

Overview of TriLynx Systems

NovaStar Flood Warning System Software

Trinity River COMMON VISION Flood Management Task Force Meeting

Operator Interface

- Station Dashboard
- Station Summary
- System Dashboard
- My Dashboards
- Map
 - Show legend
 - Quick zoom:
- Data Display Layers
 - None
 - Precipitation
 - 3-Hour Rainfall
 - 12 1 104 0 1 1 0
 - Stage
 - 7 1 53 0 0 0 0
 - Flow
 - 6 0 31 0 0 0 0
- Overlay Layers
 - Basins - HUC 8
 - Basins - HUC 12

NovaStar5 Operator Interface

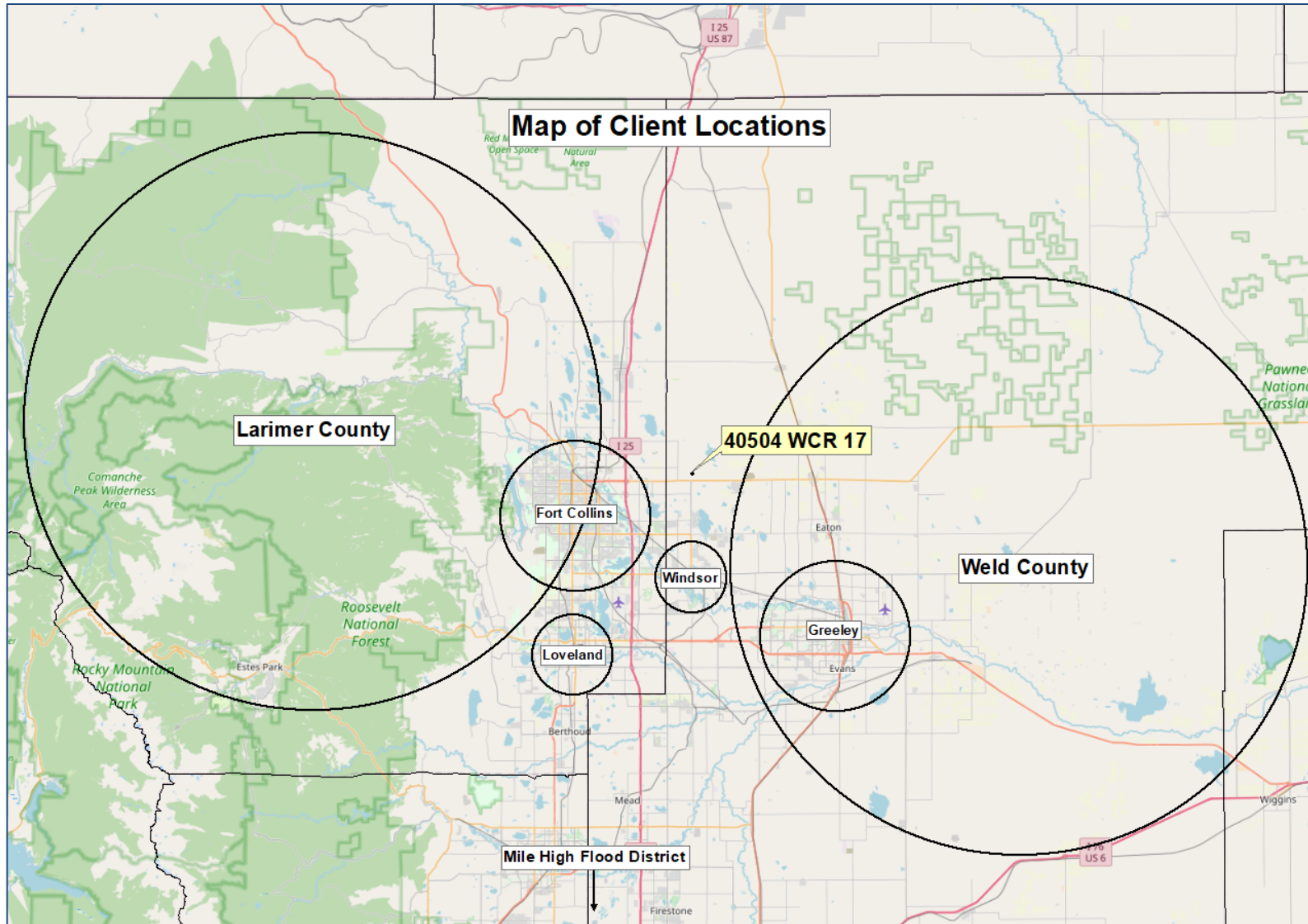
Larimer - Mill Canyon
id: 11082
Time of last report: 2023-06-12T13:56:28
Statistic: 15 Minutes 3
Precip Total (in): 0.16
Current time used to compute sta: 2023-06-12T13:56:28
Conditions: Serious Flood Threat
Active alarms:
Date/time Alarm name
2023-06-12T13:56:28 Larimer C
2023-06-12T13:56:28 NWS Ca



