

Western States Rural Transportation Consortium 15th Annual Meeting

June 16, 2025

Overview/Agenda

- Welcome / Introductions
- Western States Forum Preview
- History of COATS, WSRTC
- WSRTC Pooled Fund updates/discussions
- Project discussion
- Upcoming Meetings
- Roundtable of recent/planned ITS activities
- Other discussions (as needed)

Welcome / Introductions

Western States Rural Transportation Technology Implementers Forum



The First

The [first annual Forum](#) was held in 2006 in Mount Shasta, California, and 15 engineers and technicians from 3 states attended.



The 5th

Thirty-eight (38) individuals from six states participated in the 5th annual Forum in Yreka, California.



The 10th

The 10th annual Forum was also in Yreka, CA. Thirty-nine (39) practitioners from 8 different states attended.



The 14th

The 14th Forum in Yreka saw a record 53 participants from 8 different western and central states.



Western States Rural Transportation Technology Implementers Forum



Preview



Western States

**Rural Transportation
Technology Implementers**

Forum

June 16 – 18, 2025

Yreka, California

Best Western Miner's Inn

Presentations / Demonstrations Day 1



Pikalert: NSF-NCAR's Road Weather Hazard Prediction System

Tom Brummet

National Center for Atmospheric Research (NCAR)

Montana Transportation Management Center (TMC)

Curtis Buckley

Montana Department of Transportation

Developing The Plan – Integration of ITS into Mobility Plans

Nevada Statewide ITS & ATM Master Plan

Jordan James, Kevin Maxwell

Nevada Department of Transportation

Evaluation and Application of Fotokite Tethered Drones in Rural Areas of California and Washington

Anh Duong, AHMCT Research Center, University of California, Davis

Paul M. Yamashita, Caltrans District 6

Michael Southwick, Washington State DOT

Presentations / Demonstrations Day 2



Wyoming Roadside Network and Backhaul Upgrade

Keith Tupper, Steve Nickles

Wyoming Department of Transportation

Graffiti Detection & Drones

Kelvin Daratha, Michael Gauger

Washington State Department of Transportation

Schedule of Events



Monday, June 16th

- 4:00 pm Registration
- 5:00 pm Reception (no-host)
- 6:30 pm Dinner, Networking

Tuesday, June 17th

- 7:00 am Breakfast
- 8:00 am – 5:00 pm Technical Program
- Noon – 1:30 pm **Founders Panel**, Cake
- 5:45 pm Social, Networking

Wednesday, June 18th

- 7:00 am Breakfast
- 8:00 am – 11:40 am Technical Program
- 11:40 am – END Closing Remarks, Evaluations, Lunch



Participation

- **20th Annual** Western States Forum
- 45 Participants Registered:
 - By State:
 - California (28)
 - Colorado (1)
 - Montana (3)
 - Nevada (3)
 - Oregon (1)
 - Texas (1)
 - Utah (2)
 - Washington (4)
 - Wyoming (2)

Participation - Caltrans



Caltrans Participants:

- D2 (10)
- D3 (2)
- D6 (1)
- D9 (3)
- HQ Maintenance (5)
- HQ Operations (1)
- DRISI (3)

Participation from Other Agencies

- Western States Forum Founders (2)
- Montana Department of Transportation (1)
- Nevada Department of Transportation (3)
- Utah Department of Transportation (2)
- Washington State Department of Transportation (4)
- Wyoming Department of Transportation (2)
- AHMCT at University of California Davis (1)
- WTI at Montana State University (1)
- Montana Technological University (1)
- National Center for Atmospheric Research (1)
- Southwest Research Institute (1)

History of COATS and the WSRTC

WSRTC Pooled Fund updates/discussions

WSRTC Pooled Fund

- Western States Rural Transportation Consortium Phase 2 [TPF-5\(494\)](#)
 - Contributions
- Charter Document updated

Projects

WSRTC Meeting Coordination, Western States Forum Travel Support and Website Maintenance (Phase 2, Task Order 6)

- WTI Task Order 16
- Start Date: 4/11/2024
- End Date: 6/30/2025
- Budget: \$121,977
- WSRTC Meeting Facilitation and Attendance:
 - WSF, NRITS (ITE)
 - Other meetings via teleconference as needed.
 - Western States Forum Support
 - Website Content and Maintenance
- Estimate remaining as of June 12, 2025 = \$14,750

WSRTC Meeting Coordination, Western States Forum Travel Support and Website Maintenance (Phase 2, Task Order 8)

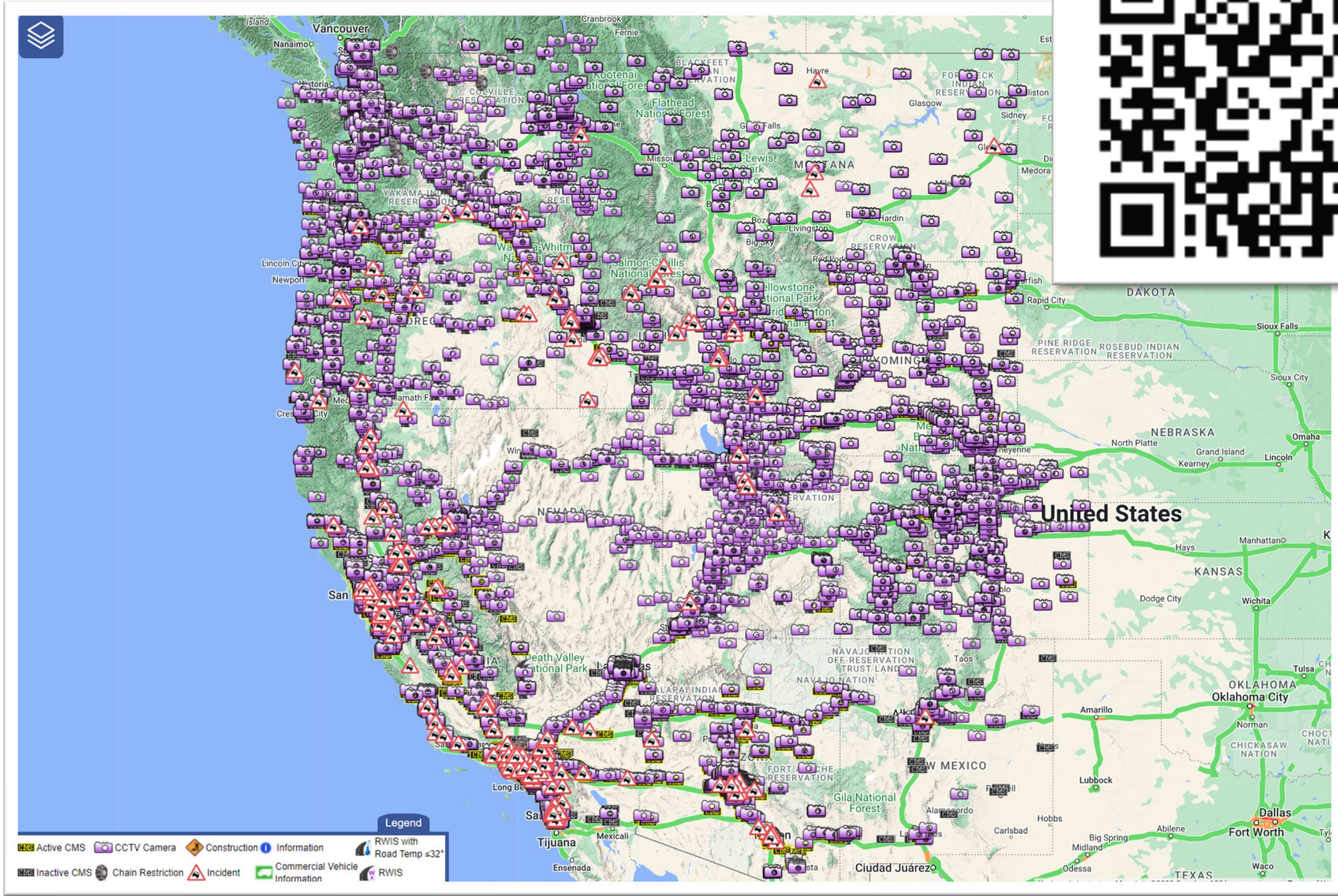
- WTI Task Order 16
- Start Date: 6/12/2025
- End Date: 6/30/2026
- Budget: \$115,172
- WSRTC Meeting Facilitation and Attendance:
 - WSF, NRITS (ITE)
 - Other meetings via teleconference as needed.
 - Western States Forum Support
 - Website Content and Maintenance
- Estimate remaining as of June 12, 2025 = \$ 115,172

