

AQC

Interactive Visual Data QA/QC Flagging

Purpose and Goals

- Visual flagging – easy to understand and change
- NRT data display – instrument operation status
- Customization – every station and user has different needs
 - Display correlated instruments for comparison
- Streamlining submission flow – reduce friction for data availability
- Access control – per instrument permissions
 - Administrative interface for hosting agency use

High Level Structure

- Web application – no specialized software to install
- Selection of station and instrument determines data shown
 - Default instrument plots with per-user customization
- Time range for flagging: anything in the NRT THREDDS server
- Selection of plot – potentially multiple correlated graphs
- Table of flagging – existing (level 0), user added, and user negated
 - With feedback of flags shown on visible plots
- Data submission – applies flagging and sends flagged level 0 files

Plot Customization

- Interactive editing with immediate feedback
- High level templates
 - Example: create graphs and select traces with automatic fanout
- Detailed configuration editing
 - "Escape hatch" allowing for generic data visualization
- Saved per user with import and export options
- Same configuration used for standard/default plots

Plot Data Sources

- Defaults to NILU THREDDS server for NRT instrument data
- Generic OpenDAP v2 loading
- Generic HTTP accessible loading
 - CSV formatted
 - Generic web API call (JSON, etc)
- Once loaded, presented to plots uniformly

Flagging Actions

- Start, end, flag, operation (instrument, negate, user), comment
- Existing instrument flagging calculated from loaded data file
 - Displays like a normal operation to allow modifications
- Negation of instrument flagging
 - Alter or change incorrect flagging in level 0 files
- Optional user comment for documenting reasoning
- Full history tracking on the backend
 - Available via API

Access Control

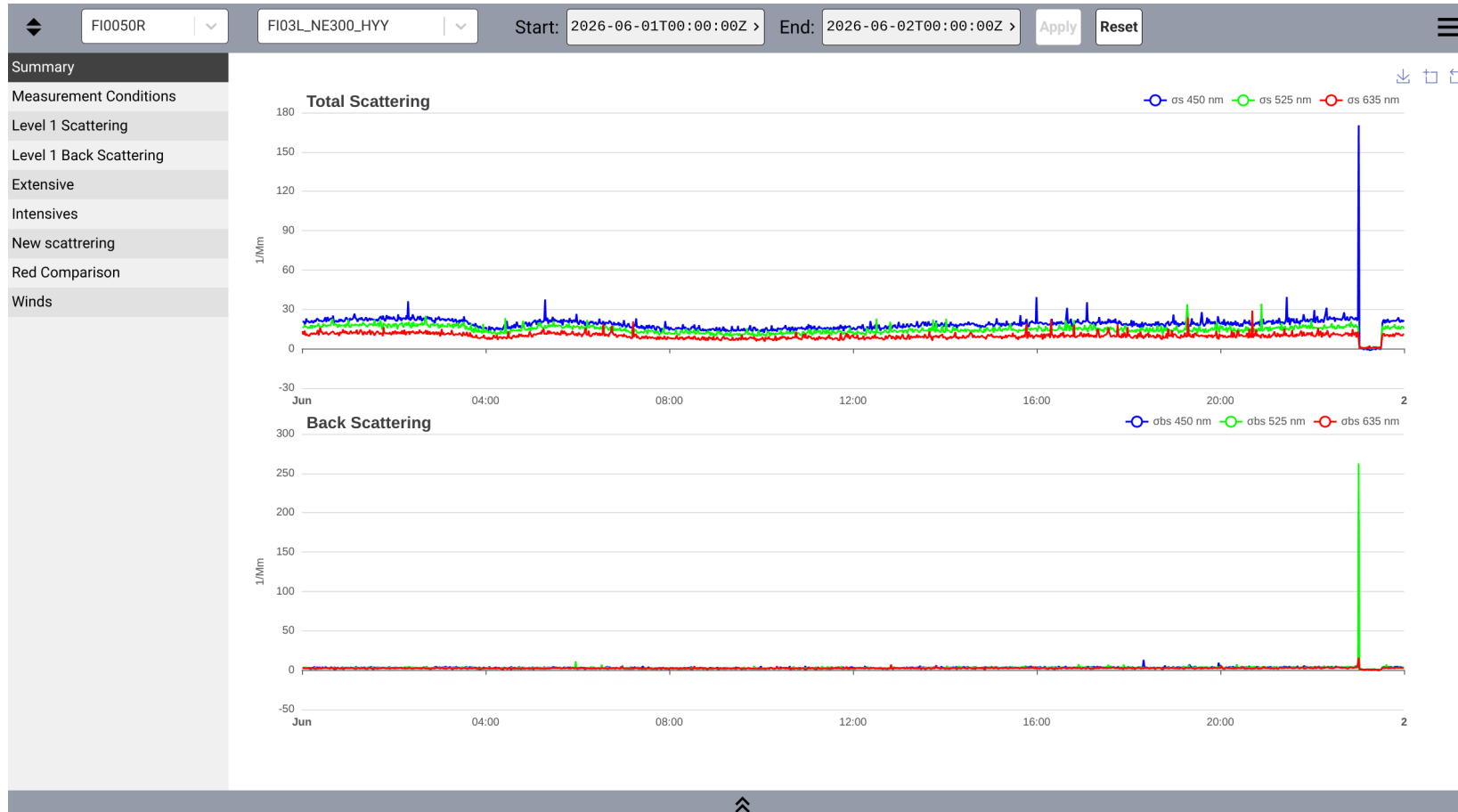
- Limit displayed instruments/plots to only those that are relevant
 - Controls backend submission access
- Login flow via ORCID.org OAuth2 – no credentials kept server side
- Machine-to-machine access via bearer token auth
- All administrative functions available via special UI

Technical and Deployment

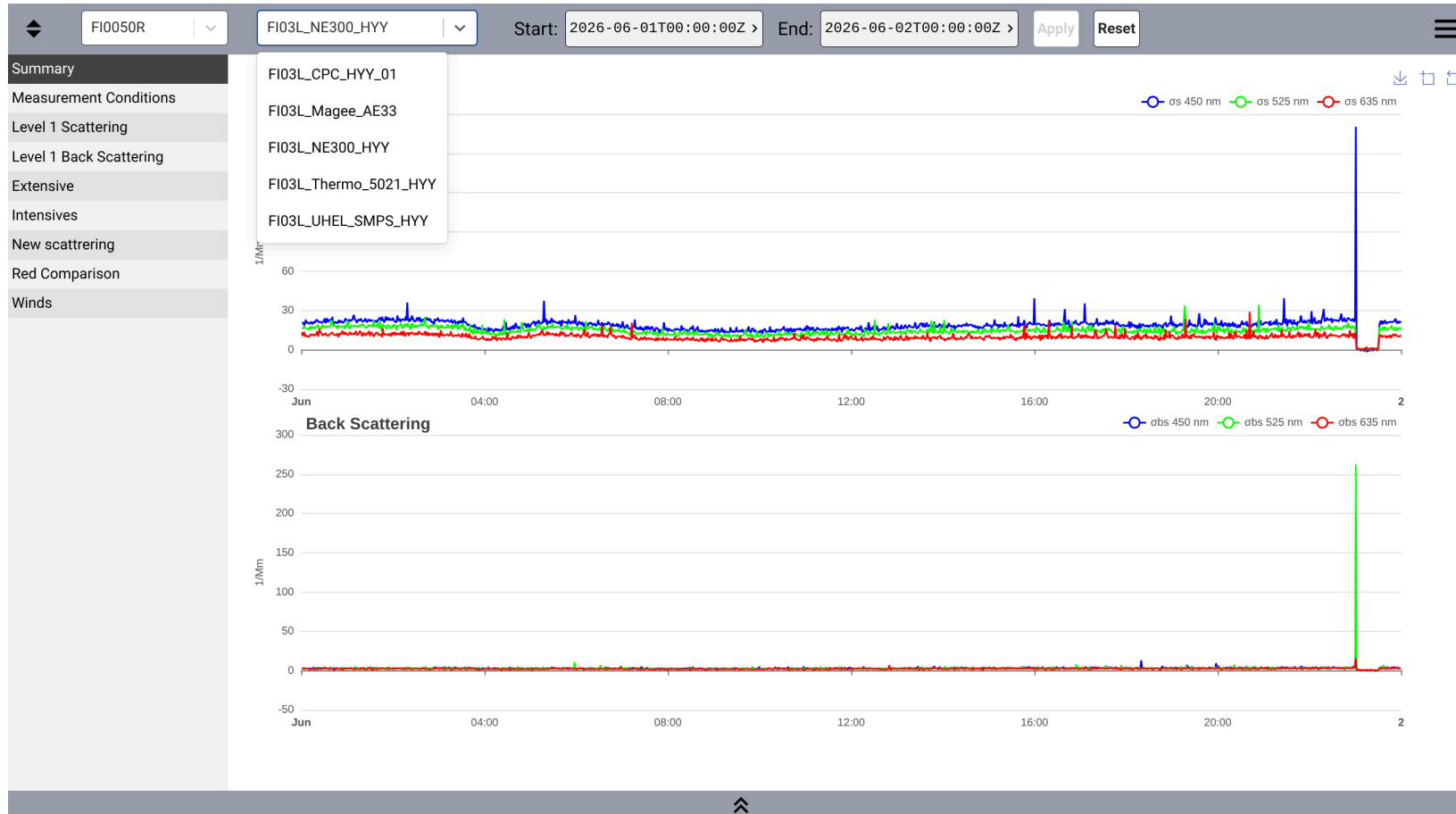
- Backend and data submission in Python
- Frontend in TypeScript/React
- Eventual single main instance for all official use
- Containerized deployment model
 - Easy integration to data center
 - Easy testing while official instance is still coming online
 - Possible to use a "private" instance until the official one is ready

