

Monitoring & Alarms

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AugerPrime SDEU F2F Meeting

04.06.2024

AugerMonitoring in gitlab

- AugerMonitoring has been migrated to gitlab:
<https://gitlab.iap.kit.edu/auger-observatory/augermonitoring>
- Standard development branching and merging preferred.
- Everything is uploaded, WebSite, Database, Alarms, ...

auger-observatory / AugerMonitoring

Alarms	inhibit MaskedPMT alarms for S...	5 years ago
AnyToSql	changes according to (not so) n...	9 months ago
DataToXml	No commit message	8 years ago
Doc	add ICrC2011	11 years ago
InFieldReport_WebSite	No commit message	11 years ago
MySQLServer	Merge branch 'MonitCalib_table...	3 months ago
PMSToAny	add a directory containing script...	2 years ago
RemoteShift	RemoteShift/MonitorWall/Adelai...	11 months ago
RootDataFilesToAny	Code to send small shower aver...	2 years ago
SDDQCTools	QualityCut scripts to check PMT...	2 years ago
SDSHIFT	correct a path	2 years ago
SqlTools	major changes, now ready for use	2 years ago
T2ToXml	verbose mode introduced	16 years ago
T2XML	Modify the temporary directory t...	8 years ago
WebSite	enable T AERAWS after fix of se...	3 months ago

Project information



3,316 Commits

2 Branches

28 Tags

102.8 MiB Project Storage

[+ Add README](#)[+ Add LICENSE](#)[+ Add CHANGELOG](#)[+ Add CONTRIBUTING](#)[+ Add Kubernetes cluster](#)[+ Set up CI/CD](#)[+ Add Wiki](#)[+ Configure Integrations](#)

Created on

November 09, 2022

1 3 7

Search or go to...