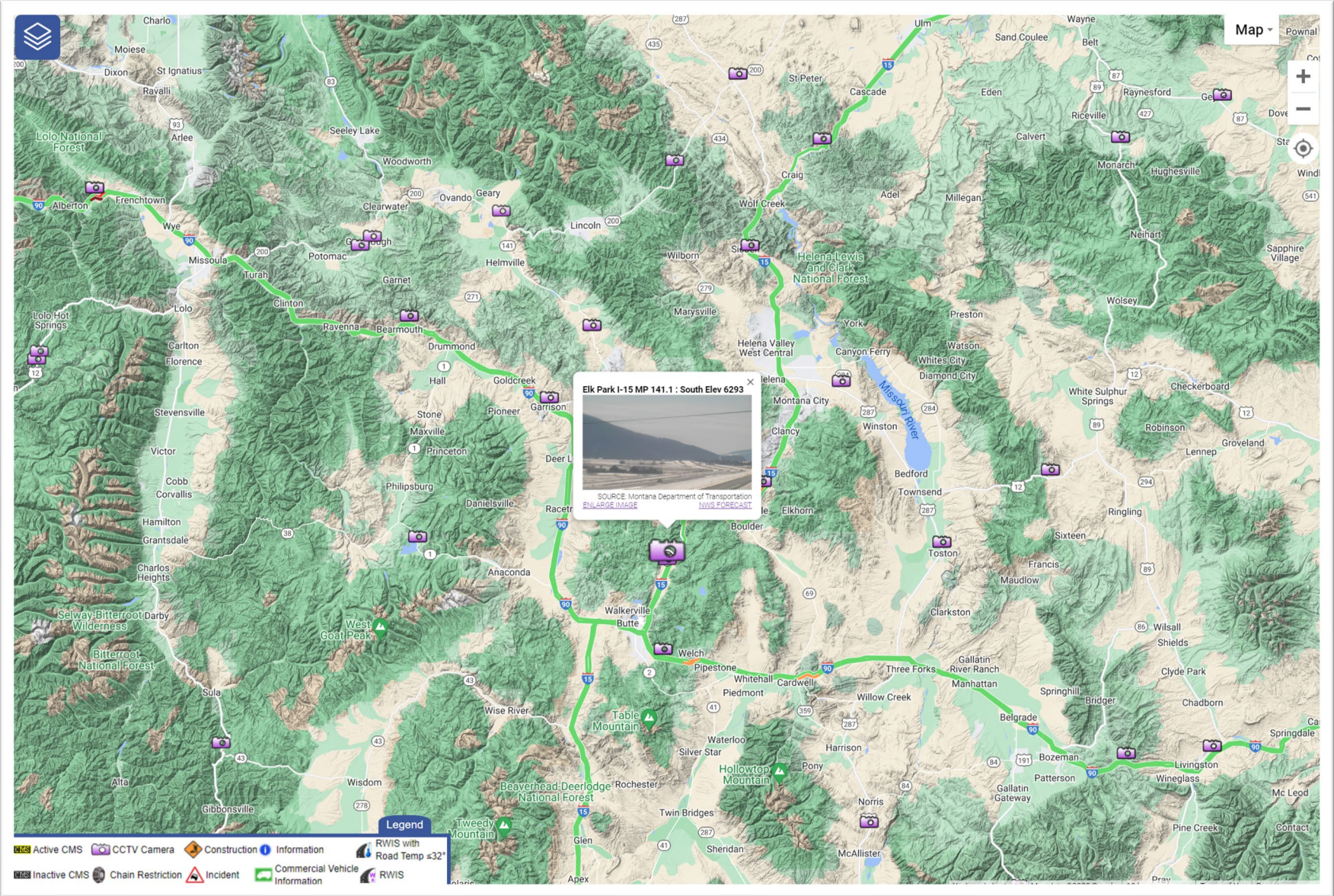
One Stop Shop

One Stop Shop

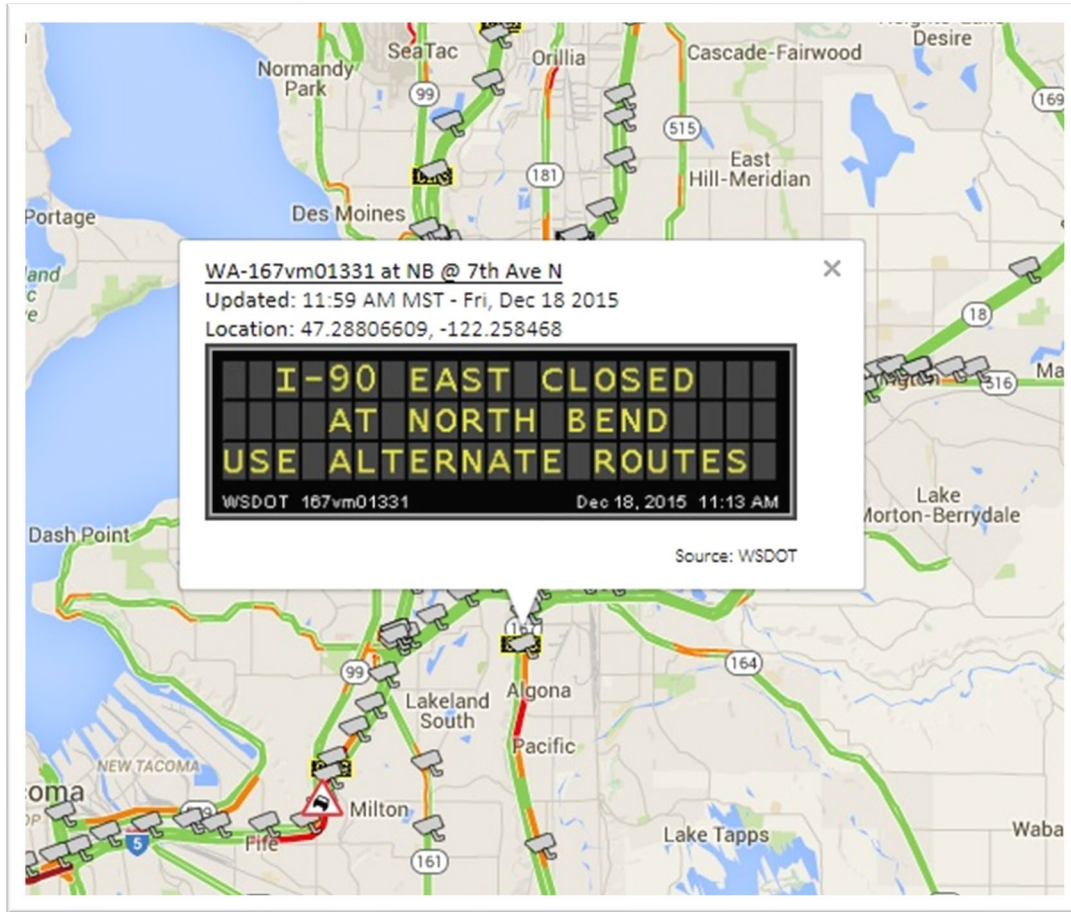
Not currently contracted, but support continues at Montana Tech.

On-going support is provided for the One-Stop-Shop (OSS) project.

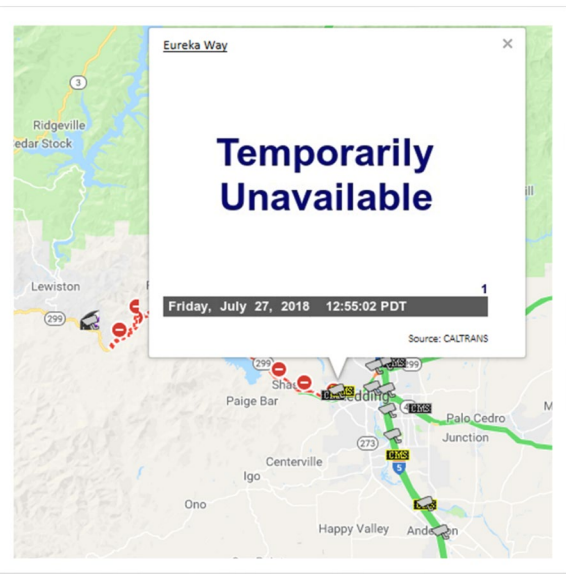
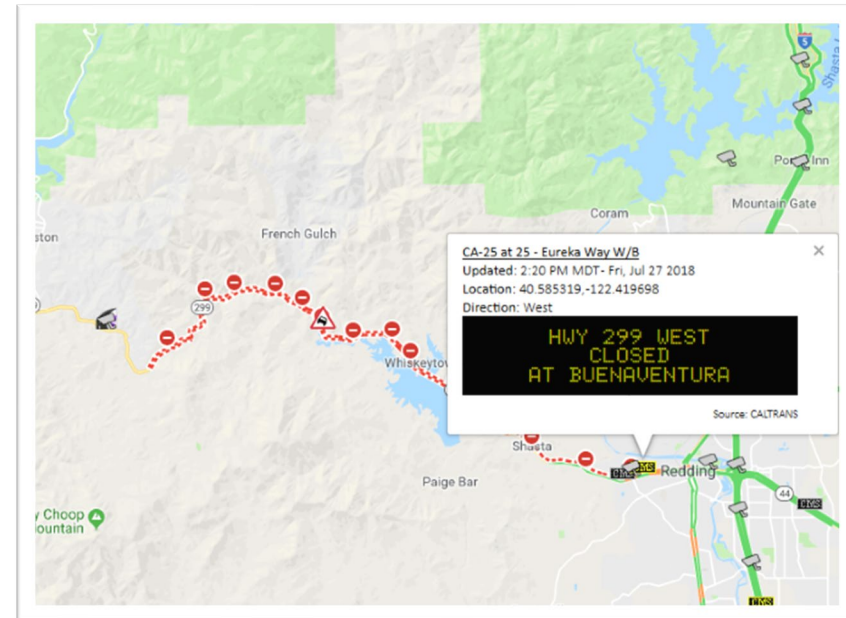
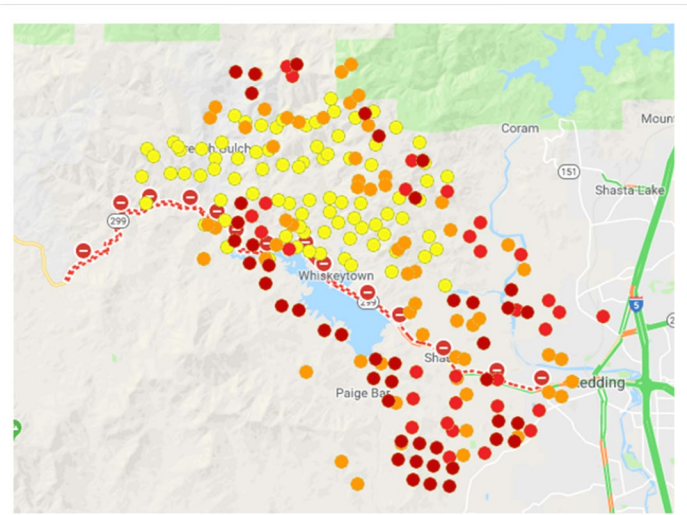