Alert for You
TriLynx

February 21, 2025
Steve Malers
TriLynx Systems

TriLynx Systems Office Location



- Severance, Colorado (near Fort Collins).
- Office can hear radio signals from several regional flood warning systems.

Co-located Companies



Alert for You
TriLynx

NovaStar Software, Bridge Monitor, and consulting.



WATER & EARTH
TECHNOLOGIES

Data collection network installation and maintenance.



Sensors for bridge and all-weather precipitation monitoring.



openwater
FOUNDATION

Open source software and open data solutions for water resources.

Typical Flood Warning Station



Flooded Roadway Warning Station



Blanco River



Post Road at Blanco River

5/25/20

Challenges



- Natural environment effects
- Seasons (snow, freezing)
- Wildfires
- Vandalism

NovaStar Administrator Software – For System Administrators

Small number of “power users”

Alert for You
TriLynx

NovaStar5 Administrator Interface (hostname: trilynx-aws-bullseye)

No Active Alarms

System up

Station List

Clear Displaying 305 items in Station List

+ Add


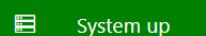
Numid ↑↓	Name ↑↓
2780	Antelope Creek
10041	Brantner Gulch near Syracuse Street
4100	Filter Plant
4570	St. Antons

View Edit

Stations


- Station List
- Station Control
- Station Poll
- Station Type List



Plots and Reports

- 
- 
- > Stations
- > Points
- > Alarms
- > Data
 - Data Edit
 - View Maps**
 - View Plots
 - View Reports
 - View Tables
- > Forecast
- > Product Definitions
- > System
- > Users
- > About NovaStar5
- Contact TriLynx

View Plots

Select Plot Input

Plot: AAA-Annual Accumulation Plot 

Point list   Displaying 5 items in Point list

Report_panel	Analysis	PointName	
	near/r3	Horseshoe Park Drop Precipitation-AR	↑↓
	near/r3	Fire Station #7 Precipitation-AR	↑↓
	near/r3	Confluence Pond Precipitation-AR	↑↓
	near/r3	Virginia Court Precipitation-AR	↑↓
	near/r3	Utah Park Precipitation-AR	↑↓

