

CI validation workflow updates

LArSoft Coordination Meeting

January 16, 2018

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(Fermilab)**

The CI Team

Outline

- **Grid support and CI validation**
- **Running CI validation workflows**
- **CI validation dashboard**
- **CI validation future plans**

Grid support and CI Validation

- Standard CI tests require small resources, these can run on a single build node.
- Validation tests usually require thousands of events to be processed, these **can't** run on a single node.
- With grid support built into the CI, validation tests become accessible.

Grid support and CI Validation

- The CI Validation workflow allows to build a specific version of the experiment code (tag, branch, ...) and to use it to run jobs on the grid using a configurable experiment workflow.
- Data produced by the CI Validation process are stored in a configurable dCache area for further analysis.
 - Also the code tarball and job logs are stored in dCache
- Provides a dedicated view in the CI dashboard to access the validation results
 - Provides stats about job usage resources for each stage

Grid support and CI Validation

CI Validation workflow configuration

- The CI validation phase has its own configuration file to set up
- This lives in *lar_ci/cfg/grid_workflow_DUNE.cfg*
- It consists of two types of sections:

[global] section that defines the experiment workflow

[<stage>] section that specifies stage properties

```
[global]
stages_phase_1      = sim reco
njobs_phase_1      = 100
nevents_per_job_phase_1 = 50
stages_phase_2      = mergeana validation
njobs_phase_2      = 1
validation_process  = DUNE Tracking Efficiency
validation_function = tracking_efficiency.sh,ana_hist_merged.root
ci_dcachedir        = /pnfs/dune/scratch/users/vito/CI_grid_input
max_log_size        = 20971520
notify_grid_email_to = slack_in_web_hook@T1961RKH6/B50B4SKFA/pUJiC

[sim]
FHiCL                = prodgenie_nu_dune10kt_1x2x6.fcl,standard_g4_dune
expected_lifetime    = 300m
memory                = 2000MB
disk                  = 5GB
executable            = lar
arguments             = --rethrow-all
output_filename       = prodgenie_nu_dune10kt_1x2x6_detsim.root
output_to_transfer    = prodgenie_nu_dune10kt_1x2x6_detsim.root

[mergeana]
expected_lifetime    = 60m
memory                = 1000MB
disk                  = 5GB
executable            = hadd
input_from_stage     = reco
input_filename        = ana_hist.root
output_filename       = ana_hist_merged.root
output_to_transfer    = ana_hist_merged.root

[validation]
expected_lifetime    = 60m
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```

Grid support and CI Validation

CI Validation workflow configuration

stages

#jobs, #events/job

dCache area used to store exp code, data, plots and logs produced by the experiment workflow

Slack channel to report the completion of the CI validation phase

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Stage FHiCL file → [sim] FHiCL

Stage executable → [sim] executable, [mergeana] executable

Stage jobs resources: expected lifetime, memory, disk → [sim] expected_lifetime, memory, disk; [mergeana] expected_lifetime, memory, disk; [validation] expected_lifetime, memory, disk

Running CI validation workflows

- **DUNE has 2 CI validation workflows:**
 - **DUNE FD Tracking Efficiency**
 - **DUNE FD Shower Reco Efficiency**

- **uBooNE has 2 CI validation workflows:**
 - **uBooNE Data/MC Cosmic validation**
 - **uBooNE MC BNB validation**

- **All these CI validation workflows are triggered weekly when a new experiment code tag is made**