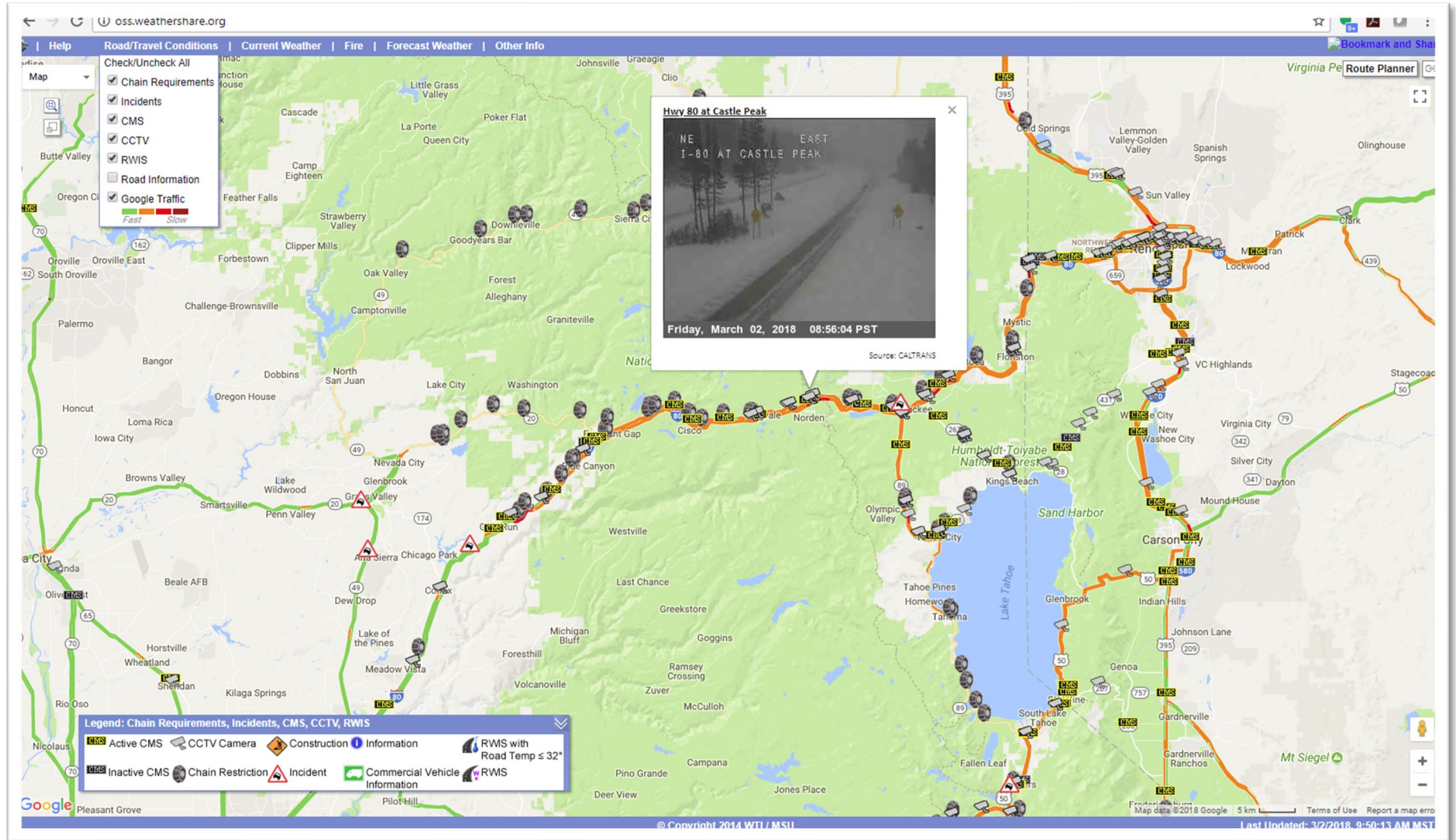
Washington Snow



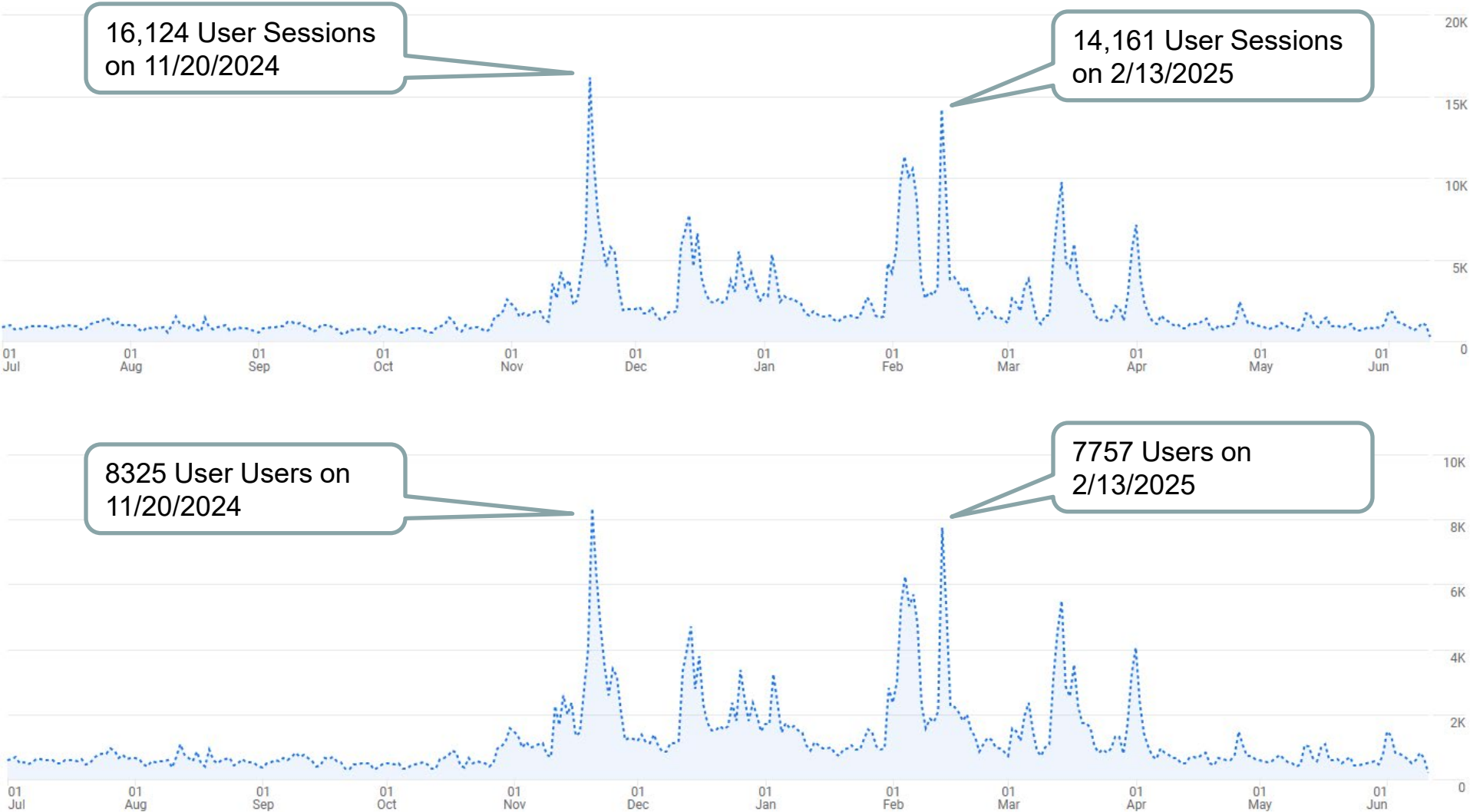
Redding Fires



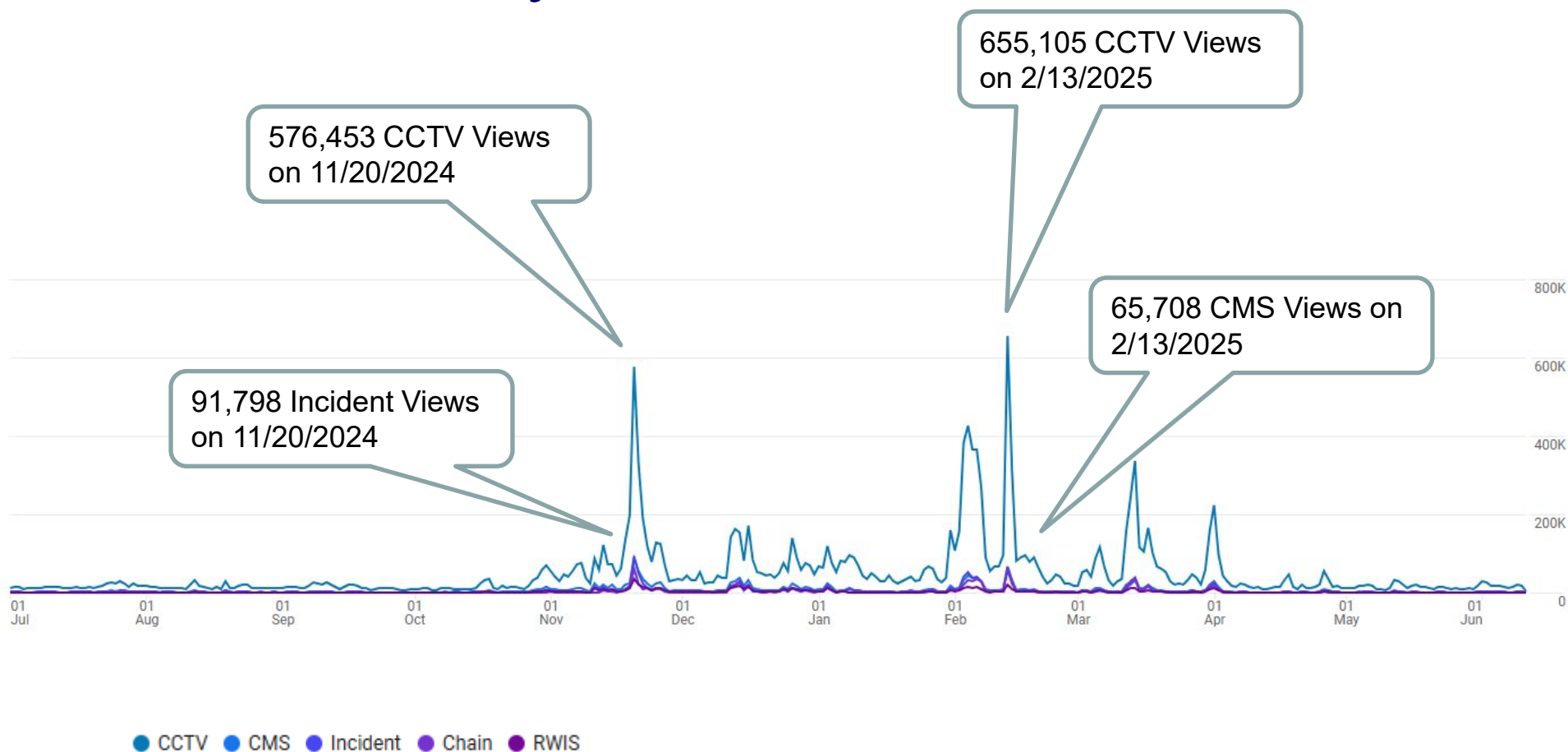
Donner Pass Snow



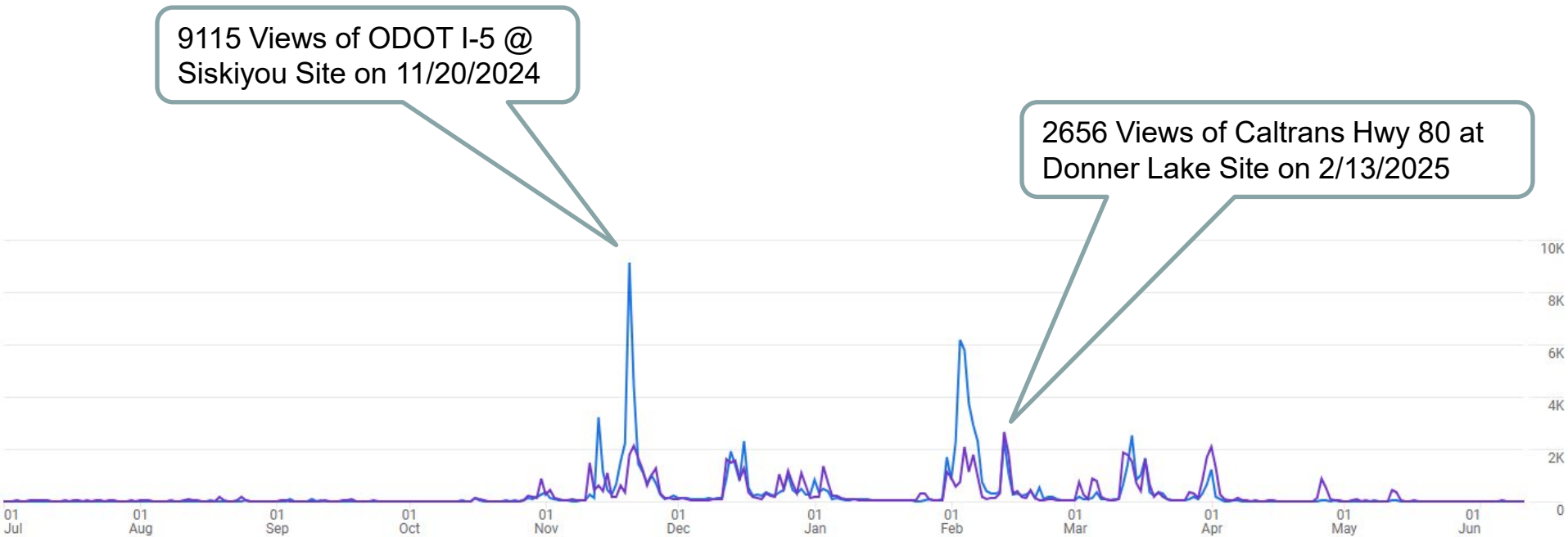
OSS Sessions and Users: July 2024 – June 2025



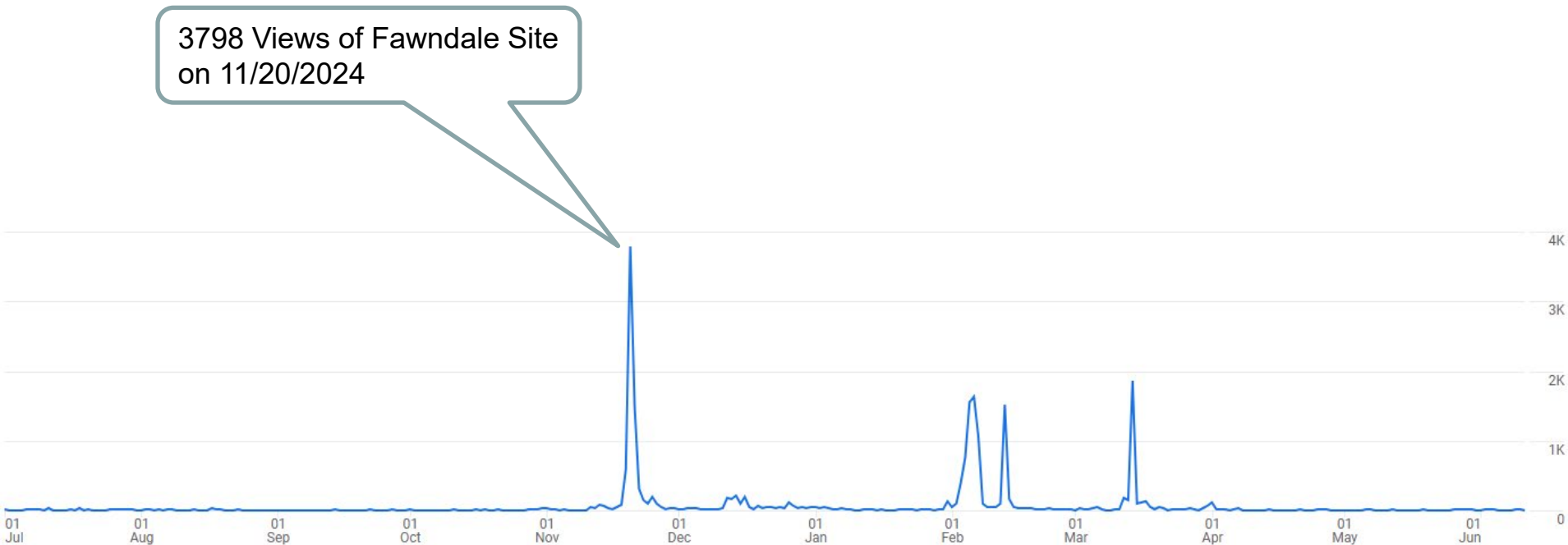
OSS Field Element Views: July 2024 – June 2025



Siskiyou and Donner Pass Views: July 2024 – June 2025



Caltrans Fawndale (Chain-up) Site Views: July 2024 – June 2025



One Stop Shop

Presentations / Outreach:

Owens, M., Galarus, D. Development of Software Routines to Read, (Pre-) Process, and Store MDT RWIS Data, presented at Techxpo, Montana Tech Student Research Conference, April 24, 2025, Montana Tech, Butte, MT. 2nd Place Winner – Two-Semester Project.

One Stop Shop

Development of Software Routines to Read, (Pre)Process, and Store MDT RWIS Data

Team Members: Maverick Owens, Dr. Douglas Galarus (Advisor), Computer Science Department

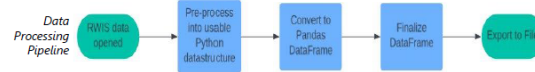
Background

The Montana Department of Transportation (MDT) has approximately 100 Road Weather Information System (RWIS) sites. These sites report critical weather information including temperatures, precipitation values, and surface conditions. This information is used to inform that traveling public about potentially dangerous road weather conditions.

Recently, the reporting method for this information changed to a new format causing a need to update retrieval and processing of this data in the One-Stop-Shop for Rural Traveler Information (OSS). This project focuses on characterizing the data and restoring its display in OSS.

Methodology

We used Python and Pandas in to extract and process RWIS data into structured data frames. GeoPandas was initially used to extract JSON data, which was then flattened into standard Pandas data frames. Site metadata, atmospheric sensor data, and surface sensor data were stored separately. Historical RWIS reports and the latest site data were archived in CSV files. Continuous feedback from our advisor helped refine the processing and results to meet project goals.



MONTANA TECHNOLOGICAL UNIVERSITY

Deliverables

- Python scripts for extraction, processing, and storage of data
- Data Dictionary document, built using Jupyter Notebooks
- Revised OSS Python Stub
- Data Visualization document, built using Jupyter Notebooks
- Final documentation

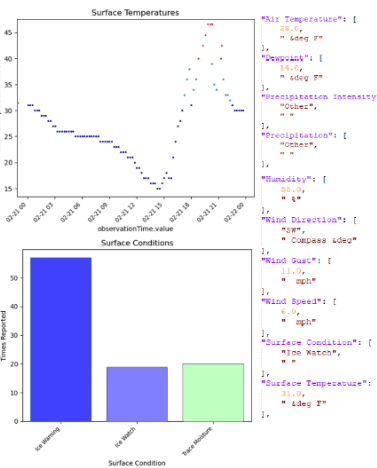
Conclusion

After data processing had been accomplished, work on data documentation followed. This produced the graphs shown to the left.