Demo

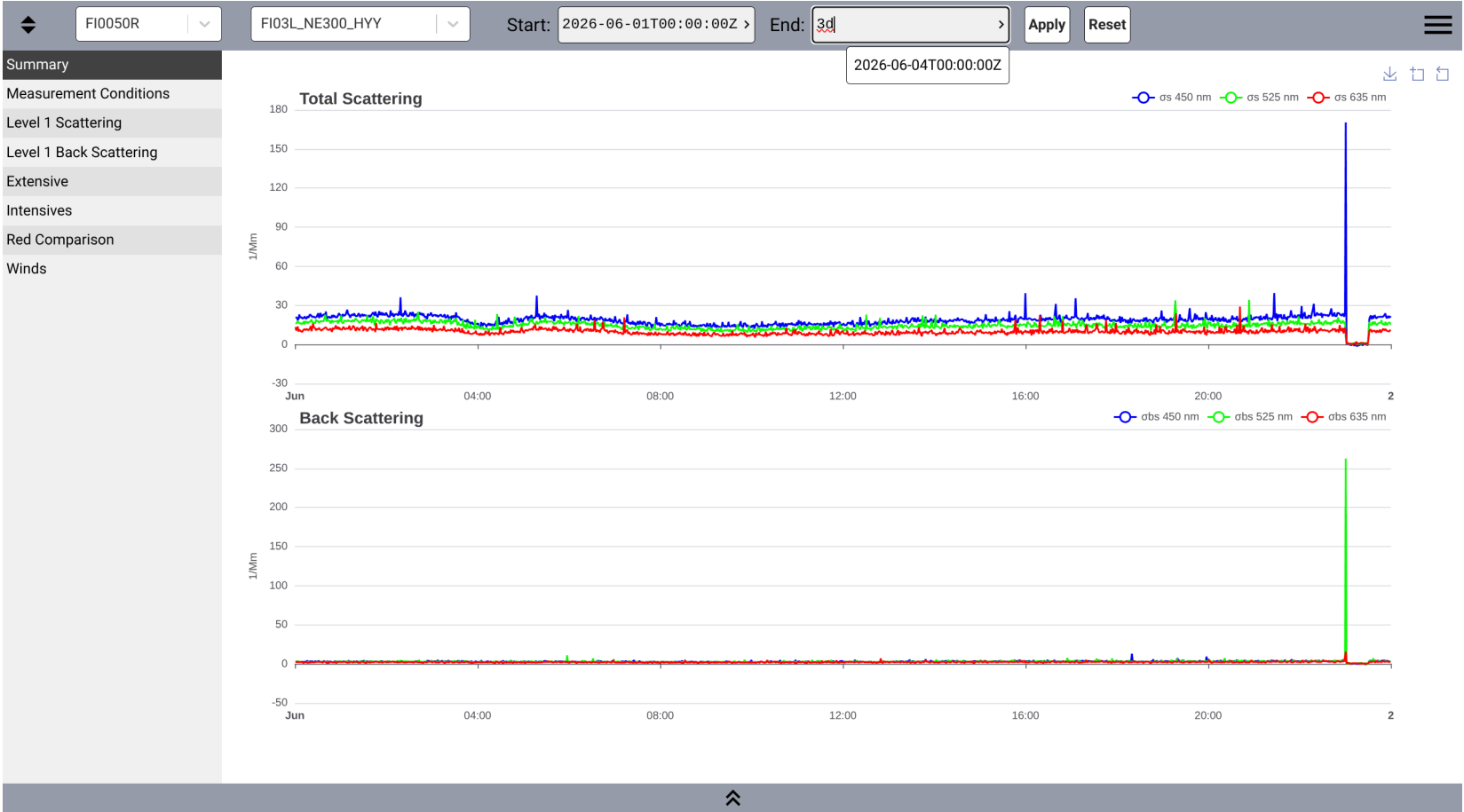
Basic – HYY 2026-06-01



Selection Tools



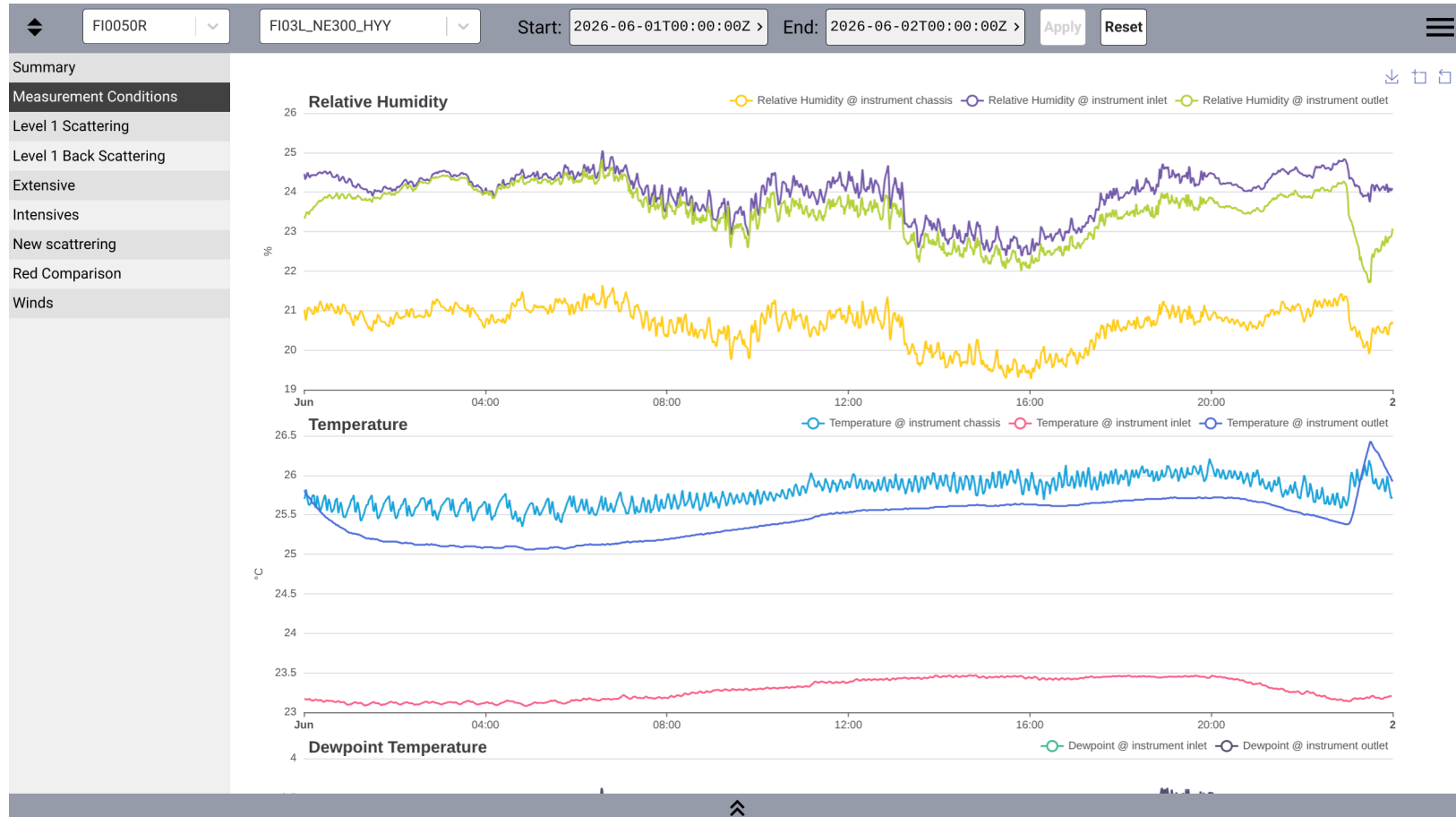
Time Selection



Plot Controls (zoom and reset)



