

Studying the Heat/Coihueco energy cross calibration

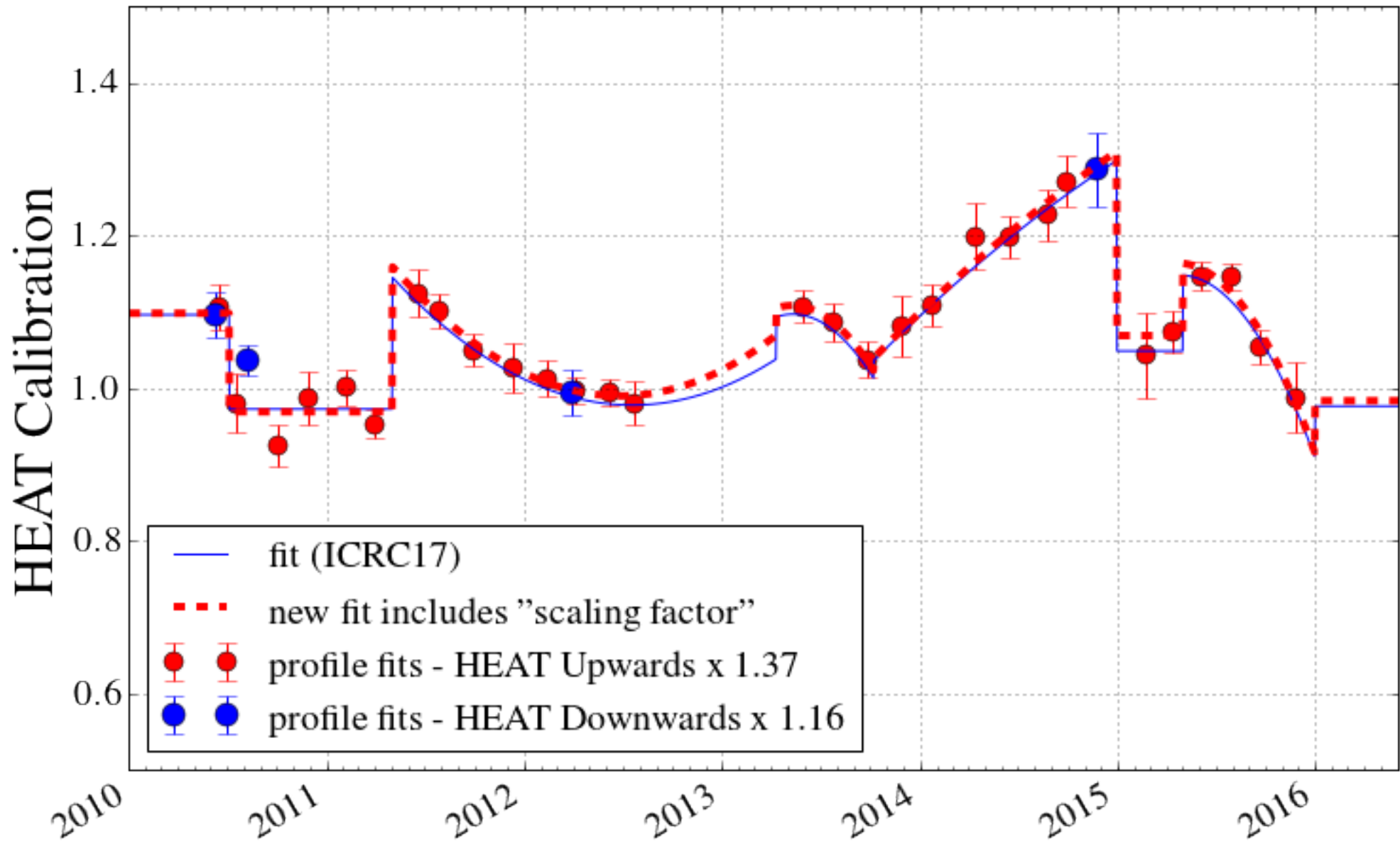