Revising the OSS stub responsible for reading the data was the next major goal and is still being refined.

Testing with the live OSS server and code has shown great results. Although fine-tuning is still being done to get the new data to properly match the front-end's requirements, we can now successfully get the new data to show on OSS.

Data from Homestake Pass on February 21st, 2025



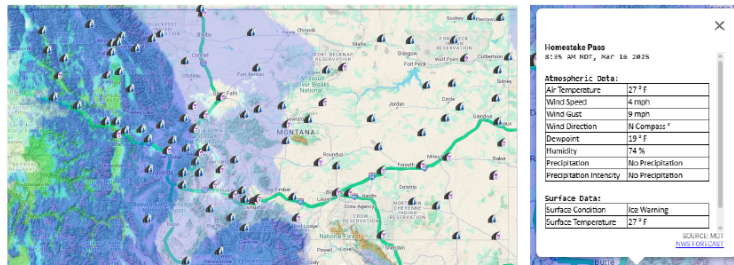
Tasks

- Read, extract, process RWIS JSON data.
- Form a data dictionary to describe RWIS data.
- Develop archive storage process CSVs for all data.
- Revise the One-Stop-Shop processing stub for production.
- Produce data visualization for individual sites and specified times.
- Produce final documentation.

Results

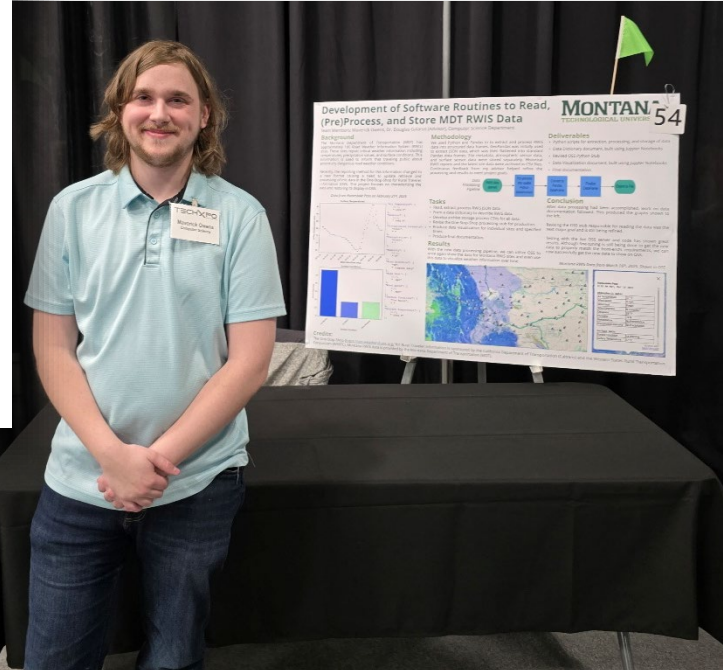
With the new data processing pipeline, we can utilize OSS to once again show the data for Montana RWIS sites and even use this data to visualize weather information over time.

Montana RWIS Data from March 16th, 2025, Shown in OSS



Credits:

The One-Stop-Shop (<https://oss.weathershare.org/>) for Rural Traveler Information is sponsored by the California Department of Transportation (Caltrans) and the Western States Rural Transportation Consortium (WSRTC). Montana RWIS data is provided by the Montana Department of Transportation (MDT).



Chain-Up Delay Tracking and Estimation

Chain-Up Delay Tracking and Estimation

- Start Date: June 1, 2023
- End Date: August 31, 2025
- Budget: \$125,000
- Montana Tech

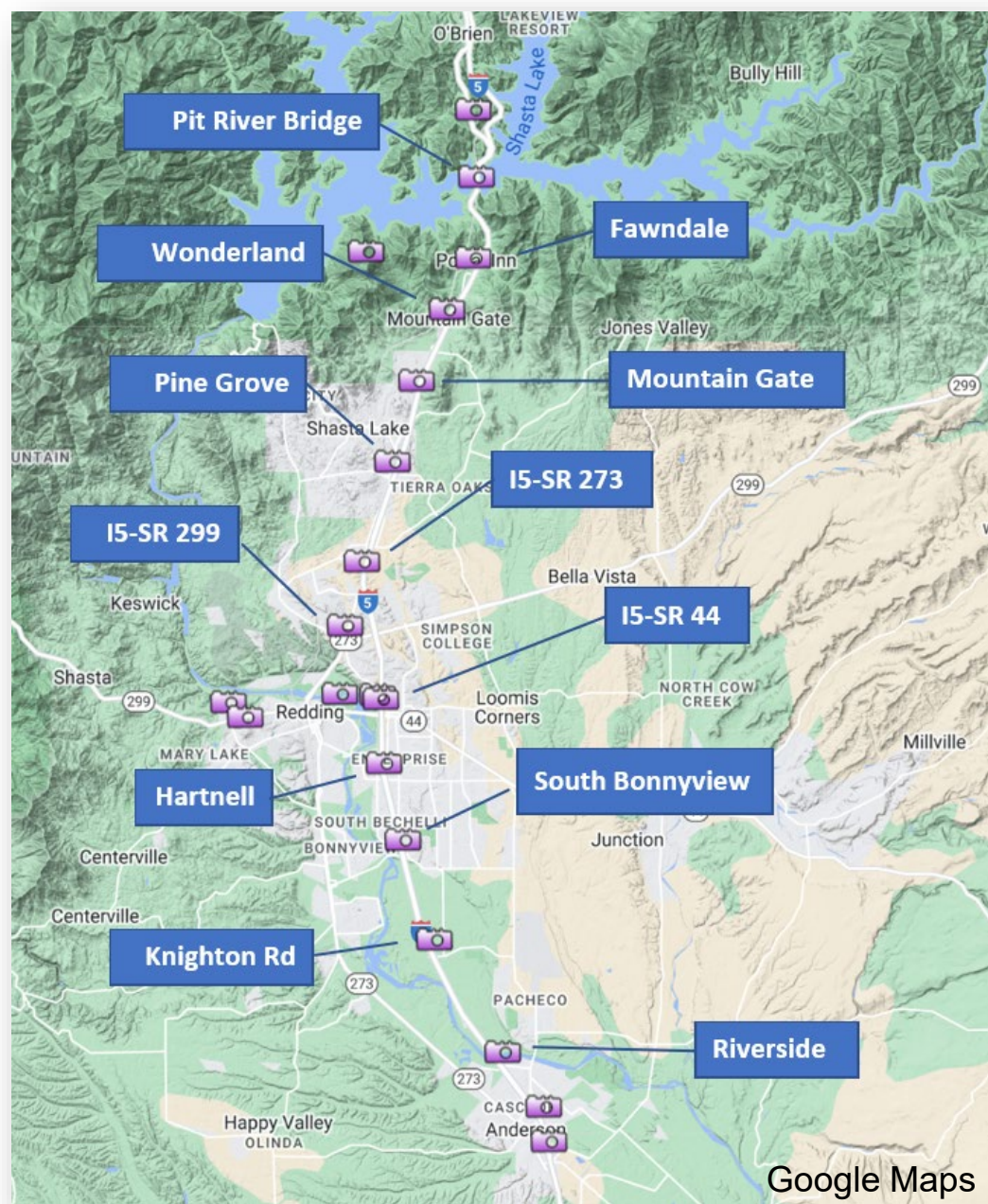
We need to discuss a no-cost time extension due to a relatively mild winter 2023-4.

The intent of this project is to use data from Caltrans-deployed Bluetooth loggers that will log time and MAC address, and to use the readings from these loggers in conjunction with chain control status and other data to develop an algorithm to estimate travel time/delay through the affected area.

Chain-Up Delay Tracking and Estimation

Map of I-5 near Fawndale

12 Sensor Locations



Chain-Up Delay Tracking and Estimation



Back-up at Fawndale – Caltrans Image

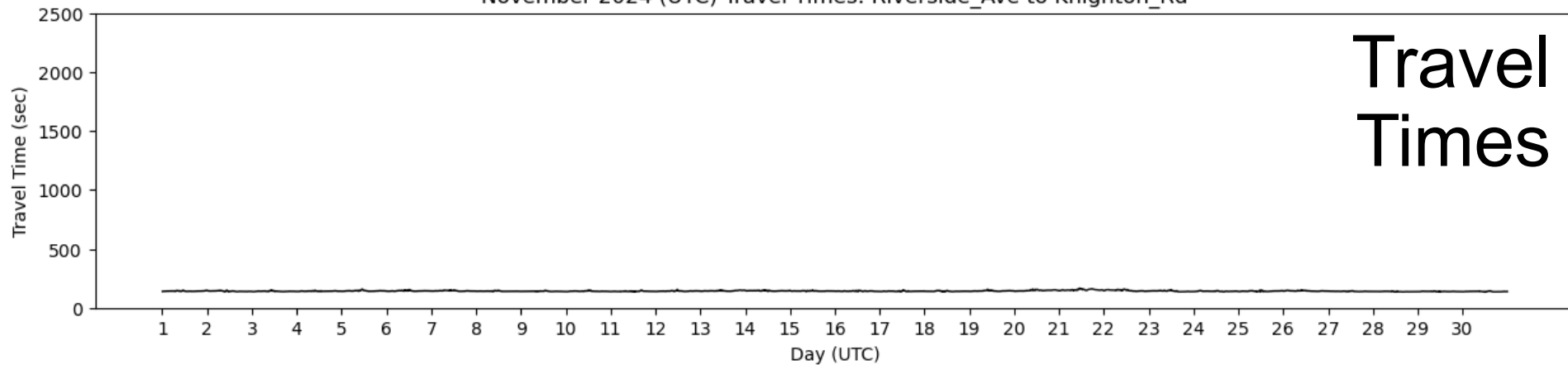


Back-up at I5-SR44 – Caltrans Image

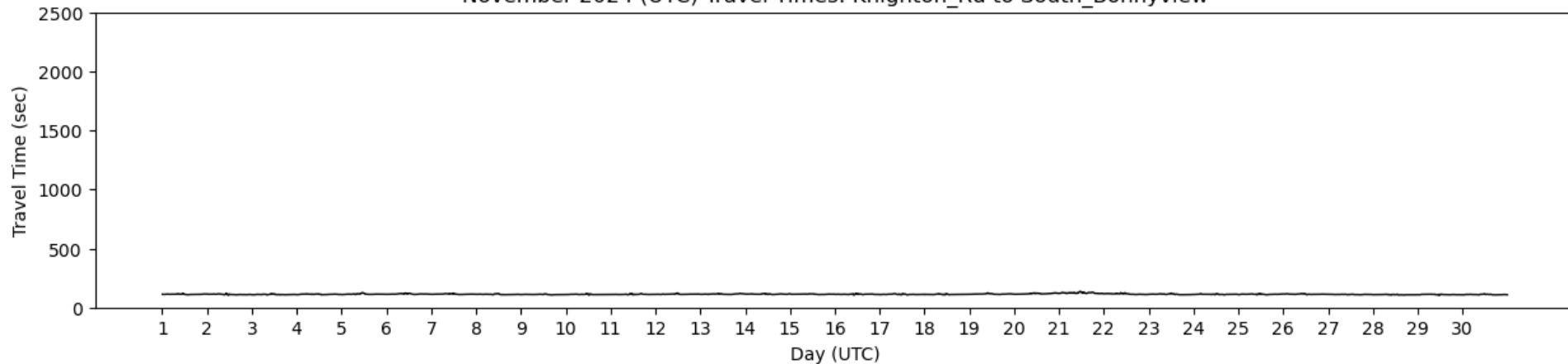
Example

Date	Time	Status	Chain Control Restriction at Fawndale
11/19/2024	3:08 PM	R-0	No chain controls are in effect at this time.
11/19/2024	3:14 PM	TS	All trucks must stop at the chain check point, Caltrans is currently screening for chains. Drivers must have maximum chains in their possession in order to proceed. Trucks without chains will be turned around. Permit loads are prohibited over the summit.
11/19/2024	6:18 PM	VS	Vehicle Screening - All vehicles will be checked to make sure they have a full set of tire chains before being allowed to travel into areas where chains will be required.
11/19/2024	8:13 PM	TH	All truck trailer combinations are being held at the chain control camper due to incidents or weather related conditions.
11/20/2024	7:03 AM	RC	Closed to traffic.
11/20/2024	7:49 PM	VM	A traffic control is in effect to meter vehicles at the chain check point in order to reduce traffic congestion in the mountain areas.
11/21/2024	3:38 AM	TS	All trucks must stop at the chain check point, Caltrans is currently screening for chains. Drivers must have maximum chains in their possession in order to proceed. Trucks without chains will be turned around. Permit loads are prohibited over the summit.
11/21/2024	8:58 AM	R-0	No chain controls are in effect at this time.