CI dashboard

- DUNE CI Validation dashboard (available [here](#))
- Similar dashboard is available for uBooNE

LArSoft | ArgoNeuT | **DUNE** | LArIAT | uBooNE | SBND

Multiplatform Continuous Integration for LarCI

Navigation: ⏪ | 🏠 | ? | ⏩

Select builds:

From build:

of builds:

Select date range:

From:

To:

Platforms +

Build types +

Test suites +

Validation suites -

DUNE_Shower_Reco_Efficiency

DUNE_Tracking_Efficiency

Build ?	Start Time ?	Build Type ?	checkout ?	build ?	unit_test ?	install ?	ci_tests ?	ci_validation ?	Progress Legend
dune_ci_slf/393 (DUNE)	2018-01-13 09:30:59.017950	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
dune_ci_slf/392 (DUNE)	2018-01-13 09:23:10.481778	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
dune_ci_slf/370 (DUNE)	2018-01-05 16:49:08.539610	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
dune_ci_slf/369 (DUNE)	2018-01-05 16:46:22.987372	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
lar_ci/1432 (DUNE)	2017-12-29 12:55:20.105342	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
lar_ci/1431 (DUNE)	2017-12-29 12:54:44.990854	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
lar_ci/1421 (DUNE)	2017-12-22 13:32:45.165144	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
lar_ci/1420 (DUNE)	2017-12-22 13:32:28.400788	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
lar_ci/1419 (DUNE)	2017-12-22 13:24:27.465513	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
lar_ci/1418 (DUNE)	2017-12-22 13:23:16.465029	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		

Progress Legend

- Pending
- Unknown
- Succeeded
- Warning
- Failed
- Skipped

By expanding the “Validation suites” menu users can select CI Validation workflows and filter them among standard CI builds by clicking on the “Update” button

CI dashboard

- DUNE CI Validation dashboard (available [here](#))

LArSoft | ArgoNeuT | **DUNE** | LArIAT | uBooNE | SBND

Multiplatform Continuous Integration for LarCI

◀ | Home | ? | ▶

Select builds:

From build:

of builds:

Select date range:

From:

To:

Platforms +

Build types +

Test suites +

Validation suites -

DUNE_Shower_Reco_Efficiency

DUNE_Tracking_Efficiency

Build ?	Start Time ?	Build Type ?	checkout ?	build ?	unit_test ?	install ?	ci_tests ?	ci_validation ?	Progress Legend
dune_ci_slf/393 (DUNE)	2018-01-13 09:30:59.017950	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
dune_ci_slf/392 (DUNE)	2018-01-13 09:23:10.481778	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
dune_ci_slf/370 (DUNE)	2018-01-05 16:49:08.539610	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
dune_ci_slf/369 (DUNE)	2018-01-05 16:46:22.987372	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
lar_ci/1432 (DUNE)	2017-12-29 12:55:20.105342	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		
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lar_ci/1418 (DUNE)	2017-12-22 13:23:16.465029	slf6 e14:prof	✓	✓	▶▶	✓	▶▶		

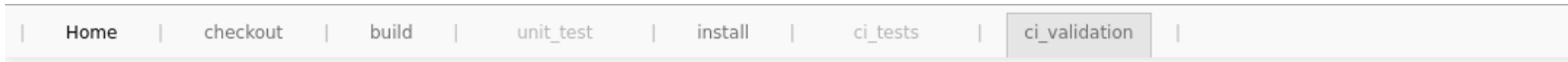
Progress Legend:

- Pending
- Unknown
- Succeeded
- Warning
- Failed
- Skipped

By clicking on one of the “ci_validation” box users can access CI validation results

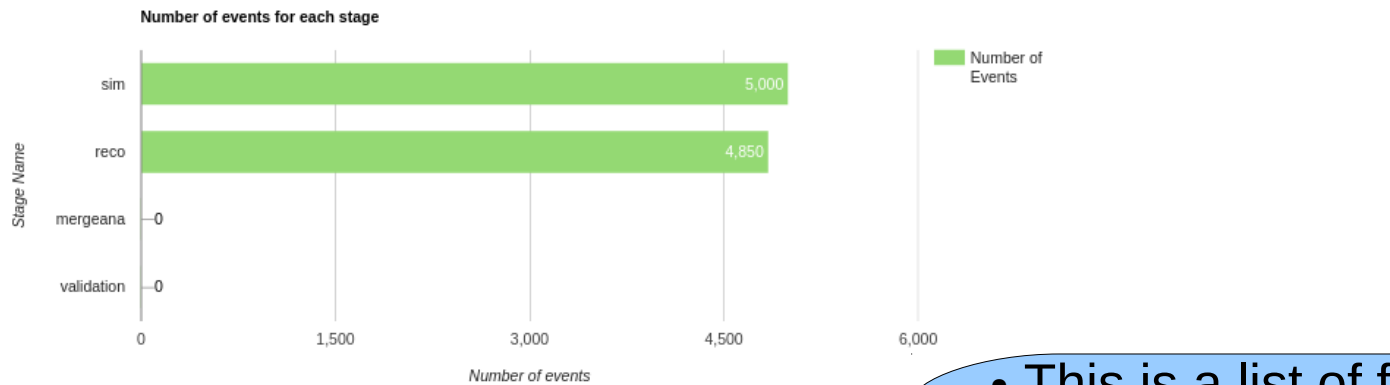
CI Validation dashboard

- DUNE Tracking Efficiency validation dashboard (available [here](#))



DUNE Tracking Efficiency

Build	Start Time	Build Type	sim	reco	mergeana	validation	Progress Legend
dune_ci_slf/393 (DUNE)	2018-01-13 15:27:41.404467	slf6 e14:prof	✓	⚠	✓	✓	Successful Failed Pending Warning Skipped Held Unknown



Phase: ci_validation

ci_validationDUNE.log

