Analysis of nonstationarity in LIGO S5 data using the NoiseFloorMon output : proposal for a seismic Data Quality flag.

Preview

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DCC #

Just a quick reminder

- Tracking AS_Q and all seismic channels.
- Frequency bands : 0-16, 16-32, 32-64, 64-128 Hz.
- Minute trends of max threshold crossing and cross correlations with the seismic channels stored.

- Offline analysis :

-looking at trends on a daily basis

-studying cross correlations with the seismic channels

-Looks up other monitors for comparison.

Location of results/ reports …
People …

Daily update is made (mostly automated/minimal supervision) and can be accessed at :

www.phys.utb.edu/~soma/MNFTresults/NoiseFloorMon_daily.html

Some analysis results/shift summaries can also be found at :

www.lsc-group.phys.uwm.edu/glitch/investigations/s5index.html

People who have been involved at various stages of this work

S. Mukherjee (algorithm and main code); Roberto Grosso (DMT code); R. Stone (present offline analysis).

Analysis and applications

- Analysis of data quality for important times , e.g. contribution to the burst detection checklist :

http://www.phys.utb.edu/~soma/MNFTresults/ctNoiseFloorMon_Sep21_H1_updated.html

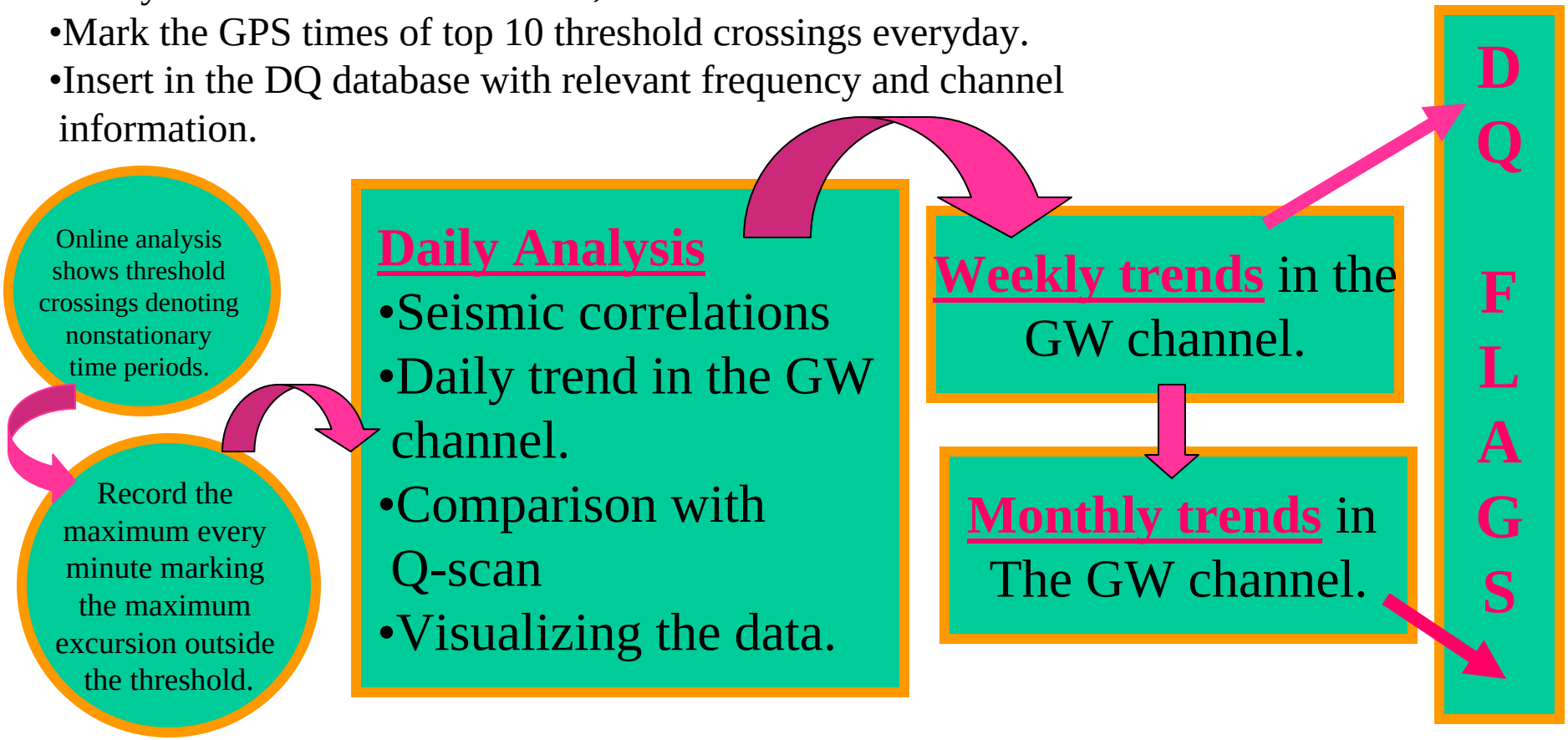
gravity.phys.uwm.edu/cgi-bin/pcvs/viewcvs.cgi/*checkout*/bursts/projects/detection/burstdetectionchecklist-gps874465554.html