Jose Bellido, Bruce Dawson

The University of Adelaide

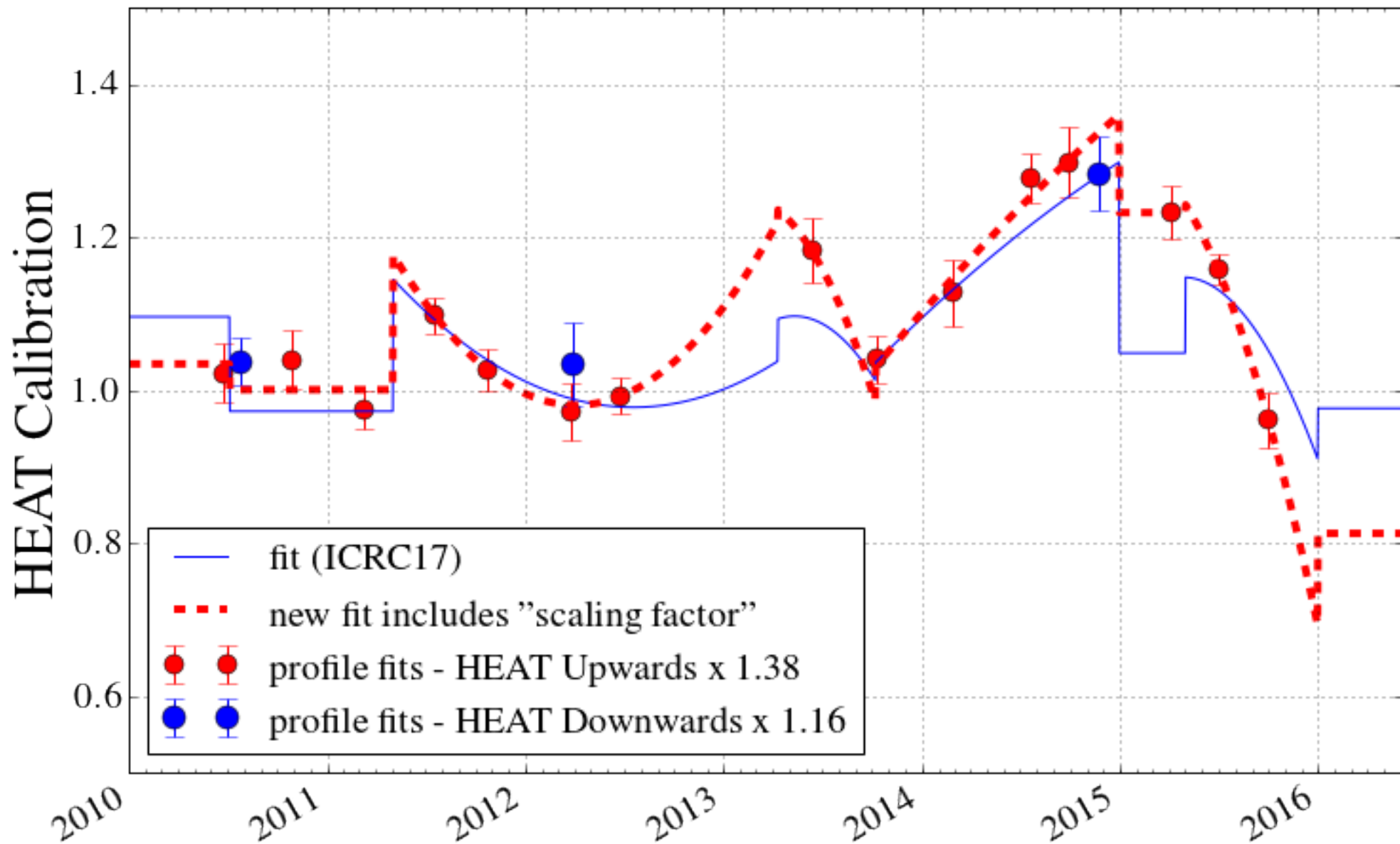
July 12th, 2018

TeamSpeak meeting Long Term Performance