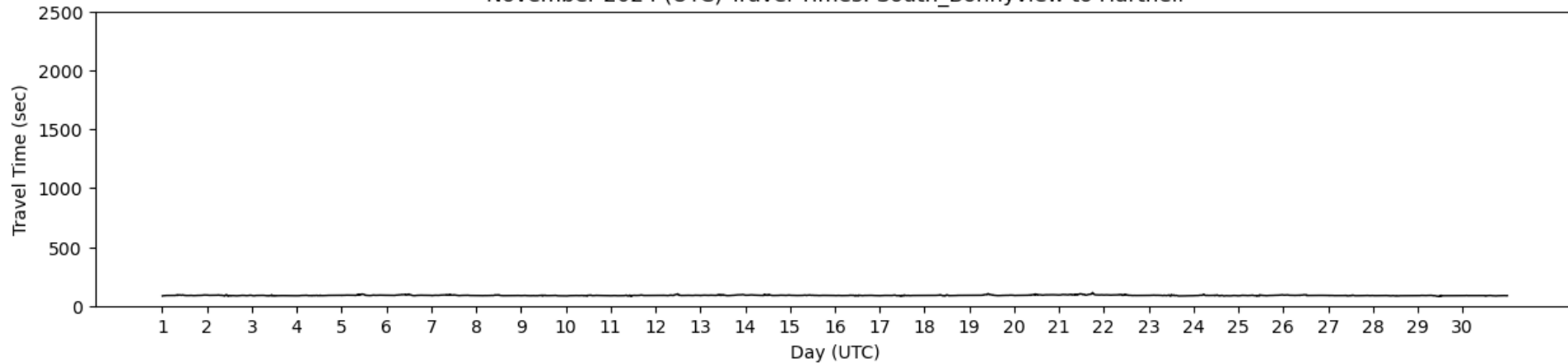
November 2024 (UTC) Travel Times: Riverside_Ave to Knighton_Rd



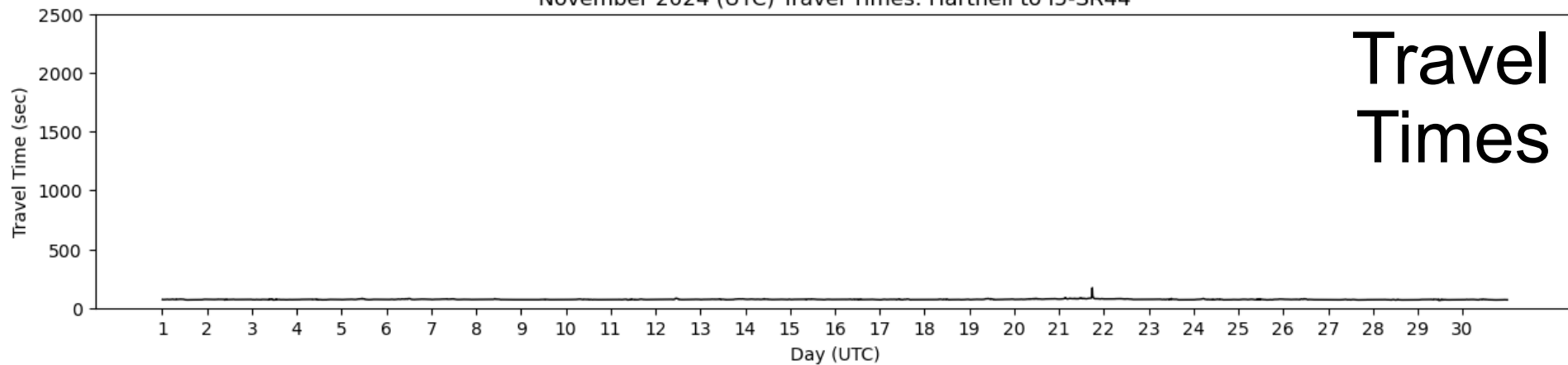
November 2024 (UTC) Travel Times: Knighton_Rd to South_Bonnyview



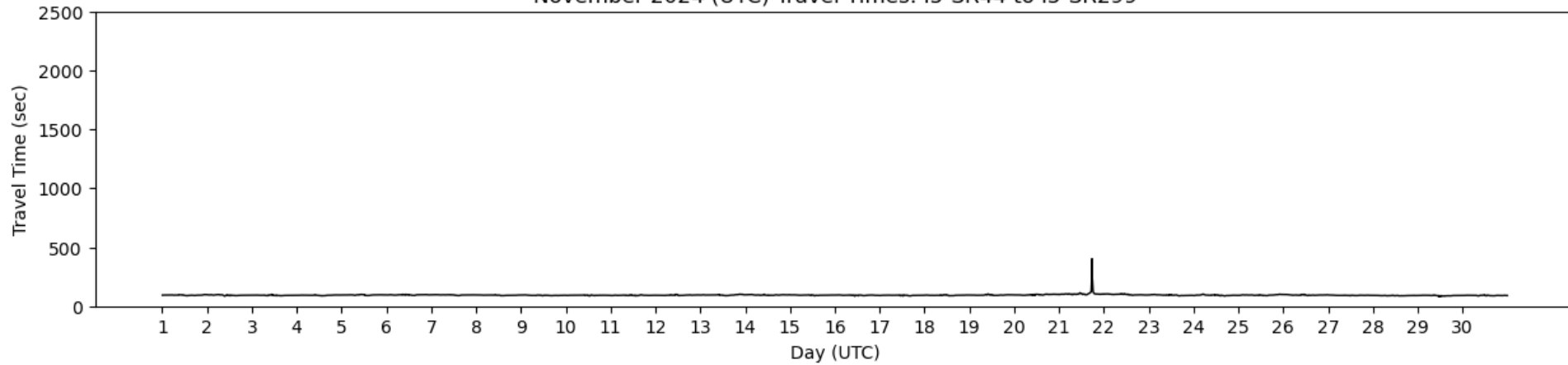
November 2024 (UTC) Travel Times: South_Bonnyview to Hartnell



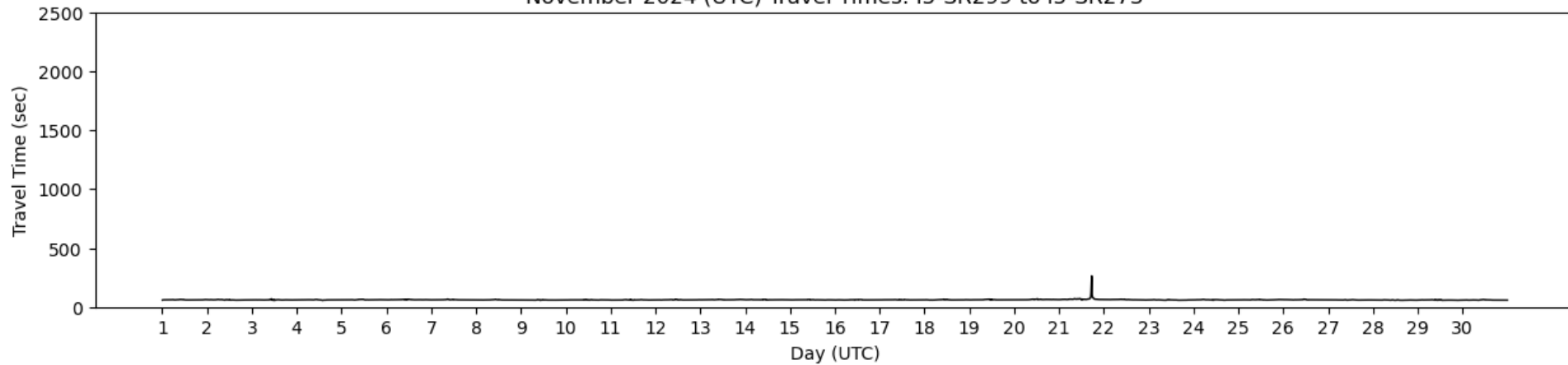
November 2024 (UTC) Travel Times: Hartnell to I5-SR44

