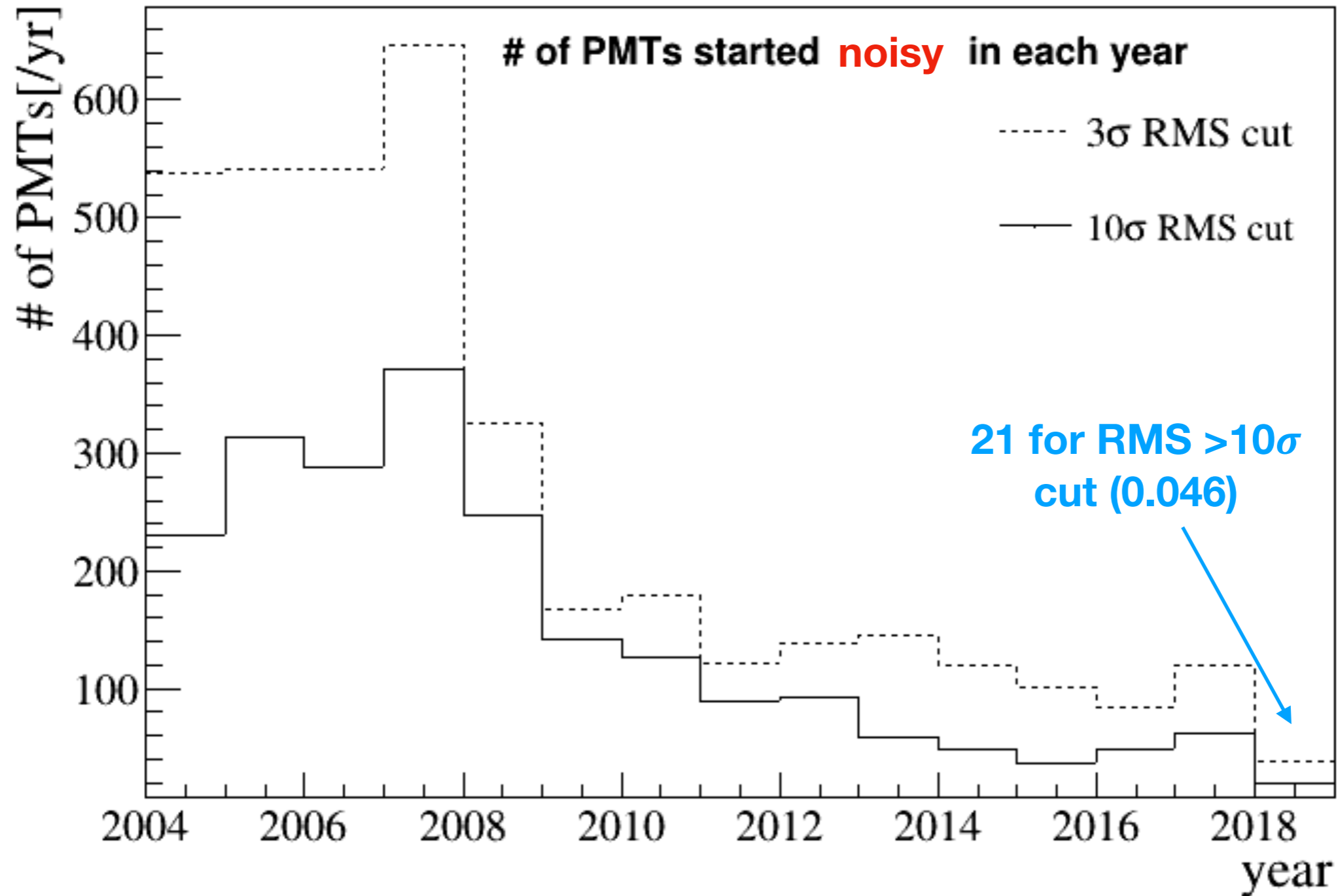


# **VEM A/P profiles for noisy PMTs**

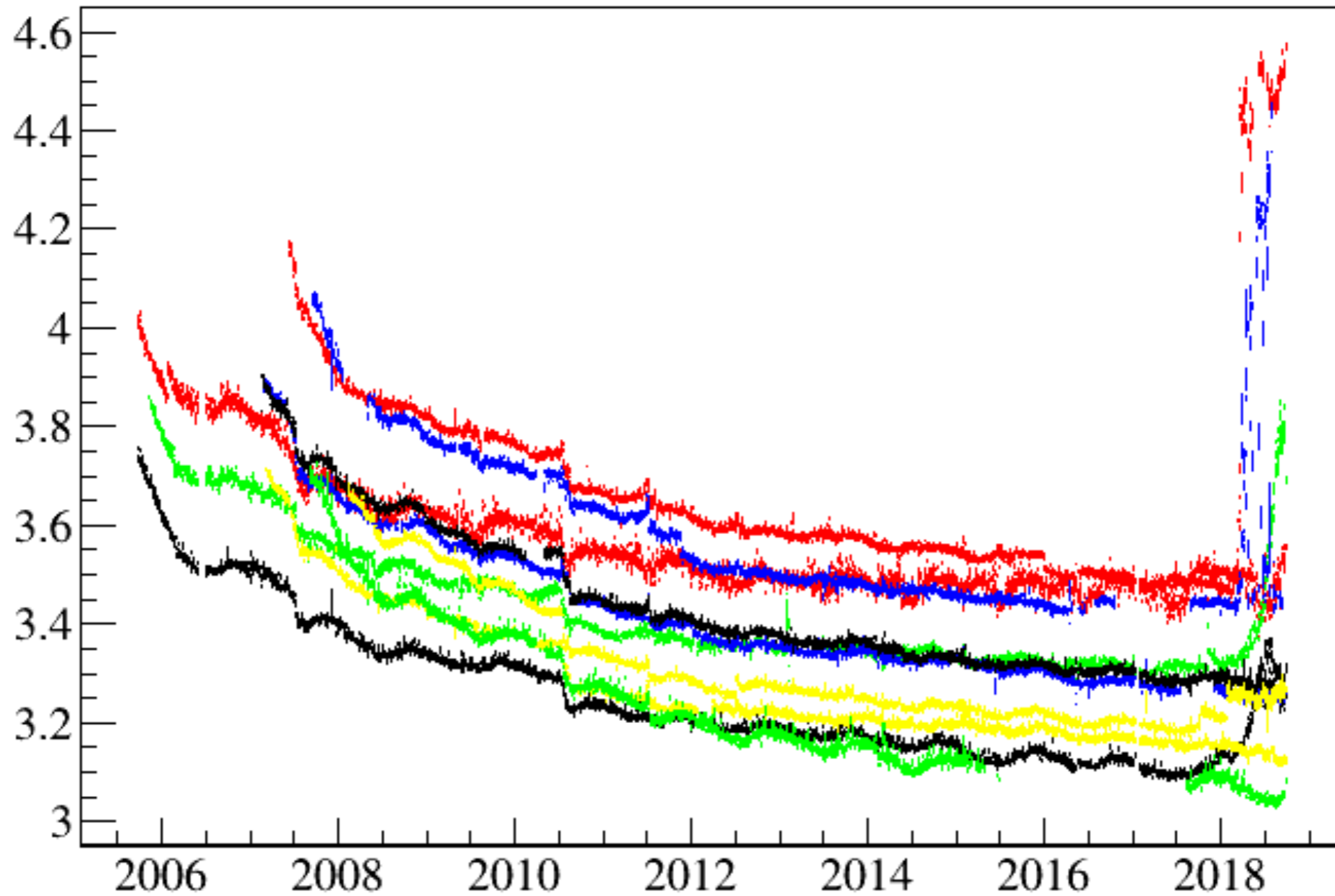
Koun Choi, Ioana C. Mariş (Université Libre de Bruxelles)