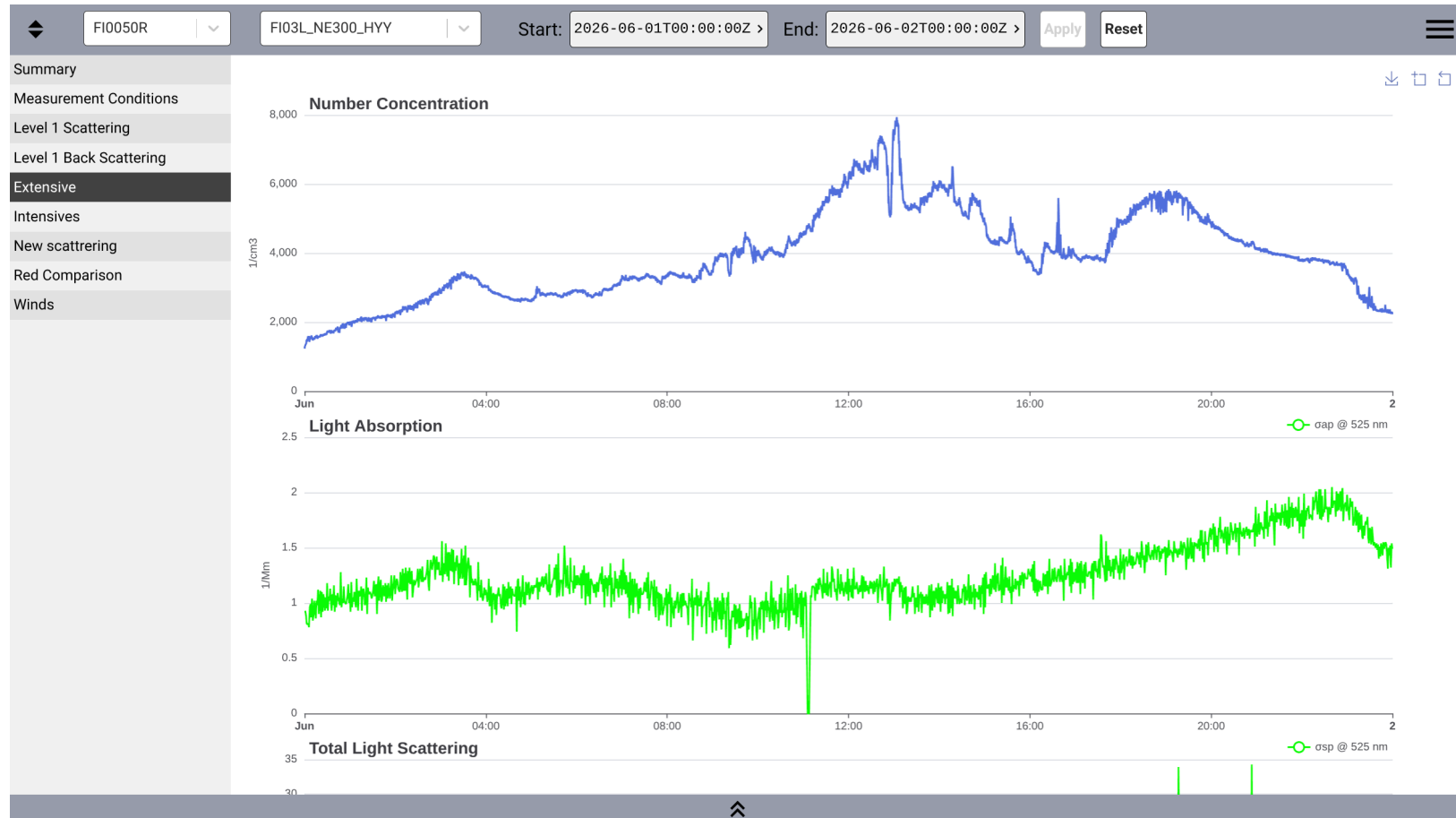
Plot Choice & Derived Values (dewpoint)



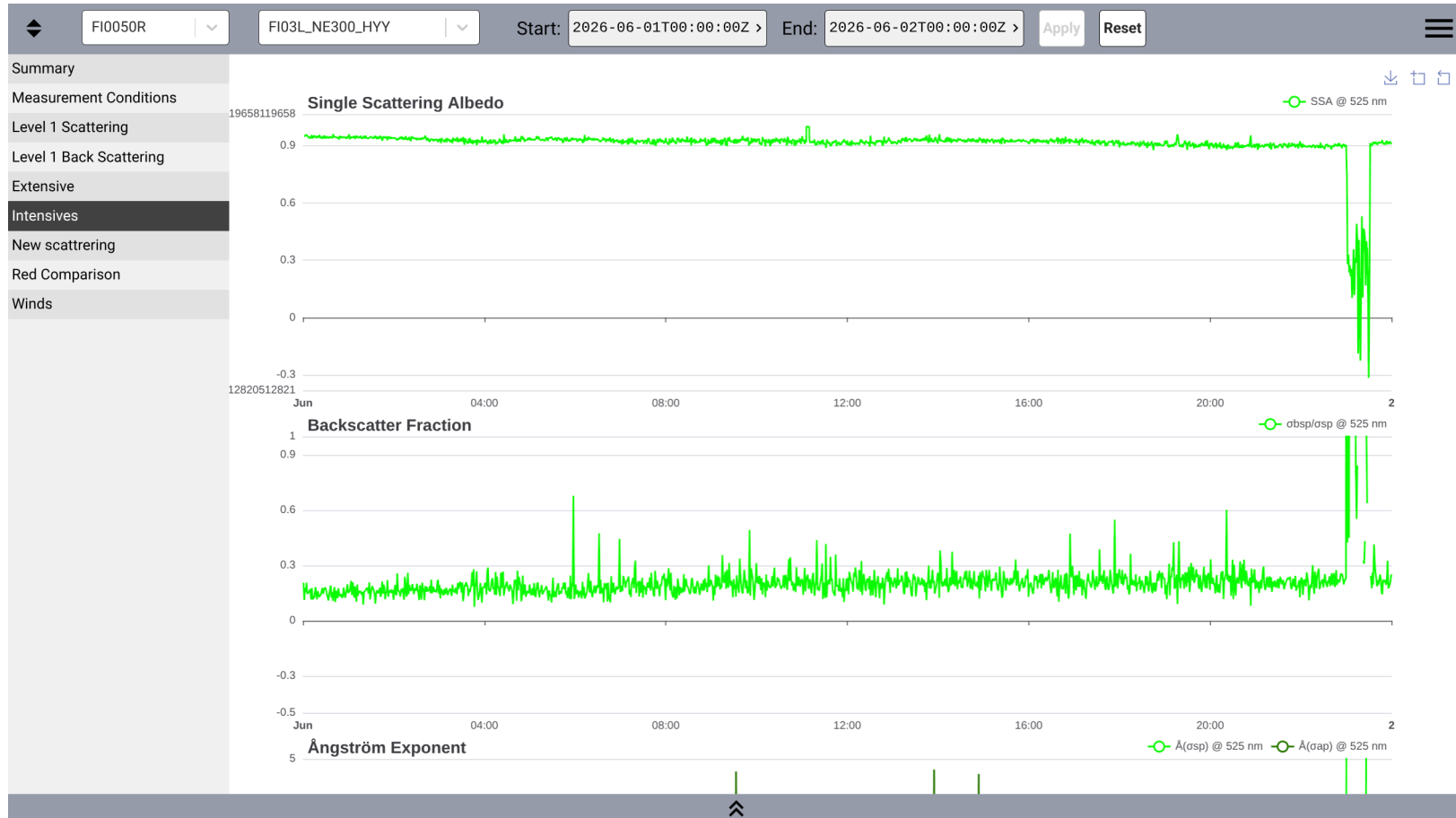
More Derived Values (level comparison)