```
pandoraeff Pkaon Eff
pandoraeff Pmu Eff
pandoraeff Ppion_minus Eff
pandoraeff Ppion_plus Eff
pandoraeff Pproton Eff
pmtrackeff Pkaon Eff
pmtrackeff Pmu Eff
pmtrackeff Ppion_minus Eff
pmtrackeff Ppion_plus Eff
pmtrackeff Pproton Eff
pmtracktceff Pkaon Eff
pmtracktceff Pmu Eff
pmtracktceff Ppion_minus Eff
pmtracktceff Ppion_plus Eff
pmtracktceff Pproton Eff
pmtrajfiteff Pkaon Eff
pmtrajfiteff Pmu Eff
pmtrajfiteff Ppion_minus Eff
pmtrajfiteff Ppion_plus Eff
pmtrajfiteff Pproton Eff
pmtrajfittceff Pkaon Eff
pmtrajfittceff Pmu Eff
pmtrajfittceff Ppion_minus Eff
pmtrajfittceff Ppion_plus Eff
pmtrajfittceff Pproton Eff
Started: 01/13/2018 09:40:10
Finished: 01/13/2018 15:31:46. Exit code: 201
```

+pandoraeff/
+pmtrackeff/
+pmtracktceff/
+pmtrajfiteff/
+pmtrajfittceff/

overall_efficiency.txt

overall_efficiency

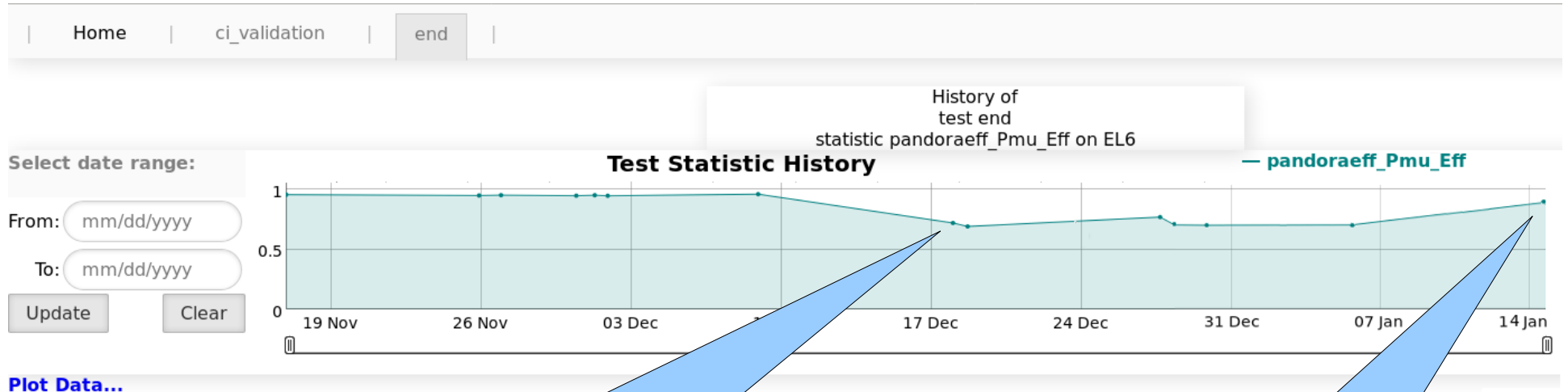