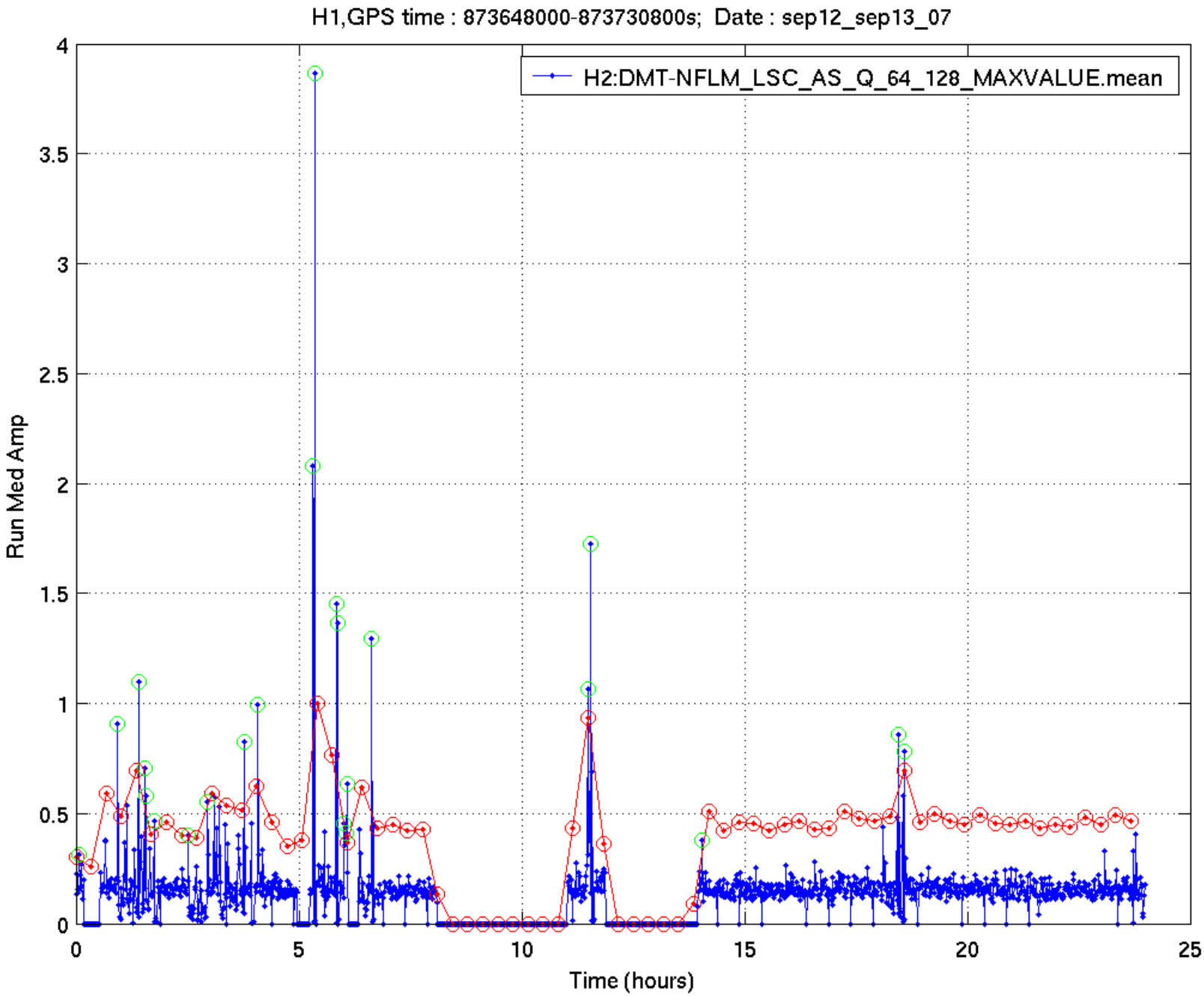
- Development of a seismic data quality flag :