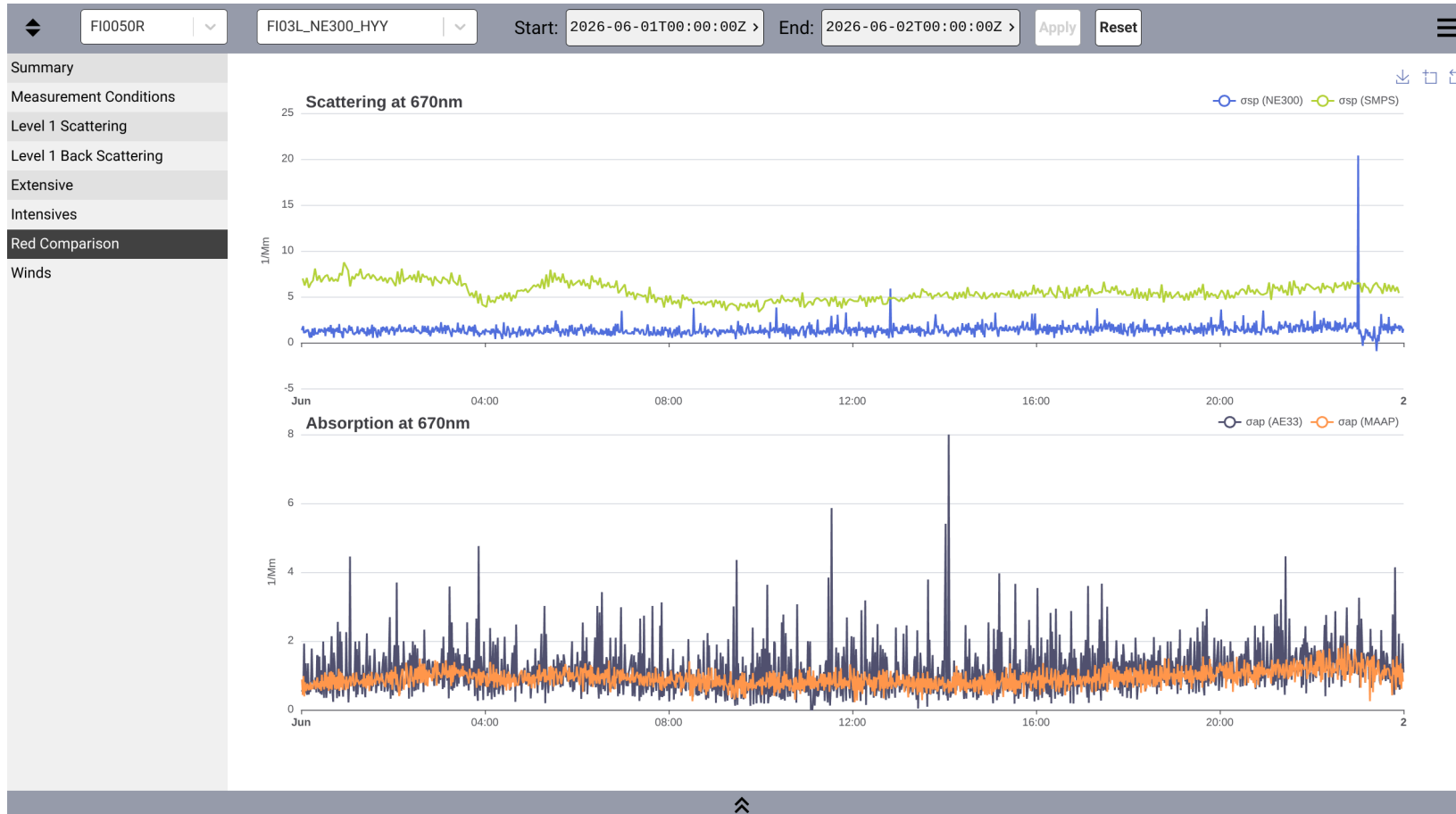
Multi-instrument plots



Multi-instrument calculation



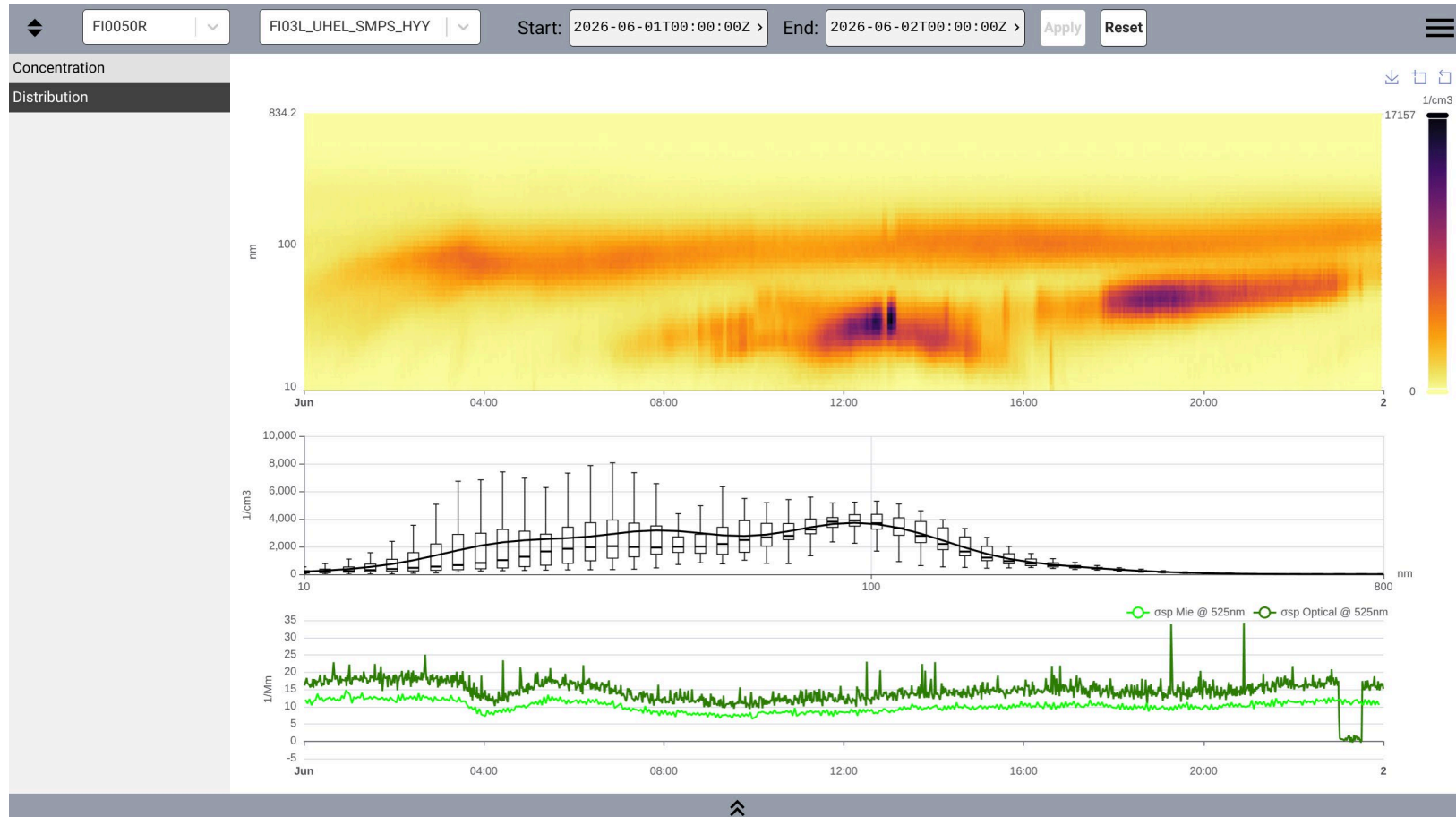
Complex Custom Plot



Non-timeseries DMPS data



DMPS Distribution and Mie Calculation



Flag Table - Empty



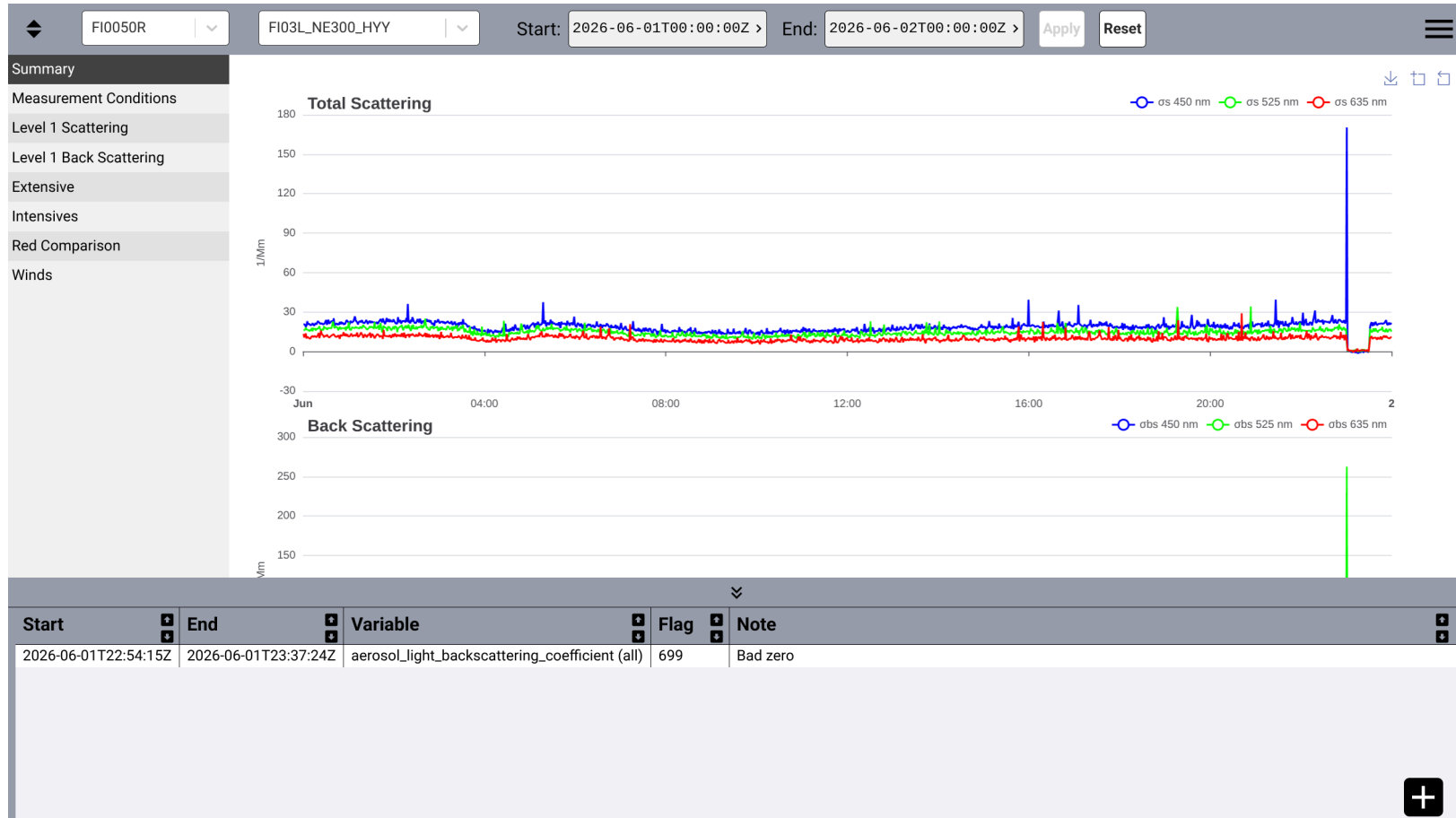
