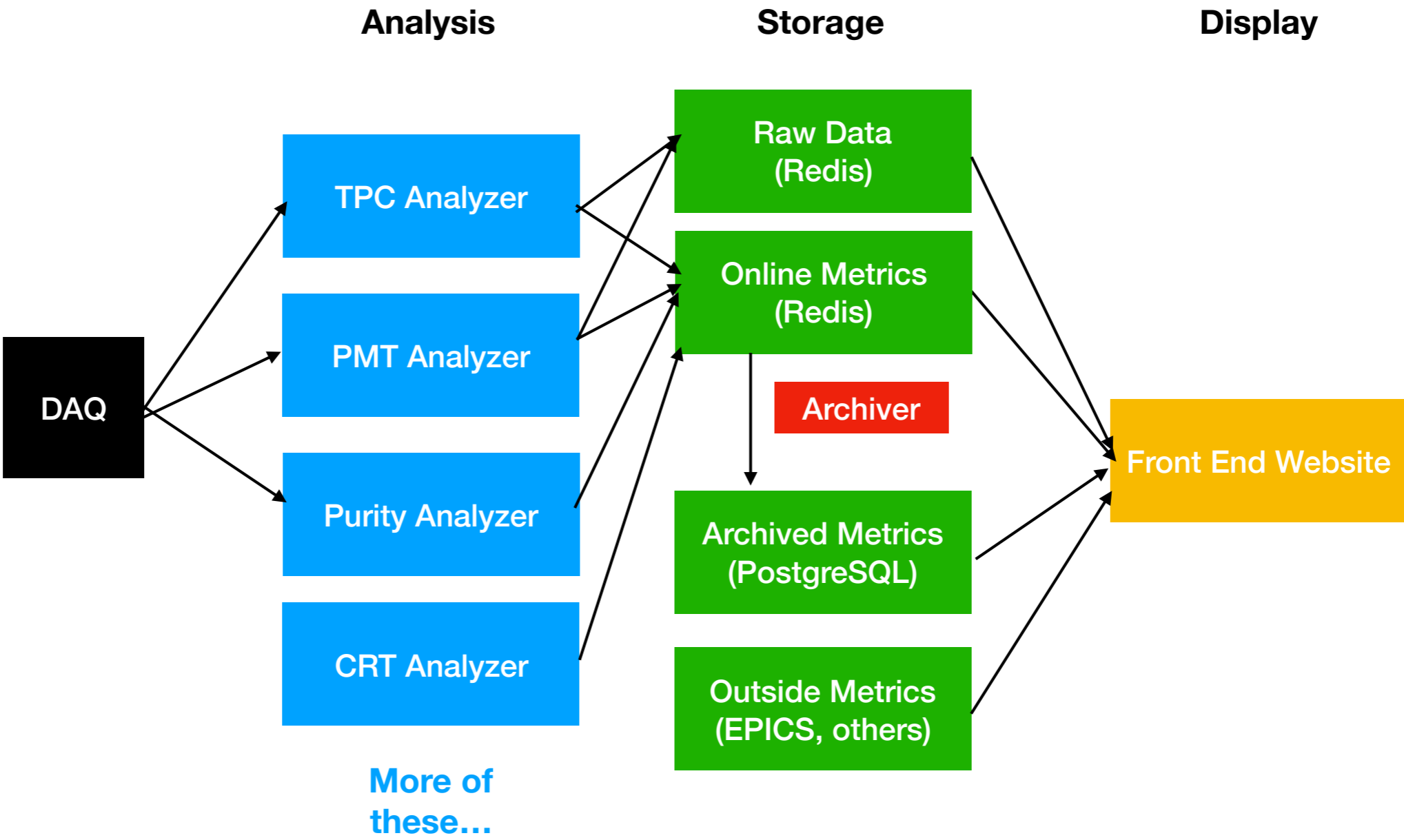# Fermilab

ICARUS Data Quality Monitoring

Minerba Betancourt

January 16 2020

Online Monitoring Infrastructure