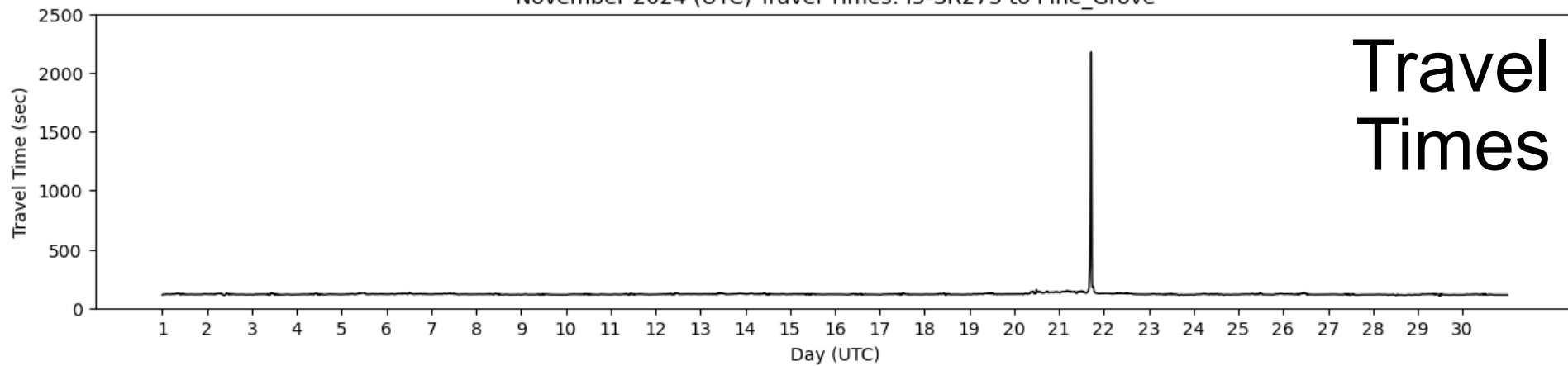


November 2024 (UTC) Travel Times: I5-SR44 to I5-SR299

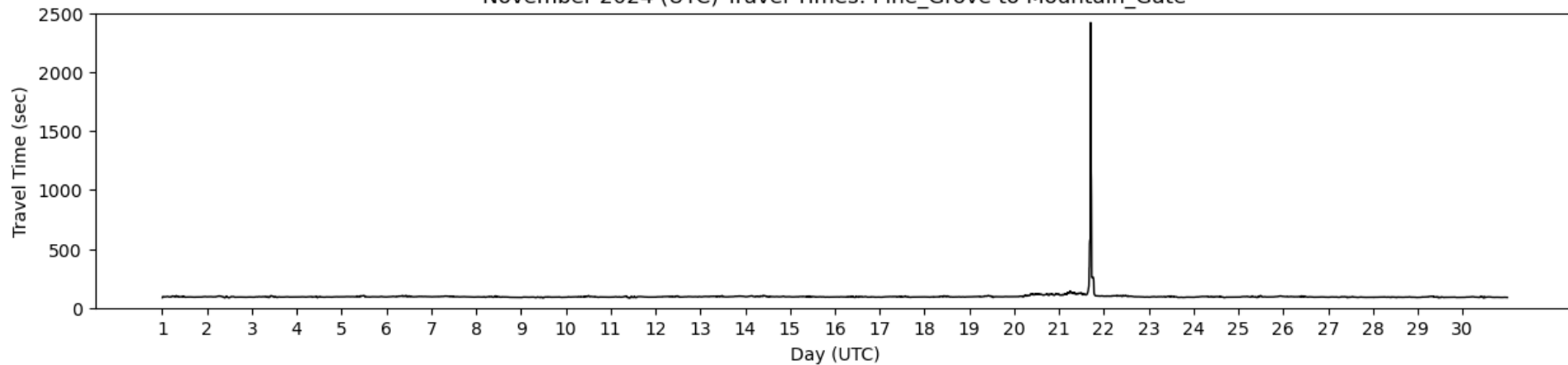


November 2024 (UTC) Travel Times: I5-SR299 to I5-SR273

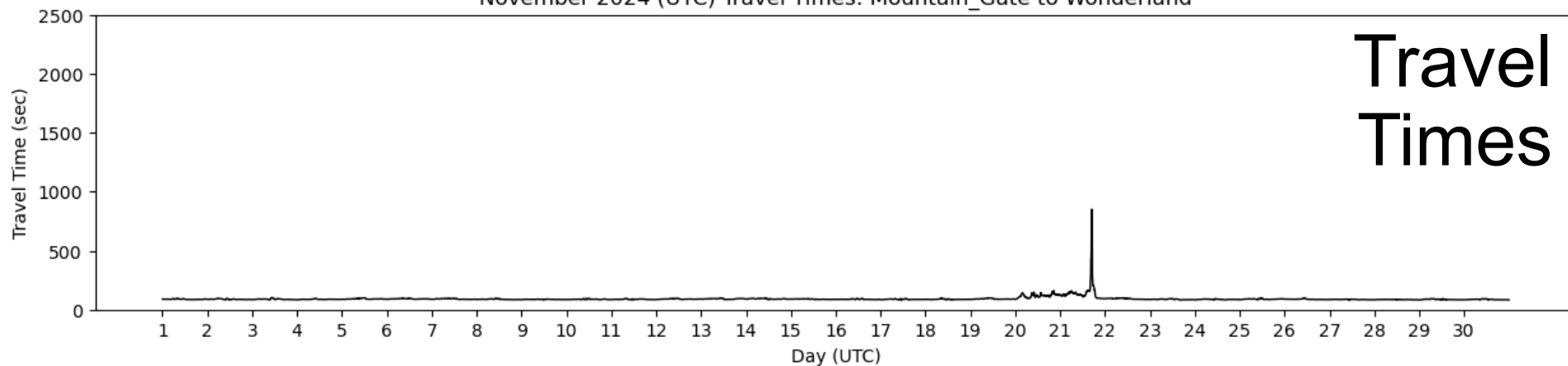




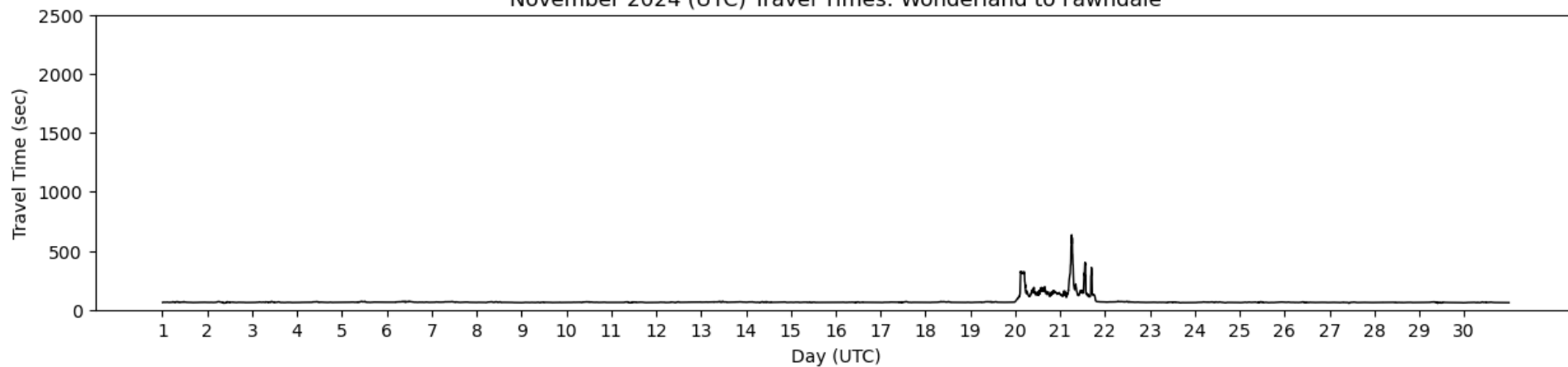
November 2024 (UTC) Travel Times: Pine_Grove to Mountain_Gate



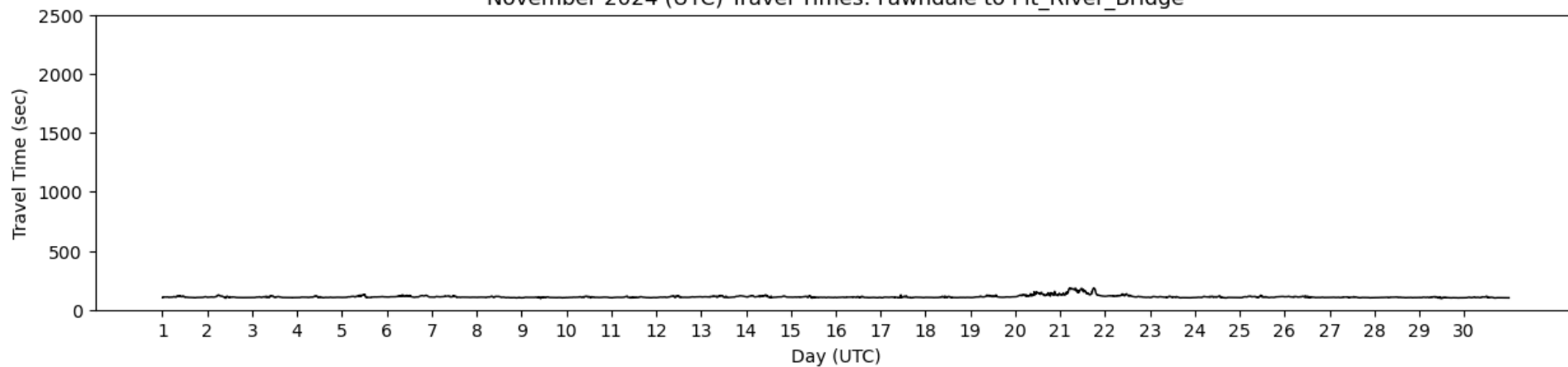
November 2024 (UTC) Travel Times: Mountain_Gate to Wonderland



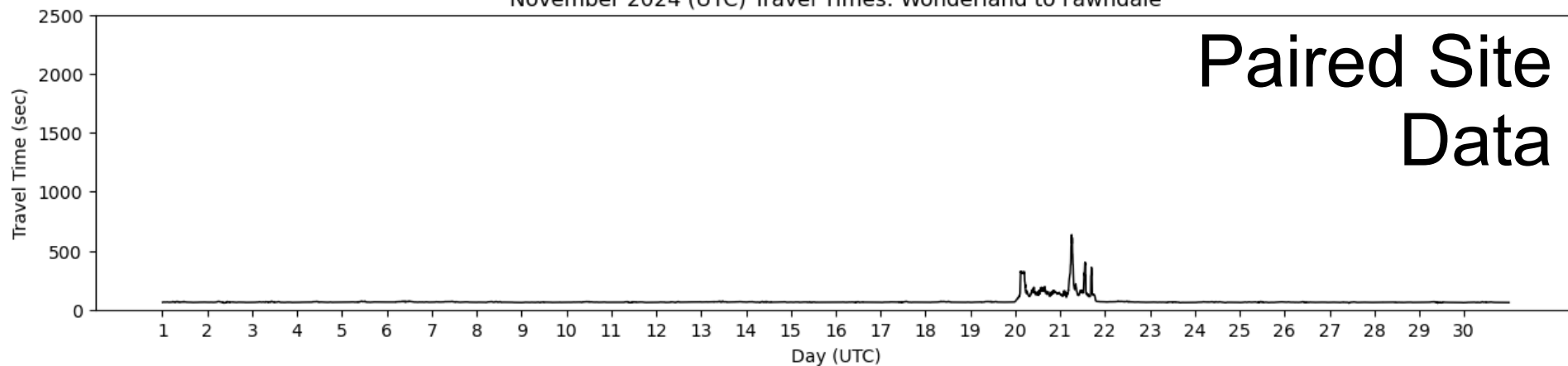
November 2024 (UTC) Travel Times: Wonderland to Fawndale



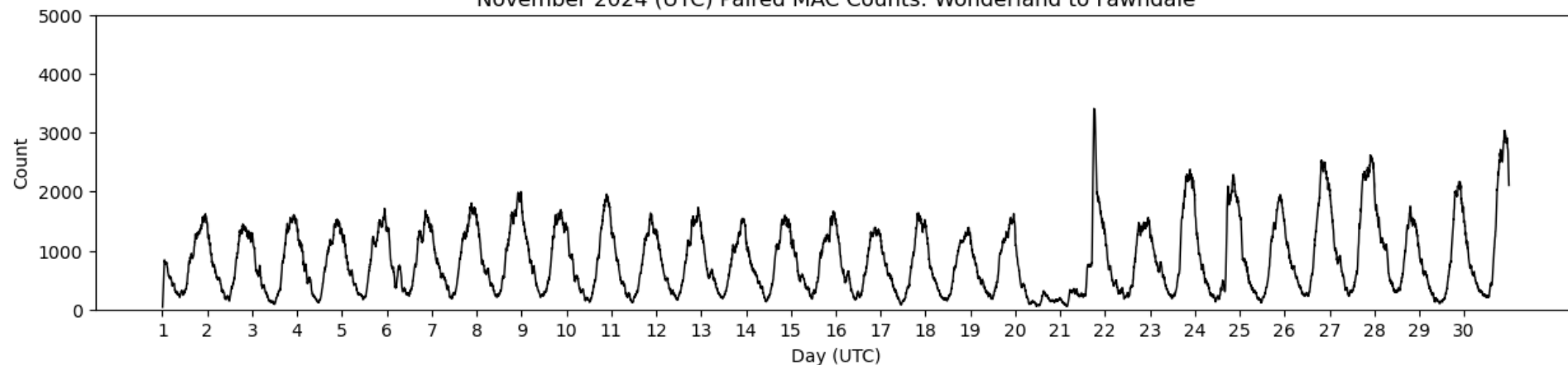
November 2024 (UTC) Travel Times: Fawndale to Pit_River_Bridge



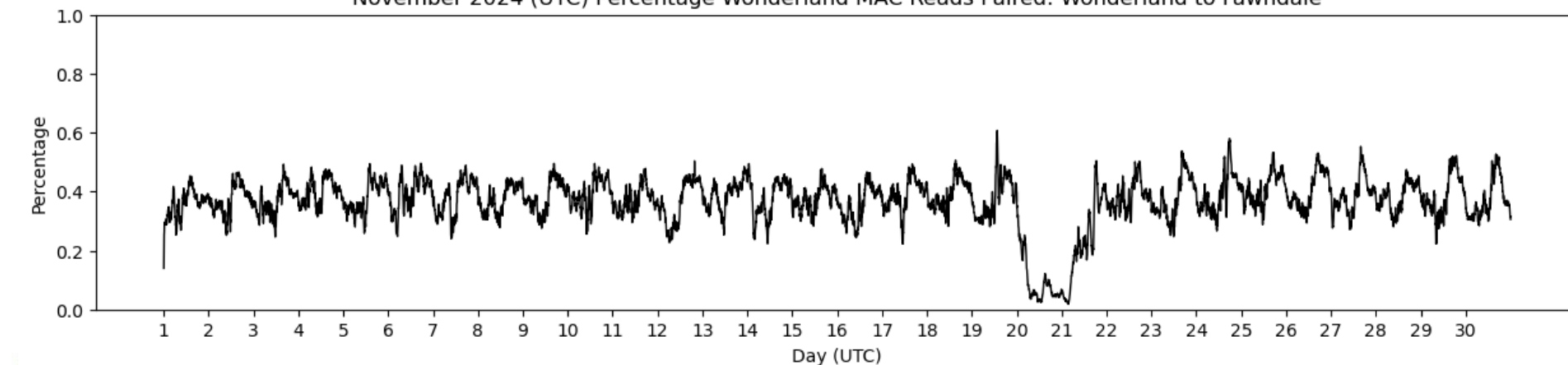
November 2024 (UTC) Travel Times: Wonderland to Fawndale



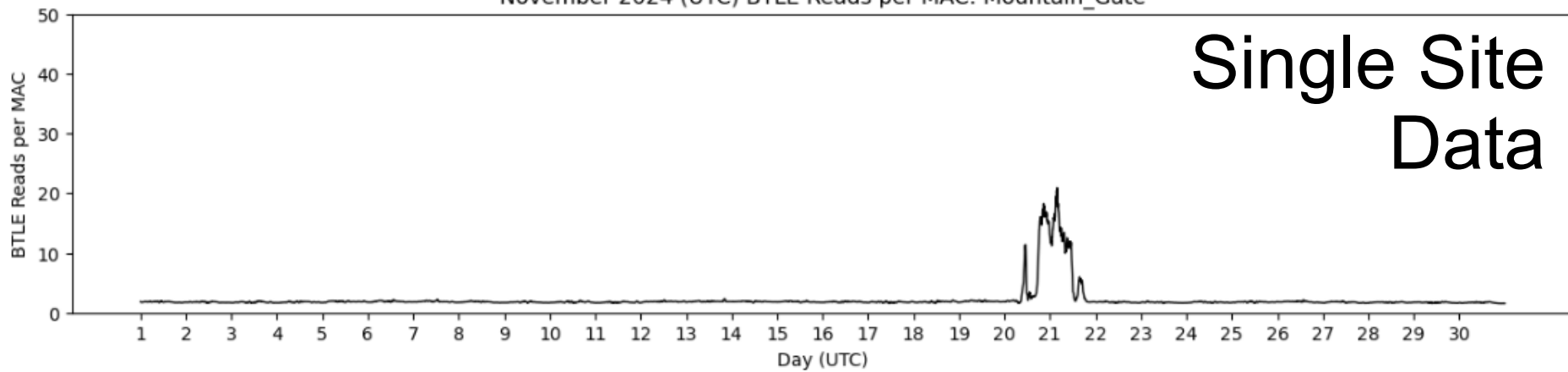
November 2024 (UTC) Paired MAC Counts: Wonderland to Fawndale