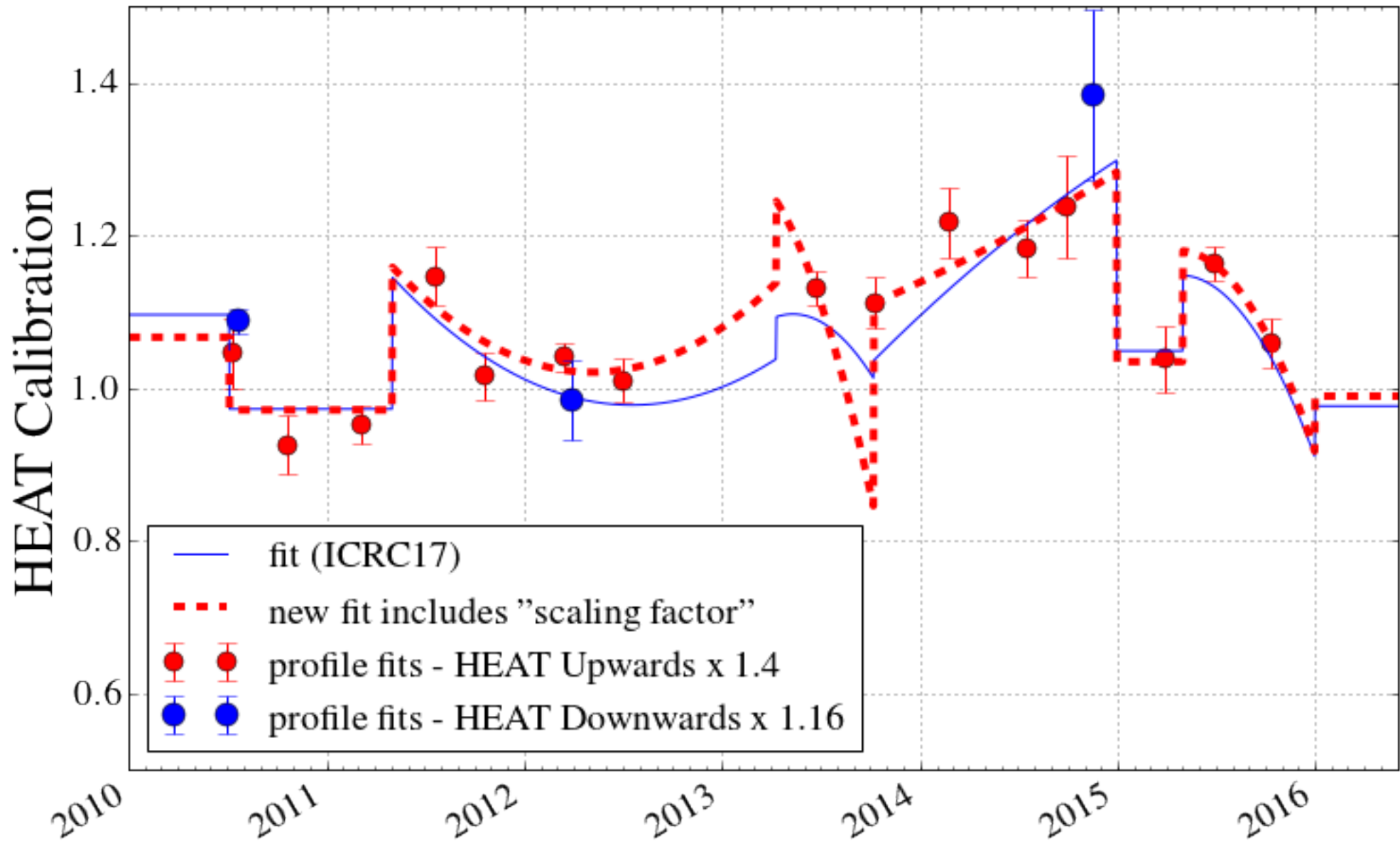
Using all HEAT telescopes