Select Display Time and

Starting time

Ending time

Display interval

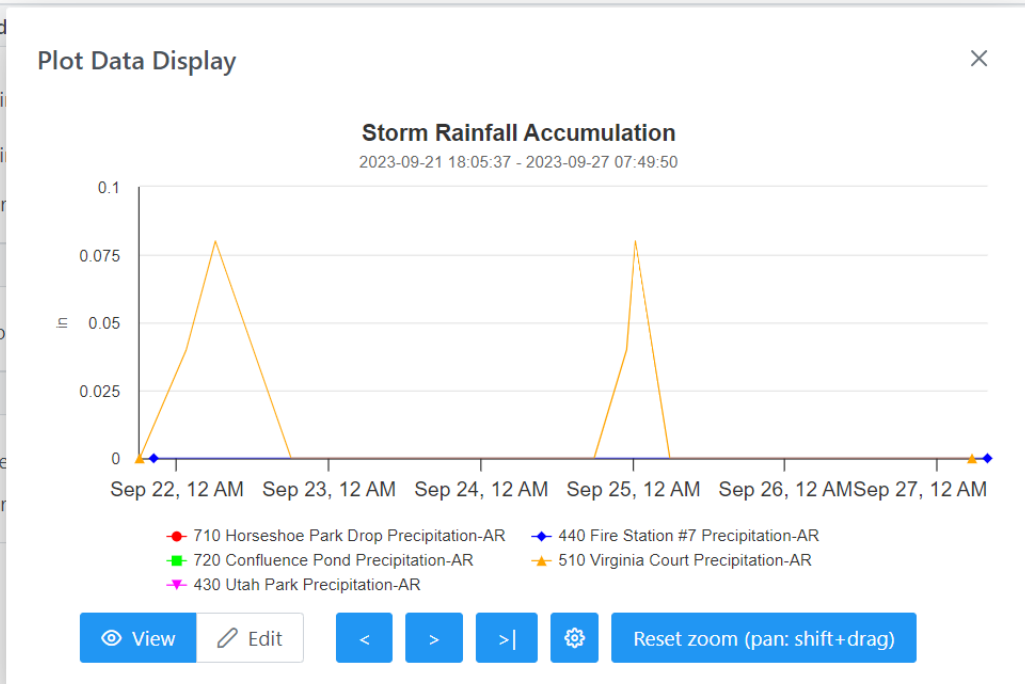
Display Options

Display options

Options


Legend


Time interval




View Plots

Check Database Tool – Expanded for Stations

 No Active Alarms

 System up

Database Problems

- All stations
- Station **A2 2 Way Test** 

Problem summary: 113 stations have problems.

> A2 2 Way Test - 360

▼ Antelope Creek - 291

#	Resource	Problem	Recommendation
1	Antelope Creek	Station "Antelope Creek" - 2 points have problems.	See the detailed messages for points.
2	Antelope Creek GPS Lock	Point "Antelope Creek GPS Lock" - Missing data units (check scaled value time series point type units).	Fix point data so that time series request is OK.
3		PointType "Latency" - Point type does not define SHEF parameter code.	Define the SHEF parameter code for the point type (see the 'dataTypes' web service).
4	Antelope Creek Latency	Point "Antelope Creek Latency" - SHEF parameter code is not set - unable to determine data type from SHEF physical element. SHEF parameter code is not set - unable to determine data interval from SHEF duration. SHEF parameter code is missing. Check point type SHEF parameter code.	Fix point data so that time series request is OK.

For more information, see </novastar/data/api/v1/checkDatabase?stationNumId=2780>

> Aurora Reservoir - 45

Help make sure that the database is properly configured.

- > Stations
- > Points
- > Alarms
- > Data
- > Forecast
- > Product Definitions
- ▼ System
 - Check Database
 - Configuration List
 - Data Export List
 - Data Flag List
 - Data Import List
 - Nova Score List
 - Scheduler List

NovaStar Operator Software for Situational Awareness

Operator Interface

Station Dashboard

Station Summary

System Dashboard

My Dashboards

Map

Show legend
Quick zoom:

Data Display Layers

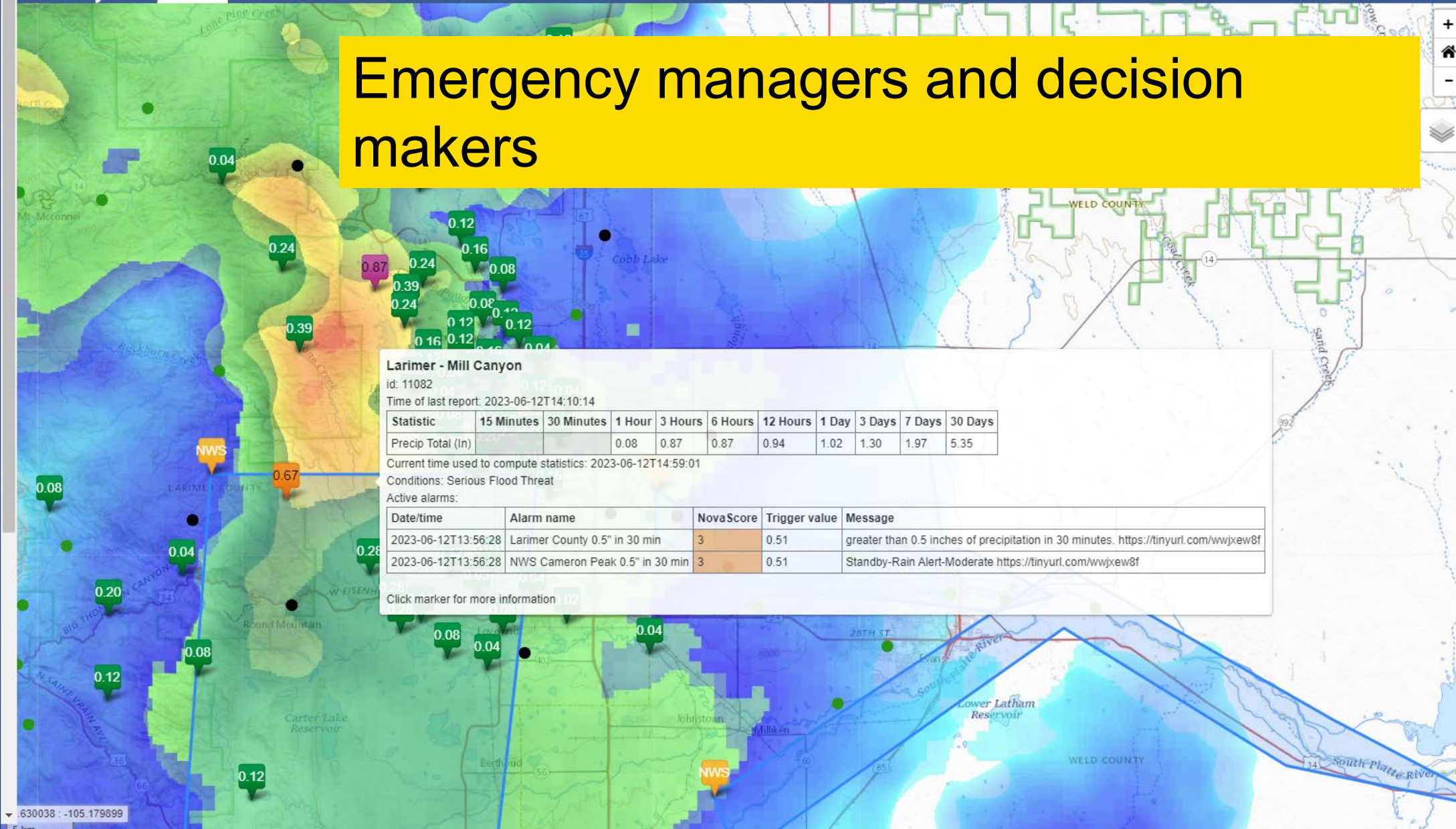
- None
- Precipitation
 - 3-Hour Rainfall
- Stage
 - 7
- Flow
 - 6

Overlay Layers

- Basins - HUC 8
- Basins - HUC 12
- Cameras
- Fires (CO), Cur. Year
- Fires, Historical
- FEMA Floodplain
- Rainviewer Radar (loop)

- Drizzle (probably)
- Drizzle
- Light Rain
- Light Rain
- Rain

Emergency managers and decision makers



NovaStar Operator Station Dashboard

Operator Interface

Station Dashboard

Station Summary

System Dashboard

My Dashboards

Map



CONTRA COSTA COUNTY, CALIFORNIA

NovaStar5 Operator Interface

Last data update: 2/20/2025, 5:50:00 AM



Station 10 Dashboard

10 - Highland Peak (3)

