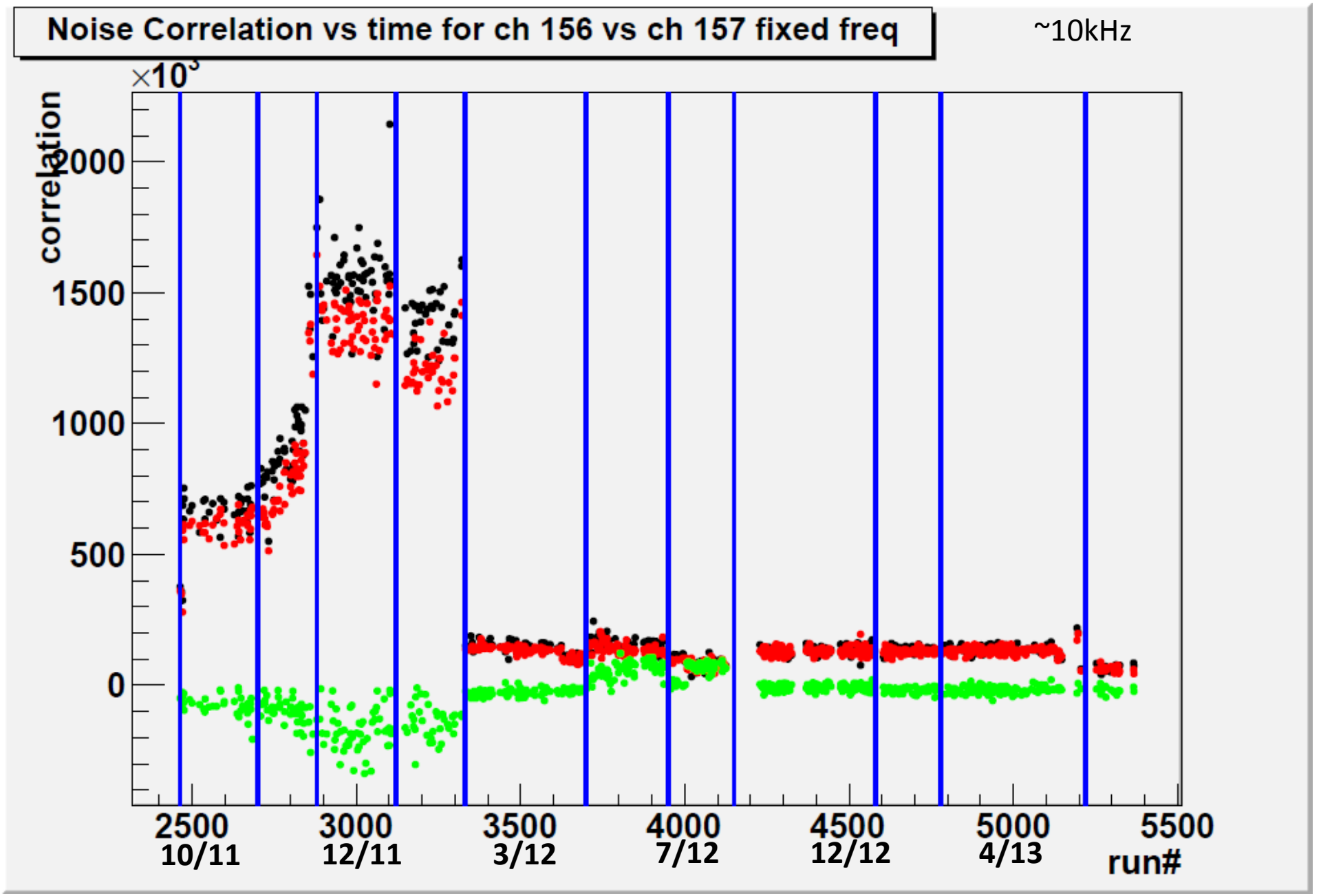