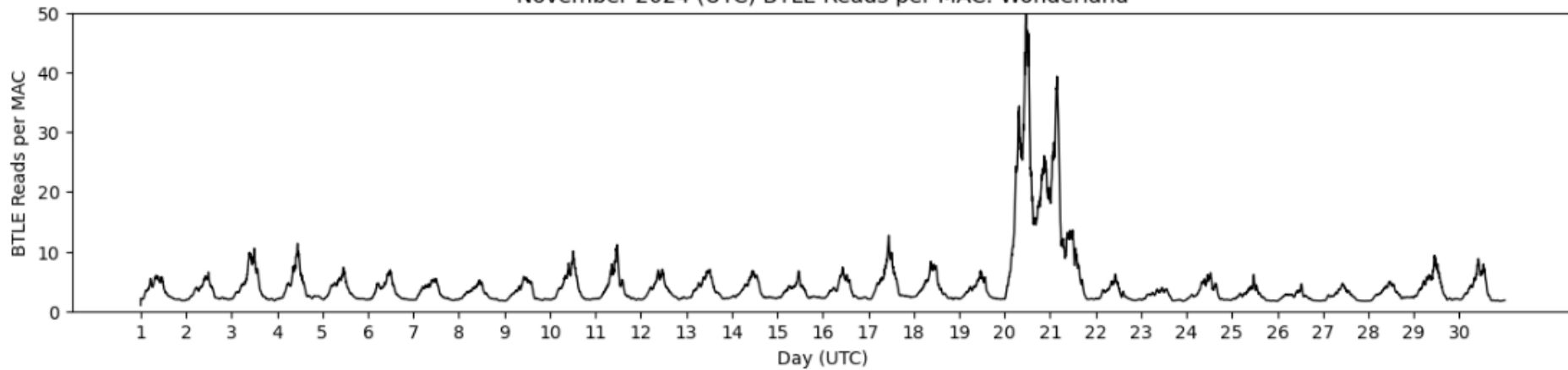
November 2024 (UTC) Percentage Wonderland MAC Reads Paired: Wonderland to Fawndale



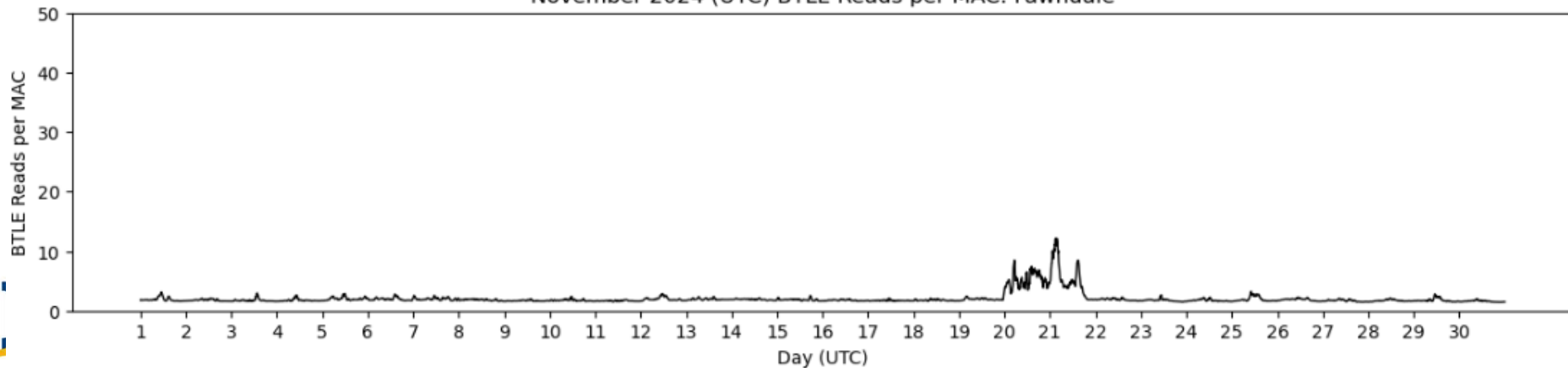
November 2024 (UTC) BTLE Reads per MAC: Mountain_Gate



November 2024 (UTC) BTLE Reads per MAC: Wonderland



November 2024 (UTC) BTLE Reads per MAC: Fawndale



Chain-Up Delay Tracking and Estimation

Presentations / Outreach:

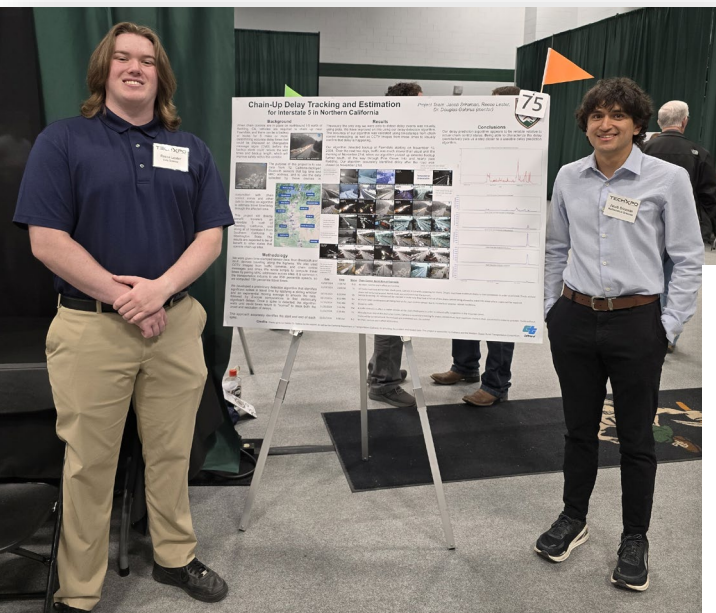
Sriraman, J., Lester, R., Galarus, D. Chain-up Delay Estimation for Interstate 5 in Northern California, presented at Techxpo, Montana Tech Student Research Conference, April 24, 2025, Montana Tech, Butte, MT.

Galarus, D. E., Pearce, J., “Estimating the Travel Delay Induced by Winter Chain-On Events”, National Rural ITS Steering Committee Webinar, July 8th, 2025. (Tentative)

Galarus, D. E., Pearce, J., “Estimating the Travel Delay Induced by Winter Chain-On Events”, to be presented at the Institute of Transportation Engineers (ITE) Annual Meeting / National Rural ITS (NRITS) Conference, Orlando, Florida, August 10-13, 2025. (Tentative)

Galarus, D. E., Pearce, J., Sriraman, J., Lester, R. Chain-Up Delay Tracking and Estimation – Progress to Date, to be presented (poster session) at the Institute of Transportation Engineers (ITE) Annual Meeting / National Rural ITS (NRITS) Conference, Orlando, Florida, August 10-13, 2025.

Chain-Up Delay Tracking and Estimation



Chain-Up Delay Tracking and Estimation for Interstate 5 in Northern California

Project Team: Jacob Sriraman, Reese Lester,
Dr. Douglas Galarus (mentor)



Background

When chain controls are in place on northbound I-5 north of Redding, CA, vehicles are required to chain up near Fawndale, and there can be a backup of trucks for 5 miles or more. Determining accurate delay times that could be displayed on changeable message signs (CMS) before the backup starts could reduce the wait times and backup length, which will improve safety within this corridor.



The purpose of this project is to use data from 12 Caltrans-deployed Bluetooth sensors that log time and MAC address, and to use the data collected by these devices in

conjunction with chain control status and other data to develop an algorithm to estimate travel time/delay through the affected area.

This project will directly benefit travelers on Interstate 5 north of Redding, California, and along all of Interstate 5 from Southern California to Washington State. The results are expected to be of benefit to other states that operate chain-up sites.



Methodology

We were given time-stamped sensor data from Bluetooth and Wi-Fi devices traveling along the highway. We also used CCTV images from traffic cameras, and chain control messages and times. We wrote scripts to compute travel times by pairing MAC addresses across sites. It is common in the transportation industry to use 85th percentile speeds, so we computed 15th percentile travel times.

We developed a preliminary detection algorithm that identifies significant spikes in travel time by applying a sliding window and an exponential moving average to smooth the data, followed by Z-score computations to find statistically significant delays. Once a spike is detected, the algorithm waits until travel times return to "normal" to track both the onset and resolution of delays.

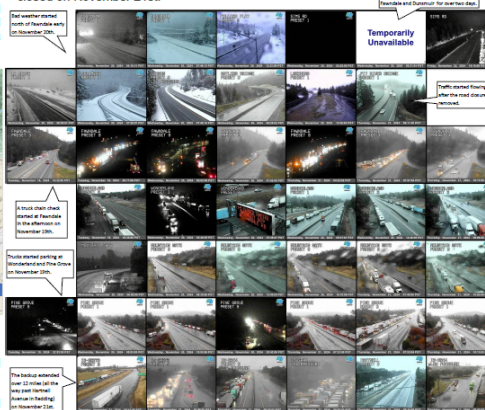
This approach accurately identifies the start and end of each spike.

Credits: Thanks go to our mentor Dr. Galarus for his support, as well as the California Department of Transportation (Caltrans) for providing the problem and related data. This project is sponsored by Caltrans and the Western States Rural Transportation Consortium.

Results

Previously the only way we were able to detect delay events was visually, using plots. We have improved on this using our delay-detection algorithm. The accuracy of our algorithm was validated using timestamps from chain control messaging, as well as CCTV images from those times to visually confirm that delay is happening.

Our algorithm detected backup at Fawndale starting on November 19, 2024. Over the next two days, traffic was much slower than usual until the morning of November 21st, when our algorithm picked up extreme backup further south, all the way through Pine Grove, into and nearly past Redding. Our algorithm accurately identified delay after the road was closed on November 21st.



Conclusions

Our delay prediction algorithm appears to be reliable relative to actual chain control status. Being able to characterize the delay quantitatively puts us a step closer to a useable delay prediction algorithm.



Date	Time	Status	Chain Control Restriction at Fawndale
11/19/2024	3:08 PM	R-O	No chain controls are in effect at this time.
11/19/2024	3:14 PM	TS	All trucks must stop at the chain check point, Caltrans is currently screening for chains. Drivers must have maximum chains in their possession in order to proceed. Trucks without chains will be turned around. Permit loads are prohibited over the summit.
11/19/2024	6:18 PM	VS	Vehicle Screening - All vehicles will be checked to make sure they have a full set of fire chains before being allowed to travel into areas where chains will be required.
11/19/2024	8:13 PM	TH	All truck trailer combinations are being held at the chain control camper due to incidents or weather related conditions.
11/20/2024	7:03 AM	RC	Closed to traffic.
11/20/2024	7:49 PM	VM	A traffic control is in effect to meter vehicles at the chain check point in order to reduce traffic congestion in the mountain areas.
11/21/2024	3:38 AM	TS	All trucks must stop at the chain check point, Caltrans is currently screening for chains. Drivers must have maximum chains in their possession in order to proceed. Trucks without chains will be turned around. Permit loads are prohibited over the summit.
11/21/2024	8:58 AM	R-O	No chain controls are in effect at this time.



WeatherShare Maintenance

WeatherShare Maintenance

- Start Date: ~~January 2022~~ June 1, 2024
- End Date: January 28, 2027
- Budget: \$100,000
- Montana Tech

On-going support will be provided for the WeatherShare project.

WeatherShare Maintenance

Project Goals

This project focuses on maintaining WeatherShare as the central repository for Caltrans RWIS data and weather information.

Mission-critical roadway data, such as surface temperature and condition (dry, wet, icy, etc.), are sourced from over 150 Road Weather Information Stations (RWIS). Additional weather data is retrieved from approximately 2,000 third-party weather stations. Caltrans maintenance and operations personnel have access to real-time and historical weather information that will help them better manage roadways, apply treatments and handle weather-related incidents.

This platform of weather observations and forecasts with near real-time road sensor data will allow Caltrans crews to make the best-possible decisions both for maintenance operations and incident response.

WeatherShare Maintenance

WeatherShare Features

- Repository for current and historical RWIS data.
- Leveraged resources (more than 2,000 weather stations in addition to 150 Caltrans RWIS stations).
- Integrated alert capability.
- Scalable, interactive elements for map, tabular and graph display.
- An easy-to-maintain, cost-effective product powered by an open-source platform.