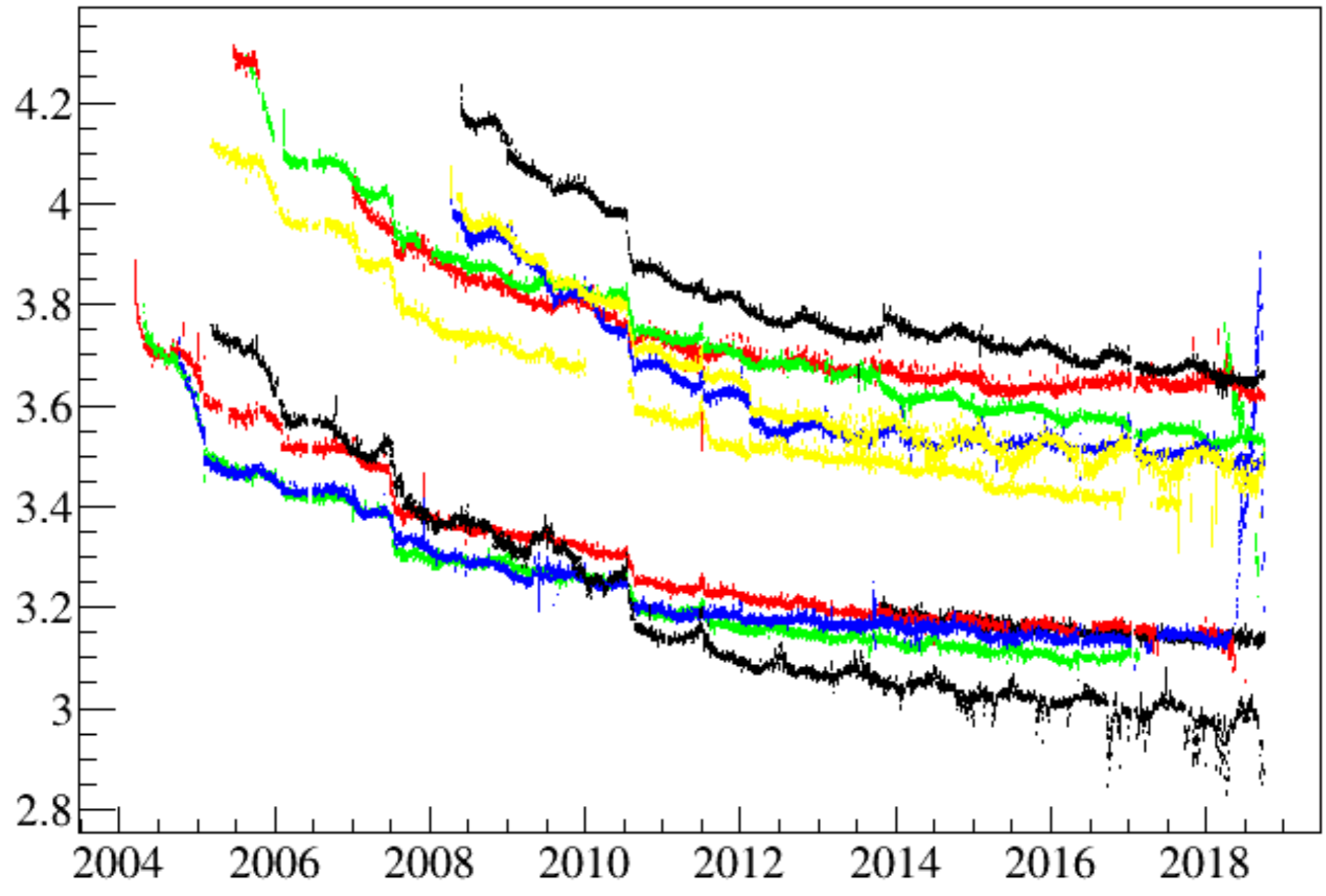
# 1. PMTs first ever started being noisy in 2018



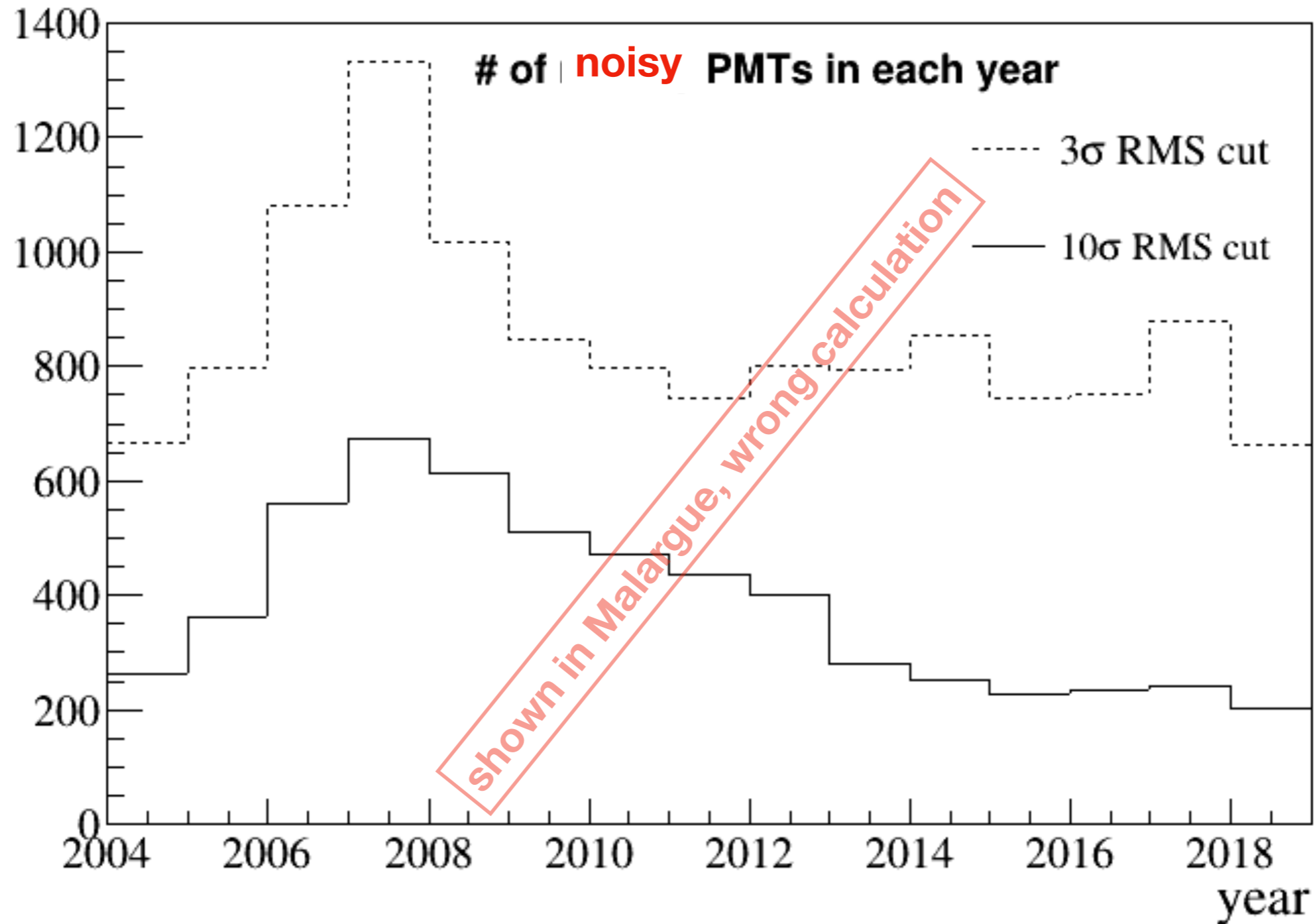
from eye-scanning, 11 of them really starts being noisy, others rather have high RMS fluctuation that happen to exceed  $10\sigma$  cut in 2018