Adding a Flagging Action



Flag Details Selection



Flag Table Entry



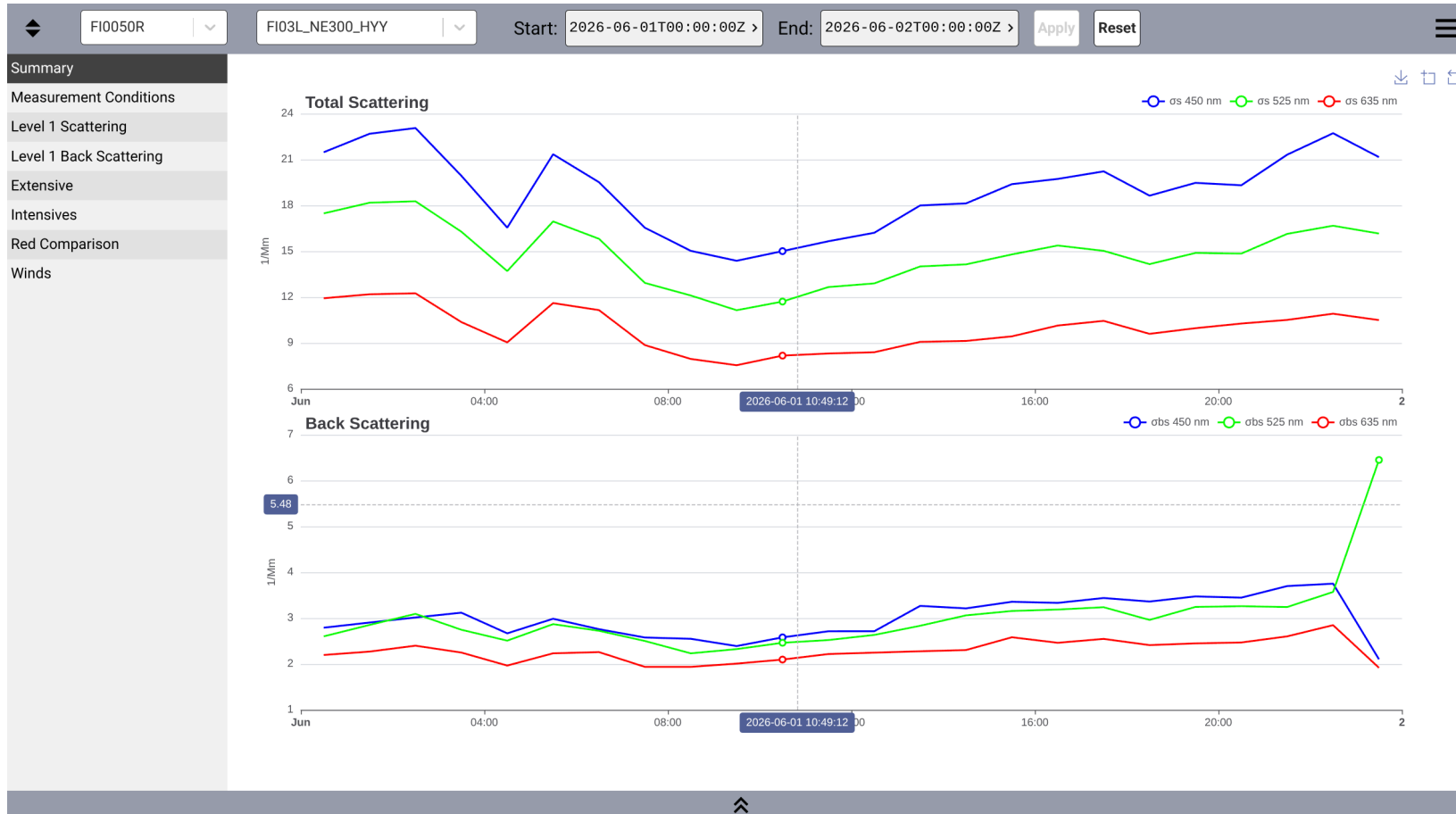
Flag Action Preview



Flag Action Preview Effect



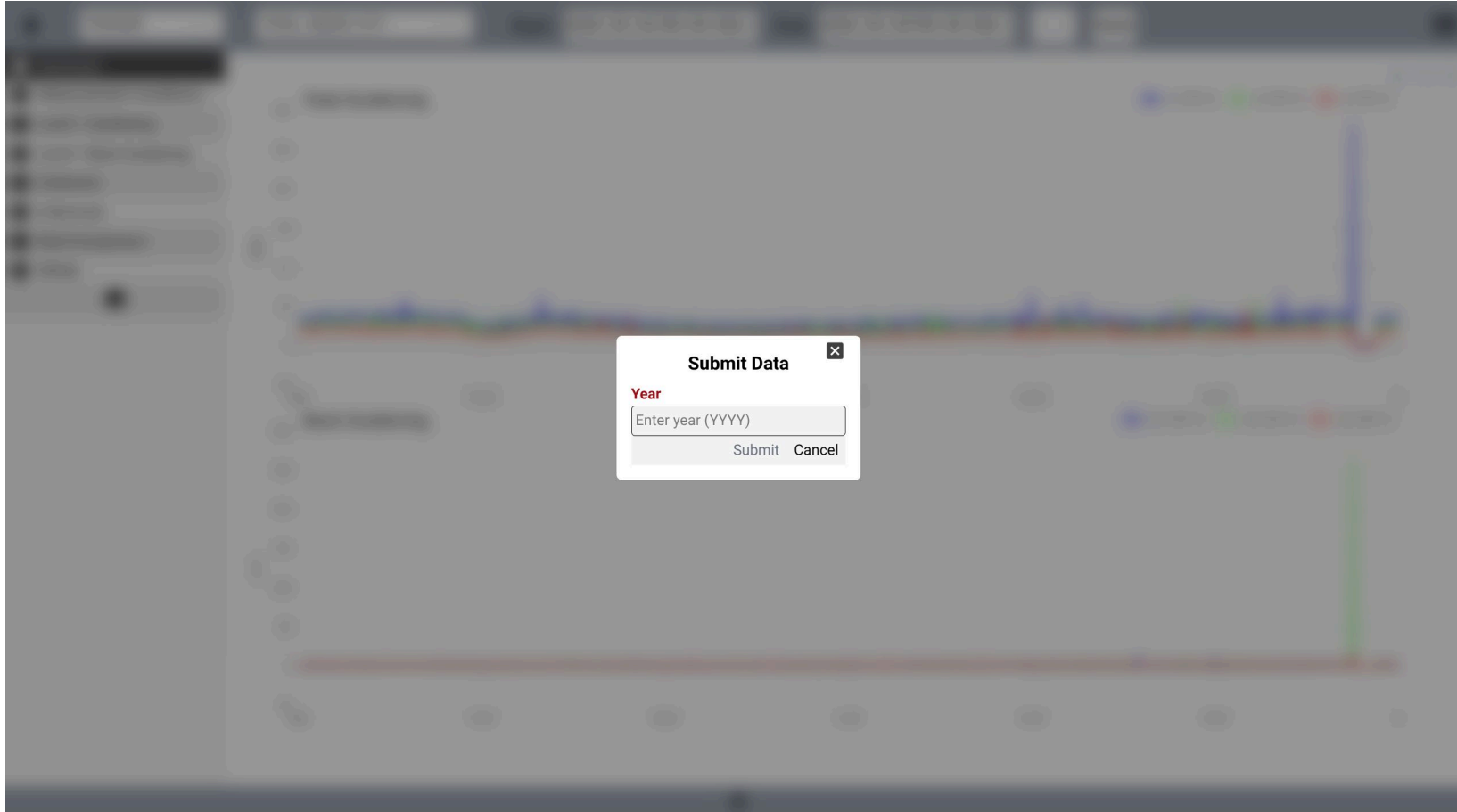
Average Preview - L2 (with and without flag)