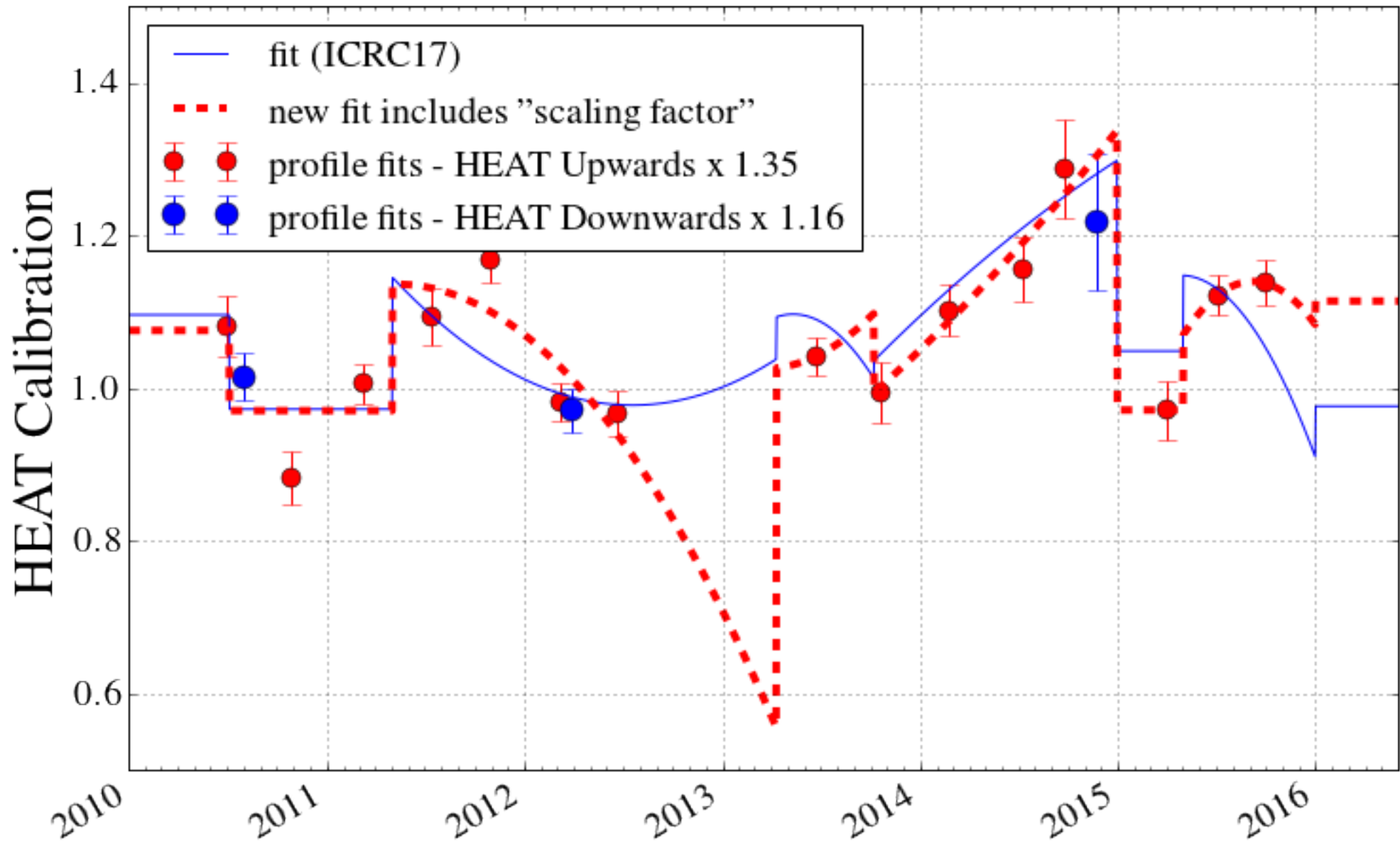
Using only HEAT telescope 1



Using only HEAT telescope 2

