

Daily summary monitor (RMSMon and FileFinder)

2016/1/26 Tuesday @DetChar meeting, Yuzurihara

o Today's topic

- What is RMSMon
- Definition of RMSMon
- Example of RMSMon
- About FileFinder

What is RMSMon?

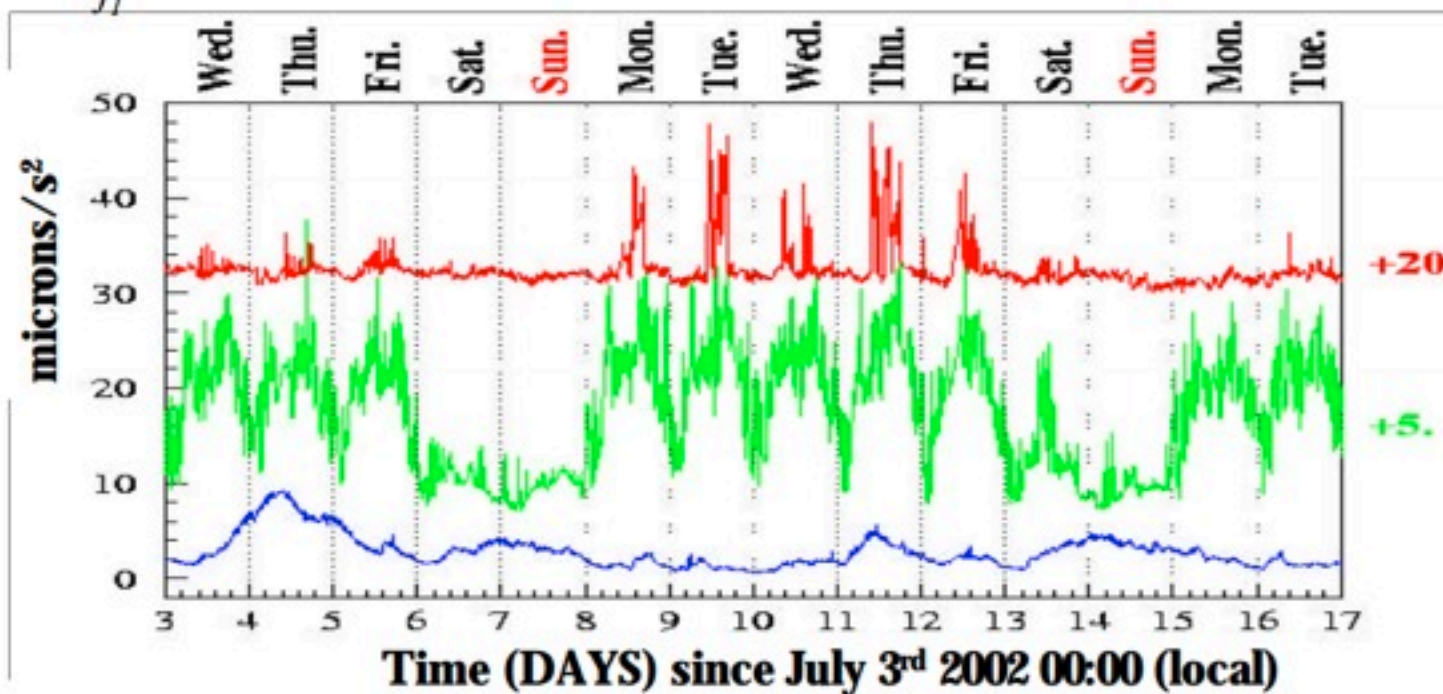
RMSMon : RMS monitor tool

RMSMonitor can find the time affected by non-stationary transient noise.



Monitor of RMS Seismic Motion

$$RMS = \left(\int_{f_1}^{f_2} |\tilde{a}(f)|^2 df \right)^{1/2} \text{ in 3 frequency bands: } 0.2\text{-}1 \text{ Hz ; } 1\text{-}4 \text{ Hz ; } 4\text{-}10 \text{ Hz}$$



- 0.2 - 1 Hz: slow motion → correlated with wind & sea-waves ?
- 1 - 4 Hz: day-night-weekend variations → local traffic ?
- 4 - 10 Hz: spikes between 10AM-6PM → human activities on-site.

[[Classical and Quantum Gravity, Volume 21, Number 5](#)]

http://labcit.ligo.caltech.edu/LIGO_web/amaldi5/pdf/fiori.pdf

$$RMS = \left(\int_{f_1}^{f_2} |\tilde{s}(f)|^2 df \right)$$

1. calculate the spectrum $s(f)$
from the time series $s(t)$
2. sum up the squared spectrum
between the frequency band

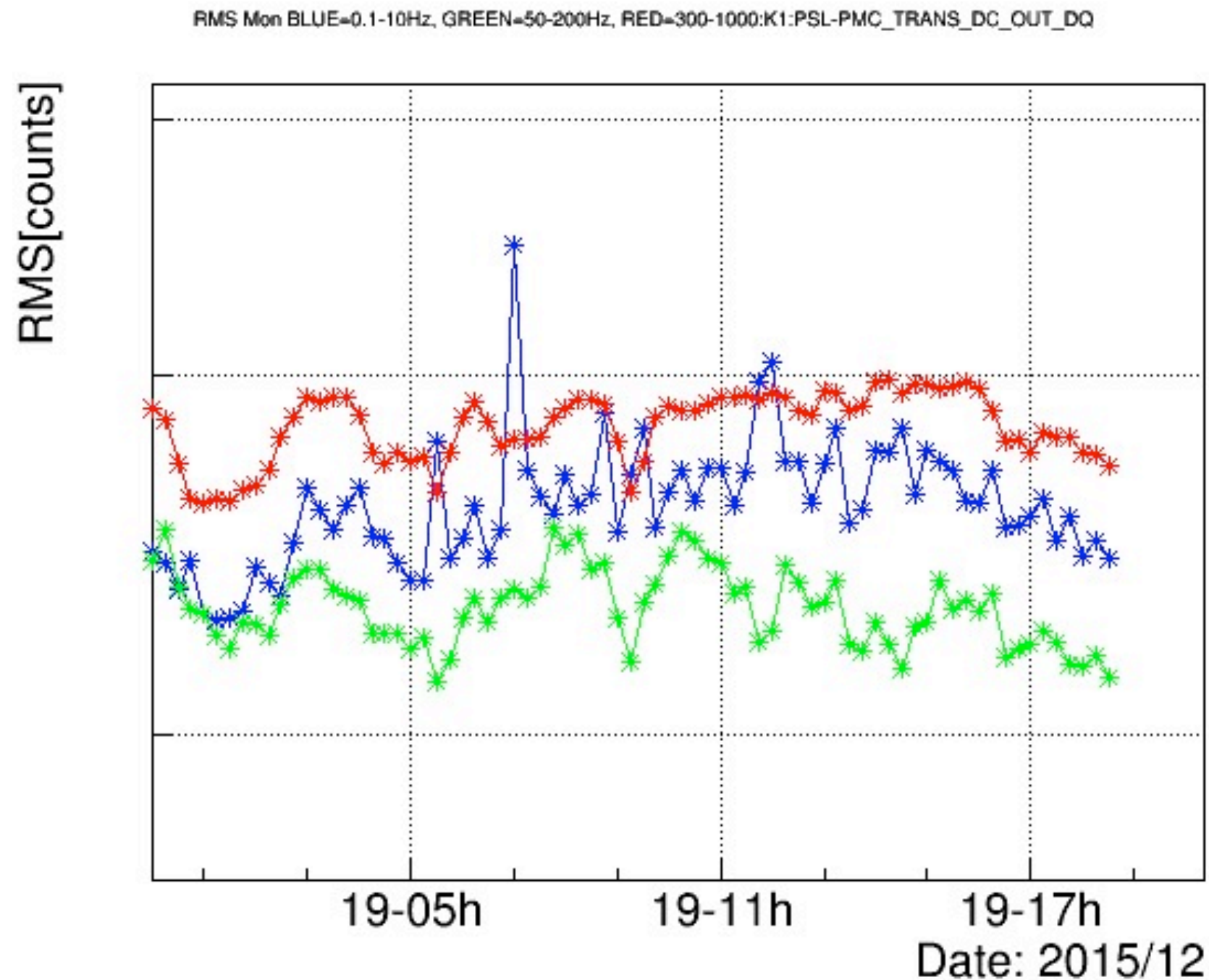
Now frequency bands are fixed as
0.1~10Hz, 50~200Hz and 300~1000Hz.

But in the web-based tool, you can more precisely analyze
changing arbitrary frequency bands.

<http://seikai.hep.osaka-cu.ac.jp/~chino/cgi-bin/webToolFrame.cgi>

Example of the calculated RMSMon

<http://seikai.hep.osaka-cu.ac.jp/~chino/cgi-bin/dailyFrame.cgi?year=2015&month=12&day=19&subSys=IOO>



Example of the calculated RMSMon

<http://seikai.hep.osaka-cu.ac.jp/~chino/cgi-bin/dailyFrame.cgi?year=2015&month=12&day=19&subSys=IOO>

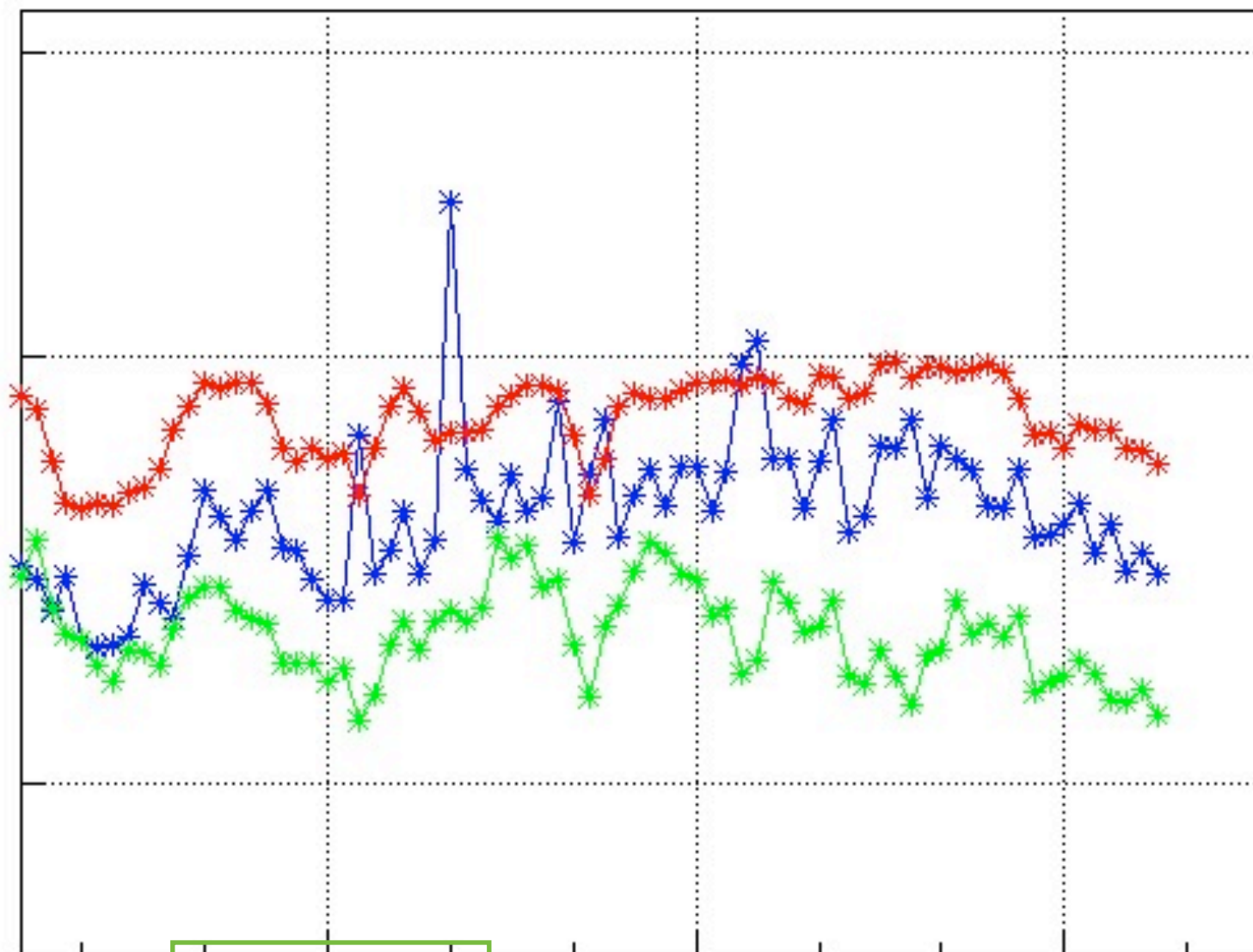
frequency bands are chosen as 0.1~10Hz, 50~200Hz and 300~1000Hz.