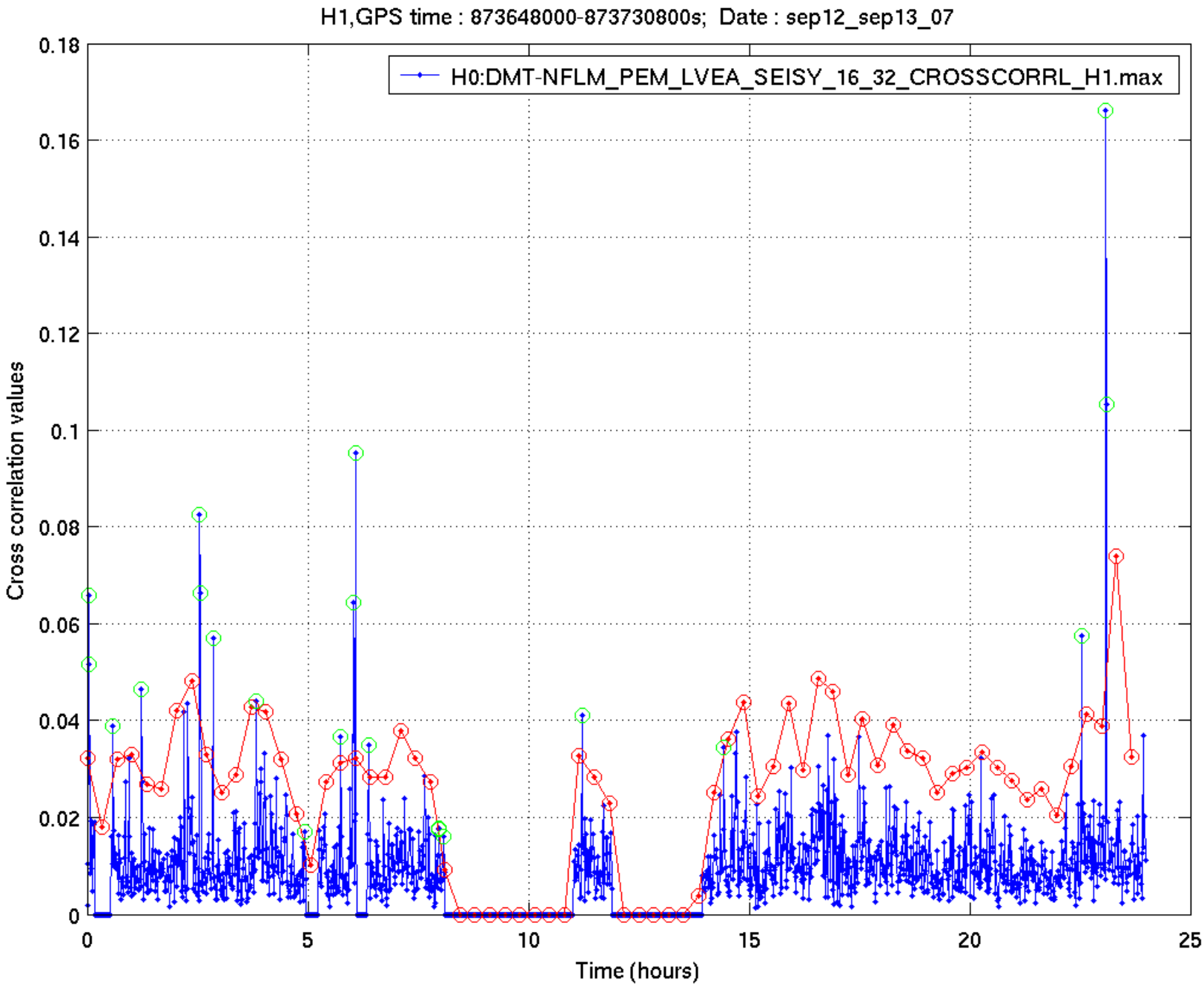
http://www.phys.utb.edu/~soma/MNFTresults/ctNoiseFloorMon_Sep12_H1_updated.html

Seismic data quality flag for S5

•Analysis of entire S5 data for H1, H2 and L1.
•Mark the GPS times of top 10 threshold crossings everyday.
•Insert in the DQ database with relevant frequency and channel information.




H1,GPS time : 873648000-873730800s; Date : sep12_sep13_07
H2:DMT-NFLM_LSC_AS_Q_64_128_MAXVALUE.mean
Run Med Amp
Time (hours)
0
0.5
1
1.5
2
2.5
3
3.5
4
0
5
10
15
20
25


H1,GPS time : 873648000-873730800s; Date : sep12_sep13_07
H0:DMT-NFLM_PEM_LVEA_SEISY_16_32_CROSSCORRL_H1.max
Cross correlation values
Time (hours)
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
5
10
15
20
25

Largest Threshold Crossings

09/12/2007

#	Site	GPS time	Channels	Frequency Bands(Hz)	Q-Scans	Comments
1	H0	873651360	PEM:EX_SEISX PEM:MX_SEISX PEM:MY_SEISX	32-64 64-128	Qscan	
2	H0	873653880	PEM:LVEA_SEISY	0-16	Qscan	
3	H0 H2	873667260	PEM:EX_SEISZ PEM:LVEA_SEISY PEM:MX_SEISZ PEM:MY_SEISZ LSC:AS_Q	64-128	Qscan	
4	H0 H2	873668220	PEM:EX_SEISX PEM:LVEA_SEISY LSC:AS_Q	0-16	Qscan	
5	H0	873669000	PEM:MY_SEISZ PEM:MY_SEISX	64-128 0-16	Qscan	
6	H0	873671880	PEM:MX_SEISZ PEM:MY_SEISZ	64-128	Qscan	
7	H0	873689580	PEM:EX_SEISX	64-128	Qscan	
8	H0	873713520	PEM:EX_SEISX	0-16	Qscan	
9	H0	873714300	PEM:EX_SEISZ	32-64	Qscan	
10	H0	873718320	PEM:EY_SEISZ	32-64	Qscan	