- Using the same framework from SBND, developed by Gray Putnam at the SBND vertical slice test summer 2018
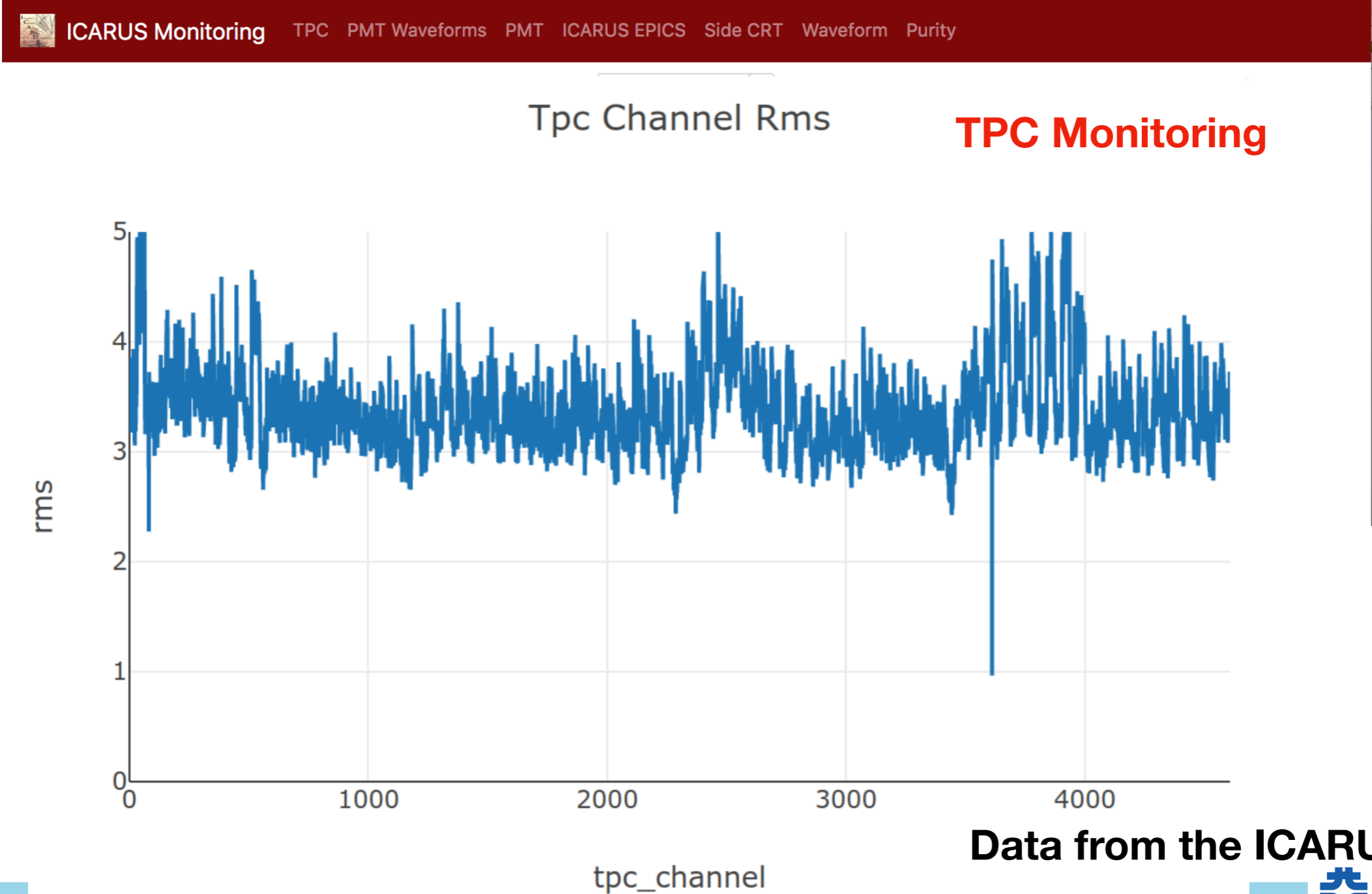
Online Monitoring Flow Chart

Analysis   **Storage**   **Display**

More of these…

Status of the Online Monitoring in ICARUS

- We created separated SBN-online website and database for SBND and ICARUS
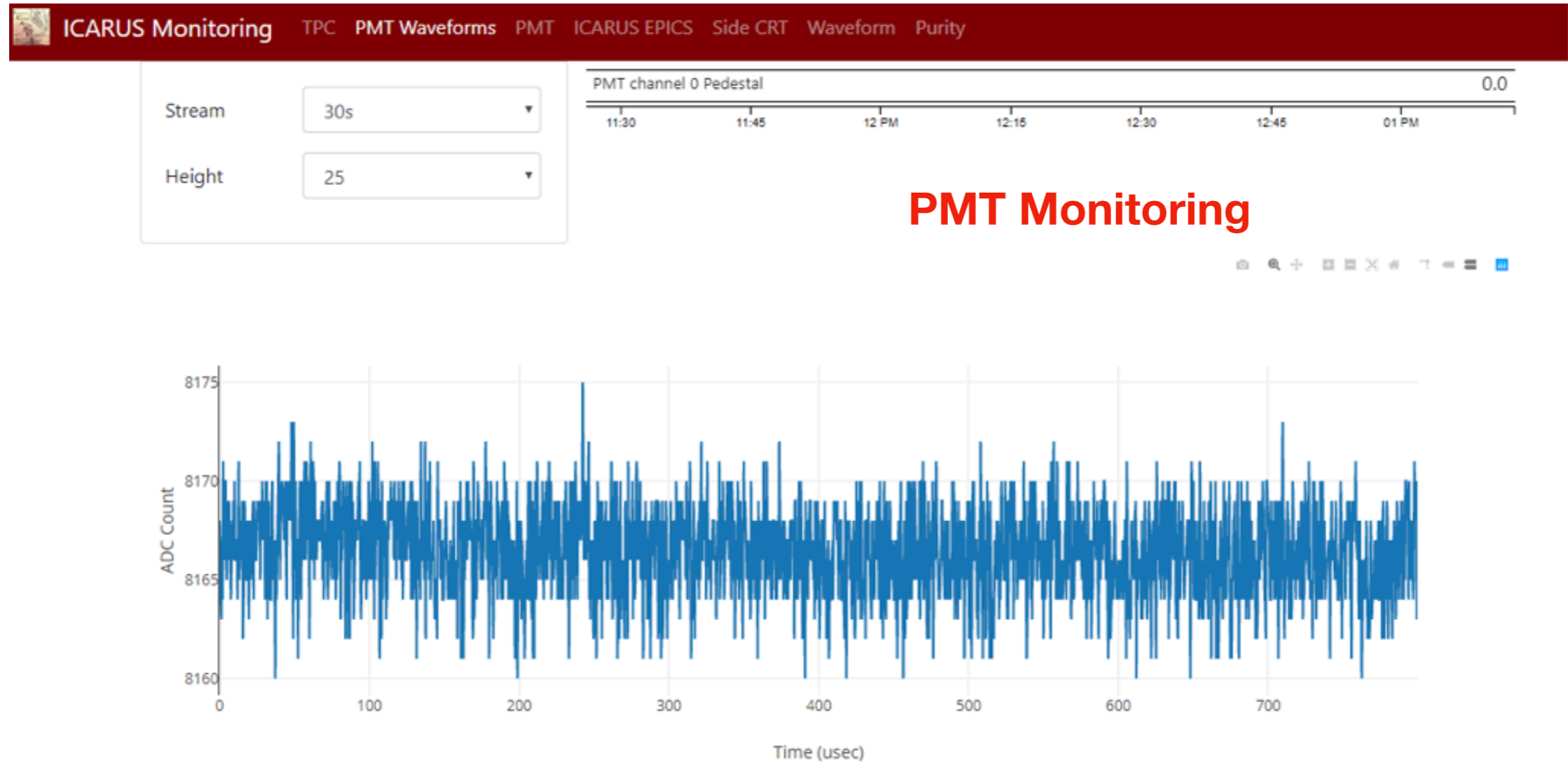- We replicated the setup from SBND to ICARUS

ICARUS Online Monitoring

ICARUS Monitoring   TPC   PMT Waveforms   PMT   ICARUS EPICS   Side CRT   Waveform   Purity

Tpc Channel Rms

TPC Monitoring

Data from the ICARUS VST

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PMT Monitoring

- PMT Waveforms

- We are developing metrics to monitor the PMTs, for example
  - Making a heat map with ADC count

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CRT Monitoring

- Monitoring data from the north wall side CRT
- We are reading 8 Front end Boards

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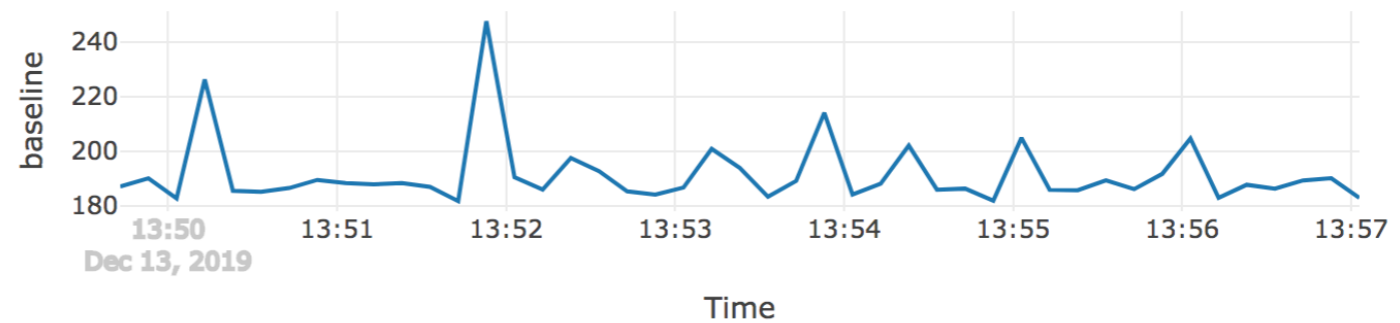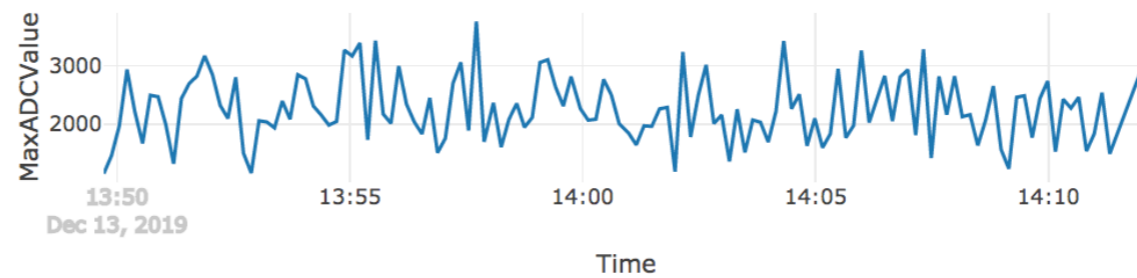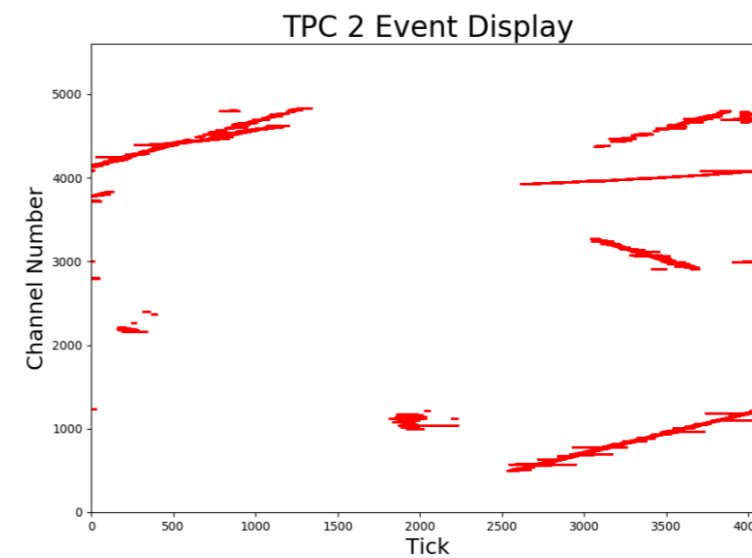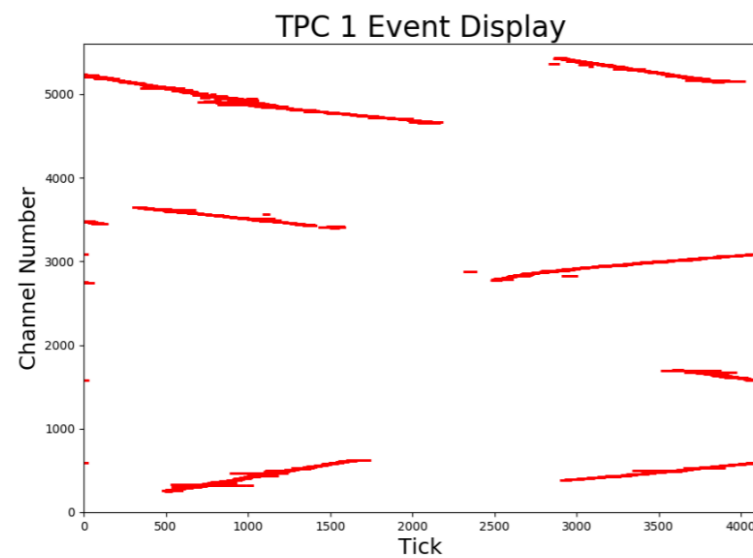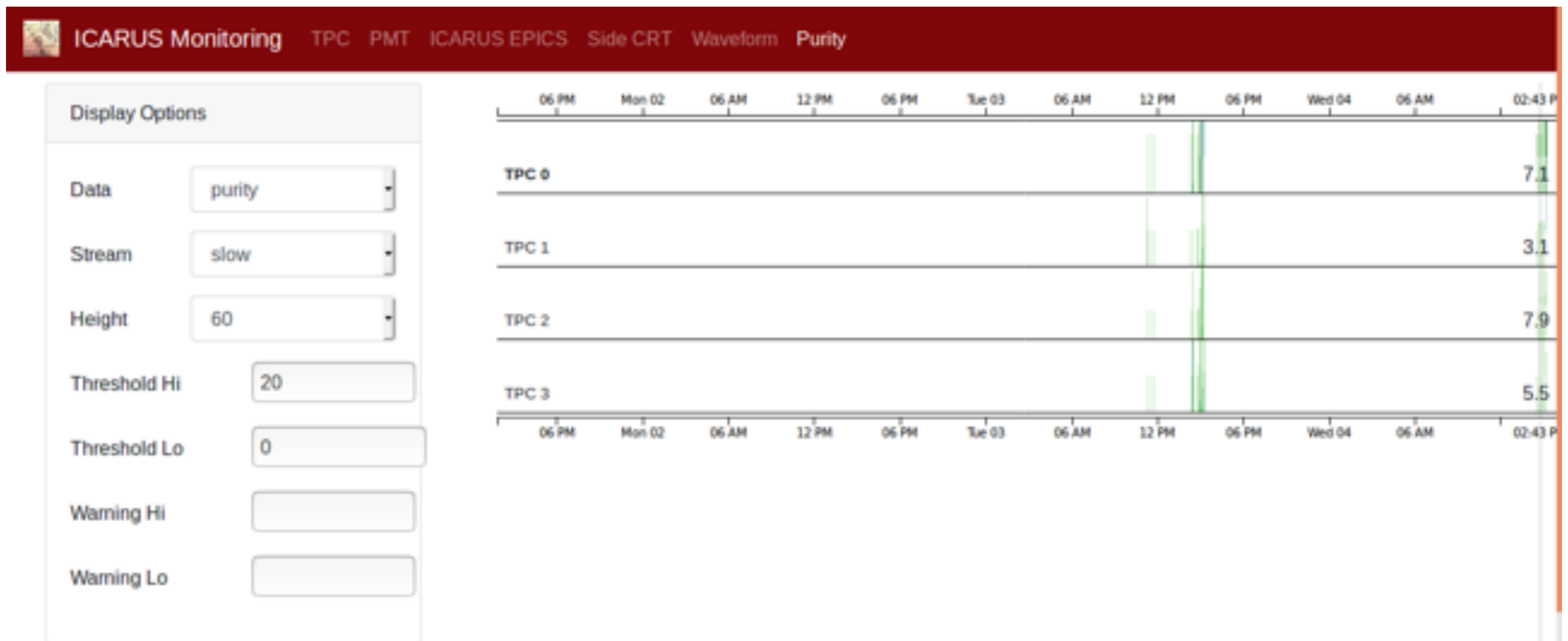
Event Display Development