**noisy PMT profile examples (21 PMTs started raining in 2018, shown in ~10PMT bundles)**

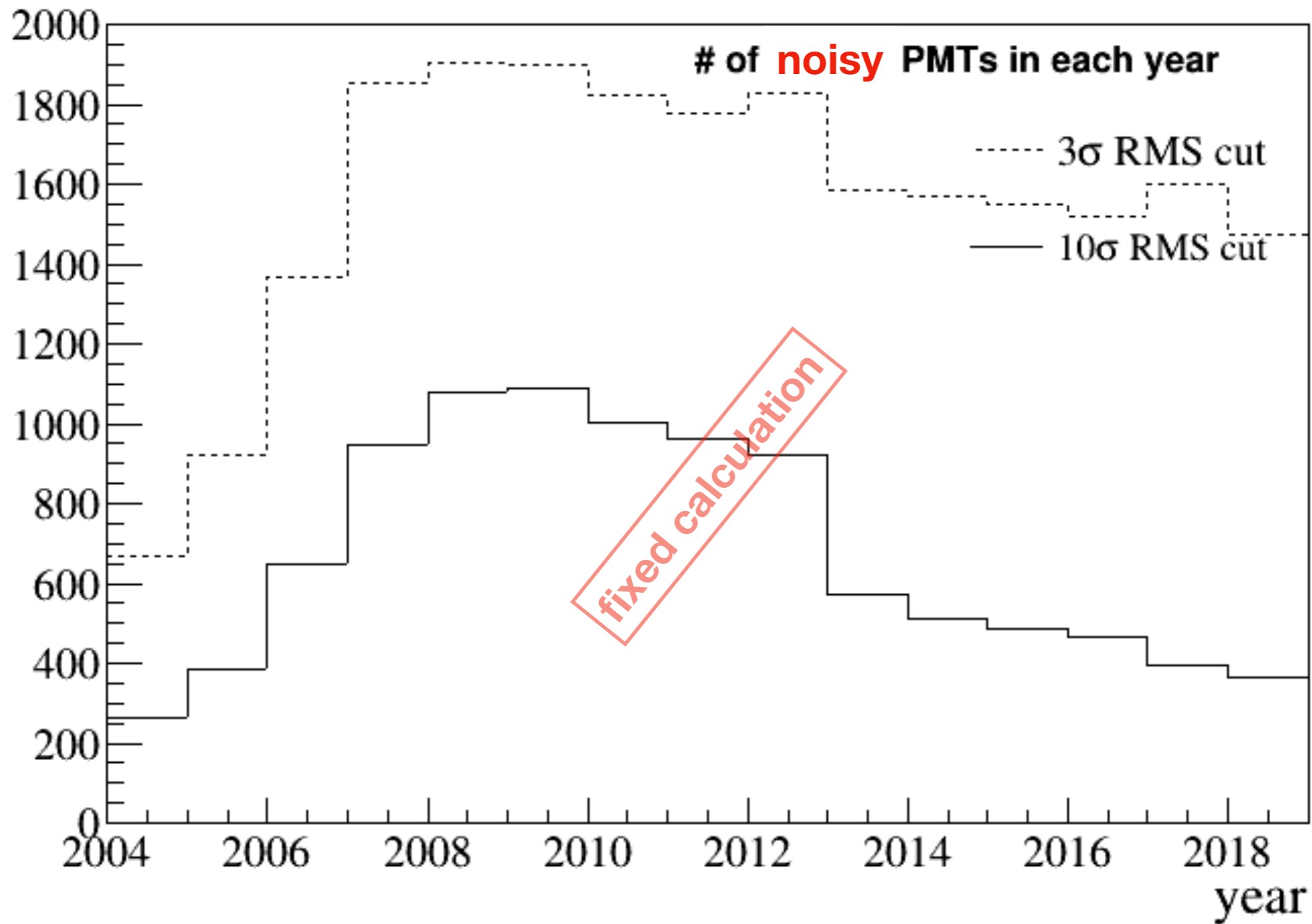




## 2. PMTs (continuously) being noisy in 2018

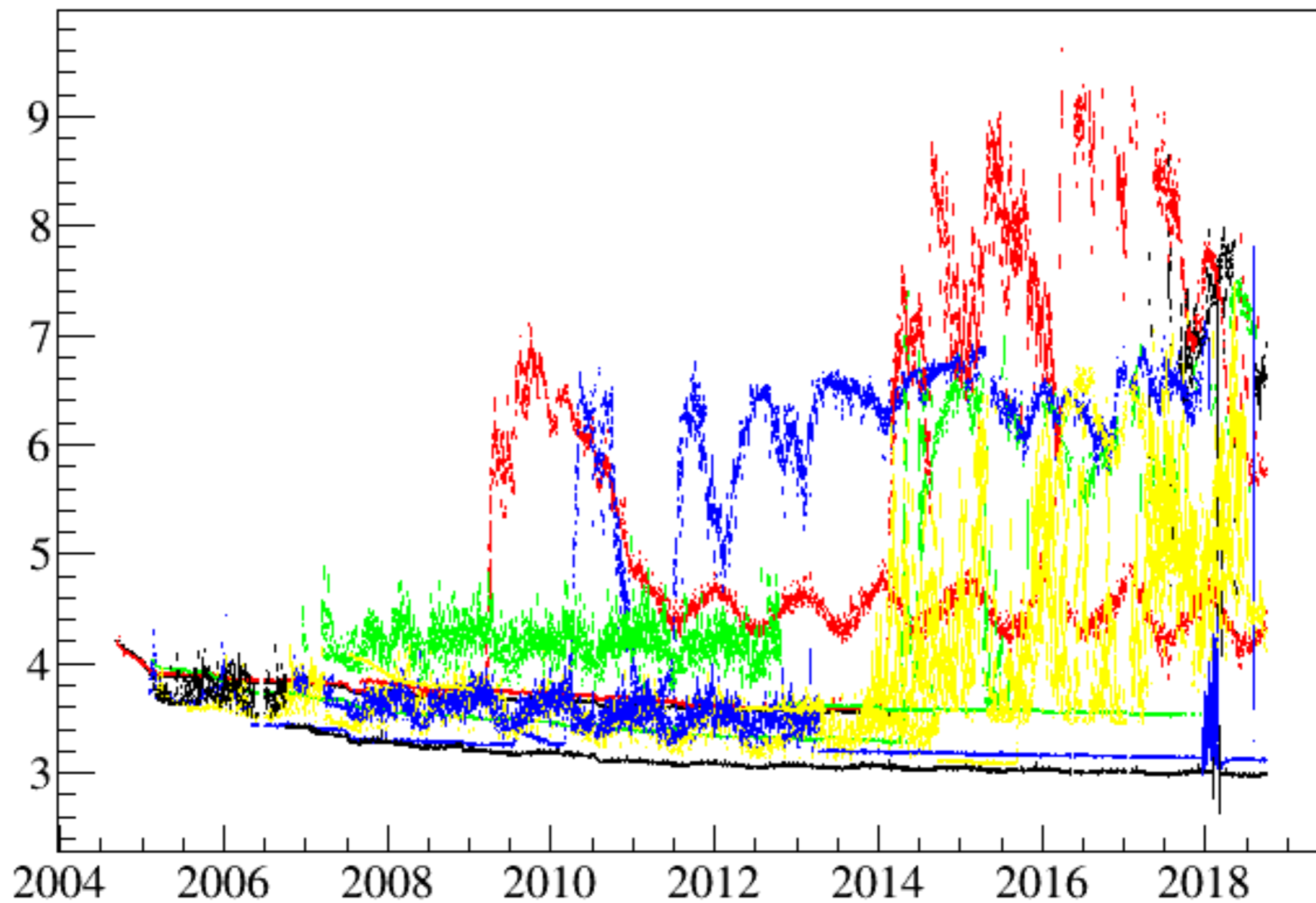


