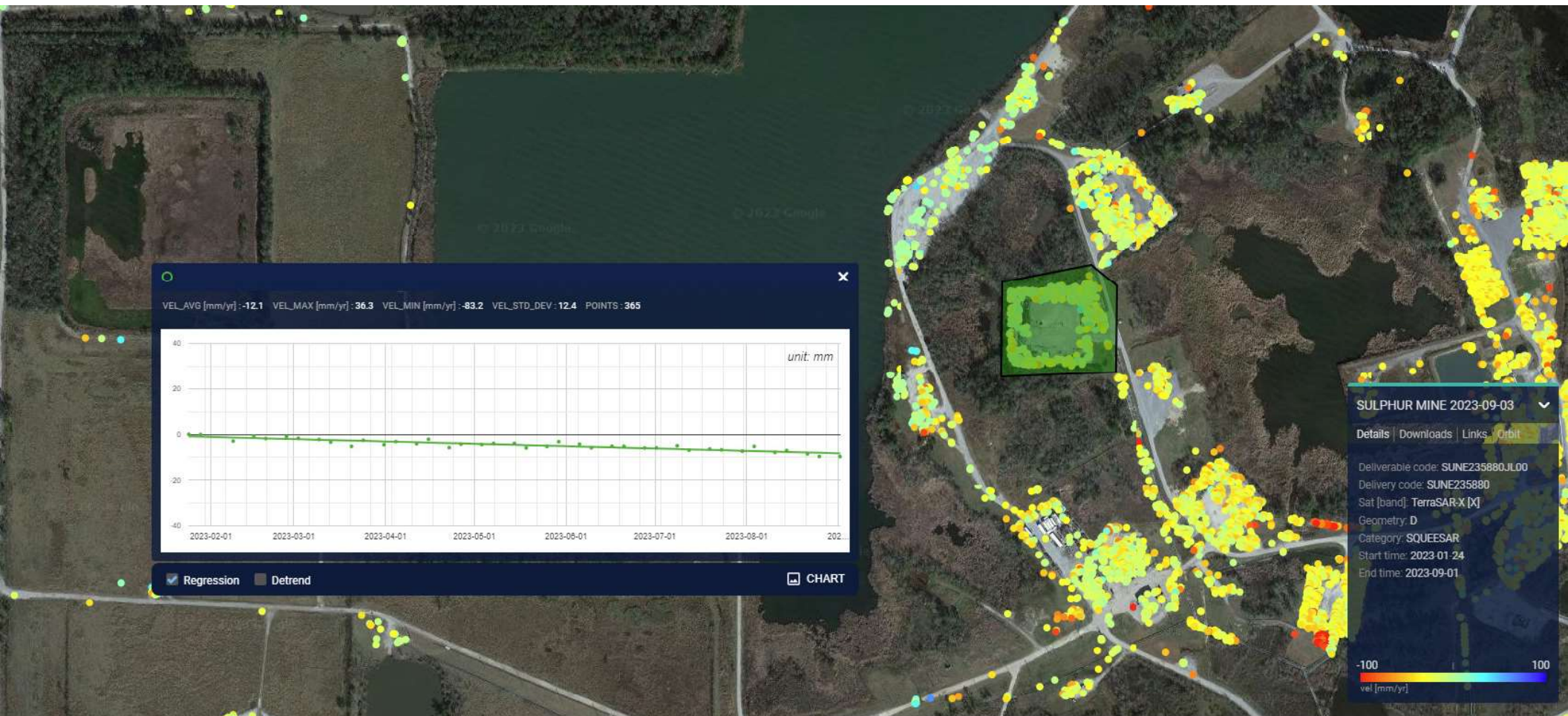


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PPG 7

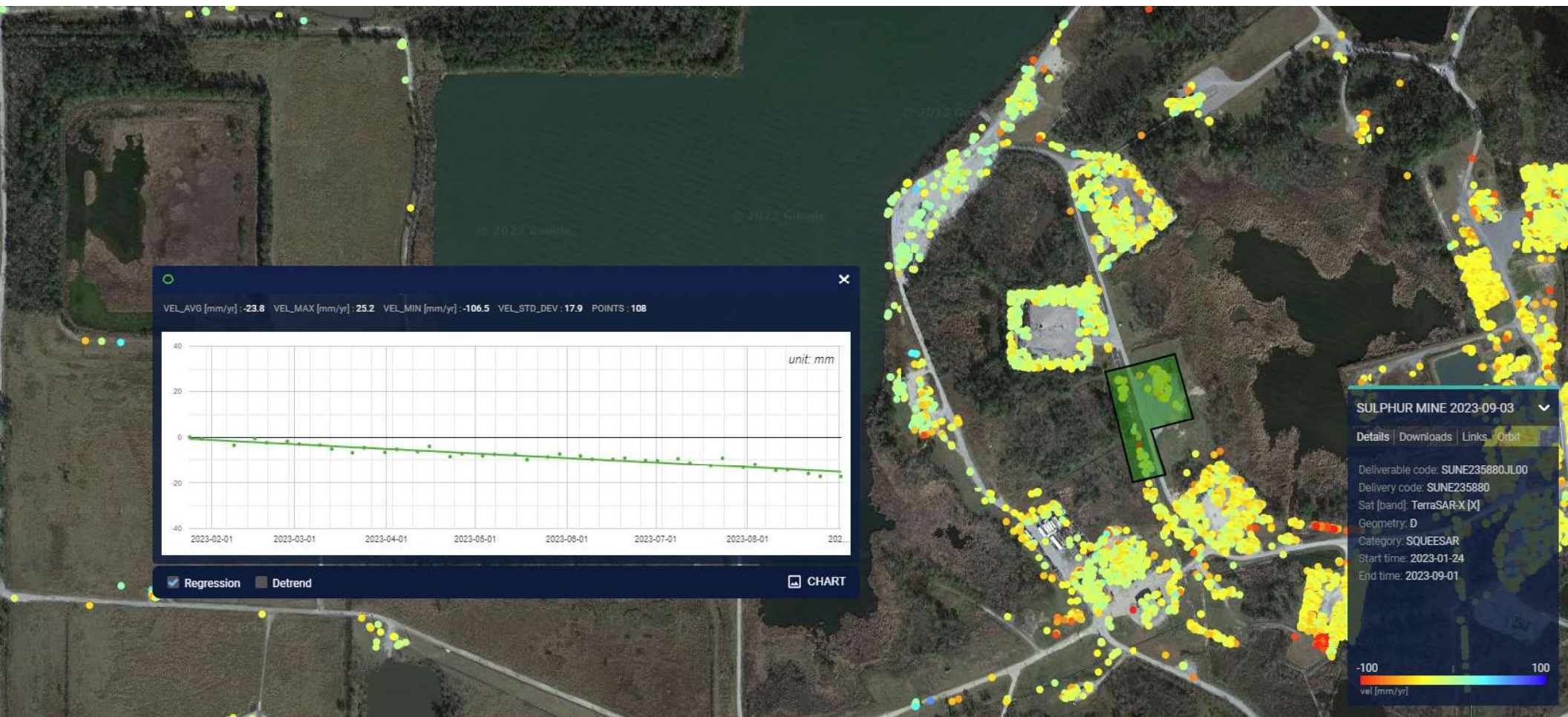


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PPG 22

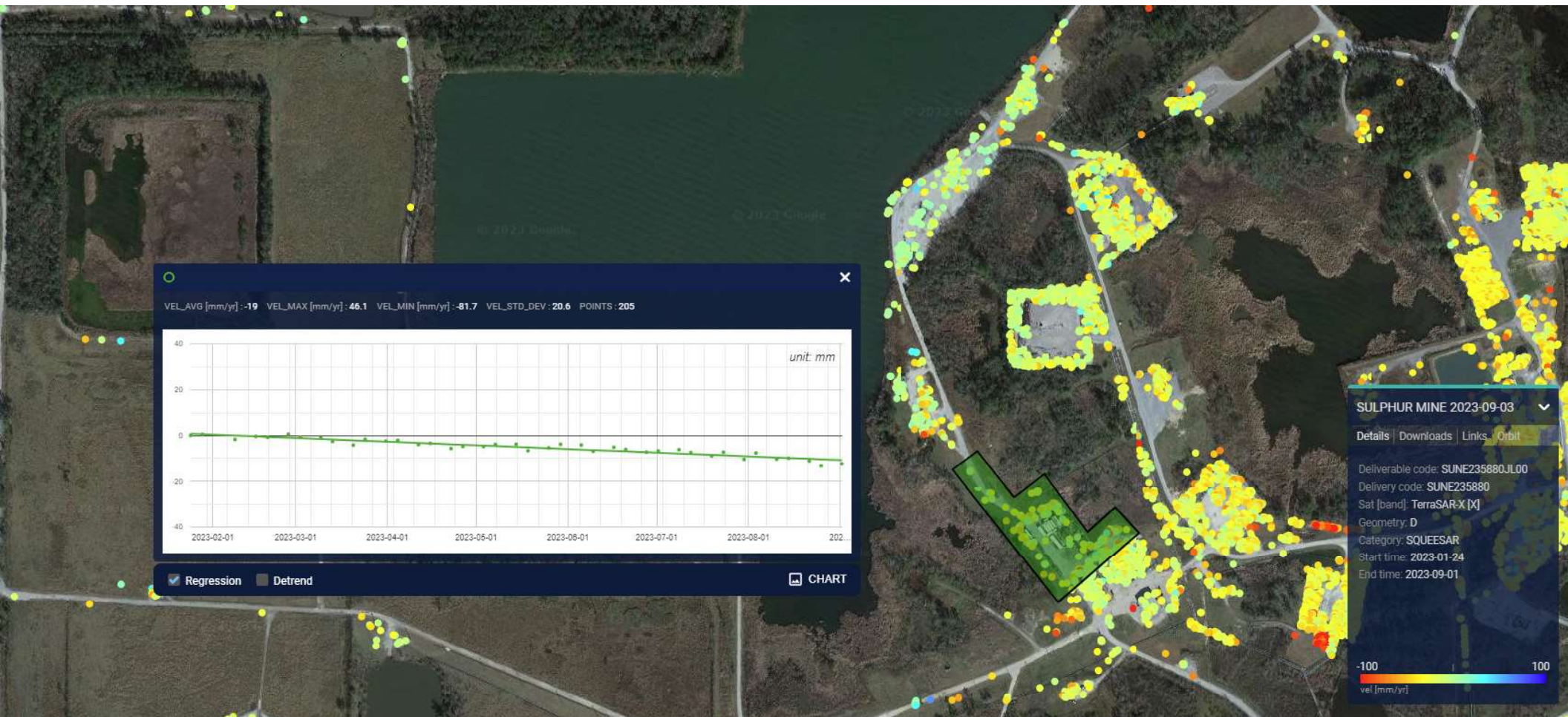


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AOI #1

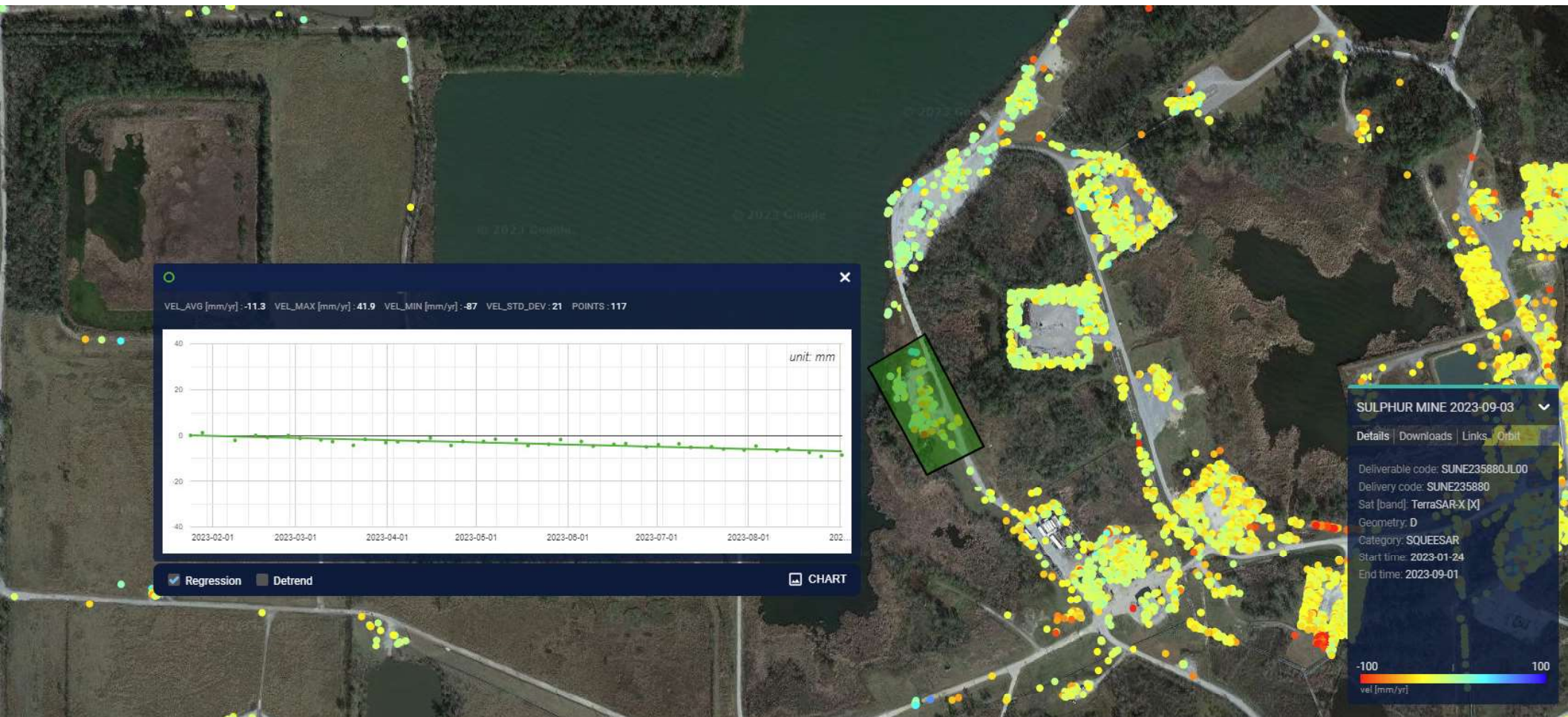


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AOI #2



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AOI #3



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AOI #4



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