WeatherShare Maintenance

Current Conditions: Spring Garden

RWIS Timestamp: 04/01/2014 06:40:03 AM

Temperature

Air	30.20 °F
Wet Bulb	28.94 °F
Dewpoint	26.96 °F
24-hr Max	41.36 °F
24-hr Min	30.02 °F

Wind

Situation	
Avg	0 mph from 30°
Spot	0 mph from 3°
Max	0 mph

Precipitation

Y/N	NO
Situation	noPrecipitation
Rate	0 in/hr
1 hr	0 in
3 hr	0 in
6 hr	0.012 in
12 hr	3.413 in
24 hr	4.689 in
Start	4/1/2014 01:49
End	4/1/2014 01:50

Visibility

Visibility	
Visibility Situation	other

Other

Relative Humidity	88%
Water Depth	



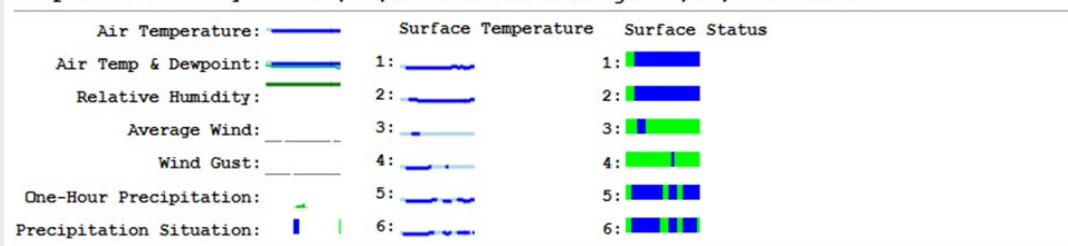
CCTV Timestamp: 04/01/2014 06:39:10

Near: Quincy
 Longitude: -120.8184°
 Latitude: 39.91438°
 Elevation: 3813 ft
 Direction: West
 County: Plumas
 Route: SR-70
 Milepost: 131.351

Surface Sensors

Sensor #	1	2	3	4	5	6
Surface Status	iceWatch	iceWatch	wet	wet	iceWatch	wet
Surface Temperature	31.64 °F	31.64 °F	33.08 °F	32.54 °F	31.82 °F	32.00 °F
Pavement Temperature						
Surface Water Depth						
Surface Salinity						
Surface Freeze Point						
Surface Black Ice Signal	other	other	other	other	other	other

Graphical Summary for 04/01/2014 00:00 through 04/01/2014 06:39



WeatherShare Maintenance

Presentations / Outreach:

Good, D., Gutierrez, S., Pflug, S., Galarus, D. Software Engineering, Re-Design and Re-Development of the WeatherShare RWIS Subsystem, presented at Techxpo, Montana Tech Student Research Conference, April 24, 2025, Montana Tech, Butte, MT.

WeatherShare Maintenance

Software Engineering, Re-Design and Re-Development of the WeatherShare RWIS Subsystem

Project Team: Dylan Good, Seth Gutierrez, Sequoia Pflug

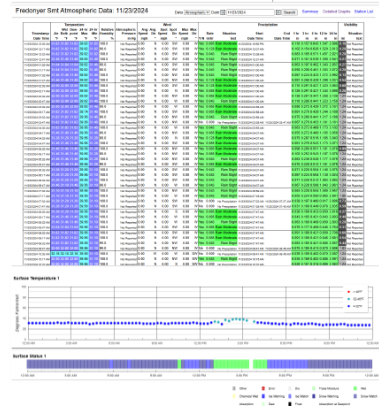
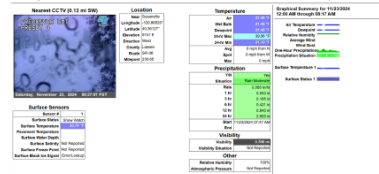
Advisor: Dr. Douglas Galarus

Background

WeatherShare is the principal repository for the storage and viewing of California Department of Transportation (Caltrans) Road Weather Information System (RWIS) data. It is used by Caltrans personnel for road management in the Winter. It uses a map-based tabular interface to display RWIS sensor data.

WeatherShare can be accessed at <http://www.weathershare.org/>

Current Conditions: Freeway 580
Timestamp: 11/23/2024 08:17 AM



Project Scope

Our project focused on redesign. The current system relies on heavily intertwined and complex features. This design makes the system difficult to maintain and modify. Our aim has been to rectify this issue for the WeatherShare subsystem that processes RWIS data.

Our redesign focused on updating the system as simply as possible while implementing modern Python constructs to make the code more readable. The updated subsystem must replace current components in place. I.e., the new data processing subsystem must use the same inputs and produce the same outputs as the current subsystem.

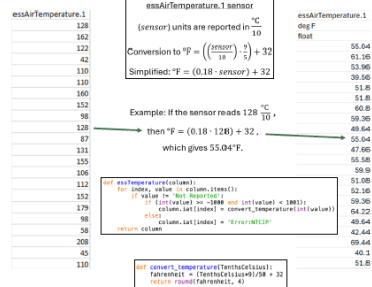
Redesign Process

We began our redesign with planning and documentation. We revised existing system documents to reflect anticipated changes. This involved editing and revision, and creation of new documents and diagrams. We then moved on to implementation.

The system uses several types of functions to handle and process the RWIS data:

- metadata handling,
- temperature, wind speed and direction, humidity, precipitation, and other condition conversions.

We implemented new functions within the data processing subsystem, replacing the old code.

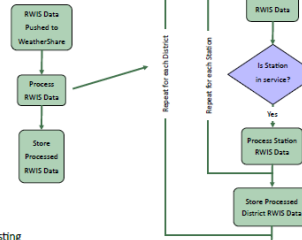


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Results

System:

The RWIS Subsystem will be redesigned utilizing modern Python constructs to make managing and maintaining it easier.



Testing:

System Testing

- A Python script was used to compare the output files of the new scripts to the corresponding files created by the current system.
- Some files from each district were selected for a direct visual comparison.

Integration Testing

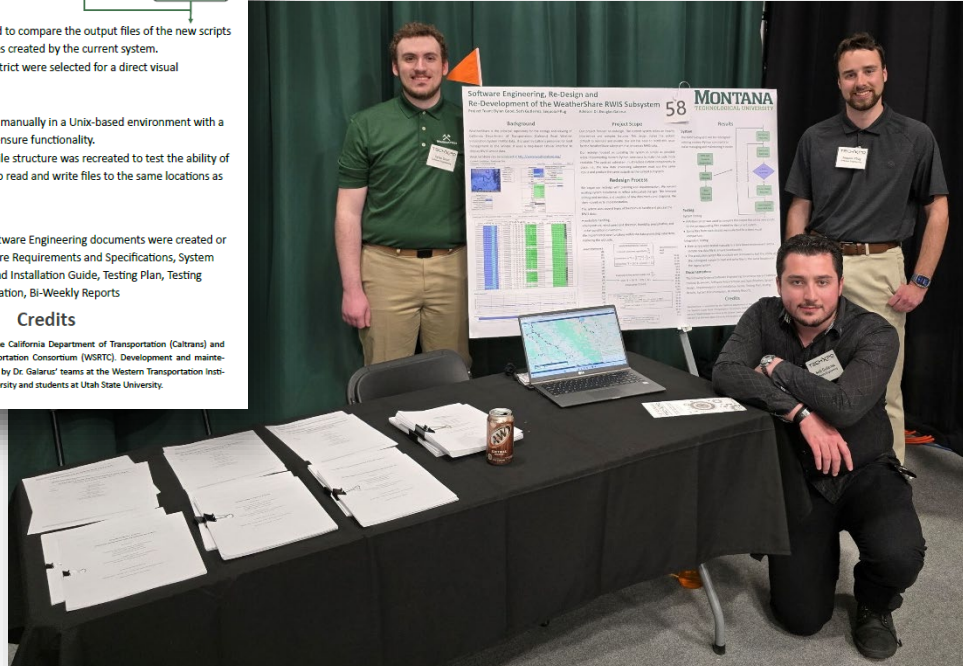
- New scripts were tested manually in a Unix-based environment with a sample raw data file to ensure functionality.
- The production system file structure was recreated to test the ability of the redesigned system to read and write files to the same locations as the legacy system.

Documentation:

The following Systems/Software Engineering documents were created or revised: Strawman, Software Requirements and Specifications, System Design, Implementation and Installation Guide, Testing Plan, Testing Results, System Documentation, Bi-Weekly Reports

Credits

WeatherShare is sponsored by the California Department of Transportation (Caltrans) and the Western States Rural Transportation Consortium (WSRTC). Development and maintenance of WeatherShare was done by Dr. Galarus' teams at the Western Transportation Institute (WTI) at Montana State University and students at Utah State University.



Evaluation of the Fotokite Tethered Unmanned Aerial System for DOT Operations in Network-Deprived Areas

- Start Date: 2/1/2023
- End Date: 6/30/2025
- Budget: \$399,994
- AHMCT Research Center
 - Department of Mechanical & Aerospace Engineering
 - University of California – Davis
 - Iman Soltani, Anh Duong
- Washington State DOT
 - Michael Southwick, Technical Contact

Evaluation of the Fotokite Tethered Unmanned Aerial System for DOT Operations in Network-Deprived Areas

Goals and Objectives

The Advanced Highway Maintenance and Construction Technology (AHMCT) Research Center proposes to procure and evaluate Fotokite UASs for DOT operations in network-deprived areas. This effort will be a partnership between WSDOT, the California Department of Transportation (Caltrans), and the AHMCT Research Center. There will be two main phases for the research. The first phase will be procurement, which will be completed by the end of fiscal year 1. The second phase will be documentation of system setup, field trials by WSDOT and Caltrans including support and observation by AHMCT, and final evaluation and documentation.

Connected Vehicle Highway Grip Factor Reporting for Snowplows, Phase 1

- Start Date: 2/26/2025
- End Date: 4/10/2026
- Budget: \$128,775
- Western Transportation Institute
 - Montana State University
 - PI: Leann Koon
 - Sub to Iowa State, David Veneziano
- Project Customer: Jeremiah Pearce, Caltrans District 2

Connected Vehicle Highway Grip Factor Reporting for Snowplows

- **Purpose:** To deploy and evaluate Advanced Safety Warning System Controllers (ASWSC) with connected vehicles in District 2. ASWSC will be installed at RWIS stations in remote mountainous areas for real-time surface condition monitoring. OBUs will be placed in maintenance vehicles and snowplows. The project aims to assess the effectiveness in winter-impacted rural regions. (*Caltrans Research Request Form*)
- **Need:** Real-time highway surface condition data is essential for D2 Maintenance staff to optimize road treatment during inclement weather, reducing costs and improving safety. By leveraging RWIS station data and communication systems, Caltrans aims to enhance treatment effectiveness and minimize expenses. (*Caltrans Research Request Form*)

Connected Vehicle Highway Grip Factor Reporting for Snowplows

- **Goals and Objectives**

1. Characterize, evaluate, and document the state of the practice for winter maintenance decision making practices within Caltrans and other state departments of transportation.
2. Compare and analyze data from virtual RWIS networks with permanent RWIS stations to enhance weather data situational awareness.
3. Develop the framework necessary for evaluation of the data and system in a subsequent field deployment phase.

- **Deliverables**

- Literature review
- Surveys (2) of winter maintenance decision making processes
- State of the Practice Summary Report
- Evaluation of a Virtual RWIS for use in road weather management
- Framework for system evaluation

Vehicle Detection on Rural Roads Using Optical Fiber Sensing Technology

- Start Date: July 2024
- End Date: June 2026
- Budget: \$350,000
- AHMCT at UC Davis
- PI: Iman Soltani
- Project Customer: Jeremiah Pearce, Caltrans District 2

Vehicle Detection on Rural Roads Using Optical Fiber Sensing Technology

What is the goal?

An alternative detection system technology that can be deployed using existing infrastructure and requires little-to-no Construction resources. The optical fiber vehicle detection system data may be used for rural travel time messages, queue warning messages, and vehicle count statistics.
(Caltrans Research Notes)

Vehicle Detection on Rural Roads Using Optical Fiber Sensing Technology

What will be done?

We will procure, install, and operate an optical fiber vehicle detection system on I-5 near Redding. Once deployed, we will ground truth and make fine-tuned adjustments to improve the accuracy of the system during the project. We intend to develop this system so it will be usable with other optical fiber infrastructure statewide, including Broadband Middle Mile network infrastructure. We will also document this system's design, installation, integration, operation, and maintenance processes. (*Caltrans Research Notes*)

How-To Handbook/Manual for the Western States Forum

- Updated annually
- Practical, how-to guide for planning and executing the Western States Forum
- “...intended to document the Forum in such a way that the event and its standard of excellence can be easily continued even as staffing and other inevitable changes occur.”

WSRTC Website

- www.westernstates.org
- Summary of Consortium's Work, Documents
- Compliance and accessibility
- Also Forum website
 - www.westernstatesforum.org

Upcoming Meetings

- WSRTC 15th Annual Meeting
 - Yreka, California
 - June 16, 2025
- NRITS, ITE
 - Orlando, Florida
 - August 10-13, 2025
 - Registration, travel support

Roundtable of Recent ITS Activities

Other Discussions

Wrap-up

- Next meeting
 - NRITS, ITE in Orlando, Florida, August 10-13, 2025
- Action items
- Other