RMS Mon BLUE=0.1-10Hz, GREEN=50-200Hz, RED=300-1000 K1:PSL-PMC_TRANS_DC_OUT_DQ

←channel name

RMS[counts]



day and time→

19-05h

19-11h

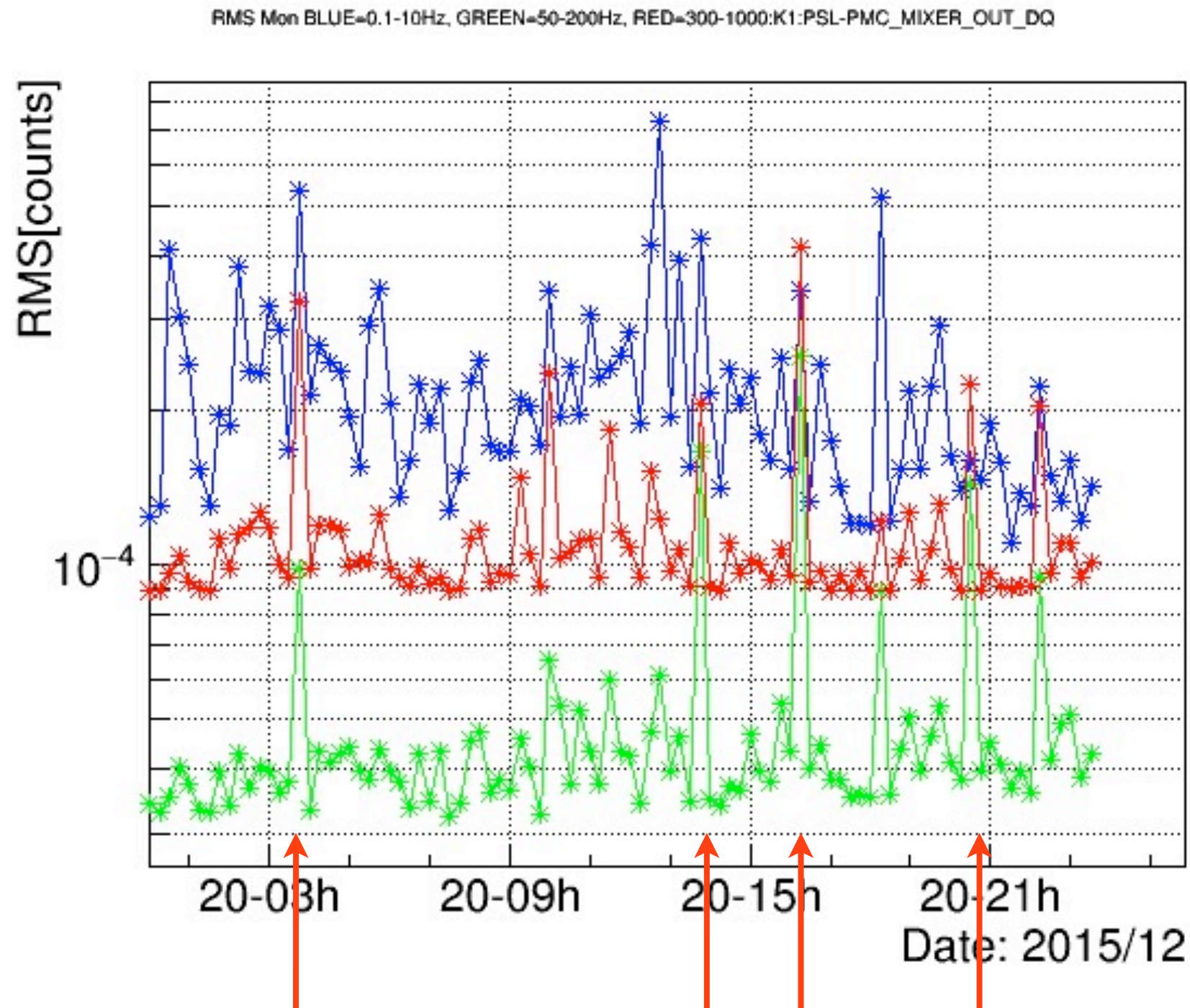
19-17h

Date: 2015/12

←year and month

Different example of the calculated RMSMon

http://seikai.hep.osaka-cu.ac.jp/~chino/2015/12/20/K1:PSL-PMC_MIXER_OUT_DQ-2015-12-20_RMSMon.png



We see the signal affected by the transient glitch by eye.

Different example of the calculated RMSMon

FileFinder monitor is developed.

This monitor can find whether the frame data is registered in data base or not.

The resolution of figure is not low, so all lost data is not covered.