• This is a list of folders used to group validation plots generated by different algorithms

• By clicking on them they expand to show plots

This is a list of validation results that are tracked over time

CI Validation dashboard: validation results

- DUNE Tracking Efficiency: “**pandoraeff Pmu Eff**” historical values

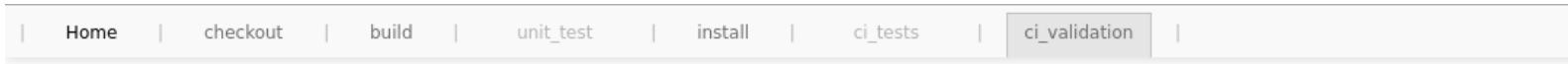


A PANDORA update caused a drop in Pmu efficiency

The fix reported the Pmu efficiency close to its original value

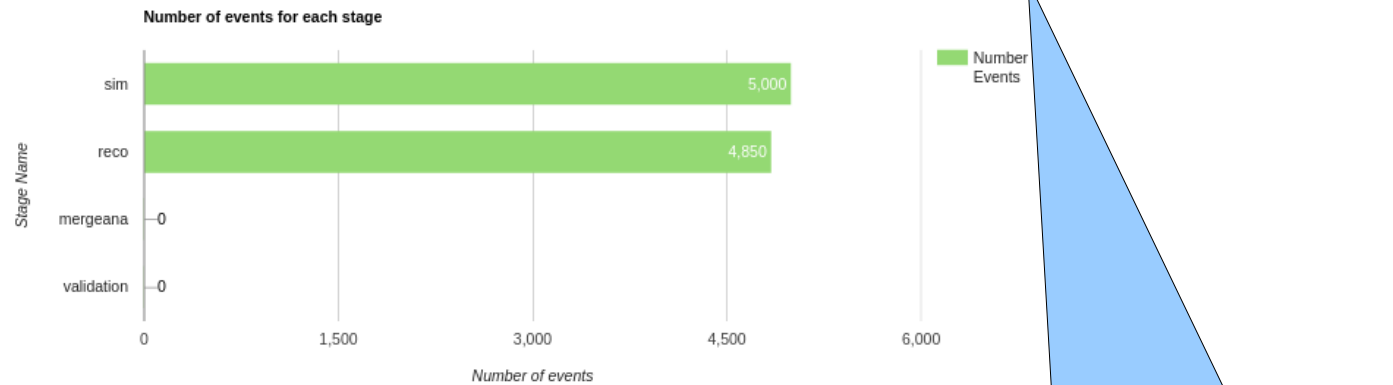
CI Validation dashboard

- DUNE Tracking Efficiency validation dashboard is available [here](#)



DUNE Tracking Efficiency

Build	Start Time	Build Type	sim	reco	mergeana	validation	Progress Legend
dune_ci_slf/393 (DUNE)	2018-01-13 15:27:41.404467	slf6 e14:prof	✓	⚠	✓	✓	Successful Failed Pending Warning Skipped Held Unknown



Phase: ci_validation

ci_validationDUNE.log