Project

A AugerMonitoring

Pinned

Issues

0

Merge requests

0

Manage

>

Plan

>

Code

>

Build

>

Secure

>

Deploy

>

Operate

>

Monitor

>

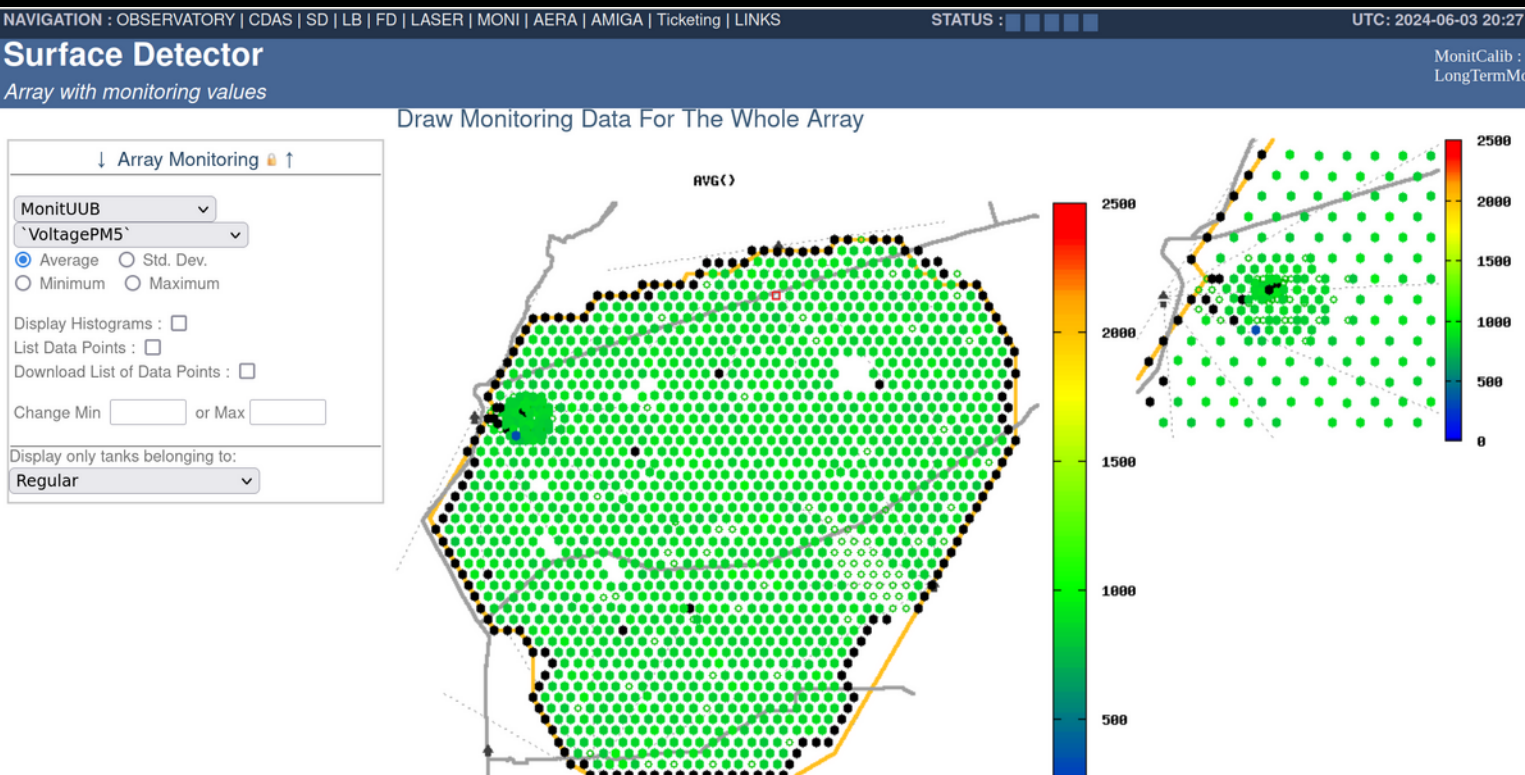
Analyze

>

Help

Upgraded WCD (SSD+SPMT+UUB) monitoring

Upgraded stations monitoring data available in **MonitUUB** table:
slow-control quantities filled since 28/10/2017 (becoming quite heavy...)
no quantities from calibration block (VEMs, baselines, etc.)