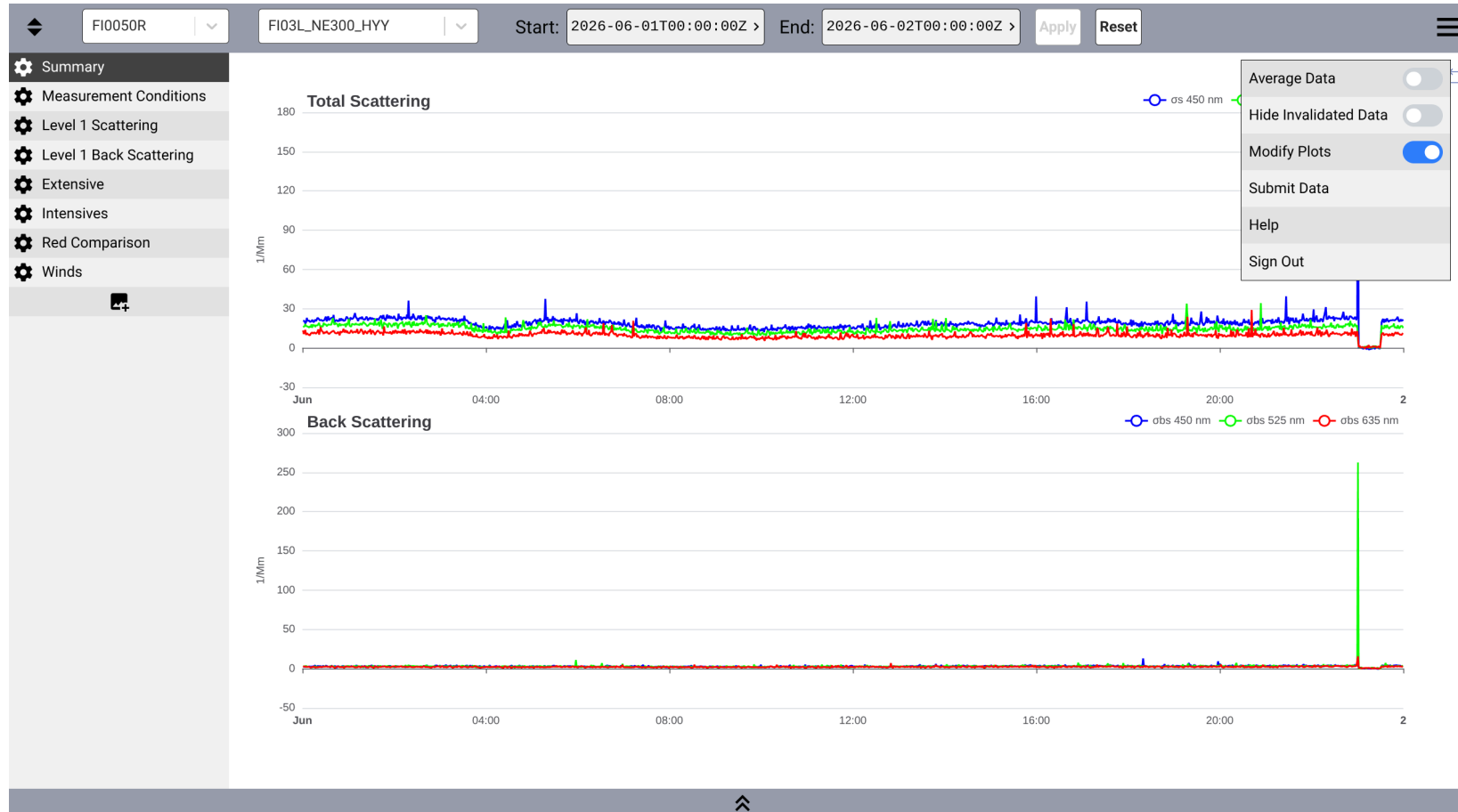
Flag Action Modification and Effect



Data Submission



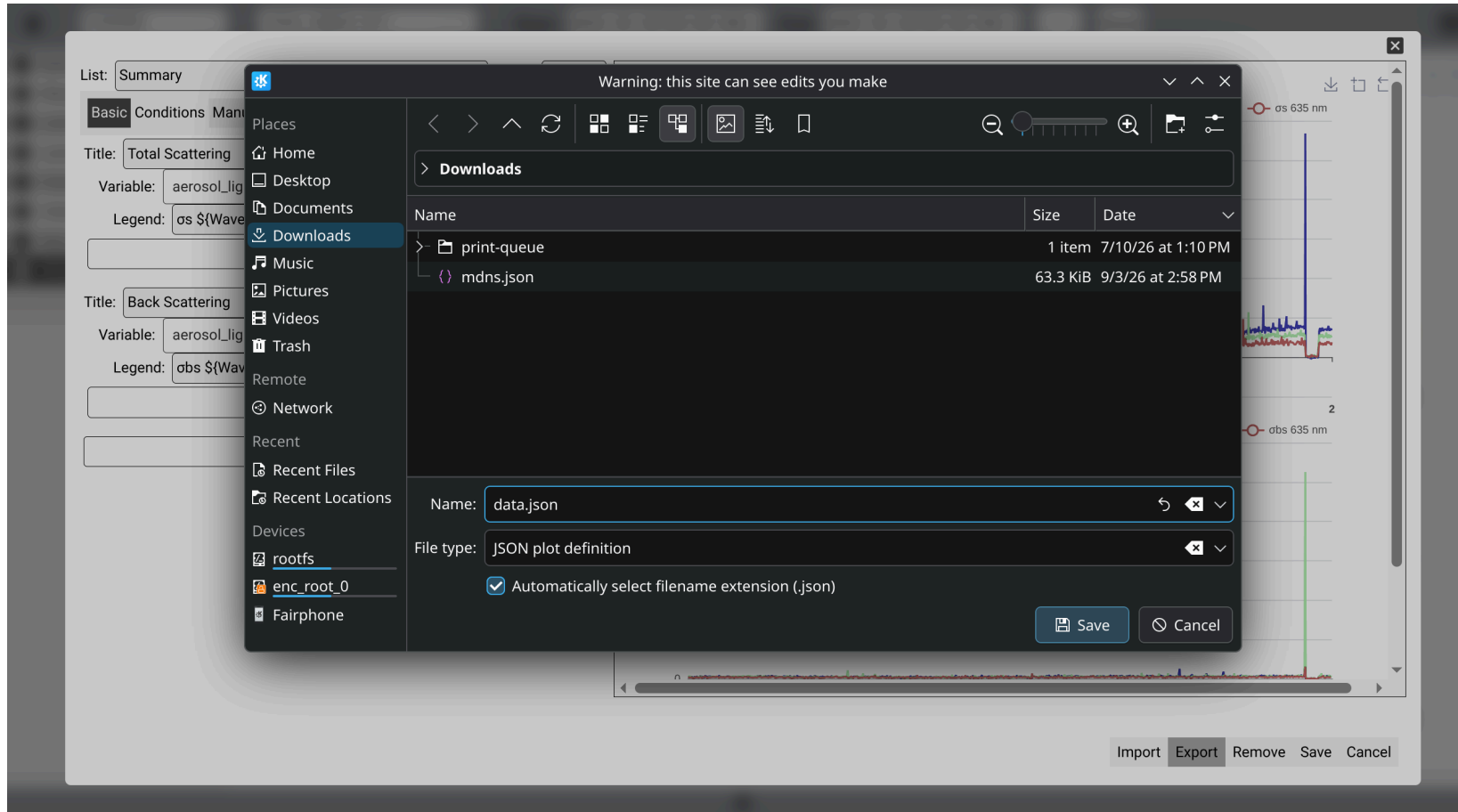
Plot Customization