- TPC event displays
- Prototype event display accessing zero-suppressed waveforms from a database
- Using ICARUS MC simulation

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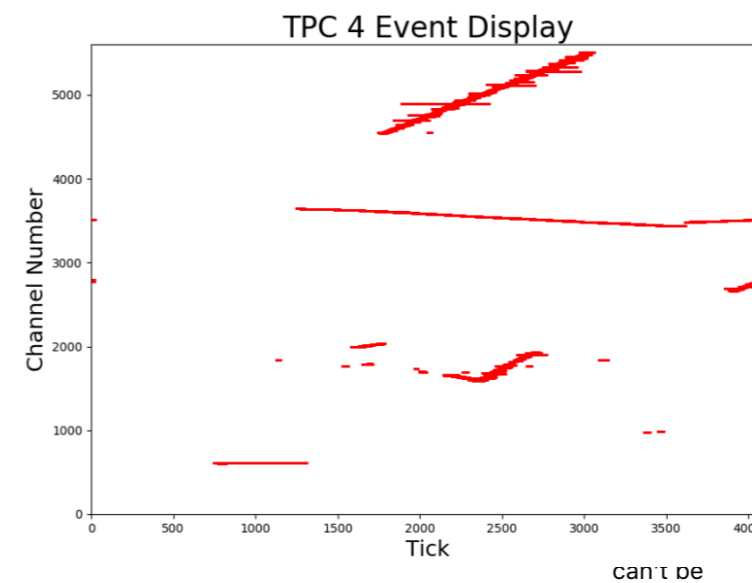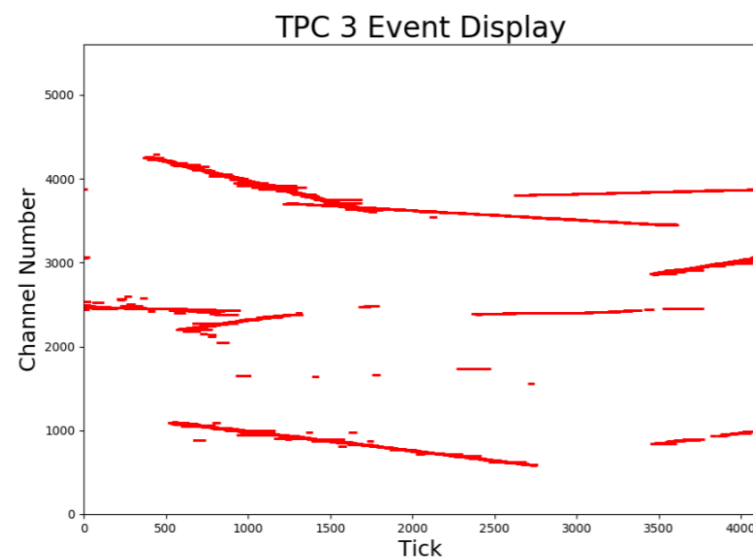
Purity Measurement in the Online Monitoring

- Using a fast method to perform the purity measurement developed by Christian Farnese
- The purity measurement is displayed per each TPC

- We are validating the code with different MC samples and developing tools to display of purity versus time

Latest Tests

- Yesterday we ran both with PMT and TPC systems at the same time
- Displaying data quality metrics from TPC and PMT at the same time!
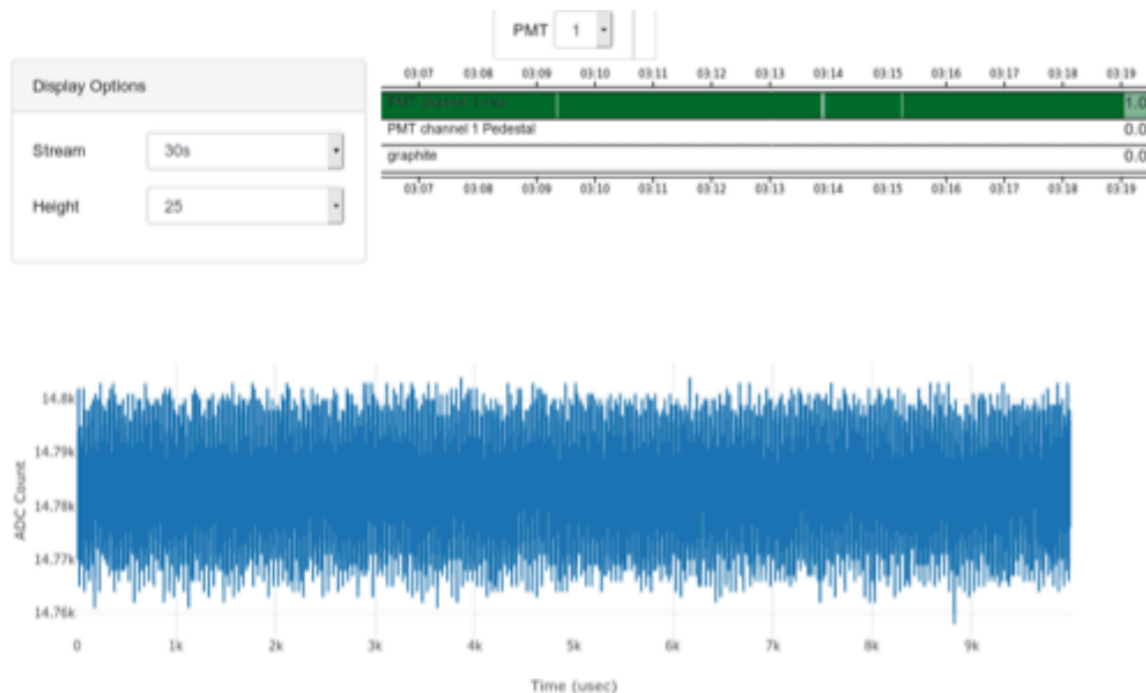
Recent Database Work

- We have been building out the database infrastructure
- Justin Mueller and Bill Badgett have developed the online monitoring Archiver program, which will aggregate metrics from online database to the archived database
- This will be tested soon at ICARUS
- Bishu has been creating the database tables we need for all the systems (TPC, PMT and CRT)

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Ongoing Activities

- Testing the online monitoring with the different systems TPC, PMT and CRT
- Validating the purity calculation in the online monitoring
- Developing metrics for the different systems: TPC, PMT and CRT
  - Please let us know any monitoring metric you would like to see during shifts
- There is room for more development, please contact me if you are interested in joining the data quality effort!

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