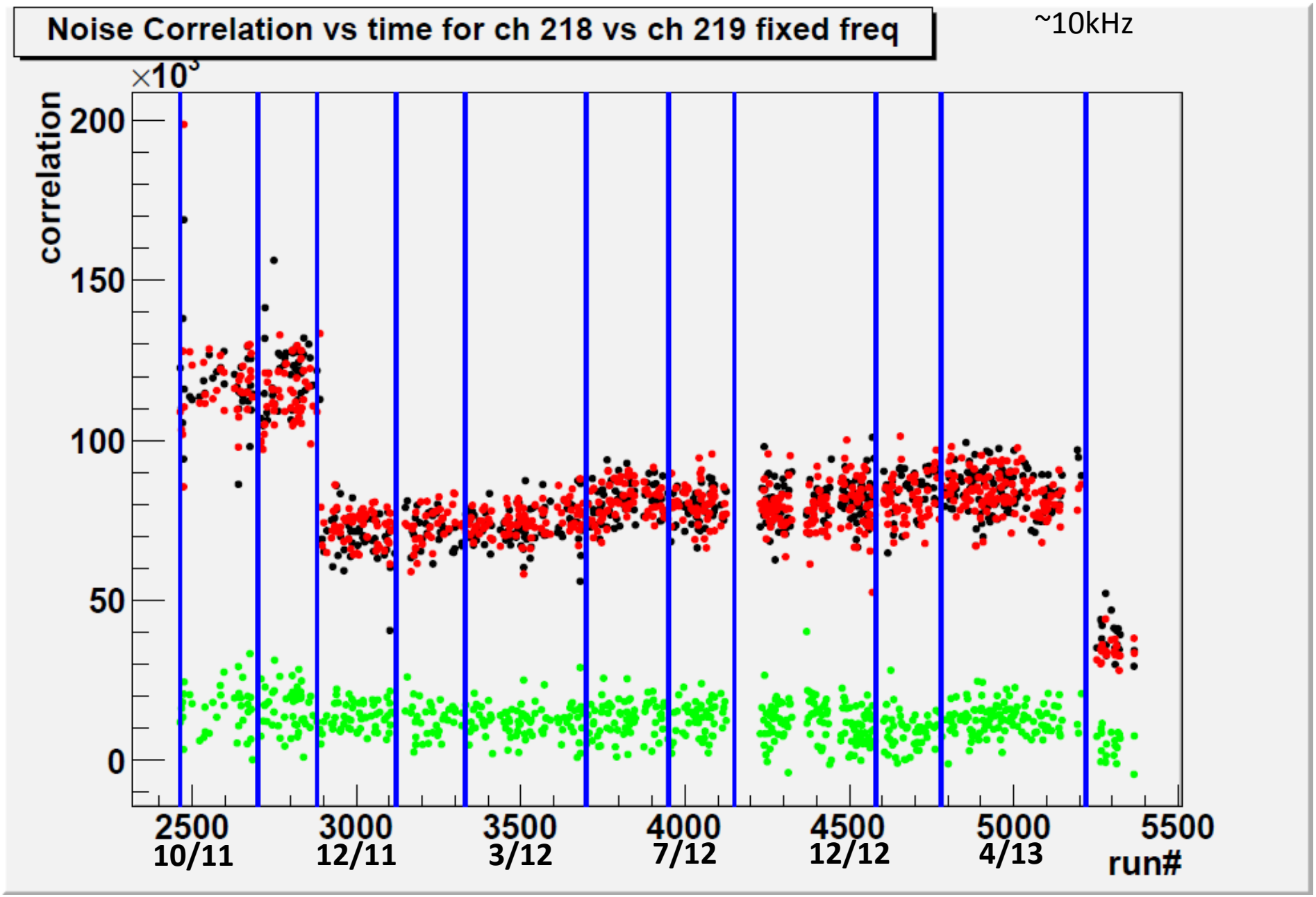
Noise Correlations