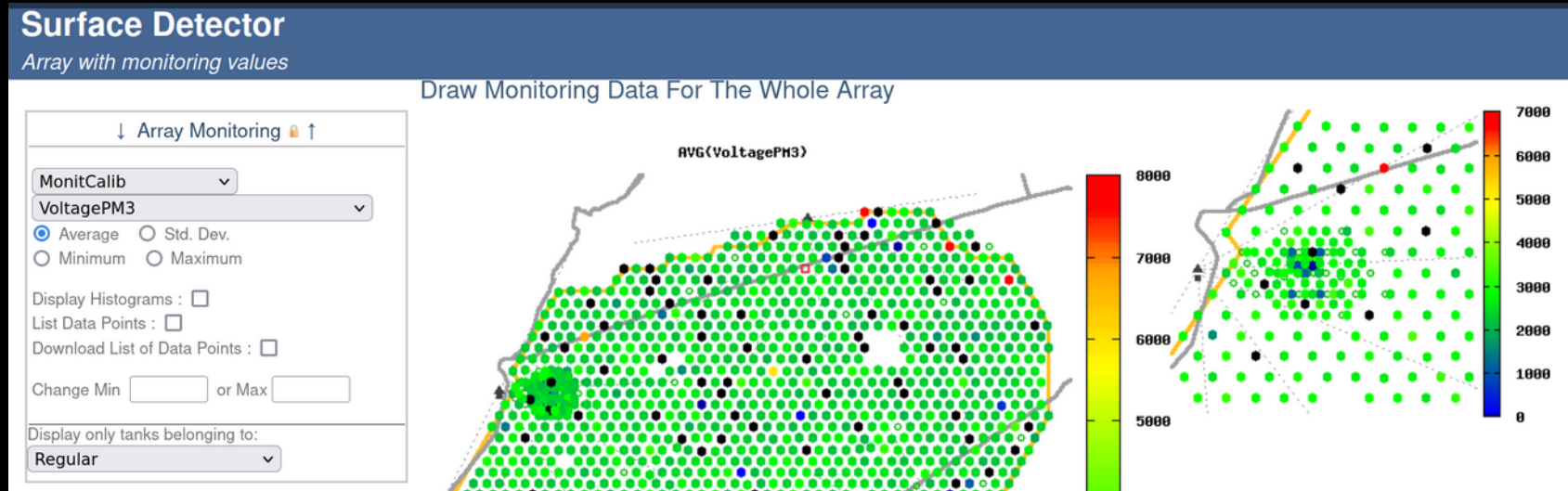


```
MySQL [AugerMonitor]> select * from MonitUUB where Ls  
***** 1. row *****  
LsId: 1737  
Time: 2023-06-07 23:53:13  
CDAStime: 2023-06-07 23:59:44  
VoltagePM1: 1031.14  
VoltagePM2: 963.89  
VoltagePM3: 1099.88  
VoltagePM4: 960.93  
VoltagePM5: 853.30  
VoltagePM6: 3.74  
CurrentPM1: 53.16  
CurrentPM2: 48.77  
CurrentPM3: 55.90  
CurrentPM4: 14.44  
CurrentPM5: 164.57  
CurrentPM6: 3.74  
TemperaturePM1: 13.79  
TemperaturePM2: 13.24  
TemperaturePM3: 10.68  
TemperaturePM4: 0.37  
TemperaturePM5: 10.50  
TemperaturePM6: 0.37  
ElectronicTemperature: 25.40  
TemperatureBattery1: 10.87  
TemperatureBattery2: 10.68  
WaterLevel: 0.37  
WaterTemperature: -272.97  
ExternalTemperature: -273.15  
AirTemperature: 25.50  
AirPressure: 25.70  
VoltageBattery1: 25.61  
VoltageBattery2: 25.50  
VoltageSolarPanel: 0.056  
CurrentSolarPanel: 0.03  
CurrentLoad: 50.708  
Voltage1.0V: 0.998  
Current1.0V: 85.407
```

Upgraded WCD (SSD+SPMT+UUB) monitoring

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Since 25/03/2022 (CDAS-DAQ update) data from UUB stations are also filled inside **MonitCalib** table, **but using uncalibrated conversion factors**.*



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slow-control quantities filled since 28/10/2017 (becoming quite heavy...)
no quantities from calibration block (VEMs, baselines, etc.)

Since 25/03/2022 (CDAS-DAQ update) data from UUB stations are also filled inside *MonitCalib* table, **but using uncalibrated conversion factors**.*

This fills only previously existing fields, no new variables like SPMT-HV.

NOTE : also mc_.root files are currently filled with wrongly calibrated values.
The re-processing will be performed after finalizing the transition.

Status:

AugerPrime monitoring session (13-15/09/2023, held remotely) outcome:

- conversion factors for UUB slow-control block validated (and well documented) by Ricardo
- updated code for the enlargement of the *MonitCalib* table committed in the AugerMonitoring repository
- CDAS-user MoIO classes updated to be in synch with CDAS/daq
- ***DataToXml*** library to be moved from AugerMonitoring to CDAS-user

```
555 CREATE TABLE `MonitCalib` (  
556   `LsId` smallint(5) unsigned NOT NULL COMMENT 'Local Station ID',  
557   `Time` datetime NOT NULL COMMENT 'Time at which the LS has sent the Monit or Calib block',  
558   `CDASTime` datetime NOT NULL COMMENT 'Time of reception of the Monit or Calib block',  
559   `UnifiedBoard3V` float(5,3) NOT NULL,  
560   `UnifiedBoard-3v` float(5,3) NOT NULL,  
561   `UnifiedBoard5V` float(5,3) NOT NULL,  
562   `UnifiedBoard12V` float(6,3) NOT NULL,  
563   `UnifiedBoard24V` float(6,3) NOT NULL,  
564   `VoltagePM1` float(6,2) NOT NULL,  
565   `VoltagePM2` float(6,2) NOT NULL,  
566   `VoltagePM3` float(6,2) NOT NULL,  
567   `VoltagePM4` float(6,2) NOT NULL,  
568   `VoltagePM5` float(6,2) NOT NULL,  
569   `VoltagePM6` float(6,2) NOT NULL,  
570   `CurrentPM1` float(5,2) NOT NULL,  
571   `CurrentPM2` float(5,2) NOT NULL,  
572   `CurrentPM3` float(5,2) NOT NULL,  
573   `CurrentPM4` float(5,2) NOT NULL,  
574   `CurrentPM5` float(5,2) NOT NULL,  
575   `CurrentPM6` float(5,2) NOT NULL,  
576   `TemperaturePM1` float(5,2) NOT NULL,  
577   `TemperaturePM2` float(5,2) NOT NULL,  
578   `TemperaturePM3` float(5,2) NOT NULL,
```