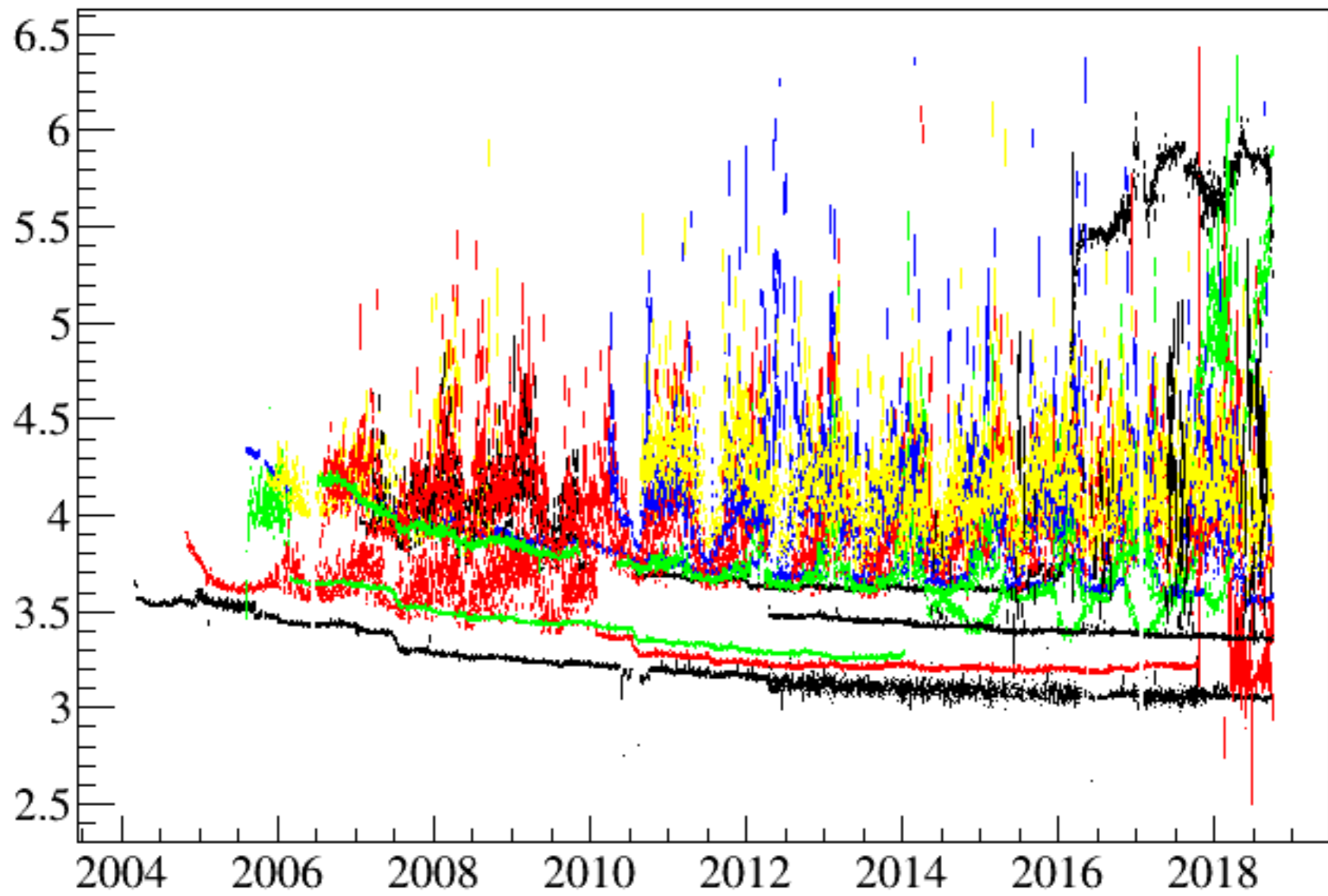
# of PMTs being noisy in 2018: 204 for  $>10\sigma$  cut  
-> underestimated due to a bug in code



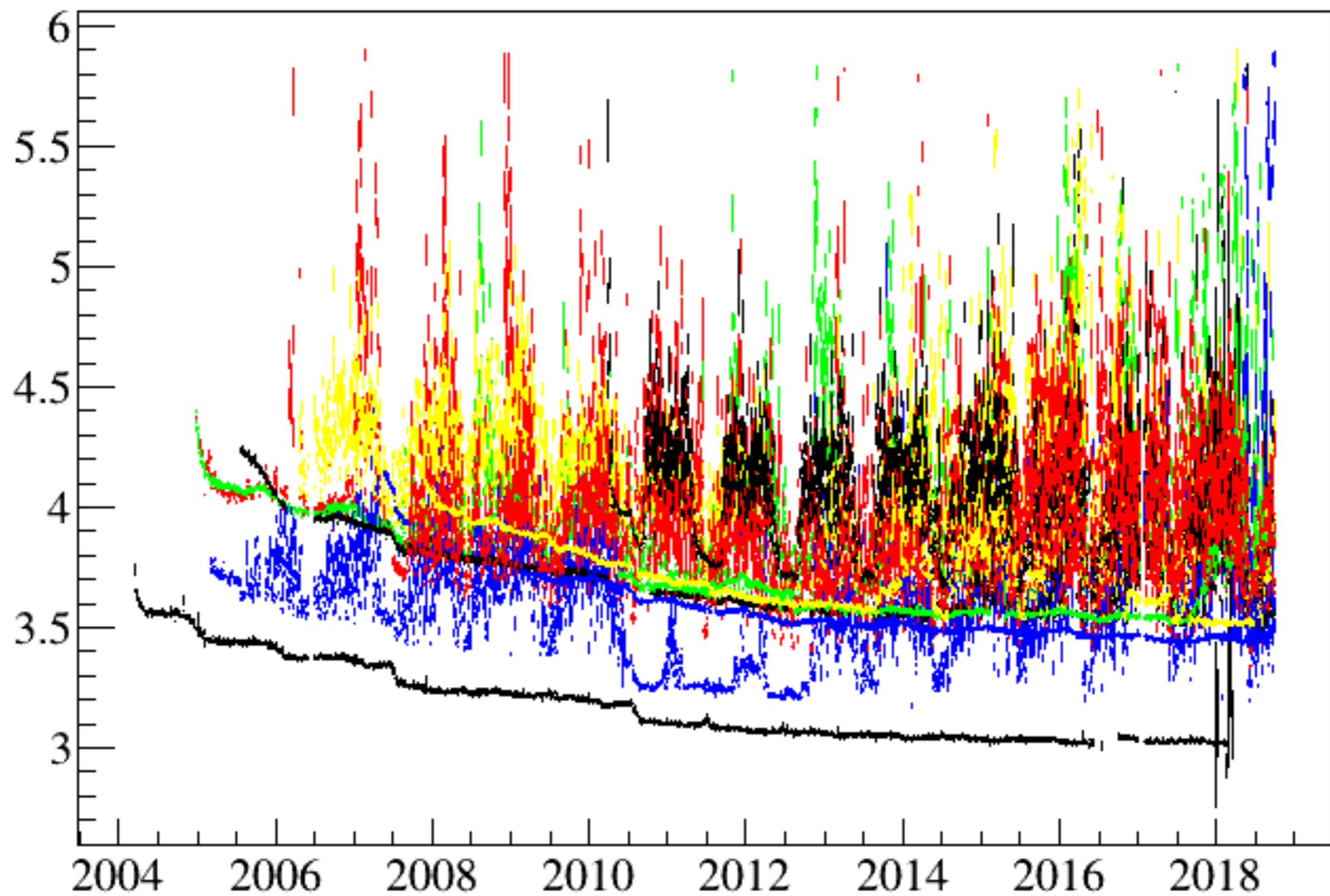
# of PMTs being noisy in 2018: 364 for >10 $\sigma$  cut