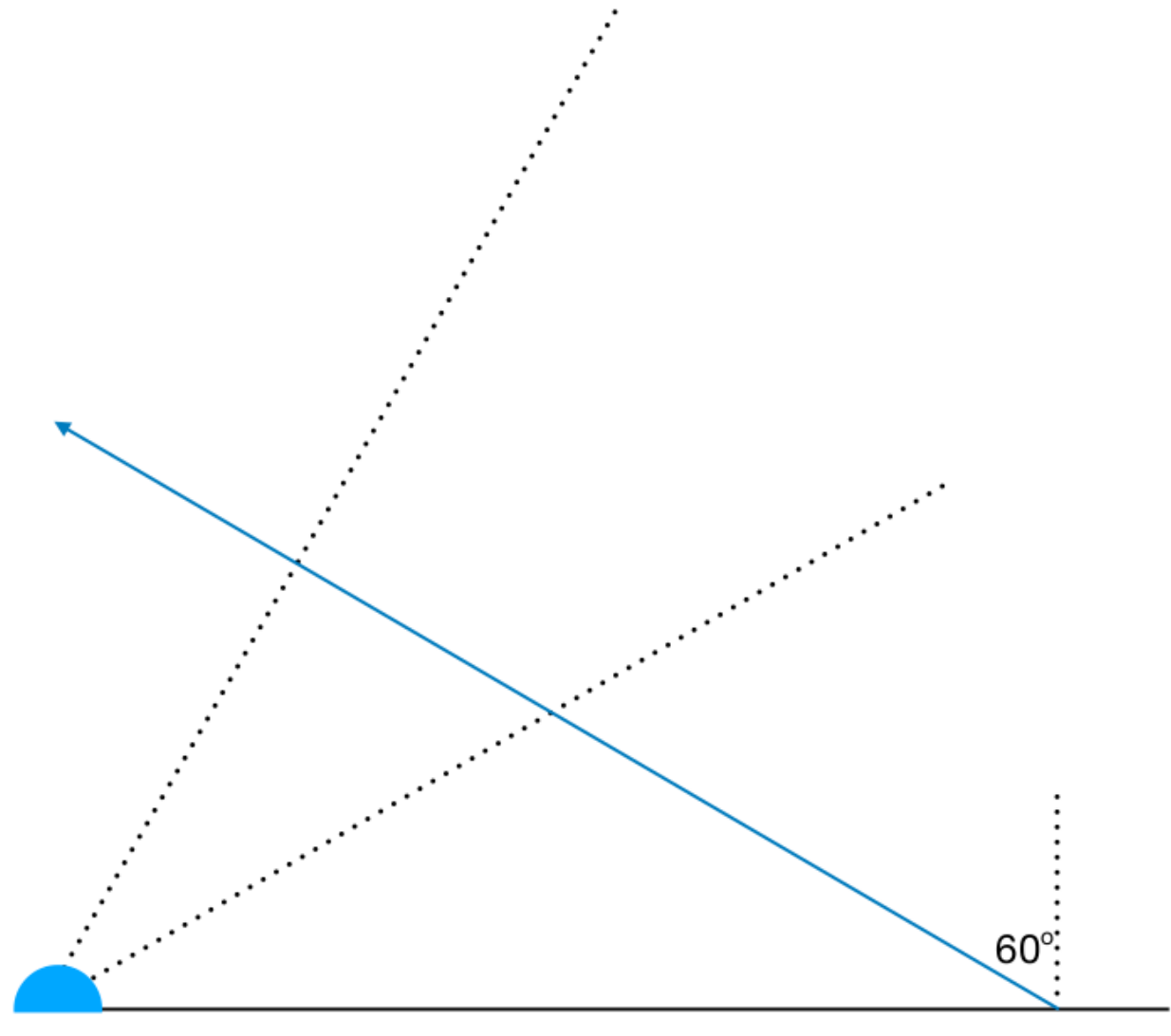


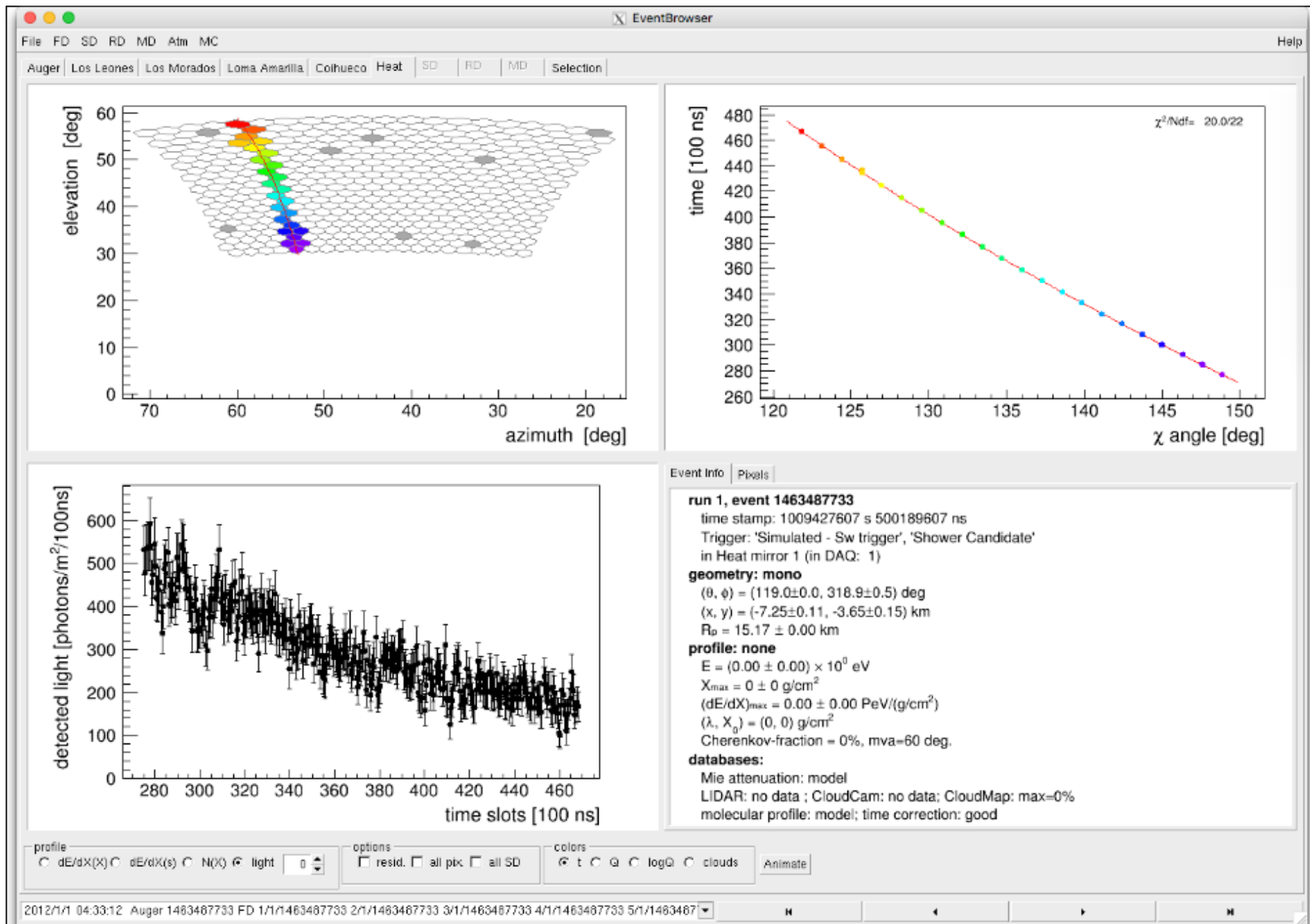