```
pandoraeff Pkaon Eff
pandoraeff Pmu Eff
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pmtrackeff Pkaon Eff
pmtrackeff Pmu Eff
pmtrackeff Ppion_minus Eff
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pmtrajfiteff Ppion_minus Eff
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pmtrajfiteff Pproton Eff
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pmtrajfittceff Pproton Eff
Started: 01/13/2018 09:40:10
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```

- +pandoraeff/
- +pmtrackeff/
- +pmtracktceff/
- +pmtrajfiteff/
- +pmtrajfittceff/

overall_efficiency.txt

overall_efficiency

By clicking on the stage box users can access jobs stats

CI validation dashboard: jobs stats

Home | ci_validation

sim on EL6
Build dune_ci_sif/393
Trigger: trigger script by Vito@larsoftdev6.fnal.gov
status: Success

Select date range: Test sim Usage History

From: mm/dd/yyyy To: mm/dd/yyyy

Update Clear

18:00

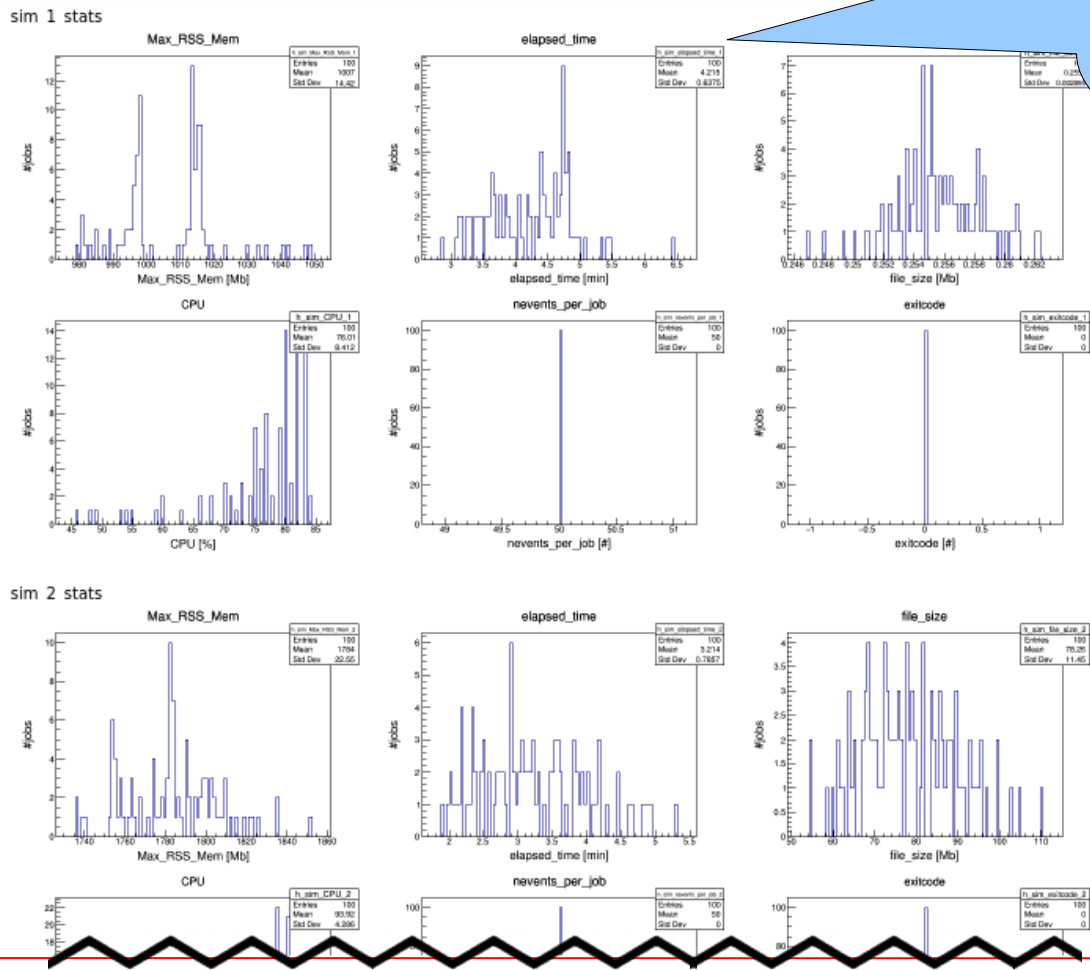
Date

For each stage there are jobs stats:

- max RSS memory
- elapsed time
- output file size
- CPU%
- #events/job
- exit code

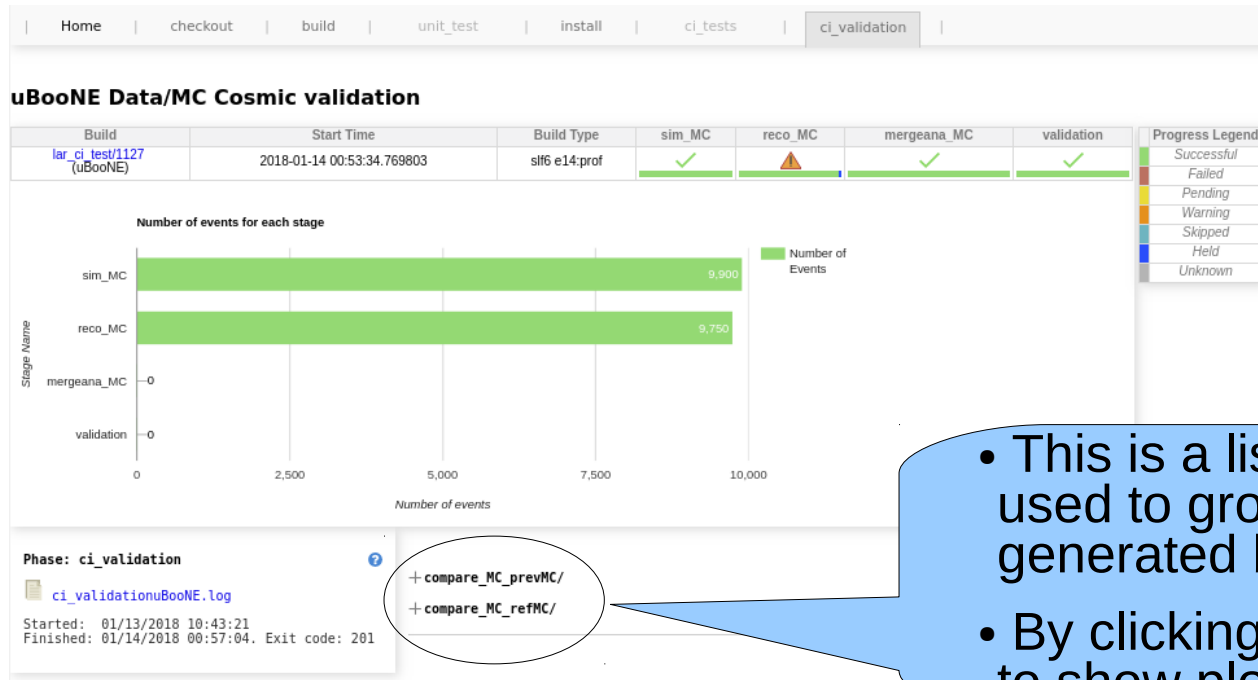
Test: sim

sort_criteria	id
Registered 2018-01-13 09:40:24.858957	
Started 2018-01-13 09:40:24.922673	
jobs_scheduled	100
jobs_completed	100
jobs_successful	100
jobs_failed	0
jobs_running	0
jobs_skipped	0
jobs_held	0
jobs_unknown	0
nevents_per_job	50
Finished 2018-01-13 15:27:41.404467	
exit code: 0.0	



CI Validation dashboard

- uBooNE Data/MC Cosmic validation dashboard (available [here](#))



- This is a list of folders used to group validation plots generated by different algorithms
- By clicking on them they expand to show plots

CI Validation dashboard

- uBooNE Data/MC Cosmic validation dashboard (available [here](#))



This is a validation plot that compare results from two different experiment code tags

CI validation future plans

- Currently the CI validation jobs run only on-site
- There is a plan to run CI validation jobs also off-site
- Any feedback to improve the CI validation is very welcome