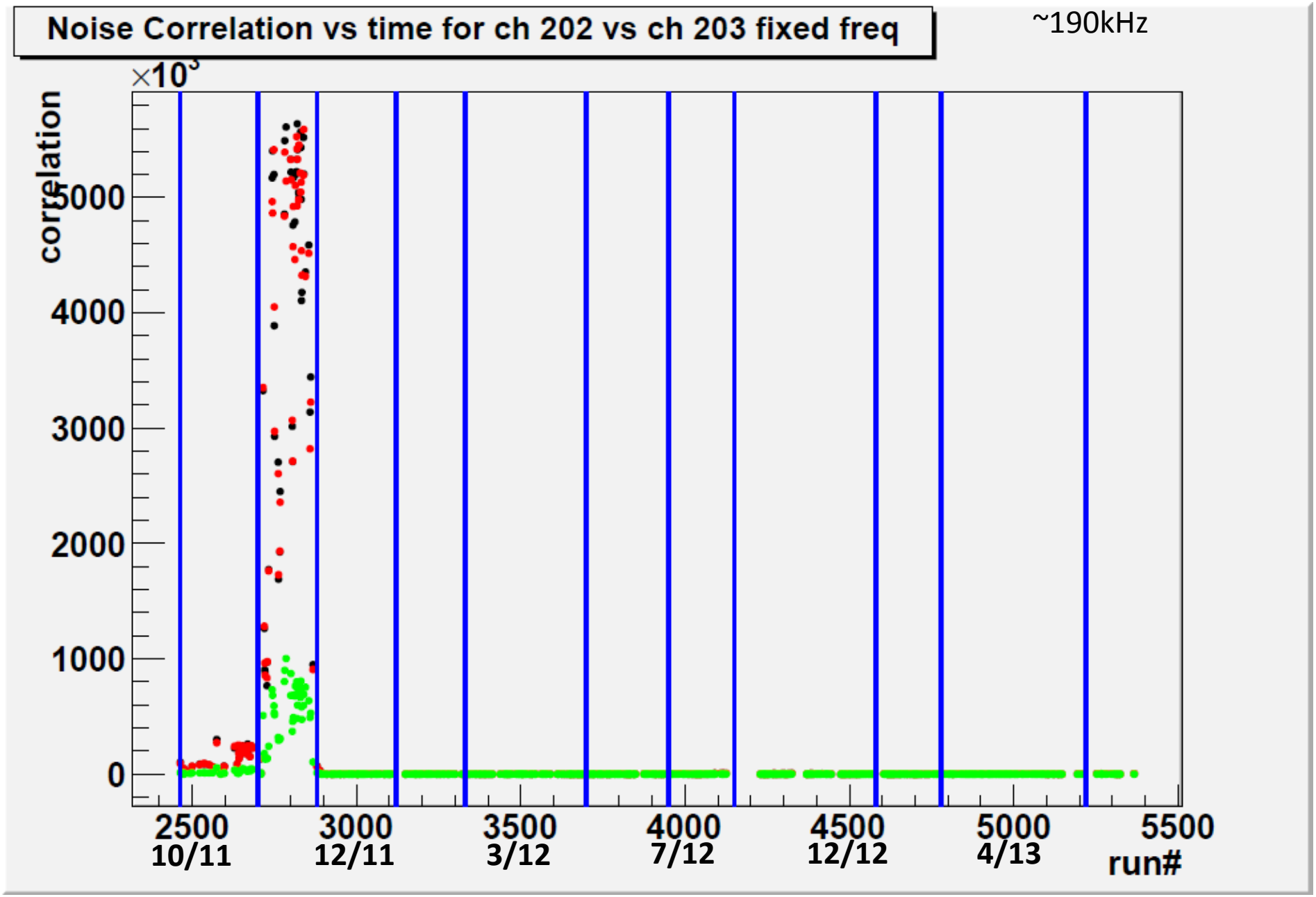
- Expected values for Noise Correlations between APD channels
  - <N_i N_j>(f)
- Calculate using solicited triggers for low background runs
- Try and define regions where matrix is constant
  - Avoid tons of noise files floating around