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Next steps:

- Extend MonitCalib by the defined new UUB variables
 - Use new Data2xml on cronos to fill extended MonitCalib
 - Validate extended MonitCalib
 - Implement new IoMo and filling in CDAS, to be installed on cronos
- Only last step will change the mc-files

Ready for
SDEU Orsay meeting
3-5 June?

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No Person-Power = No Progress

Ready for
SDEU Orsay meeting
3-5 June?

Alarms and quality cuts

Alarms are computed from *MonitCalib* table data
cc code and python scripts in augermonitoring/Alarms
Executables called in cron monitor@moni via AlarmsScript.sh

Surface Detector

Alarms

List of Alarms.

There are 6542 types of Alarms using your search preferences.

Type of Alarm = (Alarm Name) && (Station ID) && (PMT ID) .

Priority	Severity	Alarm name	Lsid	View Masked	View Resolved	View All	No cut on Time	
- Any - <input type="button" value="v"/>	- Any - <input type="button" value="v"/>	- Any - <input type="button" value="v"/>	Id <input type="text"/> or Name <input type="text"/> In Regular or Sub-array: <input type="button" value="v"/> Regular <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="SEARCH"/>

To Acknowledge or Resolve an Alarm select "View All" before

number of ouput per page: <input type="text" value="10"/>		Get the list of LSid/PMTs in alarm (t				
P.	S.	Alarm Name	Station Id	PMT Id	Last Occurence	Last Raised
		HugeLSLoss			2024-06-03 18:35:00	2024-06-03 18:40:02
		LowVoltageBatteries	11		2024-06-03 14:03:09	2024-06-03 14:03:09
		TooLowVoltageBatteries	11		2024-06-03 14:03:15	2024-06-03 14:03:15
		FreeDisk	11		2024-06-03 14:09:10	2024-06-03 14:09:10
		UBSoftwareVersion	11		2024-06-03 14:09:16	2024-06-03 14:09:16

Alarms and quality cuts

Alarms are computed from *MonitCalib* table data:

- transition from *MonitUUB* required to set alarms on AugerPrime monitored quantities ...

auger-observatory / AugerMonitoring / Repository

C++ MaskedPMT.cc 3.93 KiB

Blame

Edit ▾

Replace

Delete

```
1  /*!  
2   *  \brief MaskedPMT Alarm implementation  
3   *  \author Cyril Lachaud  
4   *  \version 1.0  
5   *  \date   11/2006  
6   *  \bug Not known.  
7   *  Main modification by Corinne Bérat for the SSD deployment/SSD80 - 2 april 2019  
8   *  The SSD PMT is connected to the UB via the channels used for one of the WCD PMT.  
9   *  Then, the corresponding PMT number is masked, so TubeMask<math>2^n = 0</math> ( $n = \text{\#PMT} - 1$ )  
10  *   and bits 4 or/and 5 of "TubeMask" is not zero, indicating the PMT number.  
11  *   Usually, when TubeMask=7 or 15, an alarm is raised. The alarms are inhibited in case of SSD80  
12  *   but the Freezing is still applied, since the other alarms are not designed for ssd-pmt.  
13  *   These modifications are done to avoid the raise and the solving of "fake" alarms.  
14  */
```