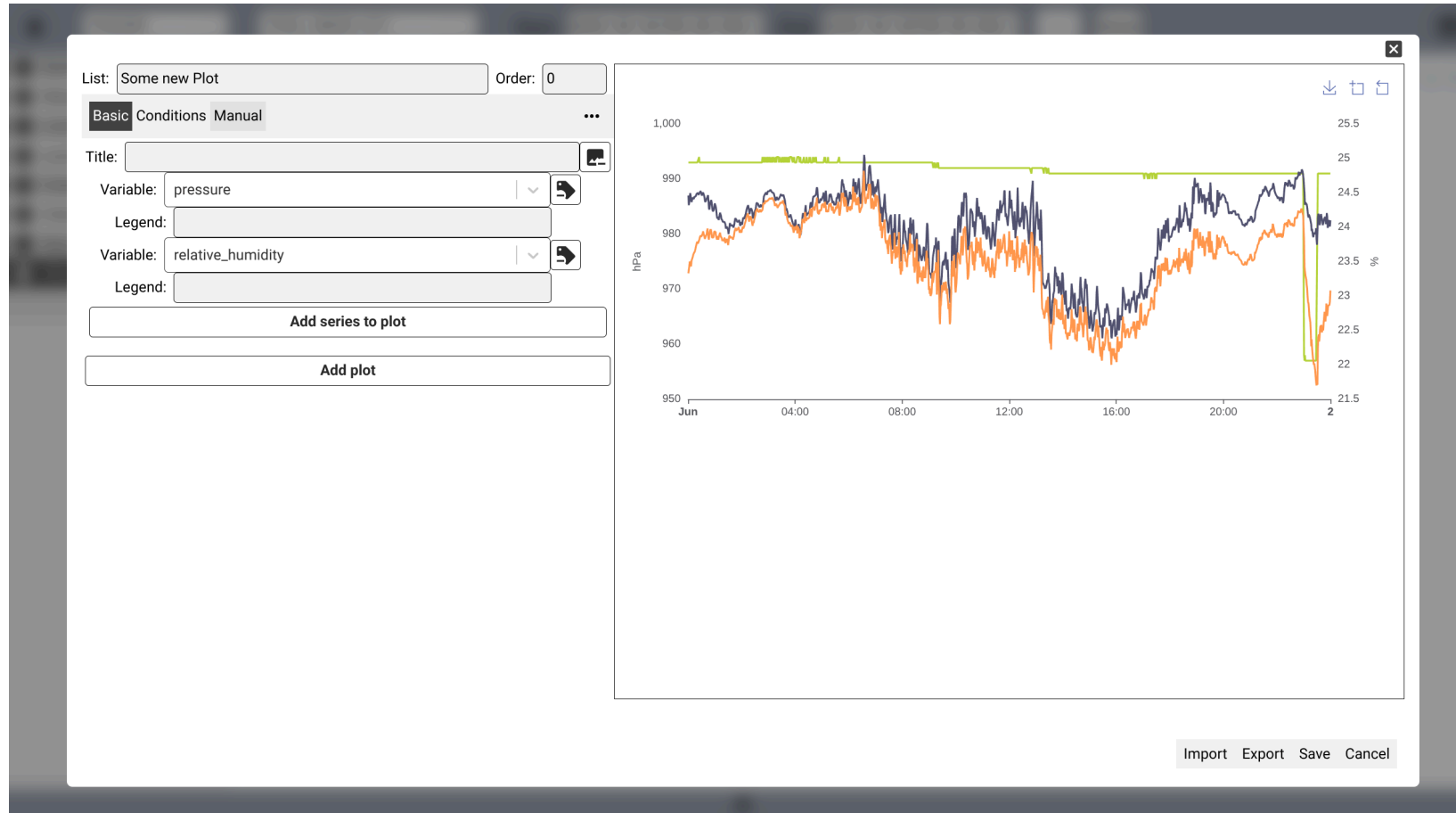
Basic Plot Customization



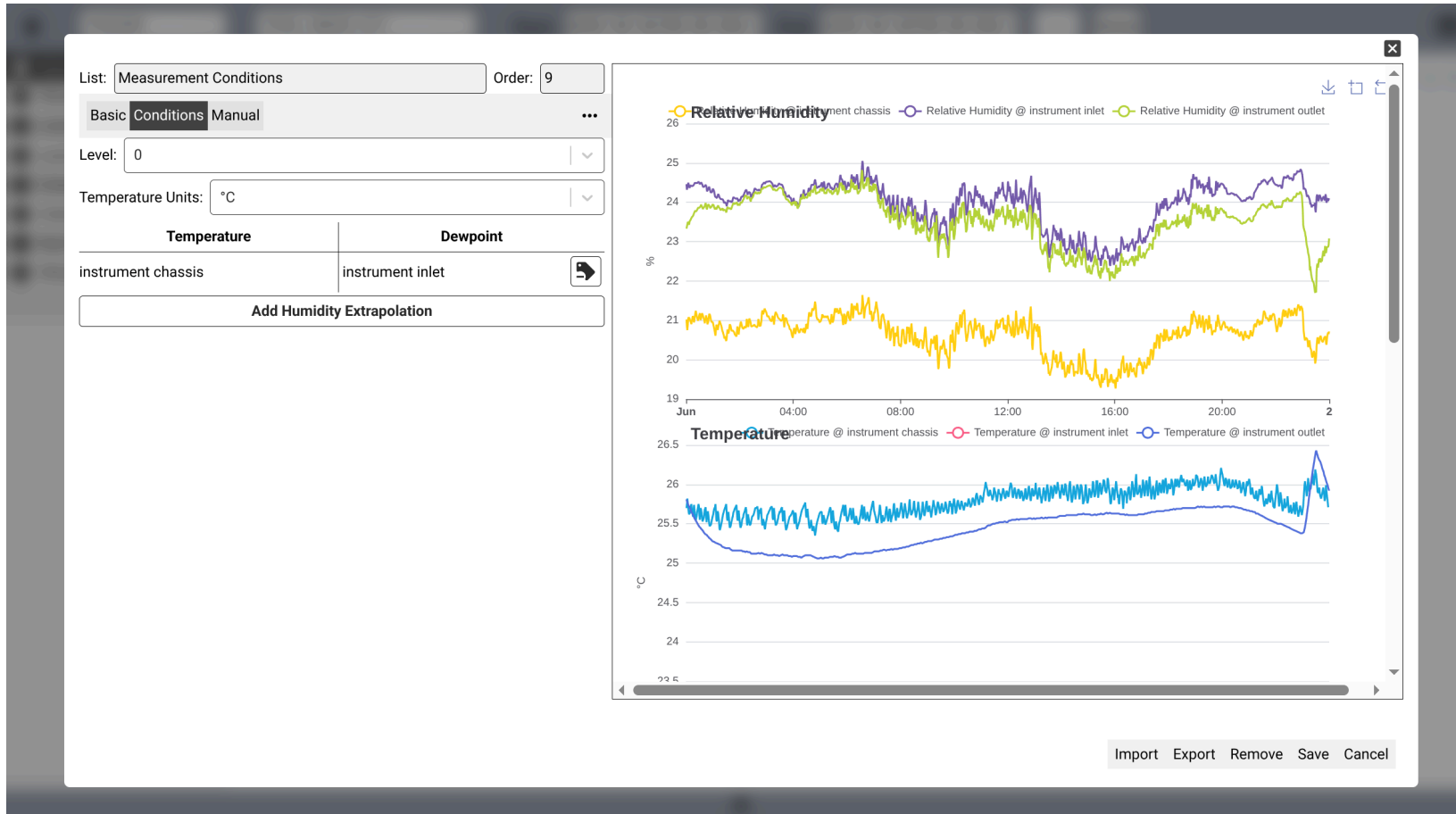
Plot General Options (import, export)