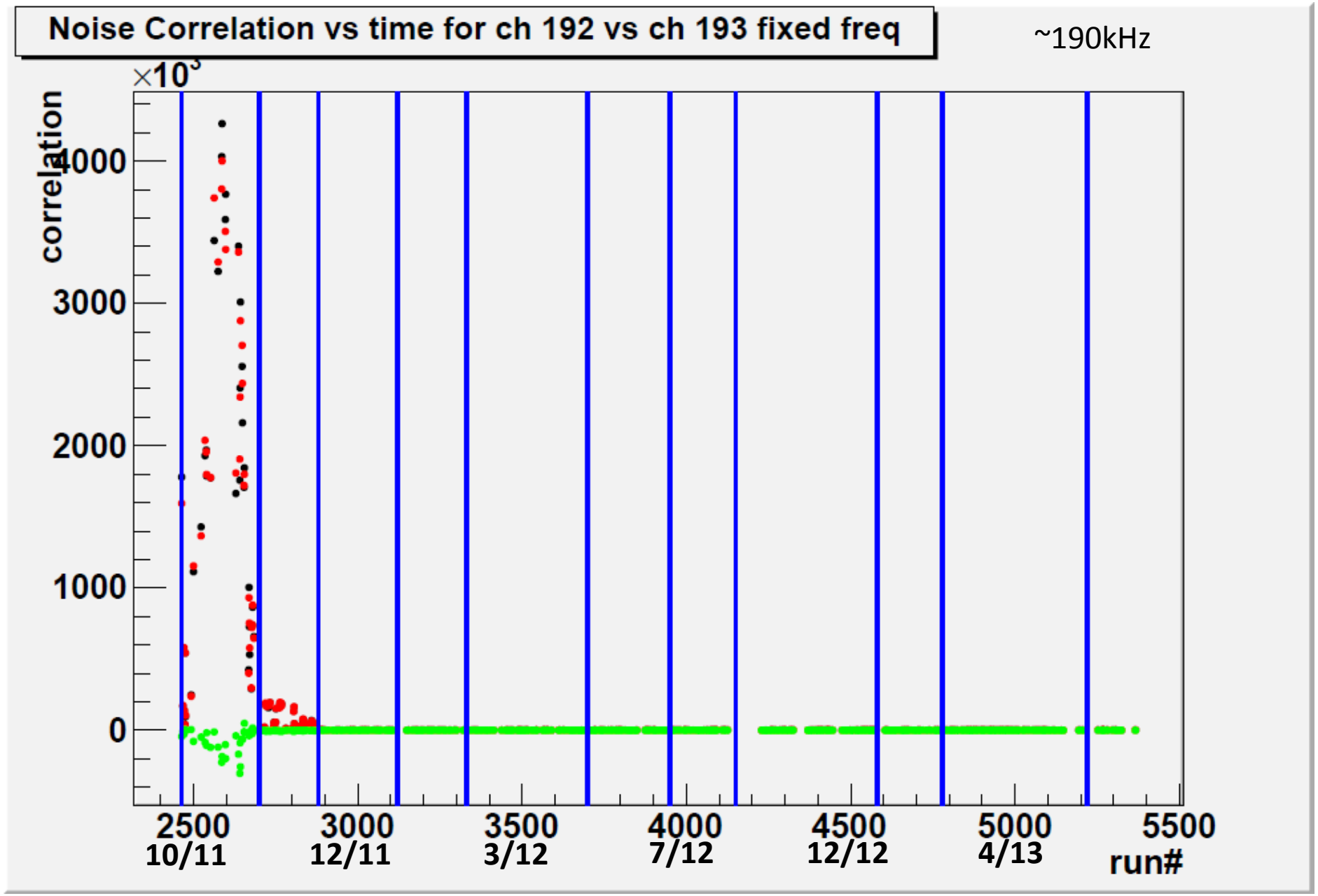
Cuts and Possible Causes

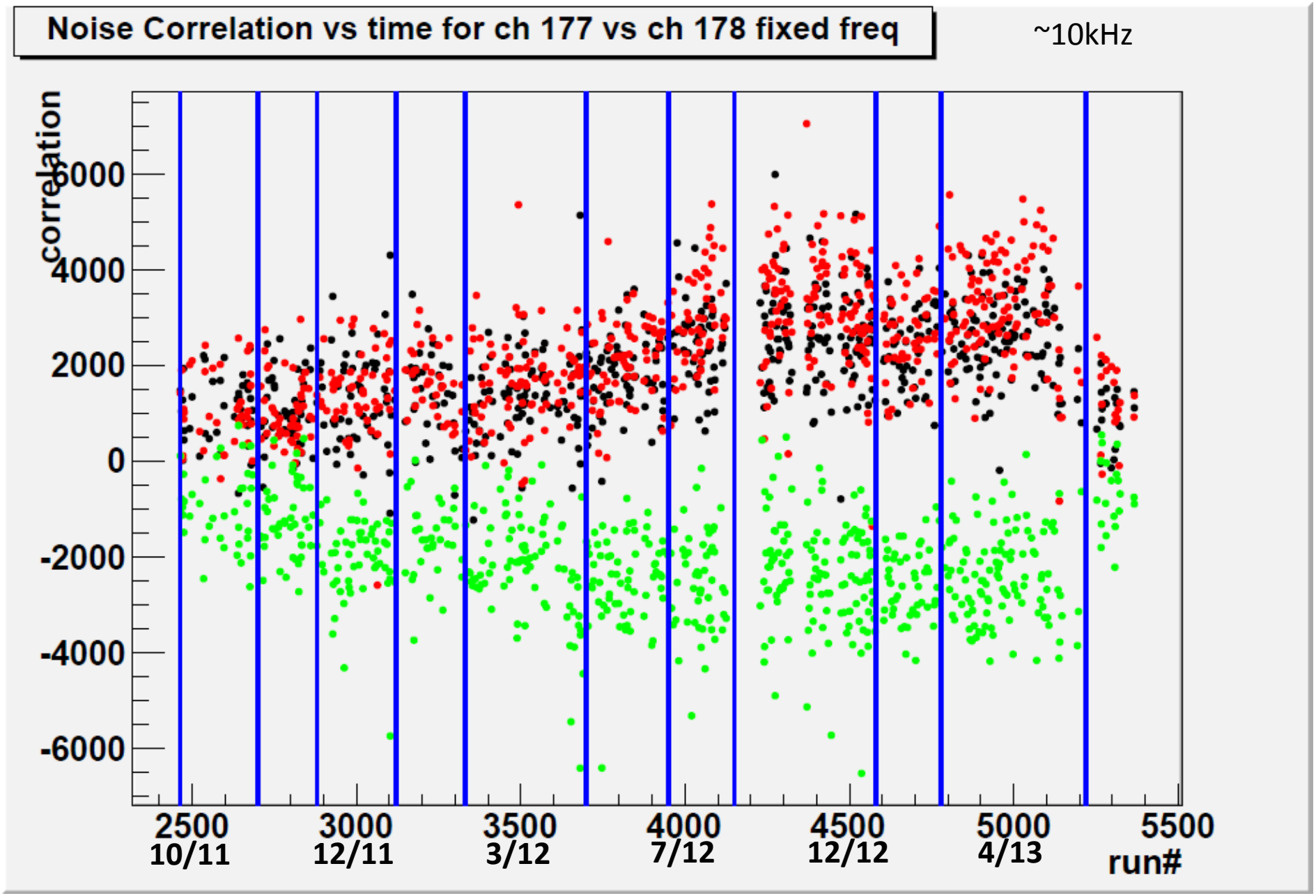
Run# cut	Cut date	Potential Cause	Comments
2700	11/3/2011	FEC PS Restart	
2880	12/1/2012	Ebox Fan1 or Fan2	different for TPC1 and TPC2
3120	1/19/2012	???	
3330	2/23/2012	APD01-APD09	might have cut too early??
3700	5/10/2012	Util Power Outage	
3950	7/12/2012	Util Power Outage	
4150	9/2/2012	APD 09 Restarted	
4580	12/24/2012	Ventillation On/Off	
4780	2/20/2013	???	
5200	6/7/2013	New APD boards?	


Noise Correlation vs time for ch 156 vs ch 157 fixed freq
~10kHz
×10³
correlation
2000
1500
1000
500
0
2500
10/11
3000
12/11
3500
3/12
4000
7/12
4500
12/12
5000
4/13
5500
run#


Noise Correlation vs time for ch 218 vs ch 219 fixed freq
~10kHz
×10³
correlation
200
150
100
50
0
2500
10/11
3000
12/11
3500
3/12
4000
7/12
4500
12/12
5000
4/13
5500
run#