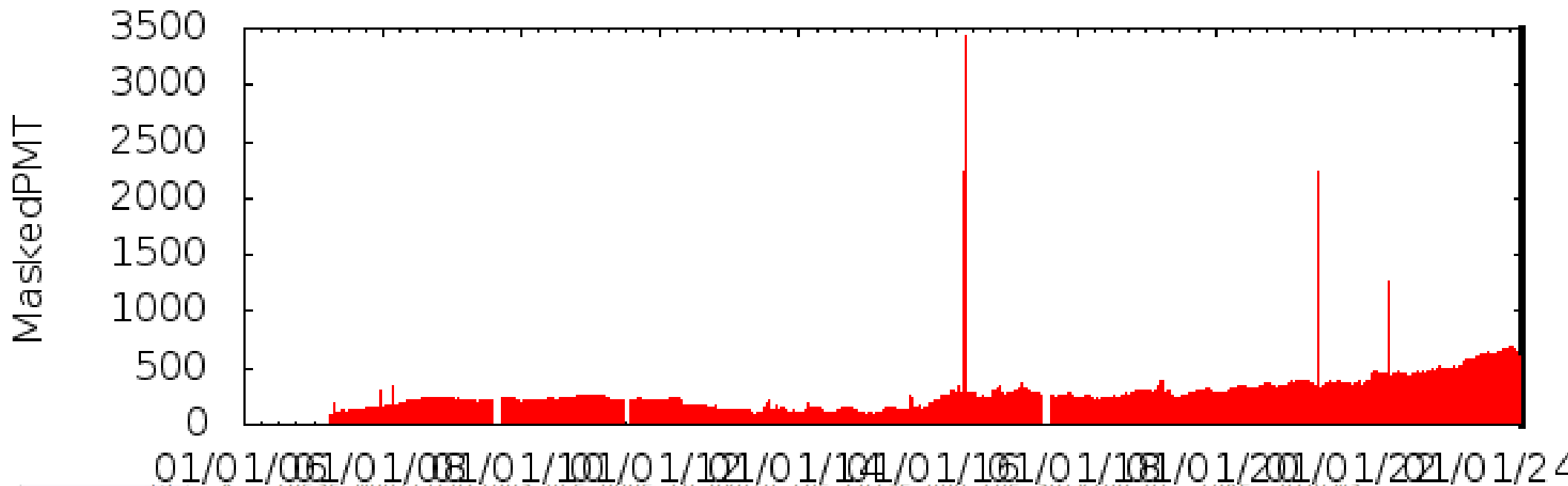
Alarms and quality cuts

Alarms are computed from *MonitCalib* table data:

- transition from *MonitUUB* required to set alarms on AugerPrime monitored quantities ...

auger-observatory / AugerMonitoring / Repository

No of MaskedPMT vs. Time (one day binning)



Alarms and quality cuts

Alarms are computed from *MonitCalib* table data:

- transition from *MonitUUB* required to set alarms on AugerPrime monitored quantities ...

Not only WCD, but also SSD, SPMT, ...

New limits for LPMT suggested:

Corinne is able to maintain alarm code and adapted suggested thresholds

Validation is required

Who is using the alarms?

(Similarly: PMTCommissioning)



GAP2024_025

SD in the UUB era: commissioning and first steps towards monitor

Author: [Martin Schimassek](#), [Piera Ghia](#)

Date: Thursday, 02 May 2024 14:50

Size: 748.16 KB

Keywords:

Monitoring, Alarms, UUB, SDEU, VEM-Peak, Stability, Bad PMTs

SSD-Check

- Development by Daniele, Matteo, Gabriella based on HV values
- See e.g. MOLTP call 14.05.2024 ([indico](#), [minutes](#))
- Check daily averages and last 10 day average as well as check if in valid range
- Created new table to fill daily averages for further alarms

```
SSD-PMT_Status.sql 473 B
1 CREATE TABLE `SSD_PMT_Status` (
2   `LsId` smallint(5) unsigned NOT NULL COMMENT 'Local Station ID',
3   `Date` date NOT NULL,
4   `DayAvgV` float(6,2) NOT NULL,
5   `DayAvgI` float(6,2) NOT NULL,
6   `Day10AvgV` float(6,2) NOT NULL,
7   `Day10AvgI` float(6,2) NOT NULL,
8   `On` smallint(1) DEFAULT '0',
9   PRIMARY KEY (`LsId`,`Date`),
10  KEY `DateIndex` (`Date`)
11 ) ENGINE=MyISAM DEFAULT CHARSET=latin1
12 COMMENT 'Filled daily by script, see in gitlab augermonitoring/CheckSSD/SSD/';
```

~~Summary~~ Person-power needed for:
UUB monitoring data2xml and validate variables
Upgrading IoMo block in CDAS

Moni upgrade pending

Hardware upgraded, Ruben prepared new systems:

moni and monidb (separated like on mirror)

- easier to maintain and upgrade
- only allow admin users on monidb server

Migration of large DBs require major down-time

Idea of parallel operation of DB-server and switching DBs one-by-one

Challenge: web-pages require php5

Mirror upgrade pending

Computing hardware upgrade assembled, system installation

Local SSD for fast dumping of DBs installed

Migration of large DBs require major down-time – *LL anyway not replicated*

Moni upgrade – LosLeones

New DAQ Hardware installation stopped the monitoring DB replication

Problem of too old slave version (rule: slave newer than master)

Procedure:

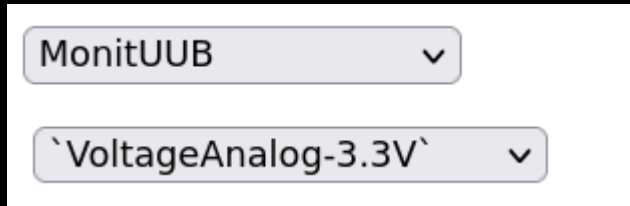
- Upgrade BUW-mirror
- Migrate LL from moni to monidb
- If ok → migrate all DBs from moni-monidb

At the moment web-interface to LL not available!

Student to validate contents once replicated would speed up the process!

UUB Monitoring

- Still temporary solution running
- MonitUUB filled daily, started in Oct. 2017
- First check showed reasonable values
- Pending check of all variables (experts)
- Web-interface had math-symbol bug – fixed now



- Then integration in MonitCalib block (CDAS), and LongTermMonitCalib (monitoring python script)
- Avoid math symbols in DB names when adapting MonitCalib !

```
MySQL [AugerMonitor]> select * from MonitUUB where Ls
***** 1. row *****
LsId: 1737
Time: 2023-06-07 23:53:13
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VoltageSolarPanel: 0.056
CurrentSolarPanel: 0.03
CurrentLoad: 50.708
Voltage1.0V: 0.998
Current1.0V: 85.407
Voltage1.2V: 1.207
Current1.2V: 13.420
Voltage1.8V: 1.802
Current1.8V: 224.014
Voltage3.3V: 3.341
Current3.3V: 343.892
Voltage12V: 10.977
VoltageAnalog3.3V: 3.296
CurrentAnalog3.3V: 182.627
VoltageAnalog-3.3V: -3.475
CurrentAnalog-3.3V: 170.050
VoltagePM12V: 12.081
CurrentPM12V: 44.359
VoltageRadio12V: 12.107
CurrentRadio12V: 0.028
VoltageGPS5V: 5.139
CurrentGPS5V: 17.446
VoltageUSB5V: 26.399
Ext1-24V: 24.988
Ext2-24V: 25.264
CurrentSC3.3V: 14.170
CurrentIn: 509.137
```

