

Summary and status of contributions for the ICRC2019 LTP poster

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**Thursday 14th of February 2019,
13:00 CET**

TeamSpeak online Meeting

ICRC2019 LTP poster: main details

- **Type:** POSTER
- **Category:** DET2: “Long Term Performance”
- **Title:** “Long term performance of the Pierre Auger Observatory”
- **Presenter:** Koun Choi
- **Submission:** January 20th, 2019
- **Abstract:** The Pierre Auger Observatory is the largest detector ever built to measure ultra high energy cosmic rays. It employs a hybrid technique combining a surface detector consisting of 1664 water-Cherenkov stations and a fluorescence detector composed of 27 Schmidt telescopes. The construction of the Observatory started in 2004 and since then it has been continuously taking data in a stable manner. We will present the behavior of the Observatory over more than 14 years and the expected response into the future with the AugerPrime upgrade now underway. Key performance indicators such as the up-time and the event rates will be presented. The instruments for calibration and monitoring of the detectors will also be reviewed.

Possible Contents and Plots

- General and large discussion during the LTP meeting of January 17th, 2019;
- Main decisions taken (see Minutes – e-mail by Ioana on January 17th, 2019);
- Data period:
 - for the data that needs analysis: 12/2017 (needs DBs);
 - ontime and some other plots can be produced with data period until ICRC

Possible Contents and Plots

A) FD/Hybrid performance

- 1) **Event rate** for simple reconstruction cuts for individual eyes → should be shown (general agreement);
- 2) **Event rates with X_{\max} quality cuts** → NOT clear: see next slide
- 3) **FD ontime** → preferred on the efficiency plot, should be shown (general agreement)
- 4) **EFD/S38 plot** → NOT to be included (general agreement)
- 5) **A plot showing the mean X_{\max} as a function of time** (or just in two time intervals) → to be decided after the plots are produced.

Possible Contents and Plots

A) FD/Hybrid performance

2) Event rates with X_{\max} quality cuts → NOT clear:

- Decision to be taken after seeing the plots. The worry (from Jose) is that data from LA were not used for one year due to the EBS clock problem.
- General agreement, here is no reason not to show this, if a small sentence is written in the text

Possible Contents and Plots

B) long term performance of the other instrumental parts of PAO

1) Long term performances of lasers

in contact with Laura & Lawrence:

“plots to show the stability of operation of the CLF and XLF lasers over the years; they are not "stable" on energy, since we see a drift in time and some "jump" in correspondence with cleanings, but our calibration, automatically performed first within the box and then at the exit, solve this issue.”

2) Long term performances of calibrations

in contact with Gaetano

Possible Contents and Plots

A) SD performance

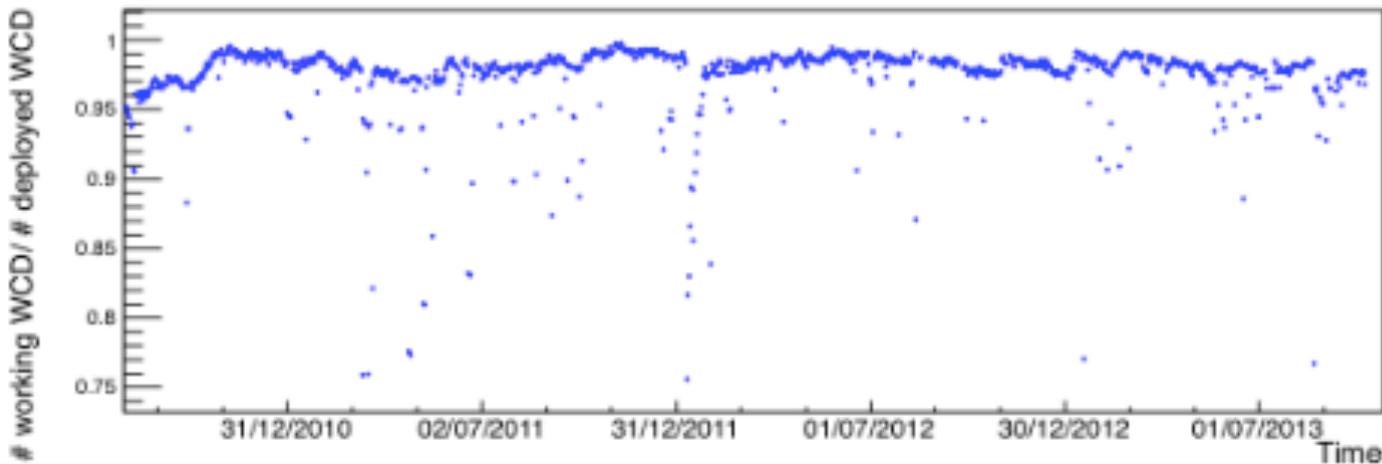
- 1) Event rates for 750/1500 m array → to be included
- 2) A/P profile and current status of the decrease and the future prediction → to be included
- 3) Data quality performance plot → not clear (see next slide)
- 4) On-time of the SD → to be included (see also email from Corinne and next slide)
- 5) Battery lifetime performances → not clear (see next slide)

Possible Contents and Plots

A) SD performance

4) Ontime of the SD → to be included

“Concerning plots that may be provided to illustrate the SD long term performance, I may suggest one of those which are in the Auger Nim paper, obtained with monitoring data: see fig 42, which shows the array efficiency (below is a similar one), to be updated. If you think it is necessary, I can update this plot.”



Possible Contents and Plots

A) SD performance

3) Data quality performance plot → not clear

we still need some input; maybe the attenuation parameters as a function of time, or a plot on the air-showers A/P as produced by Michael ?

5) Battery lifetime performances → not clear

this is quite complicated study, that cannot be done very fast (Ricardo) but this would be interesting maybe to try to automatize also as a general interesting information for the task.