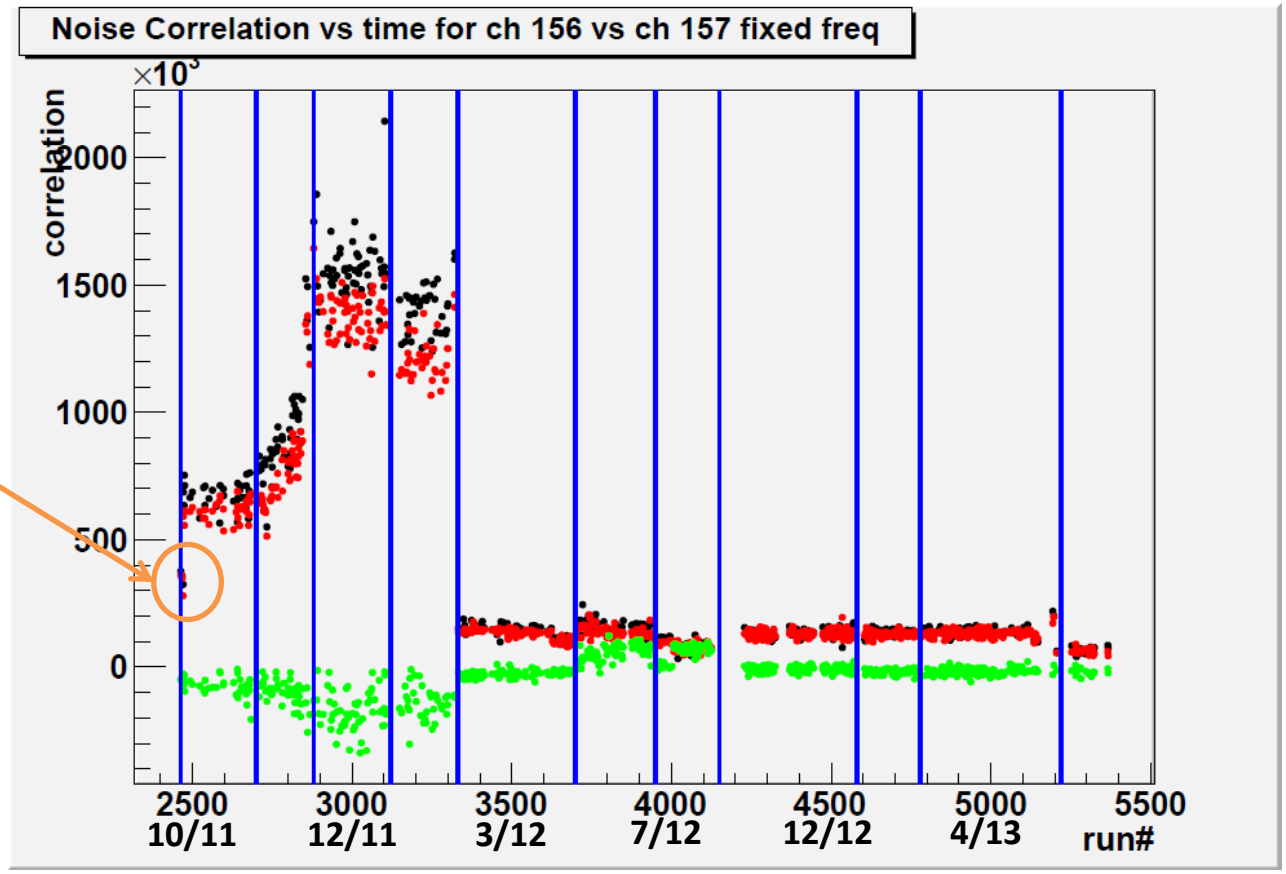

Noise Correlation vs time for ch 202 vs ch 203 fixed freq
~190kHz
×10³
correlation
5000
4000
3000
2000
1000
0
2500
10/11
3000
12/11
3500
3/12
4000
7/12
4500
12/12
5000
4/13
5500
run#


Noise Correlation vs time for ch 192 vs ch 193 fixed freq
~190kHz
×10³
correlation
4000
3000
2000
1000
0
2500
3000
3500
4000
4500
5000
5500
10/11
12/11
3/12
7/12
12/12
4/13
run#


Noise Correlation vs time for ch 177 vs ch 178 fixed freq
~10kHz
correlation
6000
4000
2000
0
-2000
-4000
-6000
2500
10/11
3000
12/11
3500
3/12
4000
7/12
4500
12/12
5000
4/13
5500
run#