Surface Detector

MonitCalib : 50 min

Local Station 1744

Plot Monitoring and Calibration Parameters

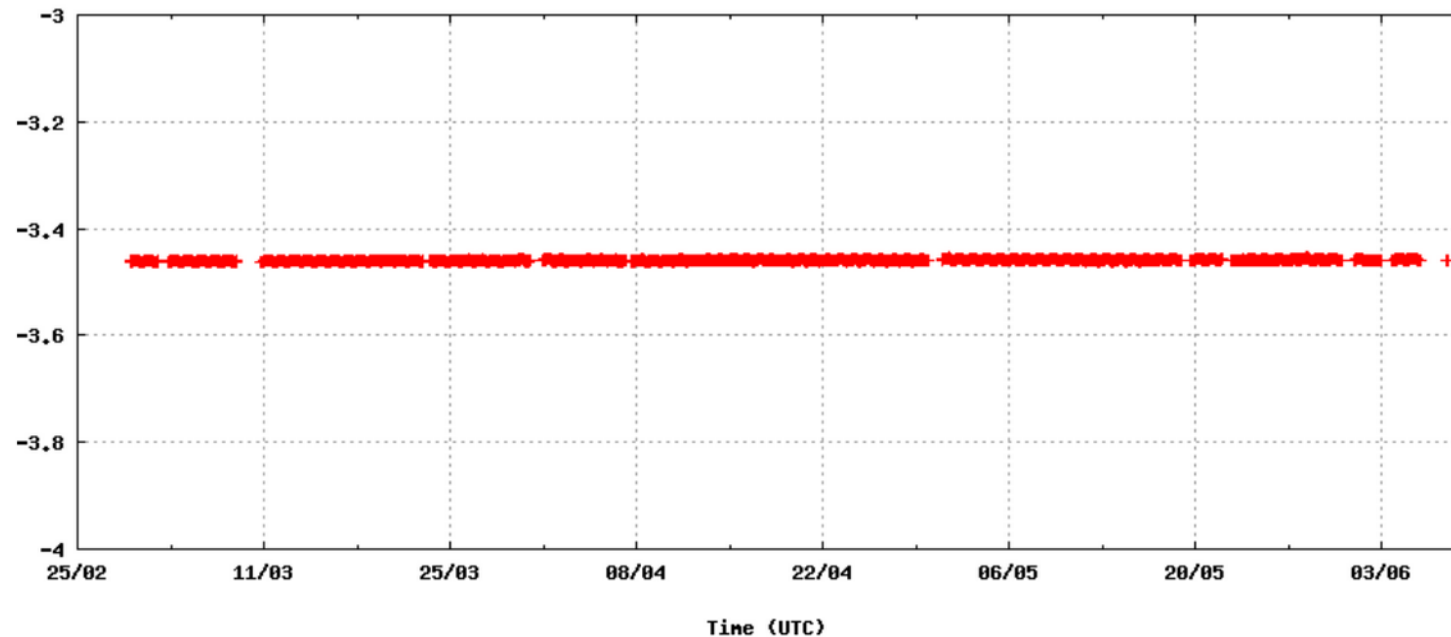
Graphics vs Time (DB binning) Grid : Use Time Cuts : Display Data Points :

MonitUUB

`VoltageAnalog-3.3V`

Set the vertical axis: Ymin and/or Ymax

LS : 1744



↓ Local Station ↑

-AlarmDefinitionName-

Select tanks belonging to:

Regular

LSId ID : 1744

Name : Le Qui Don

[LS Main Page](#)

[Alarms Table](#)

[Alarms Plots vs Time](#)

[Alarms Plots](#)

[Standard Plots](#)

[Trigger Plots](#)

[Monitoring](#)

[Batteries](#)

[Ageing Indicators](#)

[Maintenance History](#)

[Components History](#)

[Map position](#)

Current Alarms (In Time Preferences)

- FreeDisk
- LowVoltageBatteries

Surface Detector

Array with monitoring values

MonitCalib : 35 min
LongTermMonitCalib : 512 min

Draw Monitoring Data For The Whole Array

Station

↓ Array Monitoring ↑

MonitUUB

`VoltageAnalog-3.3V`

Average Std. Dev.
 Minimum Maximum

Display Histograms :

List Data Points :

Download List of Data Points :

Change Min or Max

Display only tanks belonging to:

