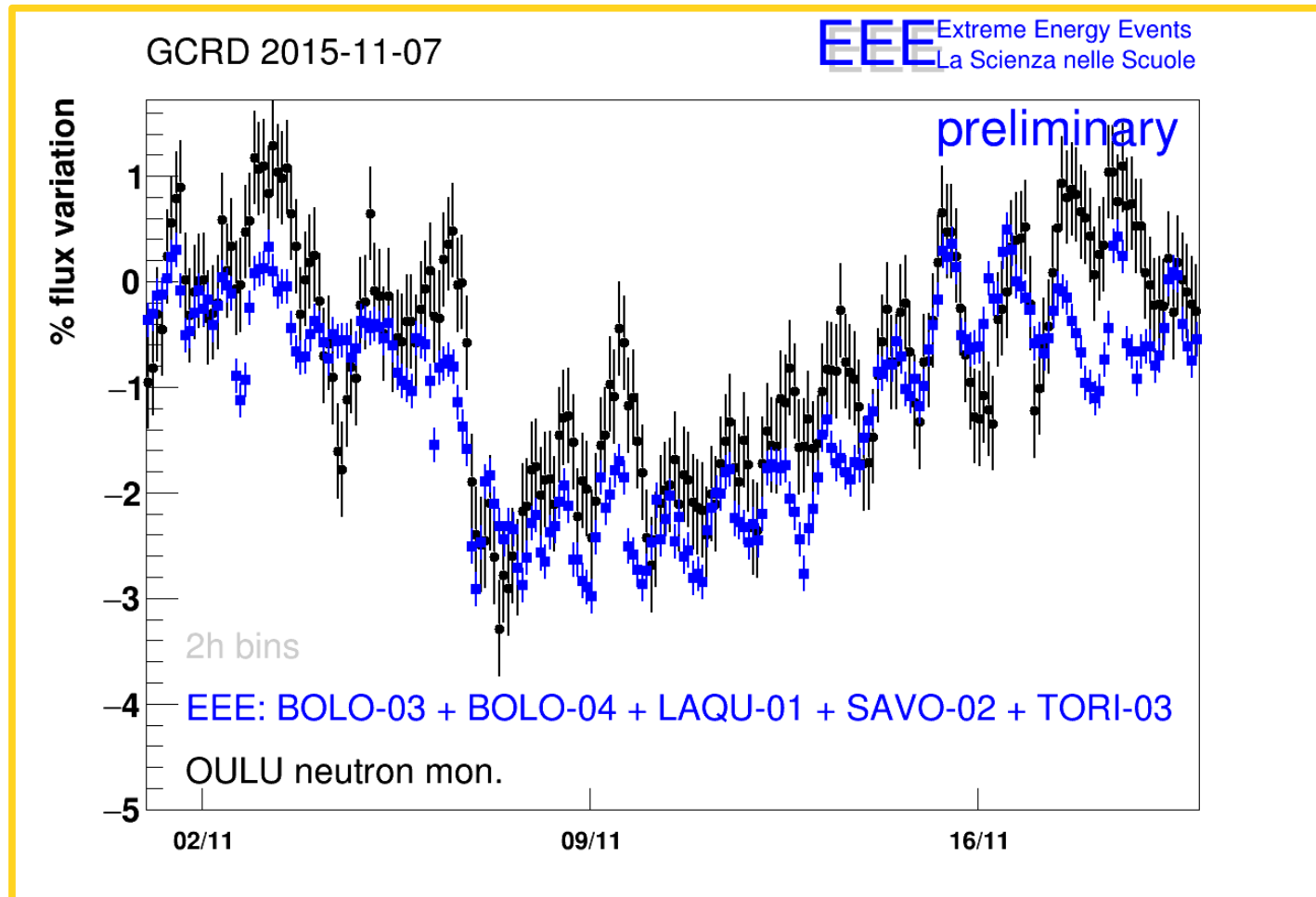


GCRD:

Corrections
and
Stability

AM 2017 06 28

We observed 4 GCRD Since Pilot RUN



5 stations, 3%, good agreement w.r.t. NM

Several parameters involved in unstabilities:

HV fluctuations:

Marco S. is working on stabilizing CATZ-01

A feedback system for HV stabilization is being designed by a student on TORI-03

This item is not related to the 4 GCRD we want to publish but it's fundamental for extensive GCRD measurements in future

Several parameters involved in unstabilities:

+

1. Barometric correction stability
2. H_{Veff} temperature dependance

These two parameters have to be corrected for reaching best confidence on the 4 GCRD already observed

Using data on the long period
2016-01 ----- 2017-01
We systematically extracted
Barometric correction
on the whole period

Asking for:

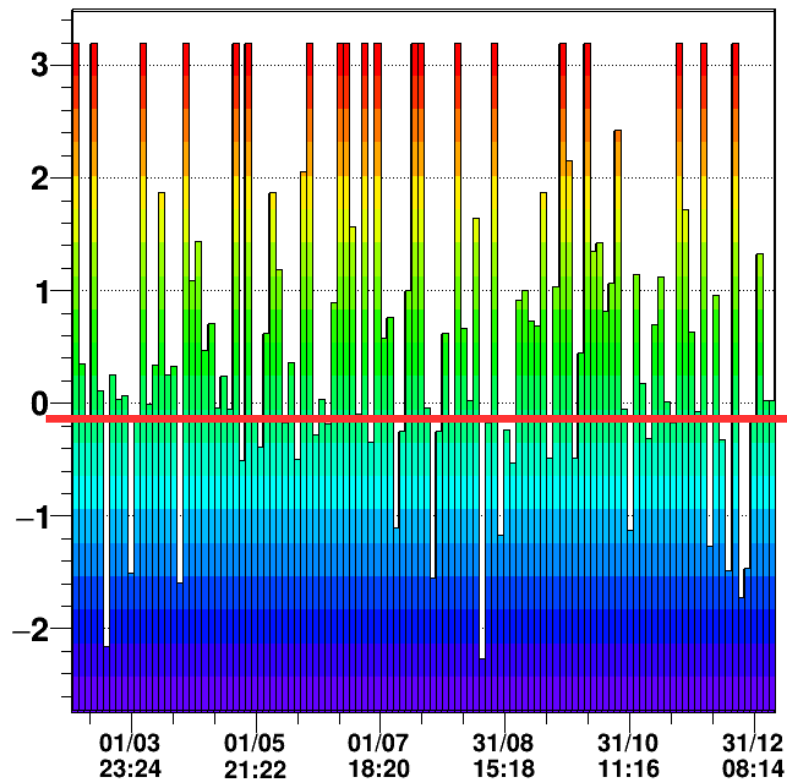
>1000 Pressure-Rate measurements per
extraction

> 10 mbar pressure variation

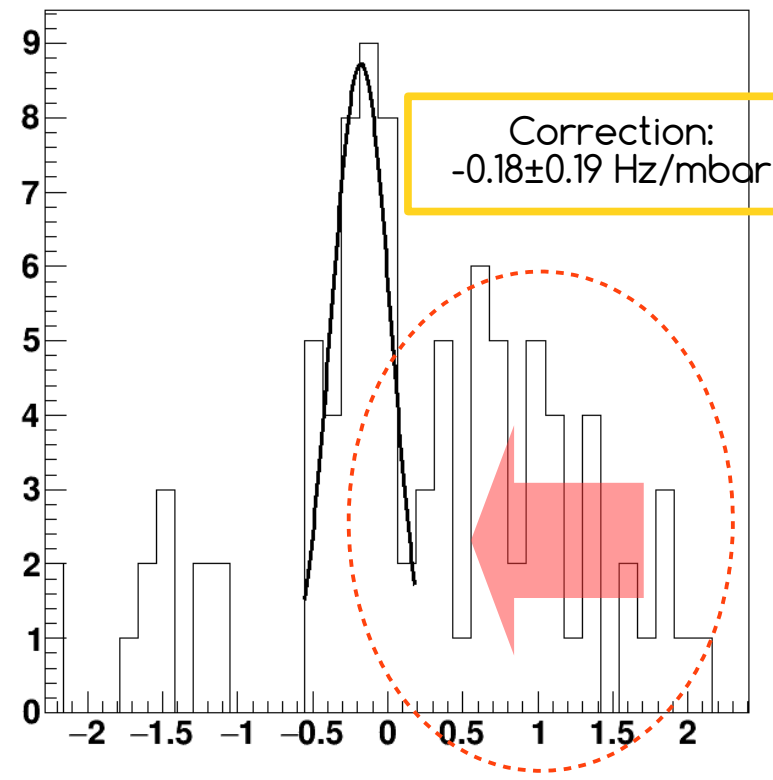
5 Hz < track rate < 70 Hz

On stations involved in 2016-01-01 GCRD: CATZ-01

Barometric correction trending



Barometric correction



Even with strong cuts issues remains

1. Unstable periods included
2. Temperature dependence

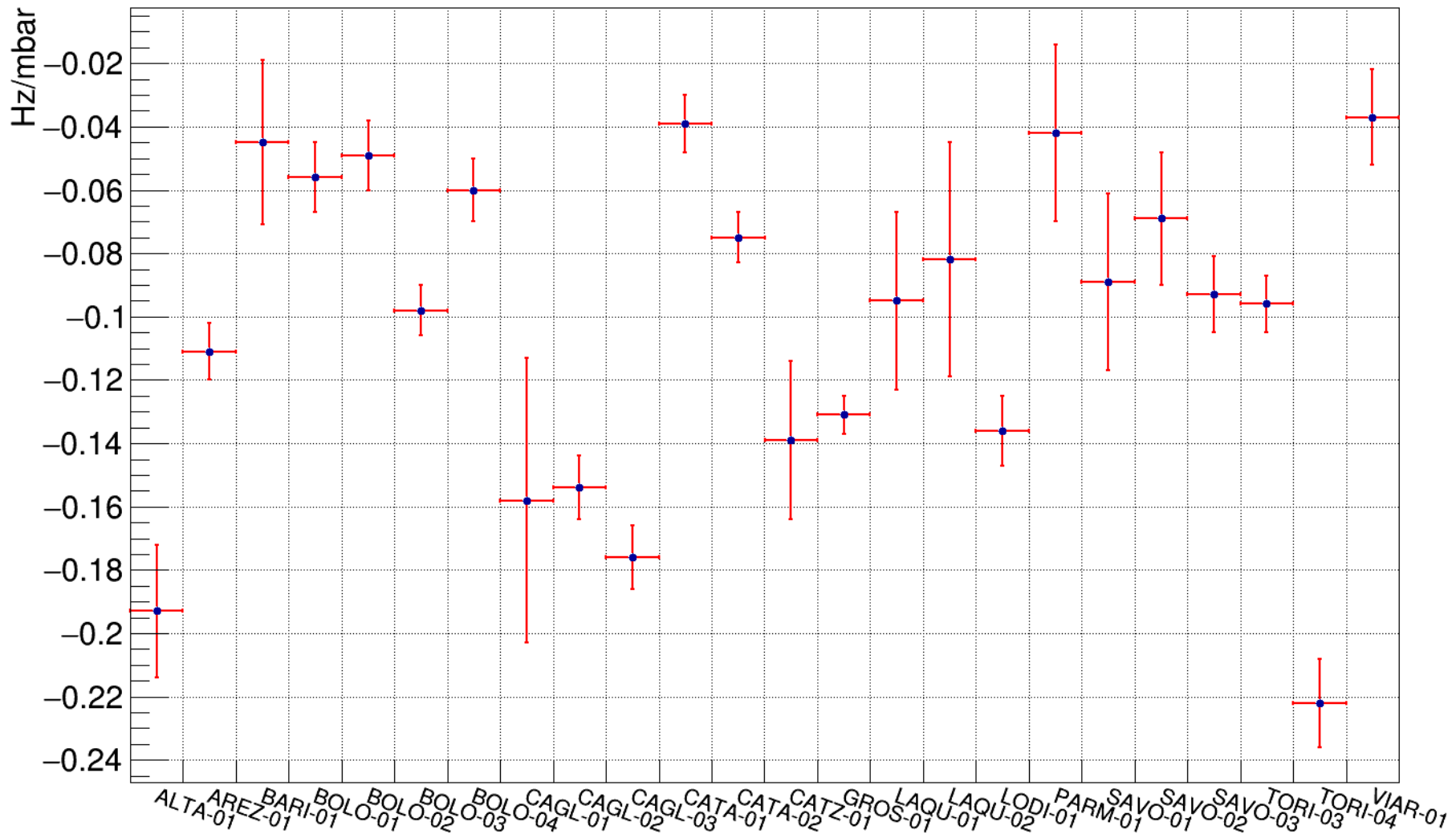
Manually searched for all telescopes in 2016:

- DAQ unstabilities
 - noisy strips
- prompt noise variations (strips in and out)
 - power shutdown (only GPS trigger)
 - HV modifications

Etc.

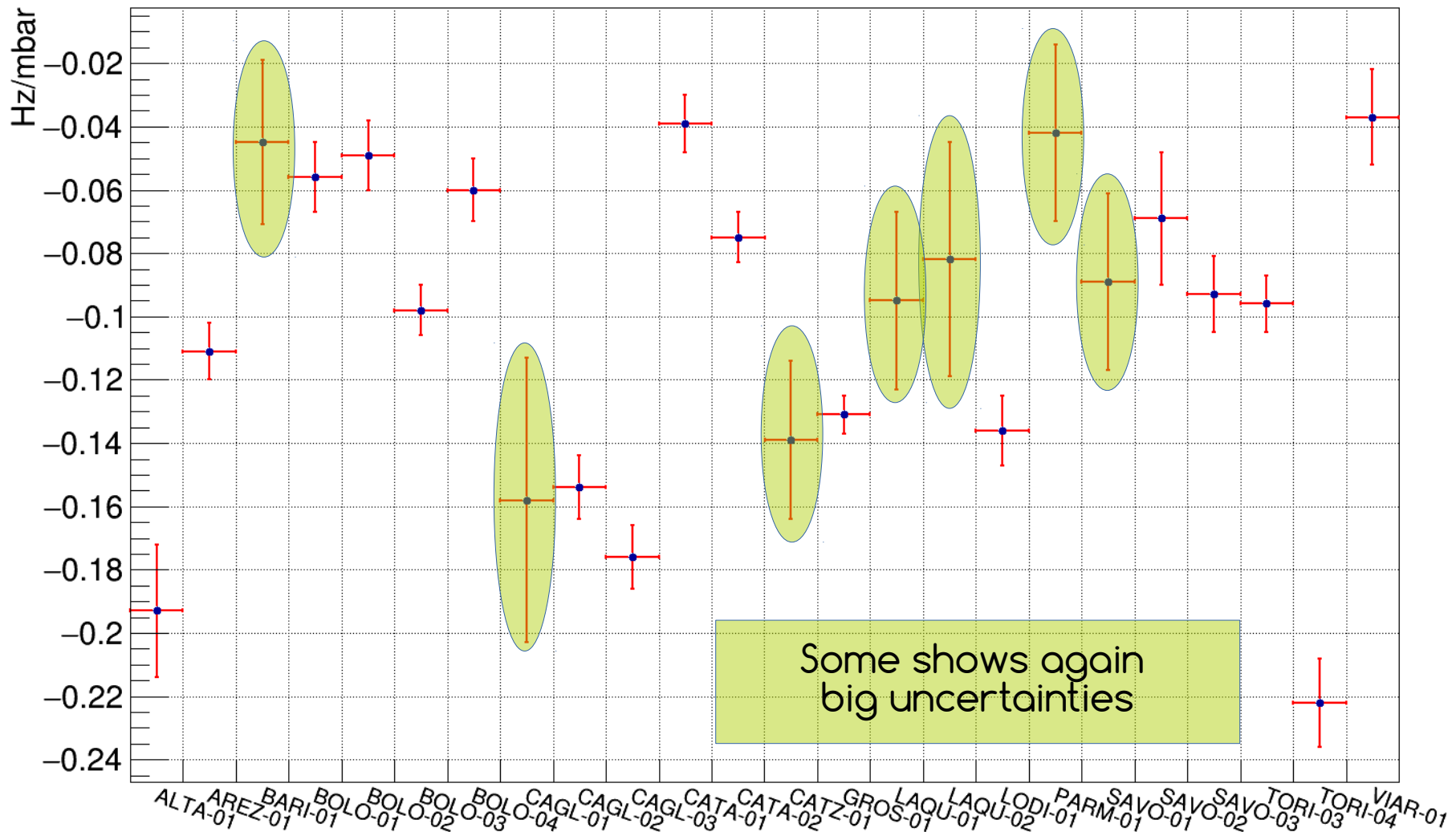
For ~ 50% of telescopes
a stable barometric correction
has been found

Barometric Corrections



For ~ 50% of telescopes
a stable barometric correction
has been found

Barometric Corrections



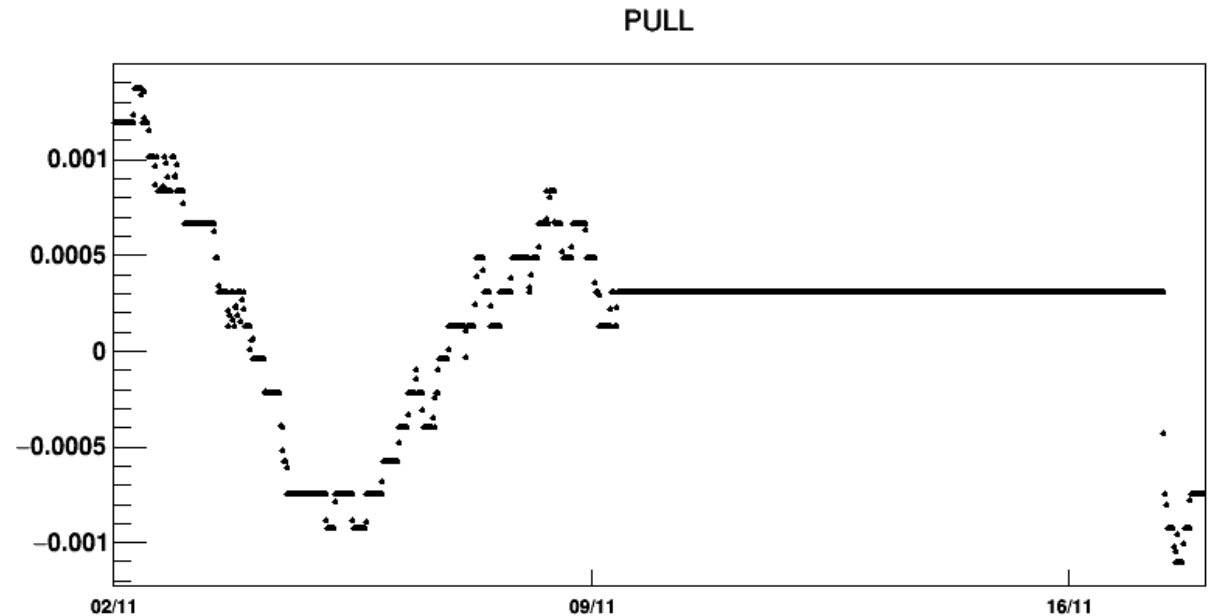
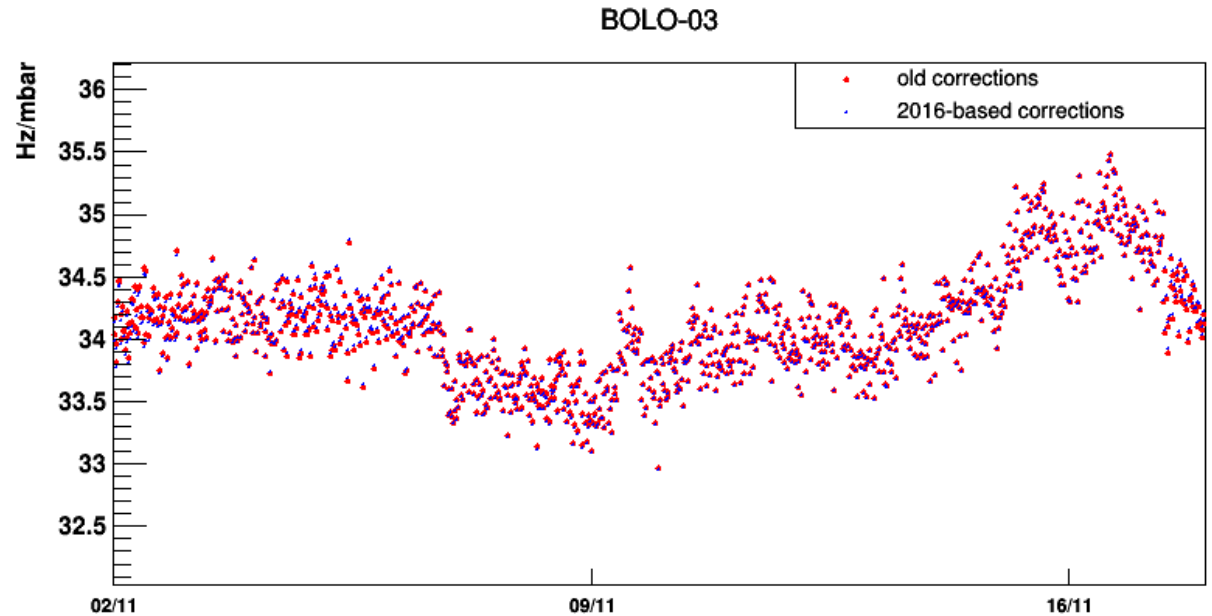
Examples of
correction
variation w.r.t.
short period
extraction

Forbush 2015-11

-0.092



-0.098 ± 0.008



Examples of
correction
variation w.r.t.
short period
extraction

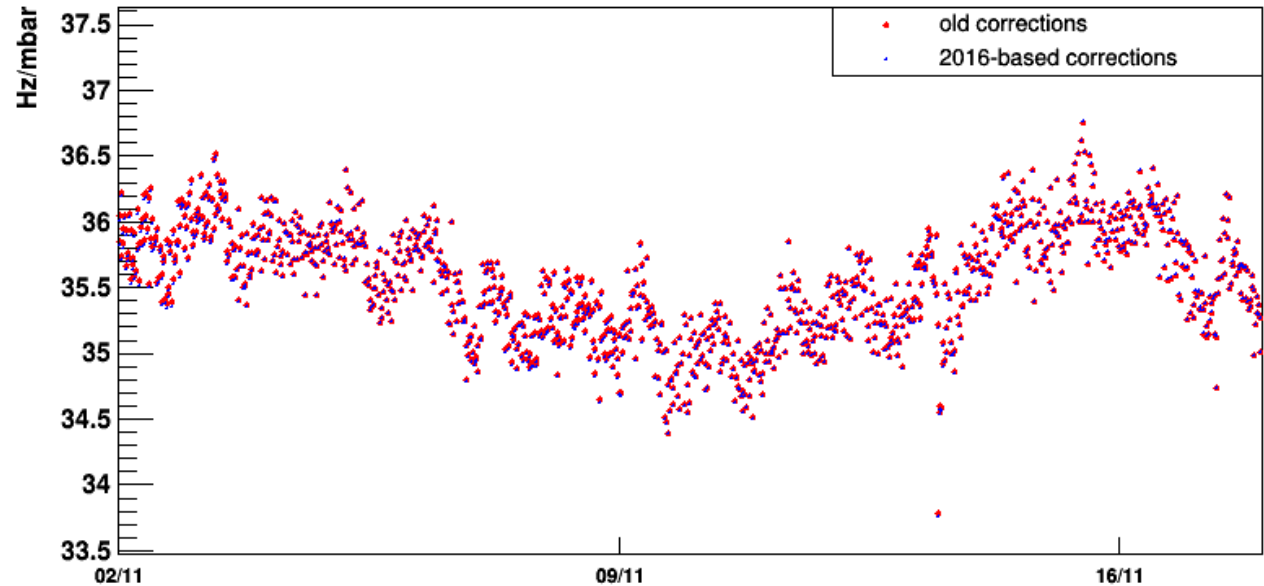
Forbush 2015-11

-0.057

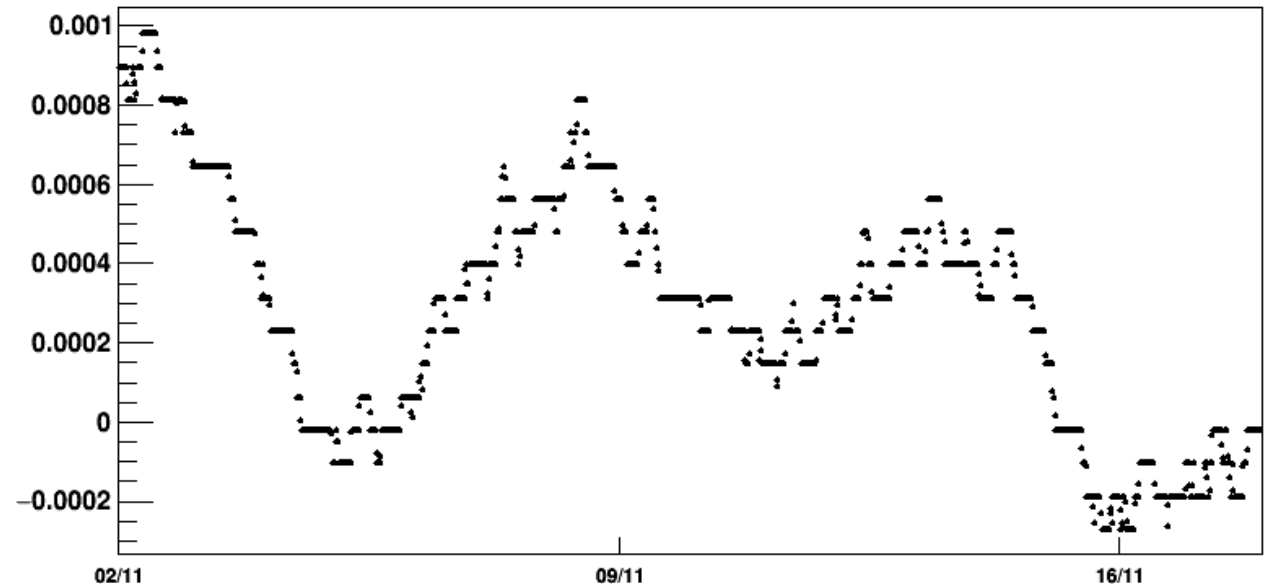


-0.060 ± 0.010

BOLO-04



PULL



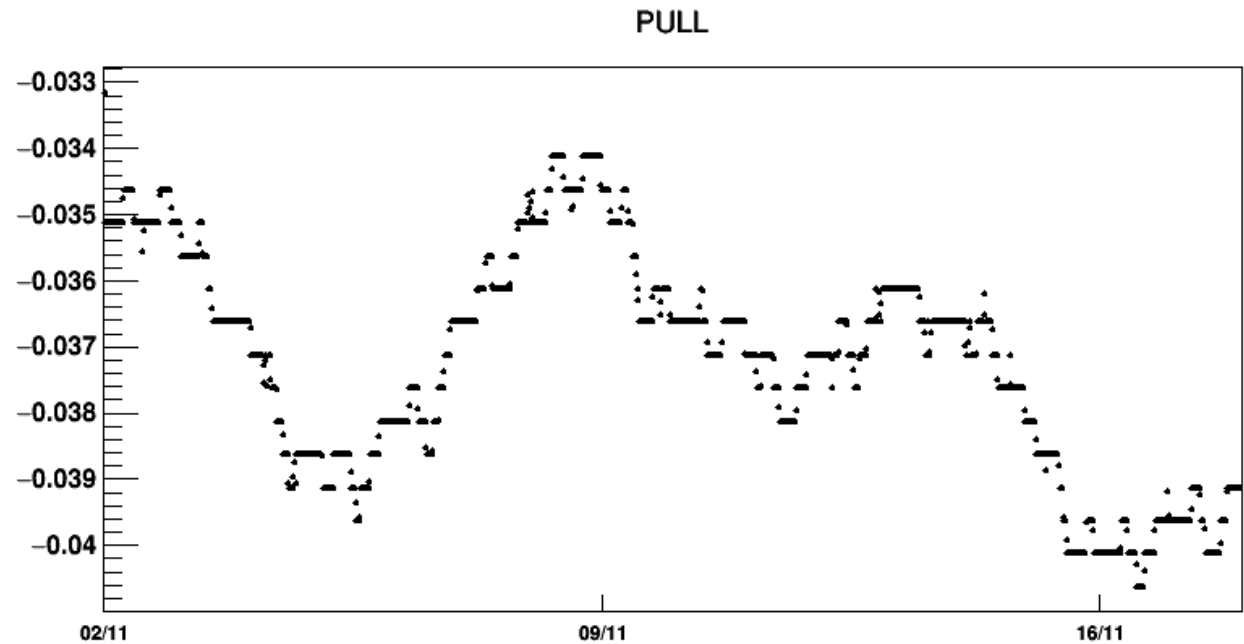
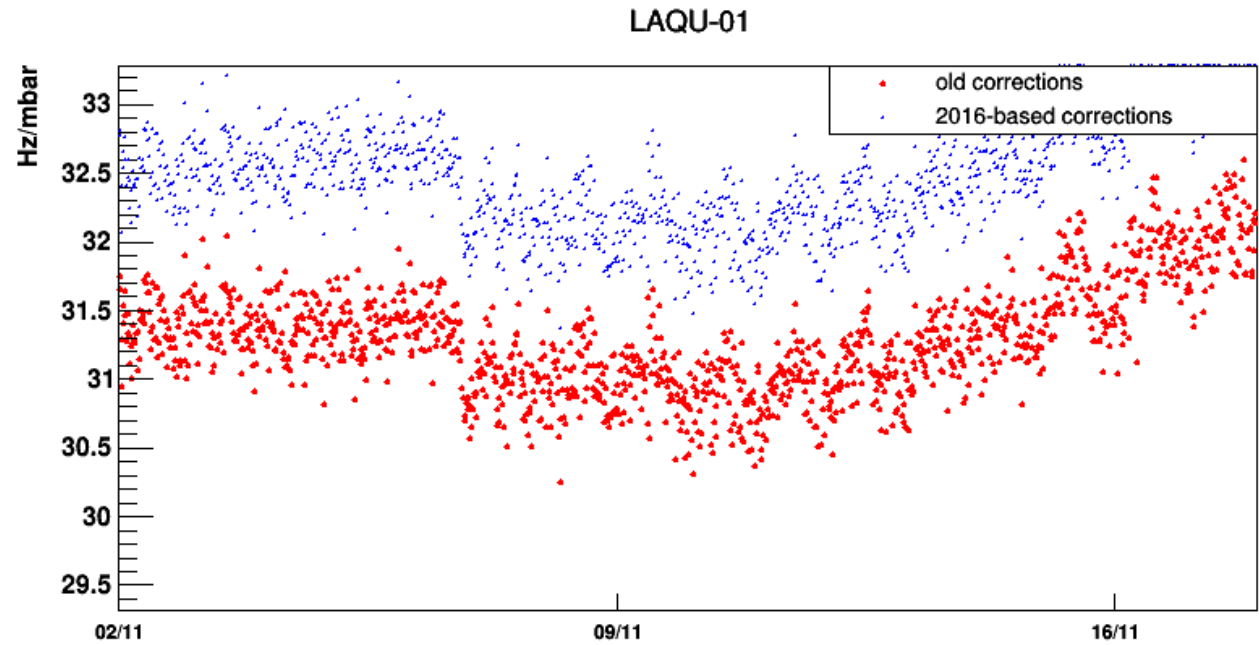
Examples of
correction
variation w.r.t.
short period
extraction

Forbush 2015-11

-0.079



-0.095 ± 0.028



Examples of
correction
variation w.r.t.
short period
extraction

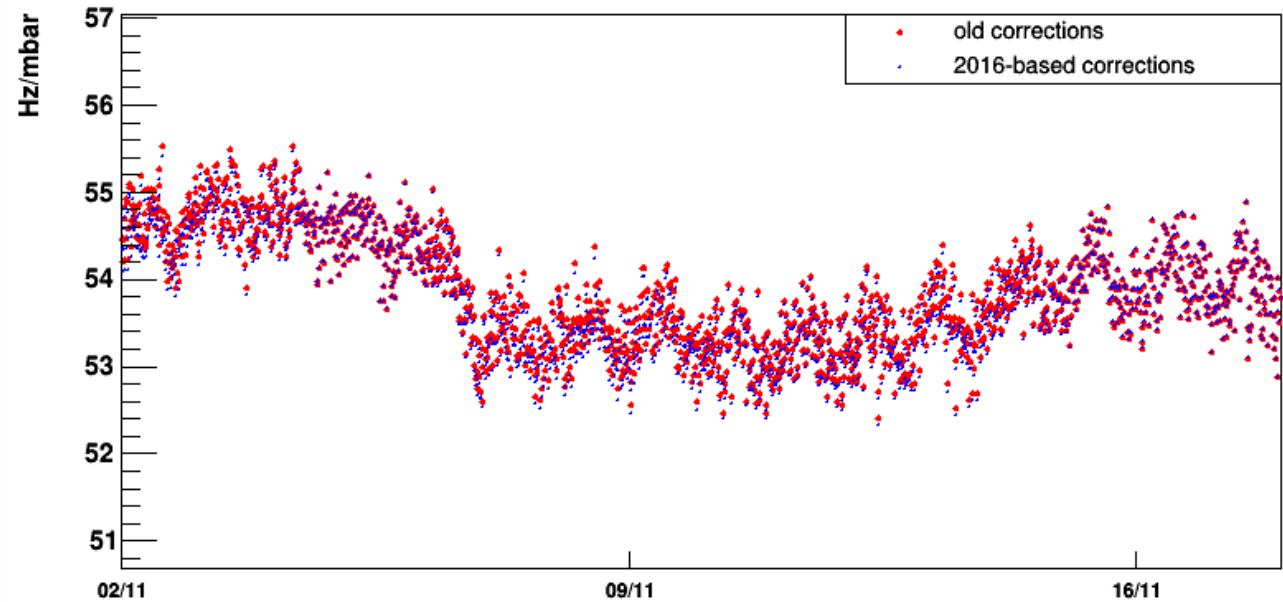
Forbush 2015-11

-0.057

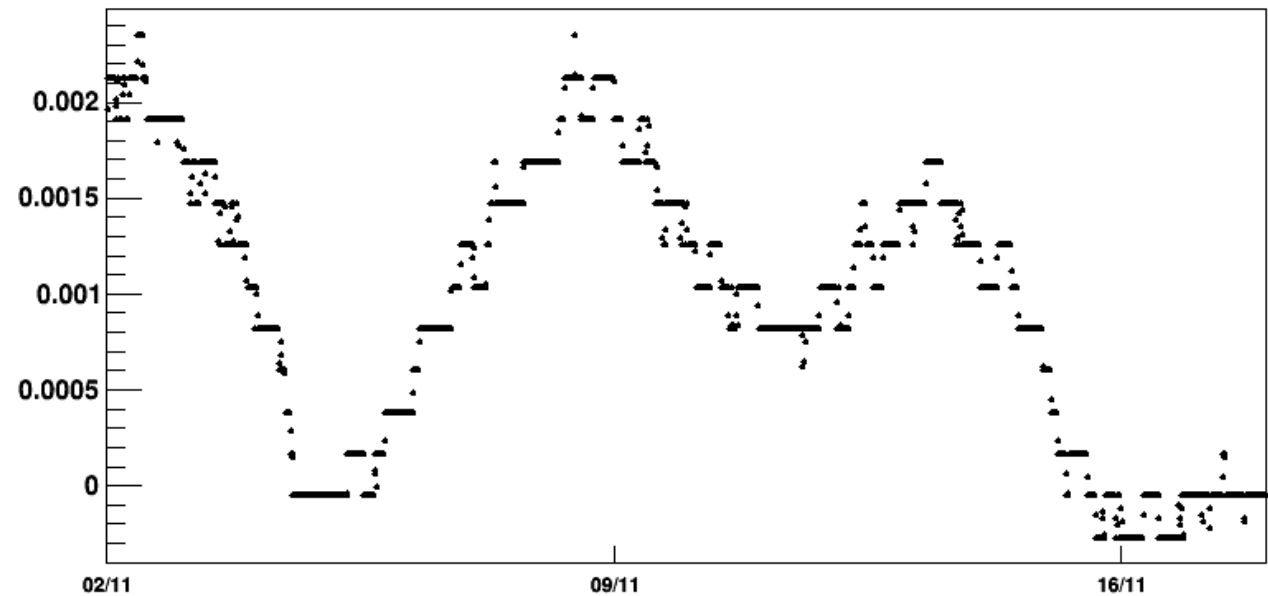


-0.069 ± 0.021

SAVO-02



PULL



Examples of
correction
variation w.r.t.
short period
extraction

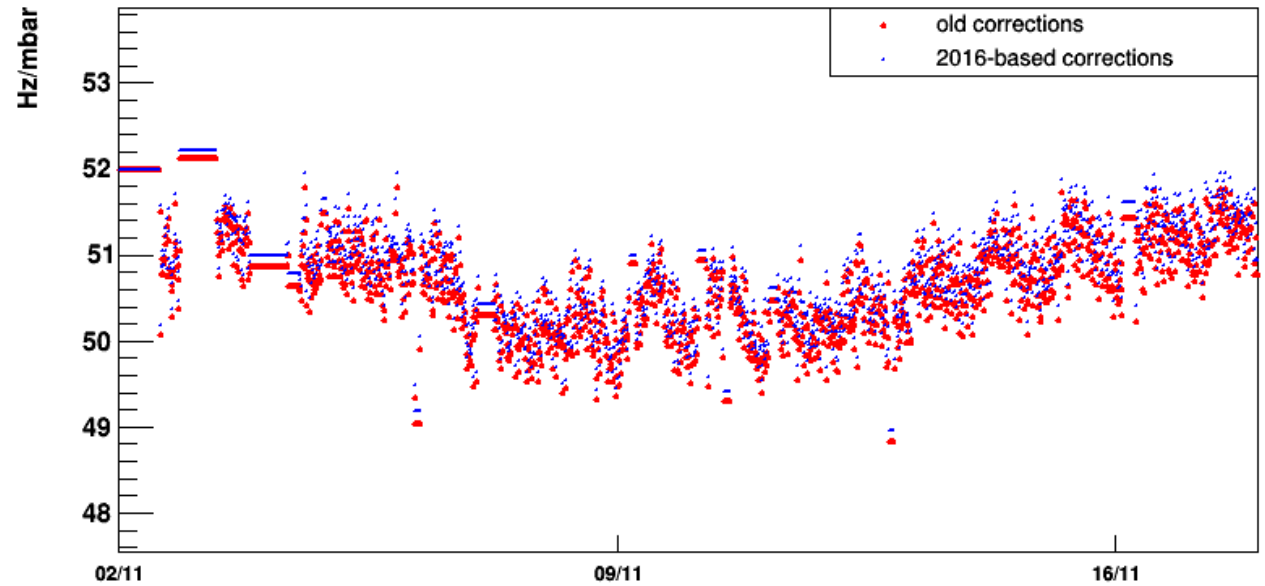
Forbush 2015-11

-0.089

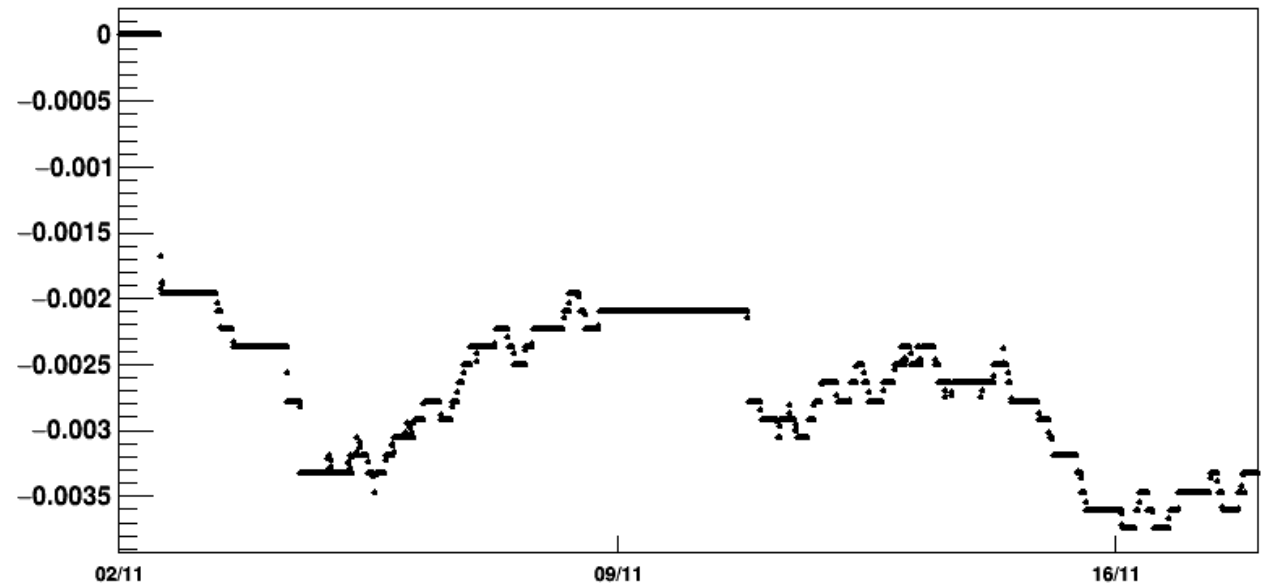


-0.096 ± 0.009

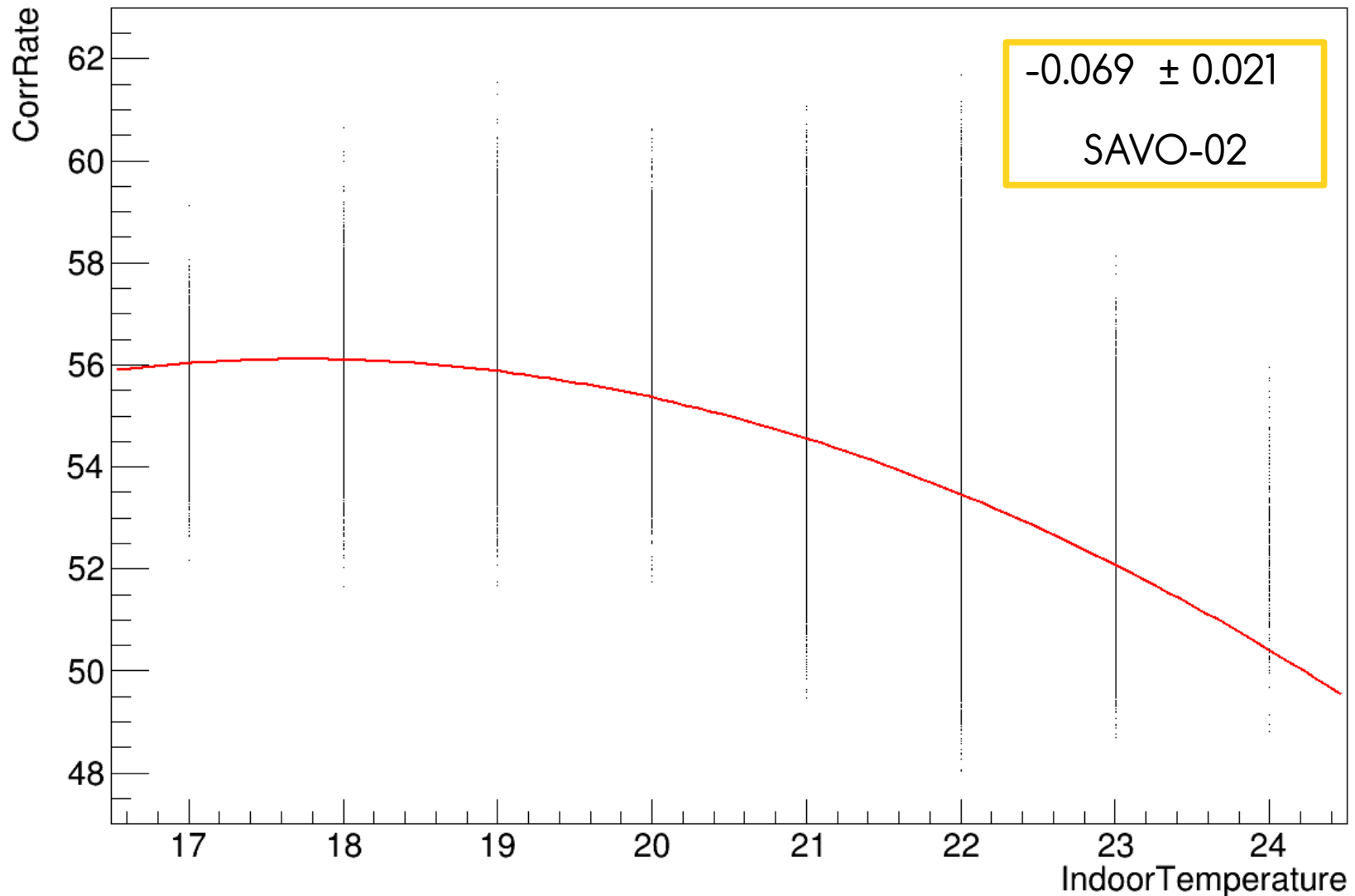
TORI-03



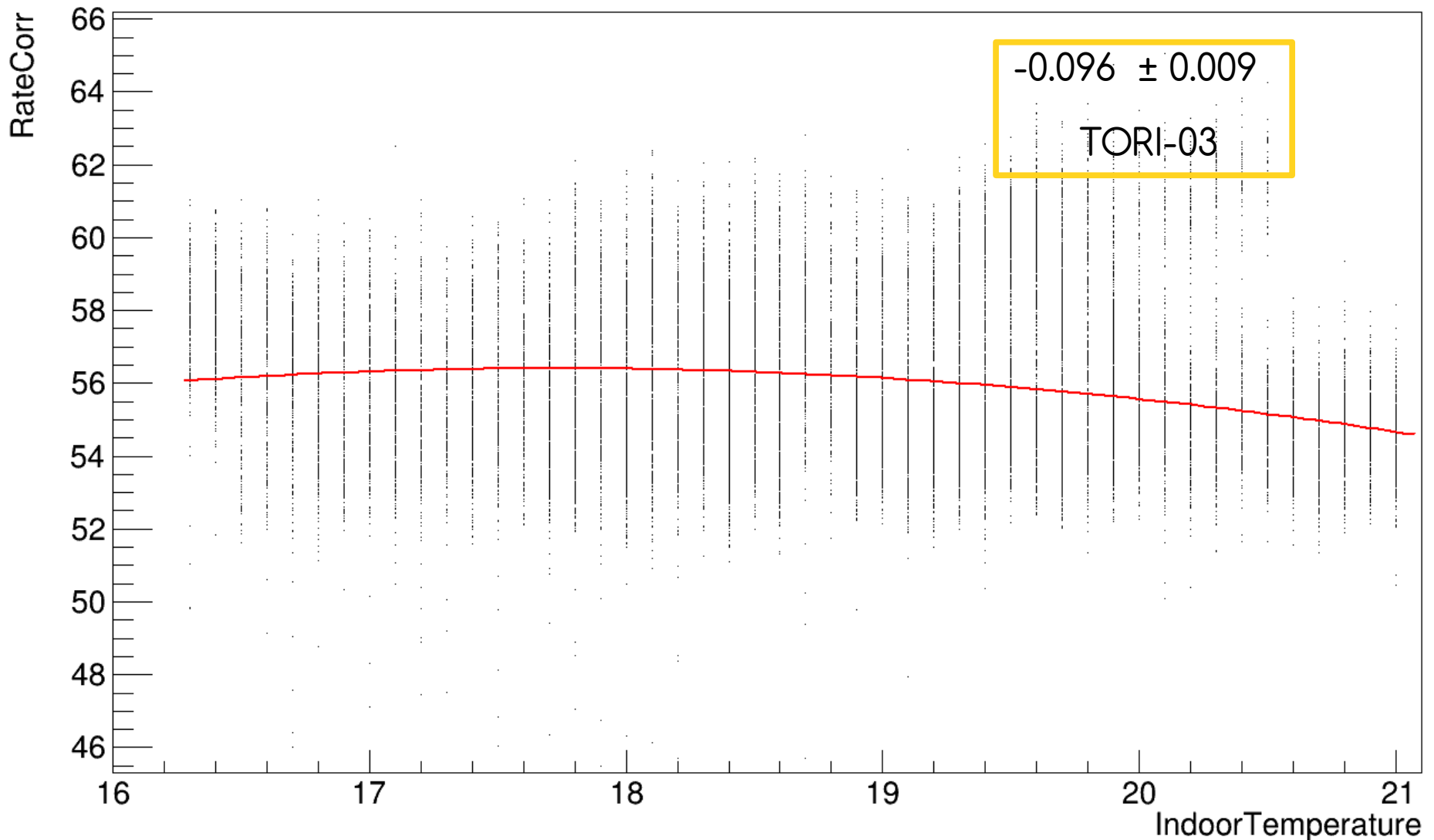
PULL



Big uncertainties in barometric corrections related also to absence of temperature correction



Big uncertainties in barometric corrections related also to absence of temperature correction



Next step

Performing

temperature/pressure
simultaneous corrections extraction

Using starting values already extracted

Reprocess data with new corrections