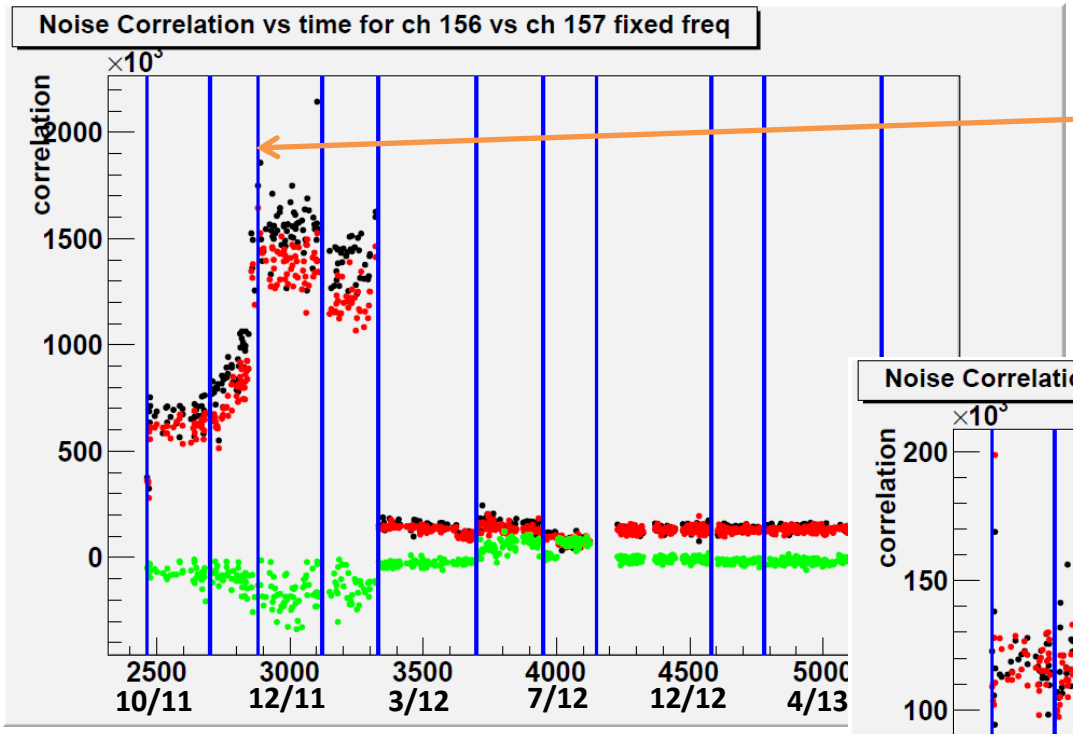
Improvements

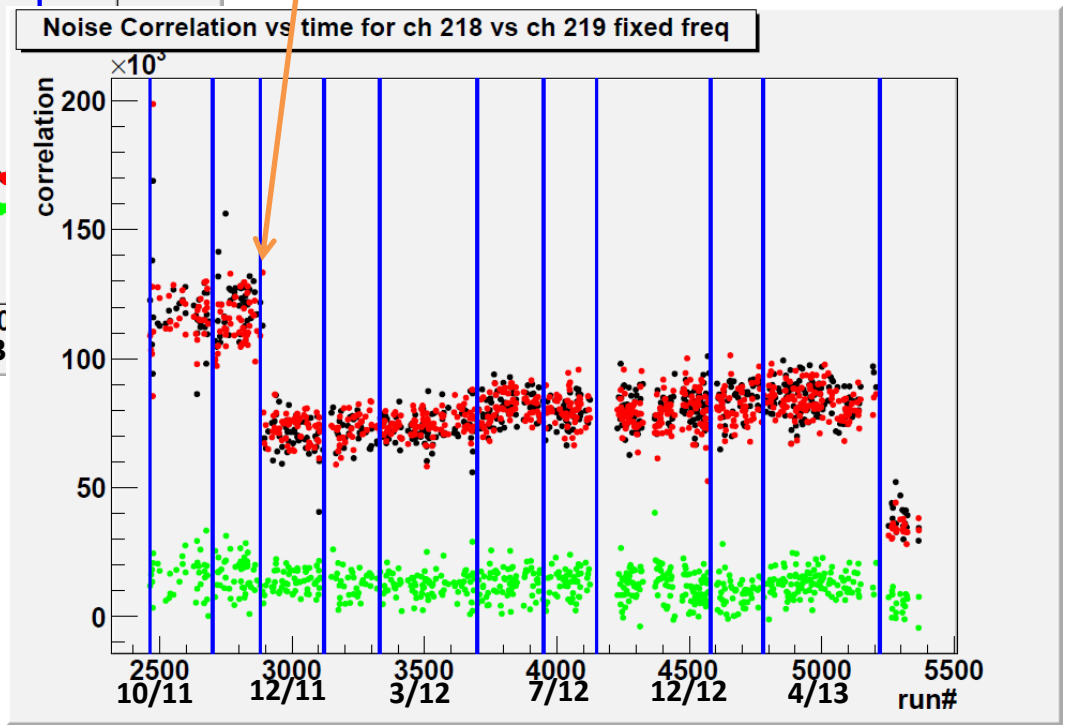
Small region in very beginning appears in some of the plots



Improvements

- Difference in cuts for TPC 1 and TPC2
- Specifically this cut is different for TPC1 ch pairs and TPC2 ch pairs
- Could be EBOX Fan installed in sides at diff times





Improvements

- High Frequencies have huge correlations early on at the 190kHz bin
- Power supply that was changed????