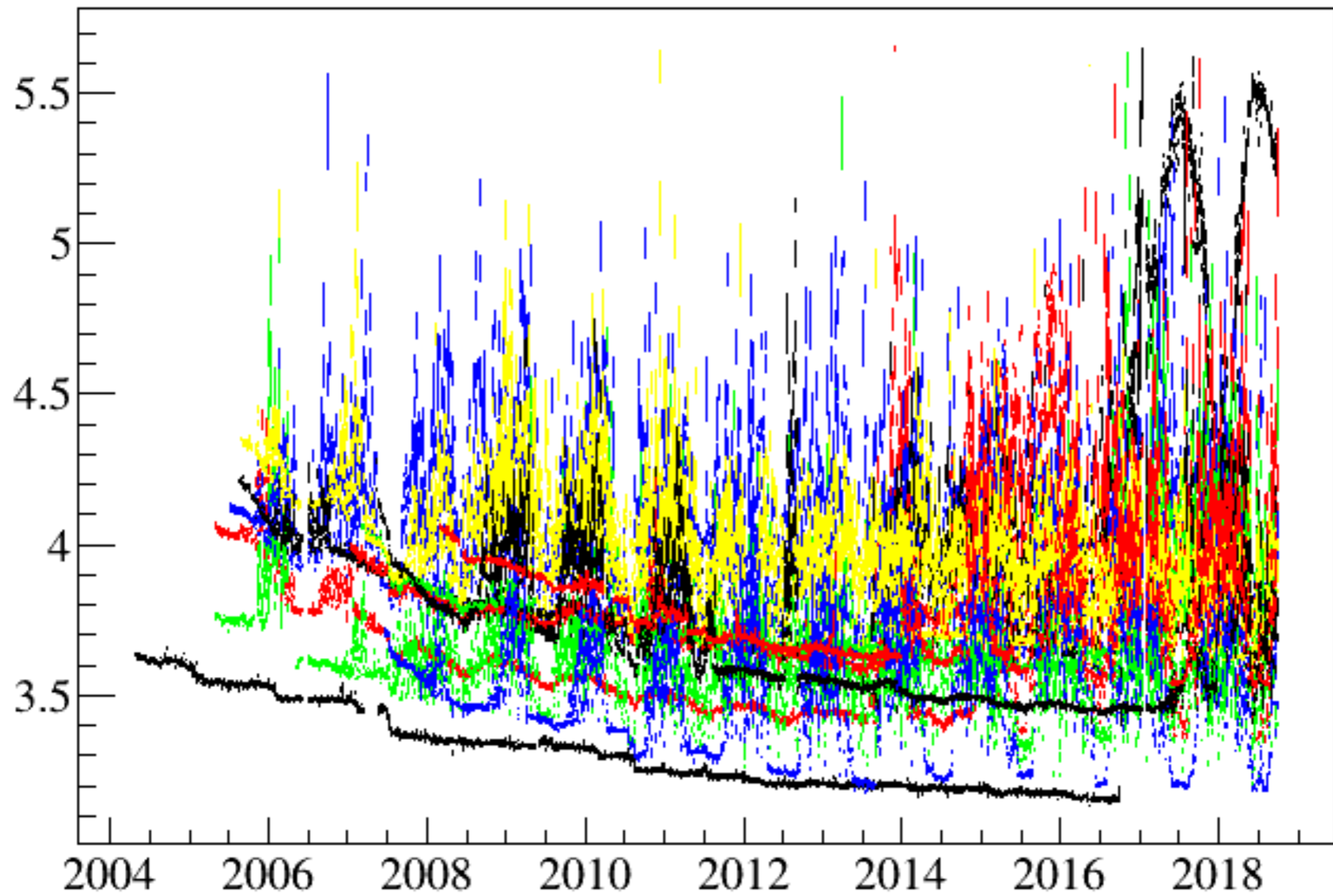
noisy PMT profile examples (126 PMTs selected by  $50\sigma$  (RMS>0.13) cut, shown in ~10PMT bundles)