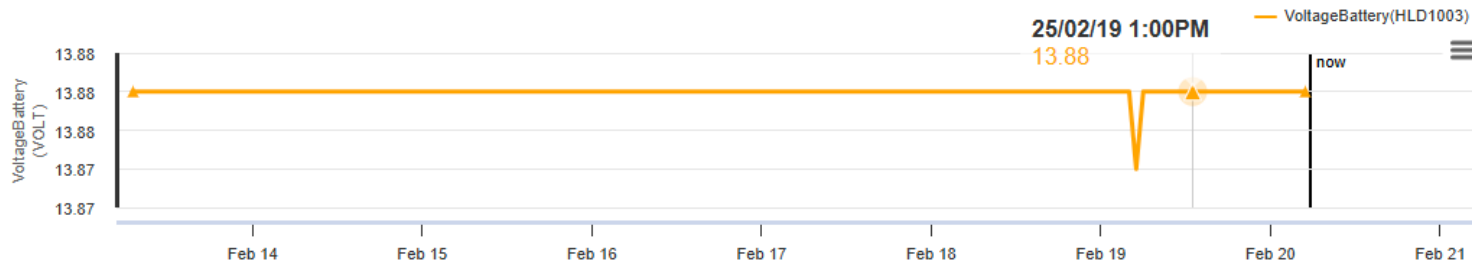
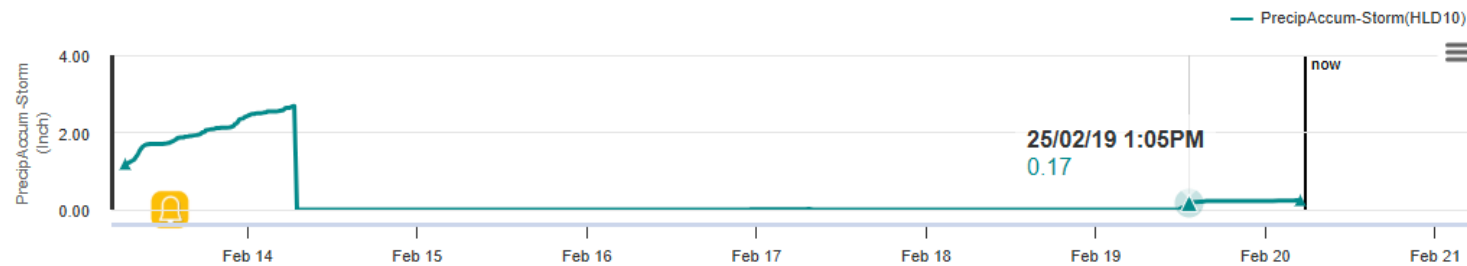
Station name: Highland Peak

Station elevation: 2520

- Precip-Total - Significant hydrologic activity
- PrecipAccum-Storm - Significant hydrologic activity
- VoltageBattery - No hydrologic activity

Period of record: 1 week

Tracker: Floating



Help

About

Support

TriLynx System Dashboard

Contra Costa County (CA-County-ContraCosta)

AWS Database Backups



Ok

Stations with Missing Data (0D=2025-02-19)

0	0	0	0	0	0	0	0	HumidityRelative (0)
3	3	3	3	3	3	3	3	PrecipAccum (34)
0	0	0	0	0	0	0	0	TempAir (0)
0	0	0	0	0	0	0	0	UNKNOWN_SHEFCODE-YIRRZZ (0)
4	4	4	4	4	4	4	4	VoltageBattery (48)
2	2	2	2	2	2	2	2	WaterLevelPool (7)
11	11	11	11	11	11	11	11	WaterLevelRiver (26)
0	0	0	0	0	0	0	0	WindDir (0)
0	0	0	0	0	0	0	0	WindGust (0)
3	3	3	3	3	3	3	3	WindSpeed (6)
-7D	-6D	-5D	-4D	-3D	-2D	-1D	0D	