New Plot Example



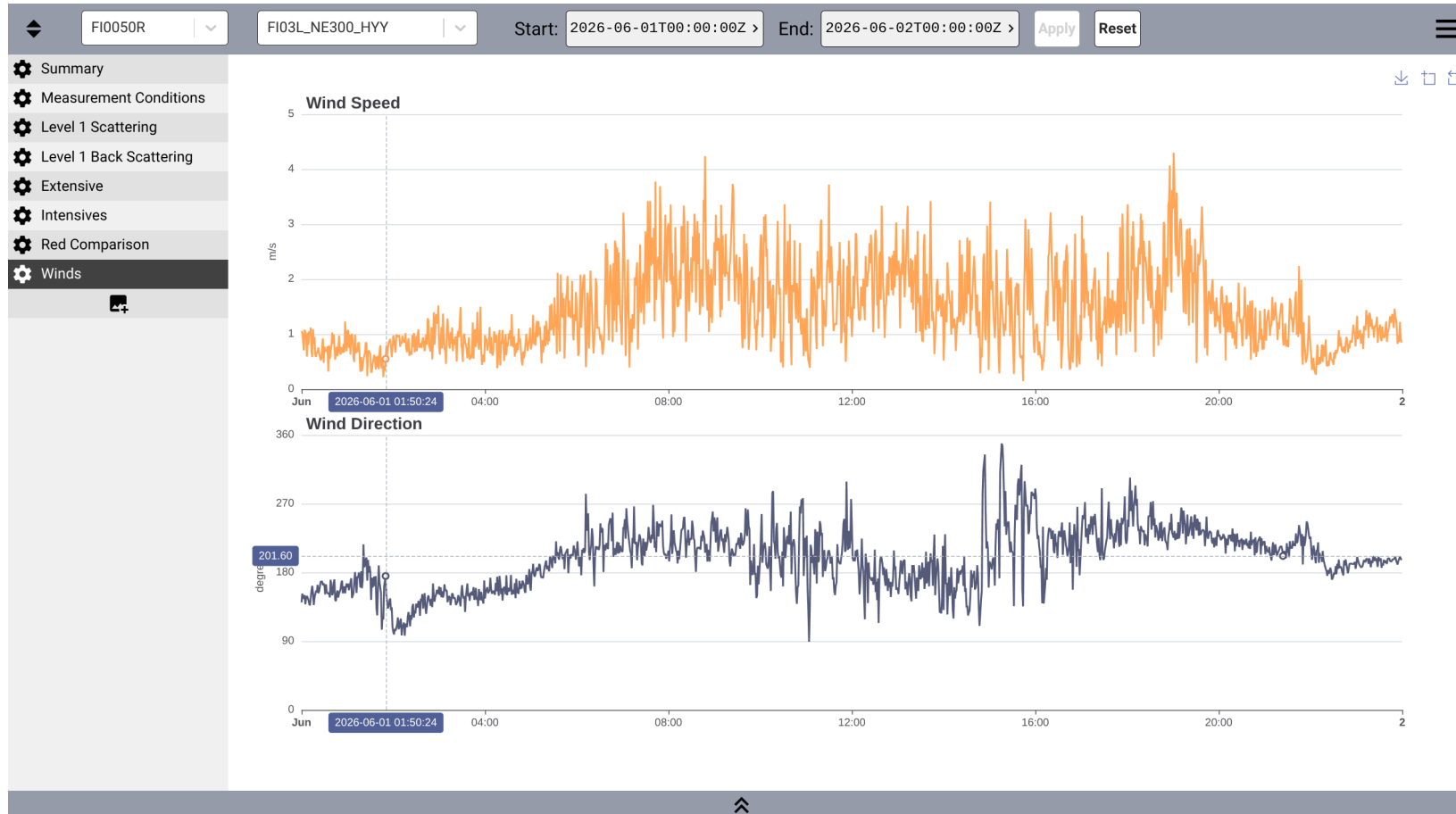
Specialized Template Customization



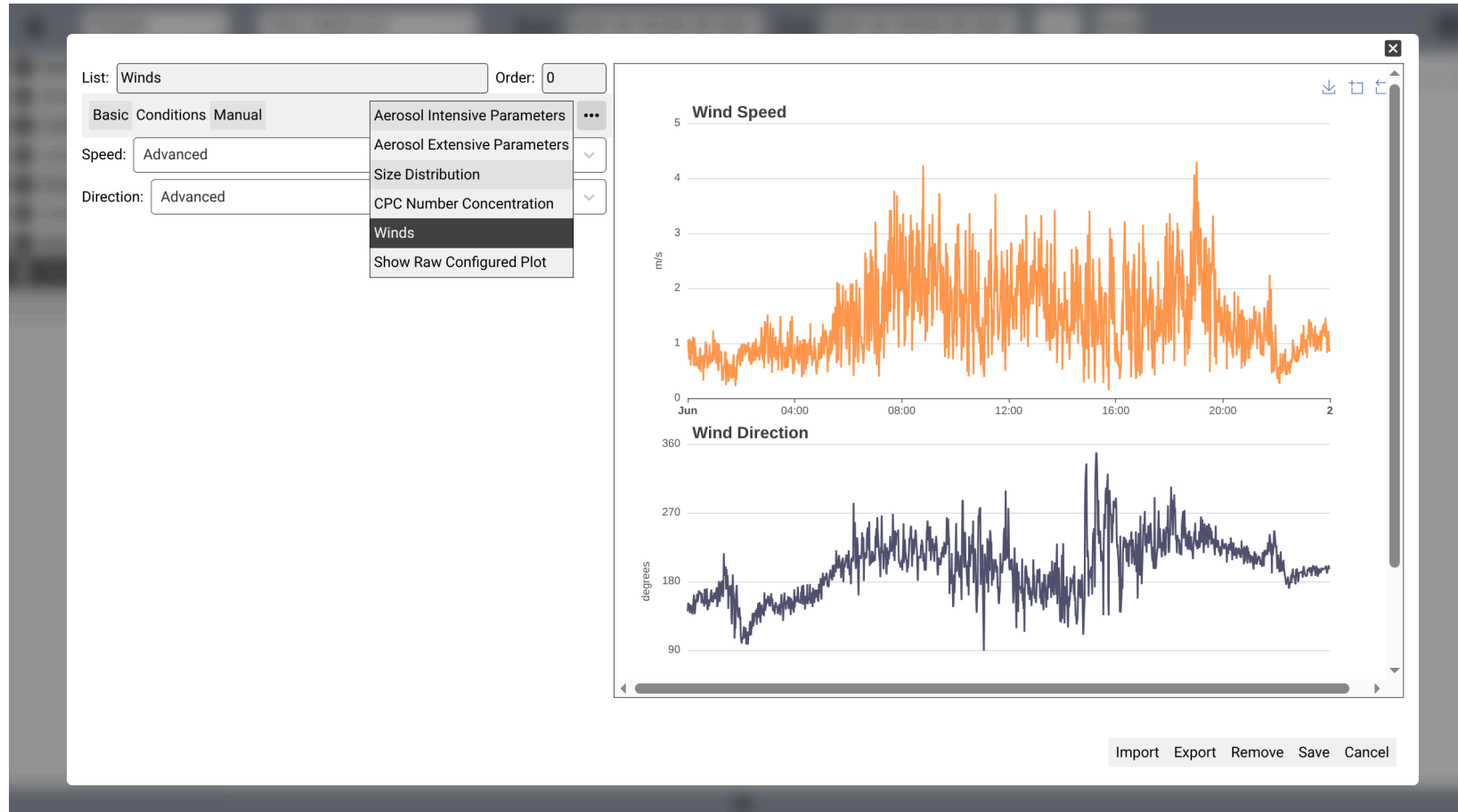
Detailed Custom Plot



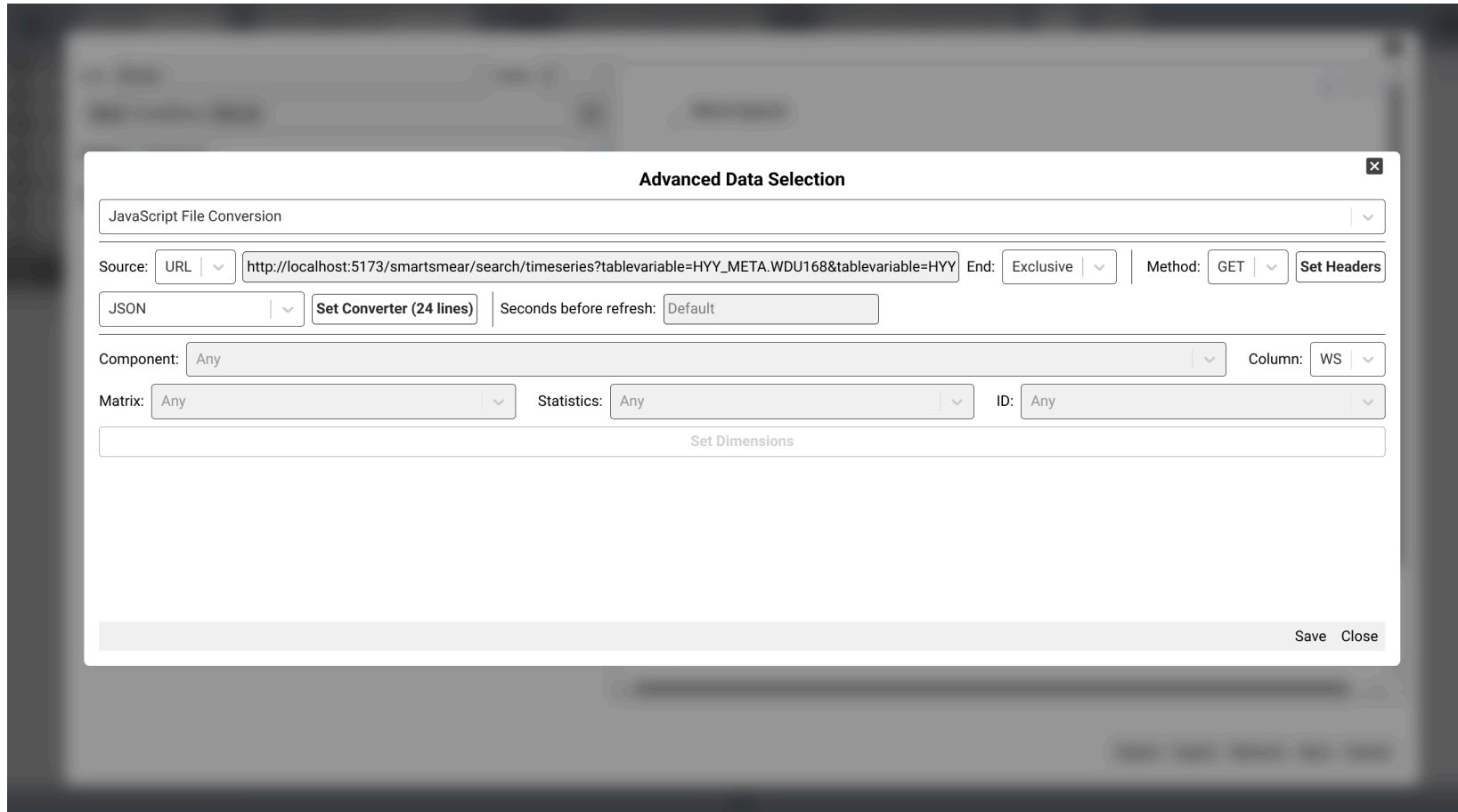
External API Source



External API Customization



API Data Source Definition



The image shows a screenshot of a software interface with a dialog box titled "Advanced Data Selection". The dialog box has a close button (X) in the top right corner. Inside the dialog, there is a dropdown menu currently showing "JavaScript File Conversion". Below this, the "Source" is set to "URL" with a value of "http://localhost:5173/smartsmeat/search/timeseries?tablevariable=HYY_META.WDU168&tablevariable=HYY". The "End" is set to "Exclusive" and the "Method" is "GET". There is a "Set Headers" button. Below the source field, there is a "JSON" dropdown, a "Set Converter (24 lines)" button, and a "Seconds before refresh" field set to "Default". The "Component" is set to "Any", and the "Column" is "WS". The "Matrix" is "Any", "Statistics" is "Any", and "ID" is "Any". There is a "Set Dimensions" button. At the bottom right, there are "Save" and "Close" buttons.

Advanced Data Selection

JavaScript File Conversion

Source: URL End: Exclusive | Method: GET | **Set Headers**

JSON | **Set Converter (24 lines)** | Seconds before refresh: Default

Component: Any | Column: WS

Matrix: Any | Statistics: Any | ID: Any

Set Dimensions

Save Close

Admin UI

User Control

Instrument Control

Station Control

Instrument Type Control

Stations List

Instrument Types

Instruments

Flags for Instrument Types

Flags for Single Instruments

Users

User Authorization

User Access

Administrators

Plots

Instrument Type Plots

Single Instrument Plots

User Plots

Plot Erasures

Static access

+

Identification

+

default

Instrument Name	Type	Station
FI03L_CPC_HYY_01	cpc	FI0050R
FI03L_Magee_AE33	ae33	FI0050R
FI03L_NE300_HYY	neph	FI0050R
FI03L_Thermo_5021_HYY	maap	FI0050R
FI03L_UHEL_SMPs_HYY	smps	FI0050R
N001L_uv_abs_uk_0002	uv_abs	N00002R

Repository

<https://version.helsinki.fi/hageman/aqc>