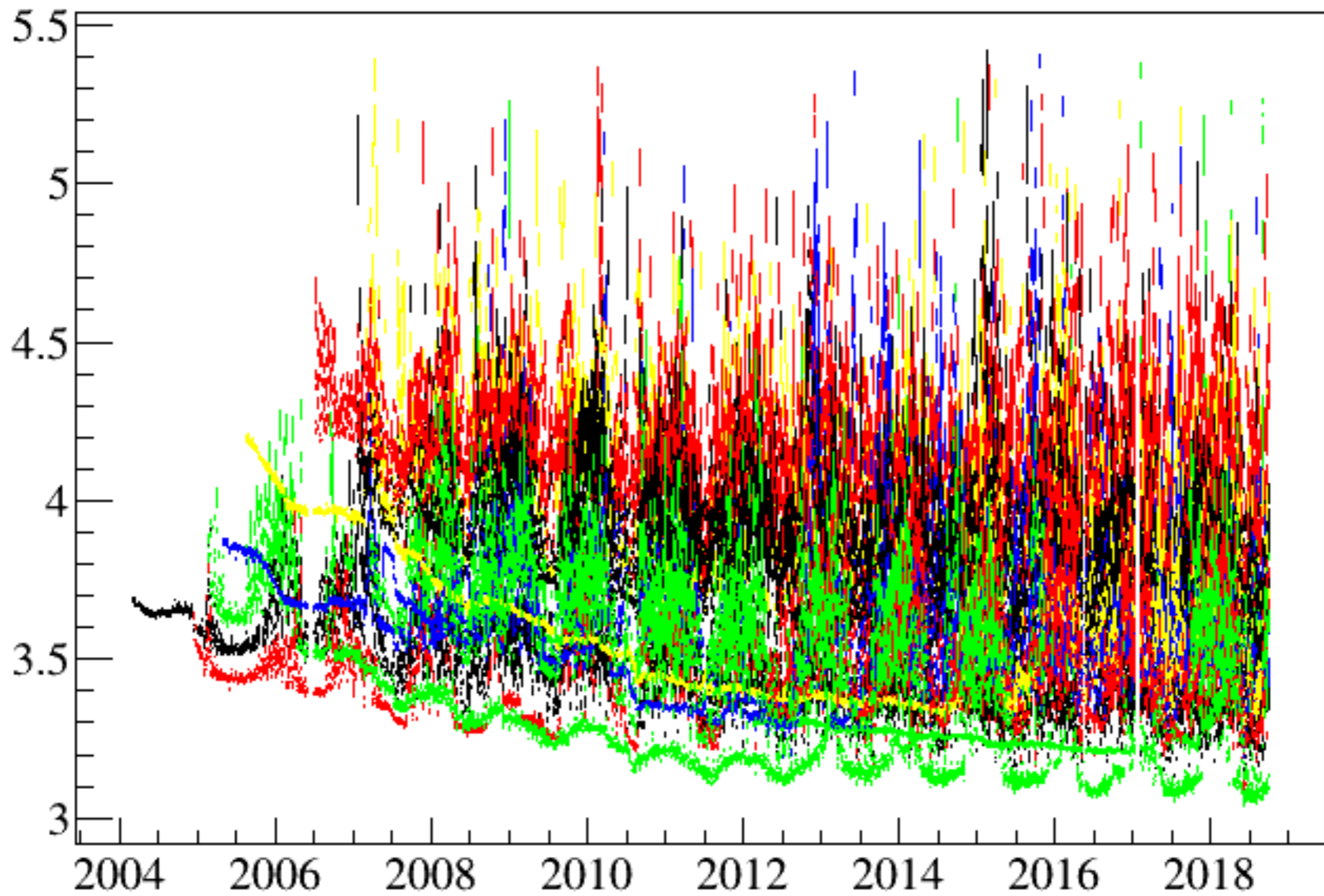


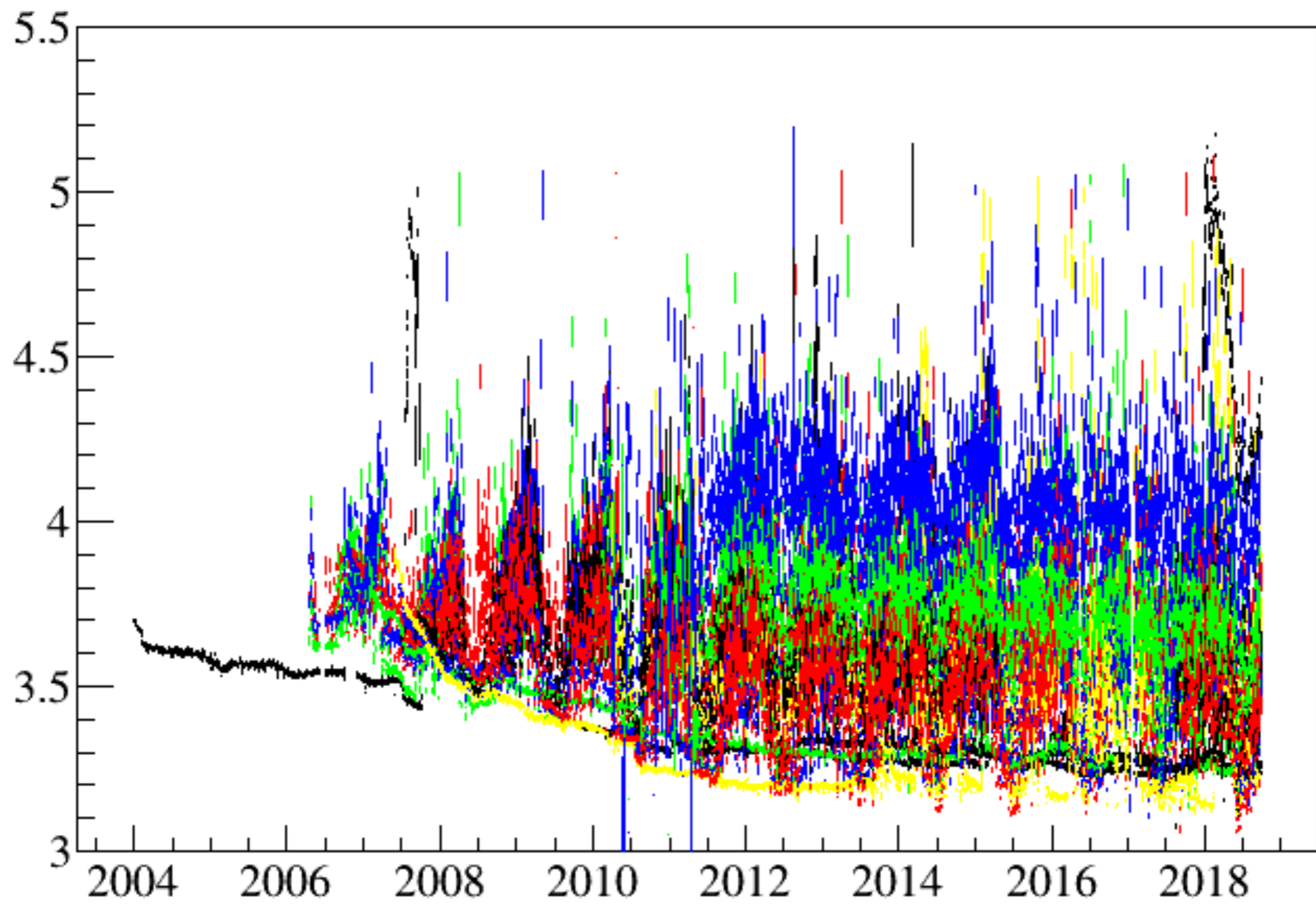


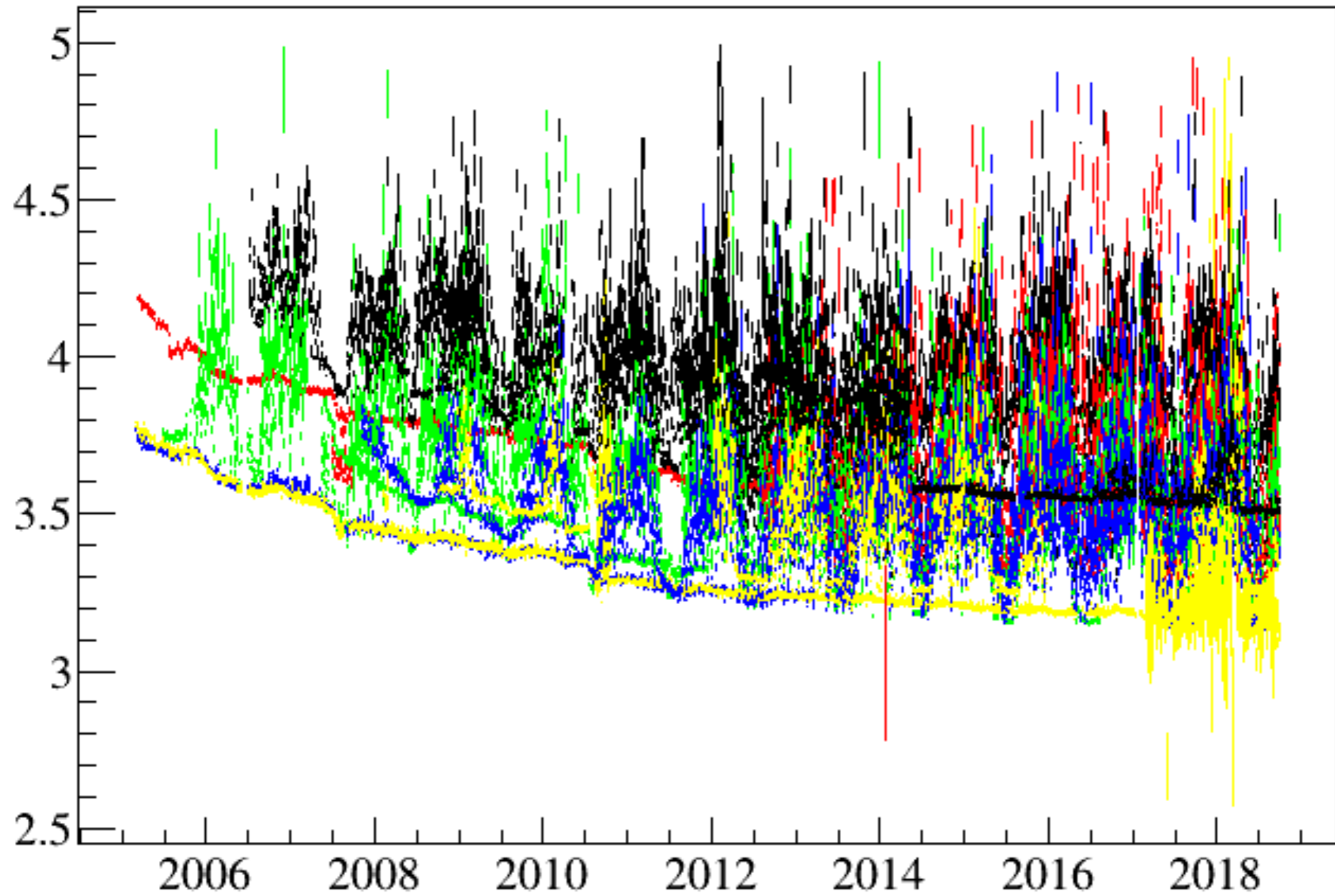


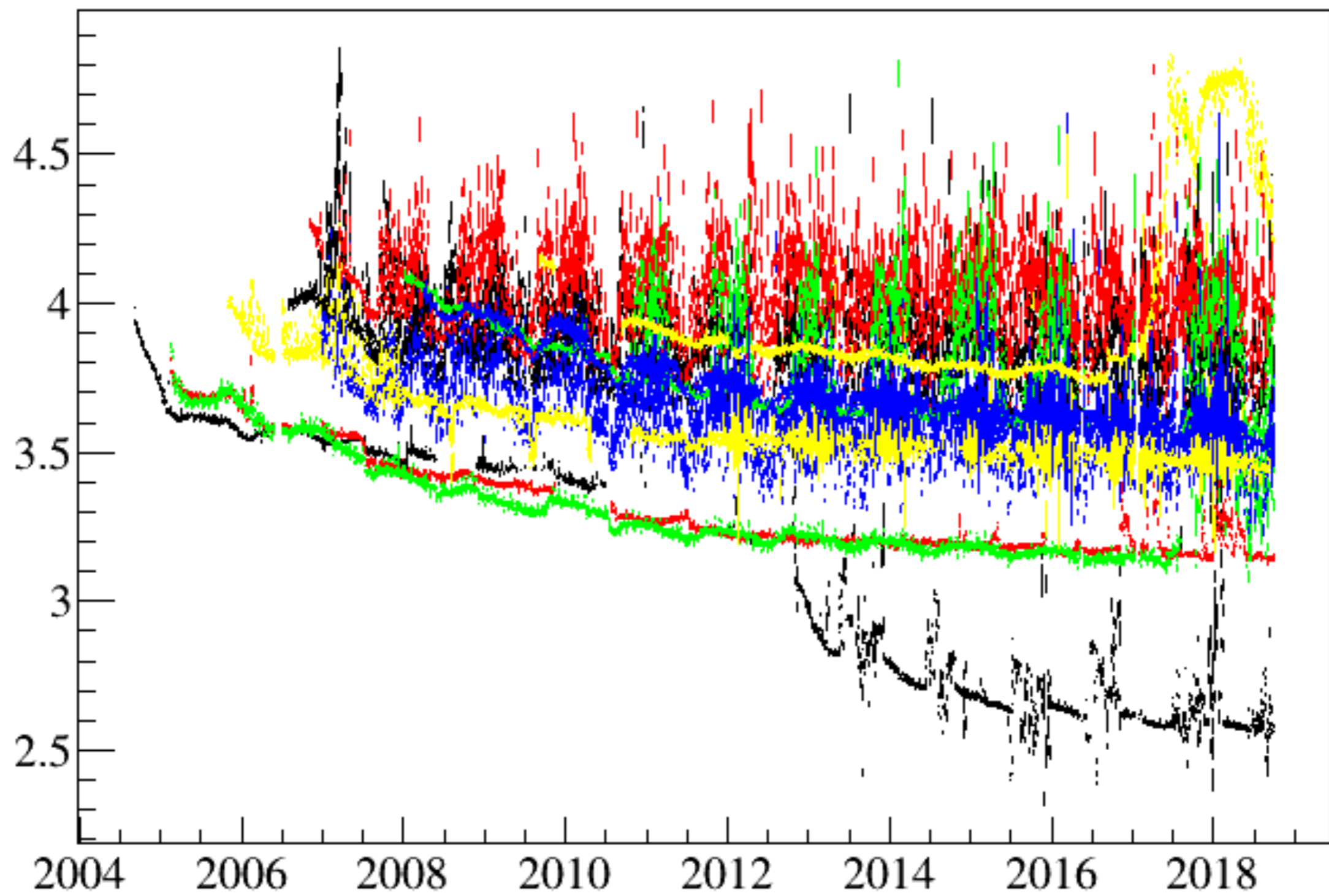


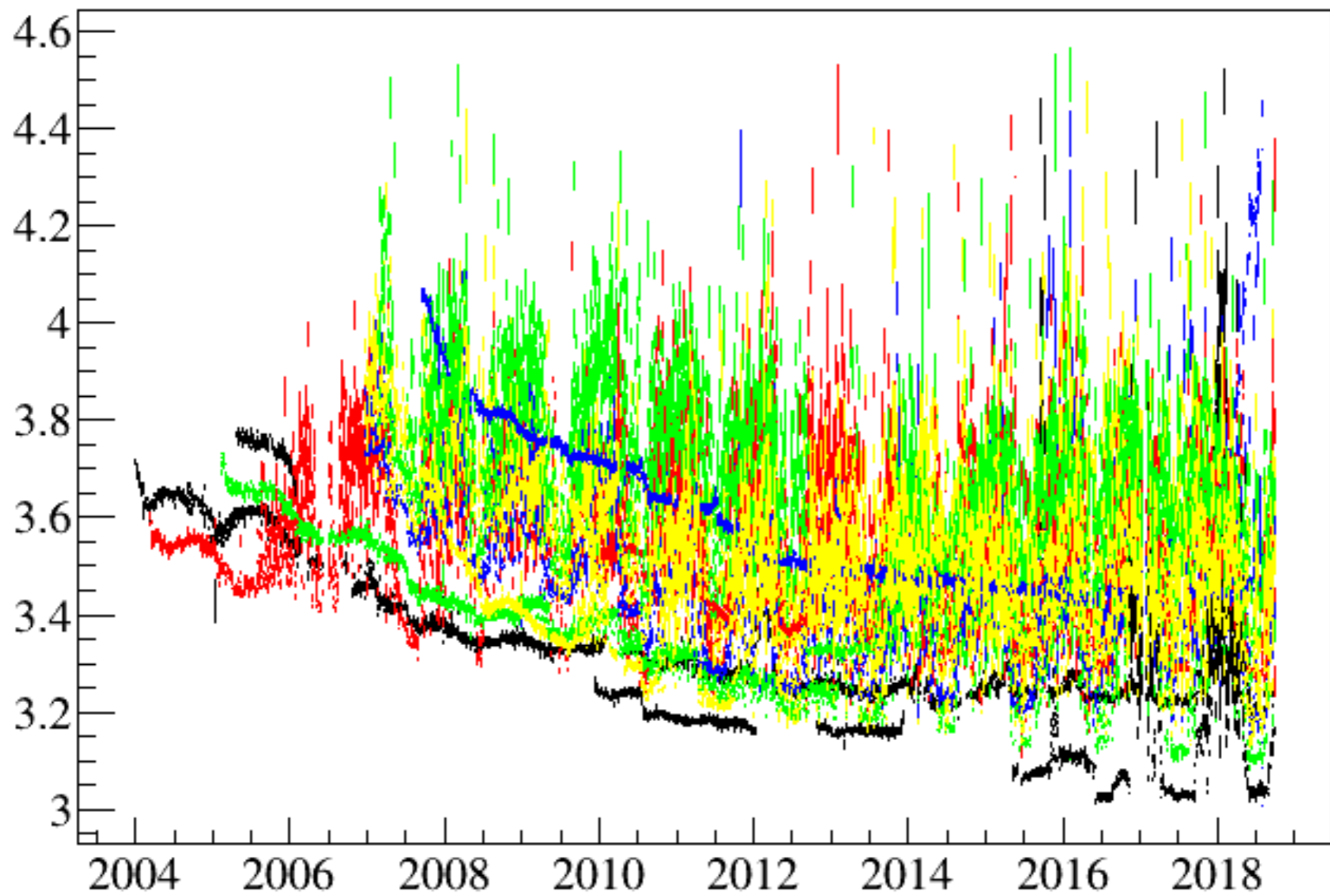


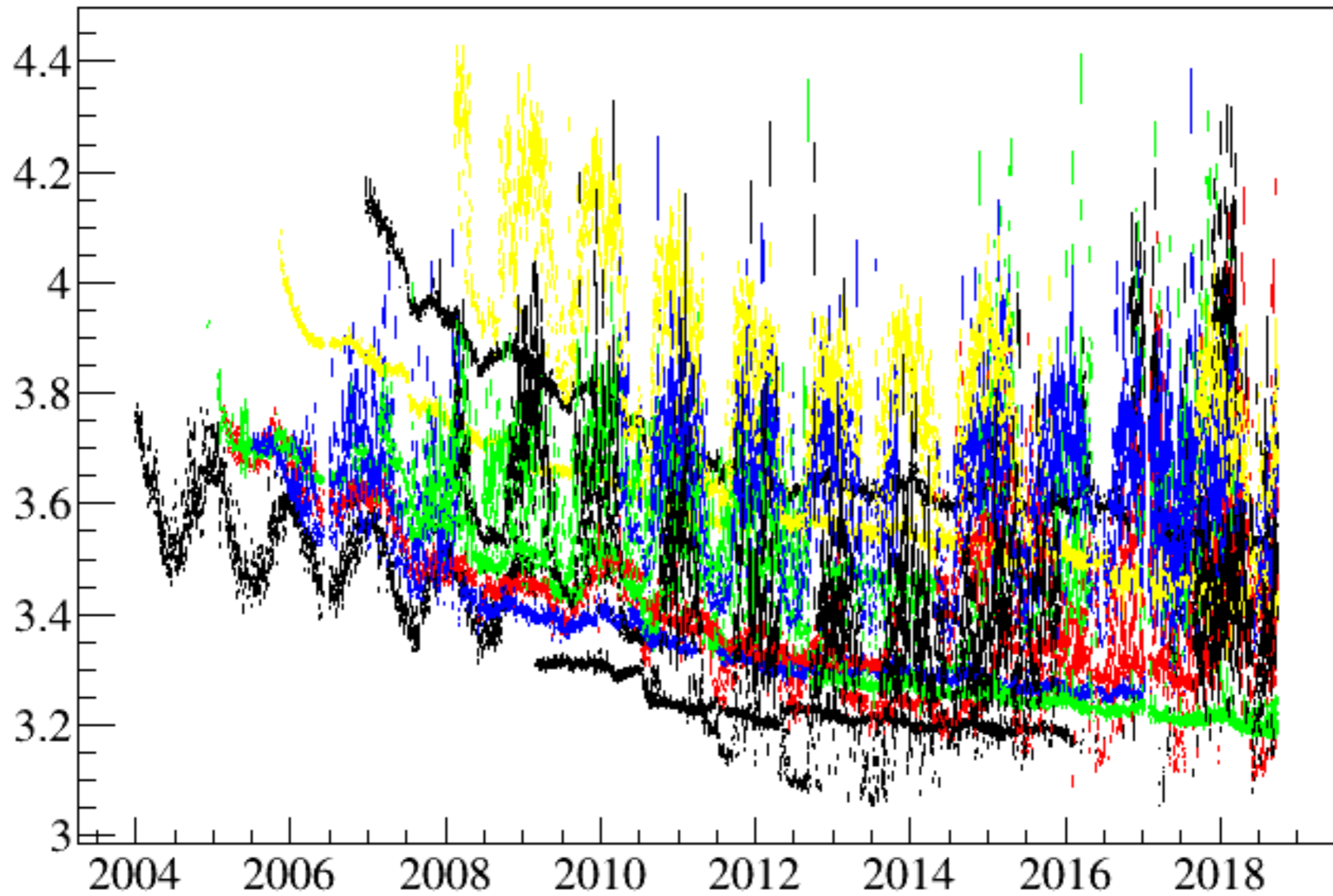




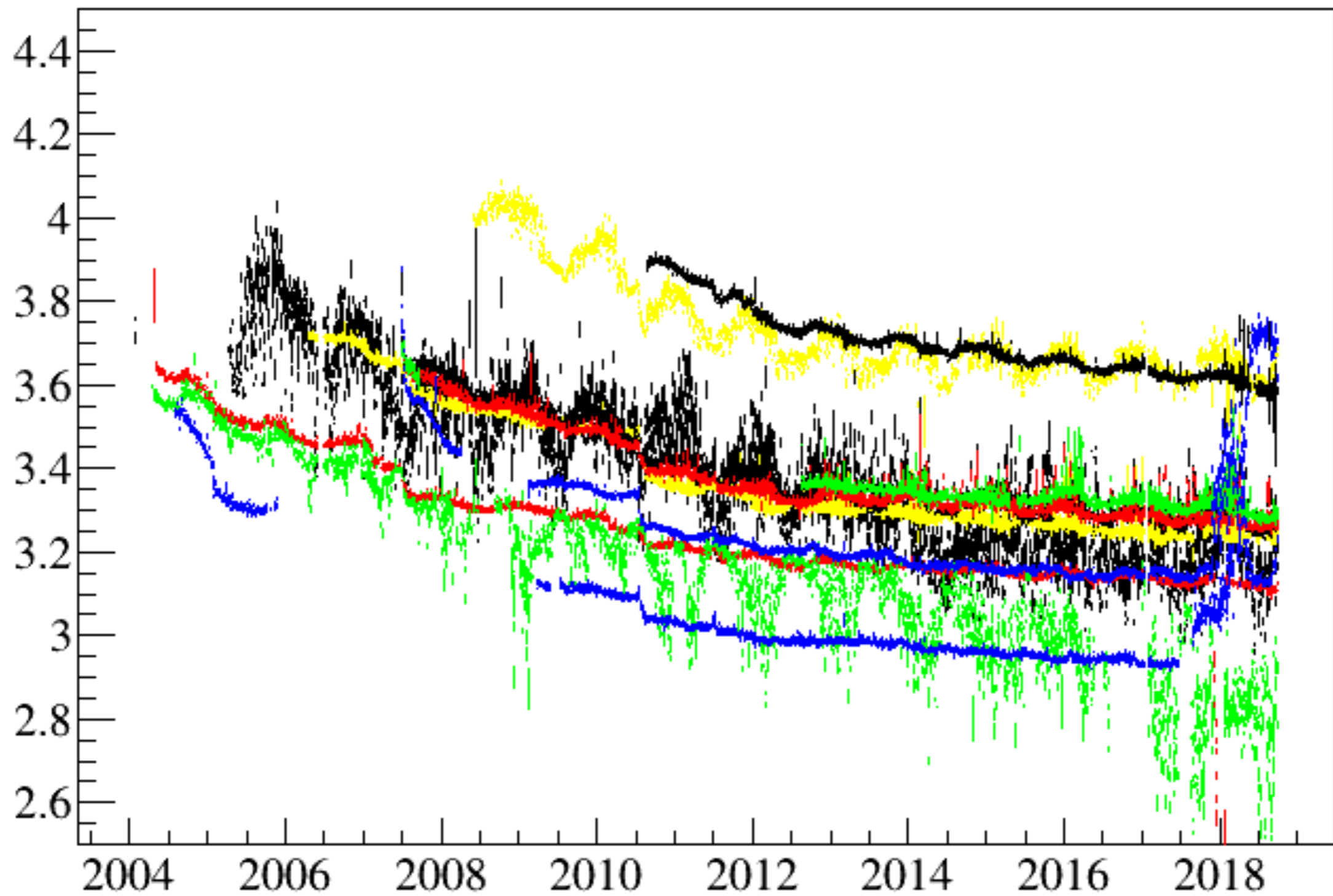












# Summary

- There are currently over 100 PMTs being noisy in the A/P ratio (364 of them in  $10\sigma$  RMS cut, 126 of them if count with  $50\sigma$  cut)  
-> but they are not all “raining” PMTs, there are different kinds of noises which can pass simple RMS cut