Support Balance



Operations

[System Performance](#)

[NovaStar Operator \(running on cloud server\)](#)

[NovaStar Data Web Services User Interface](#)

[Contra Costa Rain Map](#)

System Resources

[System Information](#)

[NovaStar Administrator \(primary - requires VPN\)](#)

[NovaStar Administrator \(cloud node\)](#)

[Zabbix - System Monitoring Dashboard](#)

[NovaStar Operating System Update Checklist](#)

Contacts

[Mark Boucher \(Contra Costa County\)](#)

[TriLynx Support \(TriLynx Systems\)](#)

[Steve Malers \(TriLynx Systems\)](#)

Billing & Contracts

[TriLynx Billing Details](#)

[NovaStar Service Level Agreement Contra Costa County Additions](#)

[TriLynx NovaStar General Service Level Agreement](#)

Other Resources

[Source Addresses Management System \(SAMS\)](#)

[Standard Hydrometeorological Exchange Format \(SHEF\) Code Manual](#)

Software Resources

[NovaStar Software License](#)

[TSTool \(Time Series Tool\)](#)

Backups

[NovaStar database backups](#)

[NovaStar file backups](#)

Example - Data Details

Check every sensor (NovaStar point) time series for missing data.

- 1) 100000000 - Larimer - Tunnel Creek at Hwy 14 Stage TEST
- 2) 10401 - Weld - Big T at WCR 13 Stage
- 3) 10402 - Weld - Big Thompson near La Salle BIGLASCO Stage
- 4) 10403 - Weld - Poudre at Fern Ave CLAGRECO Stage
- 5) 10404 - Weld - Poudre at WCR13 Stage
- 6) 10405 - Weld - South Platte near Kersey FLAKERCO Stage
- 7) 10406 - Weld - St Vrain at Platteville SVCPLACO Stage
- 8) 10408 - Greeley - Poudre River at 59th Avenue Stage
- 9) 11004 - Fort Collins - Rustic Stage
- 10) 11005 - Fort Collins - Lions Park Stage
- 11) 11009 - Fort Collins - Poudre at Whitewater Park Water Level PT
- 12) 11018 - Fort Collins - Tati Hill @ Spring Creek Stage
- 13) 11020 - Fort Collins - CR66 at Boxelder Creek Stage
- 14) 11021 - Poudre River at Mouth Stage
- 15) 11023 - Fort Collins - Timberline @ Spring Creek Stage
- 16) 11082 - Larimer - Mill Canyon Stage
- 17) 11083 - Larimer - Rist Canyon Stage
- 18) 11514 - Larimer - Poudre River at Crown Point Drive Stage
- 19) 11515 - Larimer - Poudre River at Kelly Flats Campground Stage
- 20) 11516 - Larimer - Poudre River at Narrows Stage
- 21) 11517 - Larimer - SF Poudre at Pingree Park Road Stage
- 22) 11518 - Larimer - Bennett Creek at Pingree Park Road Stage
- 23) 11519 - Larimer - Sevenmile Creek @ Mouth Stage
- 24) 11523 - Larimer - South Fork Poudre at CSU Campus Stage

Need to clean up data gaps:

- retired stations?
- maintenance?
- winterization?
- new stations?
- something else?

Annotations can help explain the information.

WaterLevelRiver 1Day Data Count

Updated: 2024-05-07 12:42:05 America/Denver

Legend Index



Data Web Services User Interface

Time Series

- GET** `/api/v1/data` Get one or more NovaStar data records, which includes raw and scaled values. The results include arrays for data values, whereas the 'dataReports' service returns a flat representation. Must specify pointNumId, pointId, or locId and dataType to limit the query. See also the 'tscatalog' and 'ts' services, which return time series metadata and data. Some formats such as 'datadisp' are specific formats that are provided for convenience and to duplicate old programs.
- GET** `/api/v1/dataFlags` Get one or more NovaStar data flags, which are used to indicate data quality for data values.
- GET** `/api/v1/dataReports` Get one or more NovaStar data reports, which are data records for sensor observations and other data measurements. The results are in a flat representation, whereas the 'data' service returns arrays of data values. Must specify pointNumId, pointId, or locId and dataType to limit the query. See also the 'tscatalog' and 'ts' services, which return time series metadata and data.
- GET** `/api/v1/dataTypes` Get one or more NovaStar data types, which indicate what is measured at a point.
- GET** `/api/v1/shefPhysicalElements` Get the NovaStar SHEF parameter code physical elements, which are data types used by the National Weather Service and other agencies.
- GET** `/api/v1/stationStatistics` Get one or more NovaStar station statistics, which are single values calculated using time series values. Multiple data types, intervals, and statistics can be requested to compute multiple statistics. This service is useful for computing system-wide data statistics, for example to list in a table or show on a map.
- GET** `/api/v1/stationSummaries` Get one or more NovaStar station summaries. This services is used by the Operator software to provide system-wide data summaries. It also returns lists of supporting and related data, to avoid many subsequent requests during interactive viewing.
- GET** `/api/v1/statisticTypes` Get statistic types, useful to provide a list of choices in user interfaces.
- GET** `/api/v1/ts` Get one NovaStar time series for a location, data type, and interval.
- GET** `/api/v1/tscatalog` Get one or more NovaStar time series catalog, which provide metadata about time series. Each entry joins station, station type, point, point type, point class, data type and other data. Use the 'ts' service to query individual time series.



TSTool NovaStar Web Service Example

1. Select a NovaStar web service datastore and other query parameters

2. Get the list of time series

3. Click to highlight and select 1+ time series

4. Copy to commands

5. Run

6. Right-click, and select **Graph - Line**

7. Graph is shown
Draw a box to zoom
Right click to edit graph properties

Completed running commands. Use Results and Tools menus.

100% 100% Ready

TSTool - no commands saved

File Edit View Commands Commands(Table) Commands(Plugin) Run Results Tools Help

Input/Query Options

Datstore: nsdataaws-mhfd

Data type: *

Time step: *

Where: Matches

Where: Matches

Where: Matches

Where: Matches

Get Time Series List

Time Series List (14953 time series, 1 selected)

	Location ID	Station Identifier	Station Name	Data Type	Point Name	Interval
1	100	100	Carr Street	DischargeRiver	Carr Street Water Level PT	IrregSecond
2	100	100	Carr Street	DischargeRiver-Max	Carr Street Water Level PT	15Minute
3	100	100	Carr Street	DischargeRiver-Max	Carr Street Water Level PT	1Hour
4	100	100	Carr Street	DischargeRiver-Max	Carr Street Water Level PT	1Day
5	100	100	Carr Street	DischargeRiver-Max	Carr Street Water Level PT	1Year
6	100	100	Carr Street	DischargeRiver-Mean	Carr Street Water Level PT	15Minute
7	100	100	Carr Street	DischargeRiver-Mean	Carr Street Water Level PT	1Hour
8	100	100	Carr Street	DischargeRiver-Mean	Carr Street Water Level PT	1Day

Copy Selected to Commands

Copy All to Commands

Commands (1 commands, 0 selected, 0 with failures, 0 with warnings)

100.NovaStar5.DischargeRiver.IrregSecond-nsdataaws-mhfd

2

3

4

5

6

7

8

9

10

Run Selected Commands

Run All Commands

Results

Ensembles Networks Output Files Problems Properties Tables Time Series Views

1 time series, 1 selected

1) Carr Street Water Level PT - 100.NovaStar5.DischargeRiver.IrregSecond (2021-04-10 19:28:31 to 2022-04-10 18:)

Graph - Line

TSTool - Time Series - Graph

Visible Period (white):

Summary Table Print Save Close

Zoom Mode X: 2021-07-31 07:13, Y: 565.71

Thank You

steve.malers@trilynx.systems



Alert for You
TriLynx