Using only HEAT telescope 3

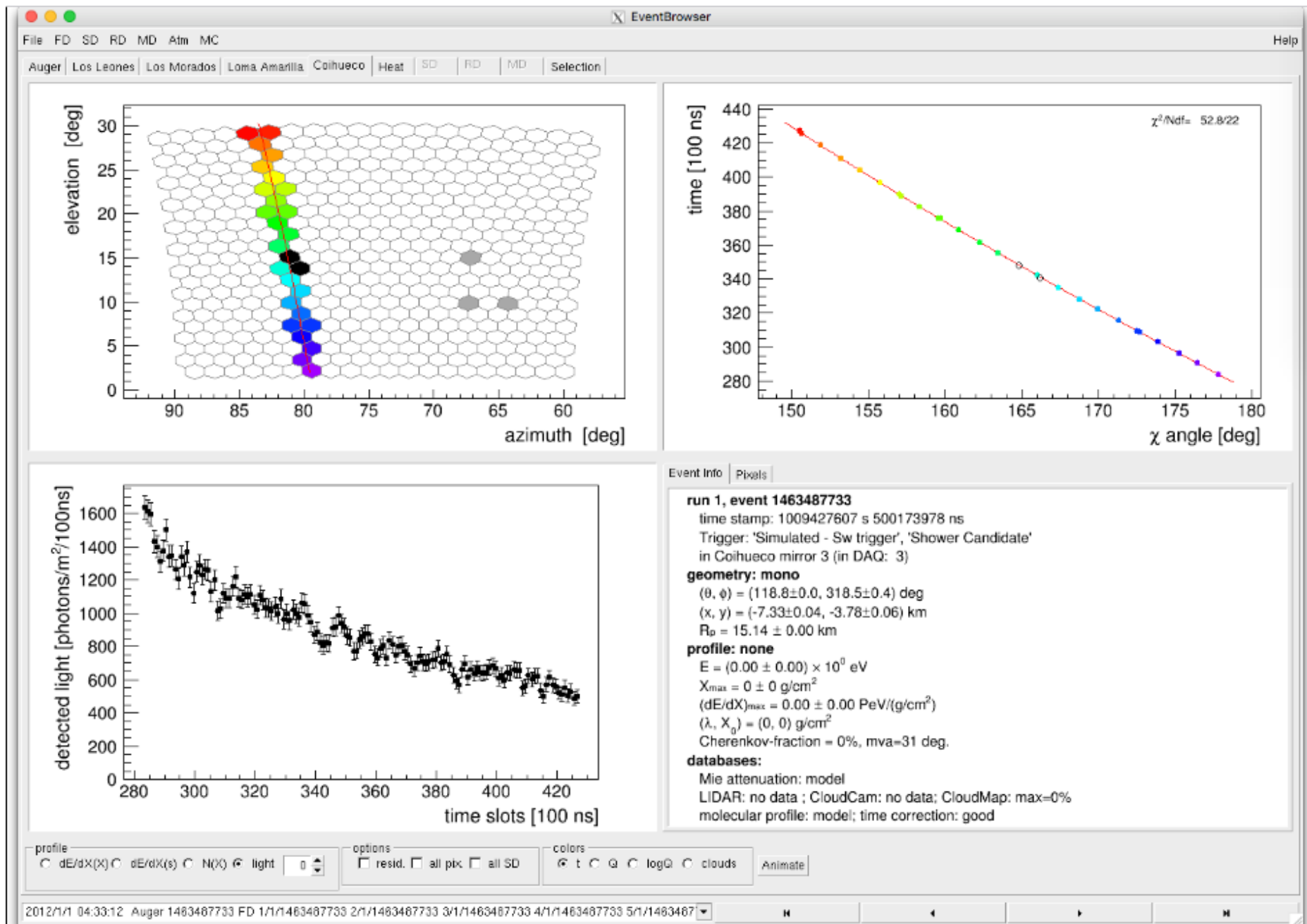


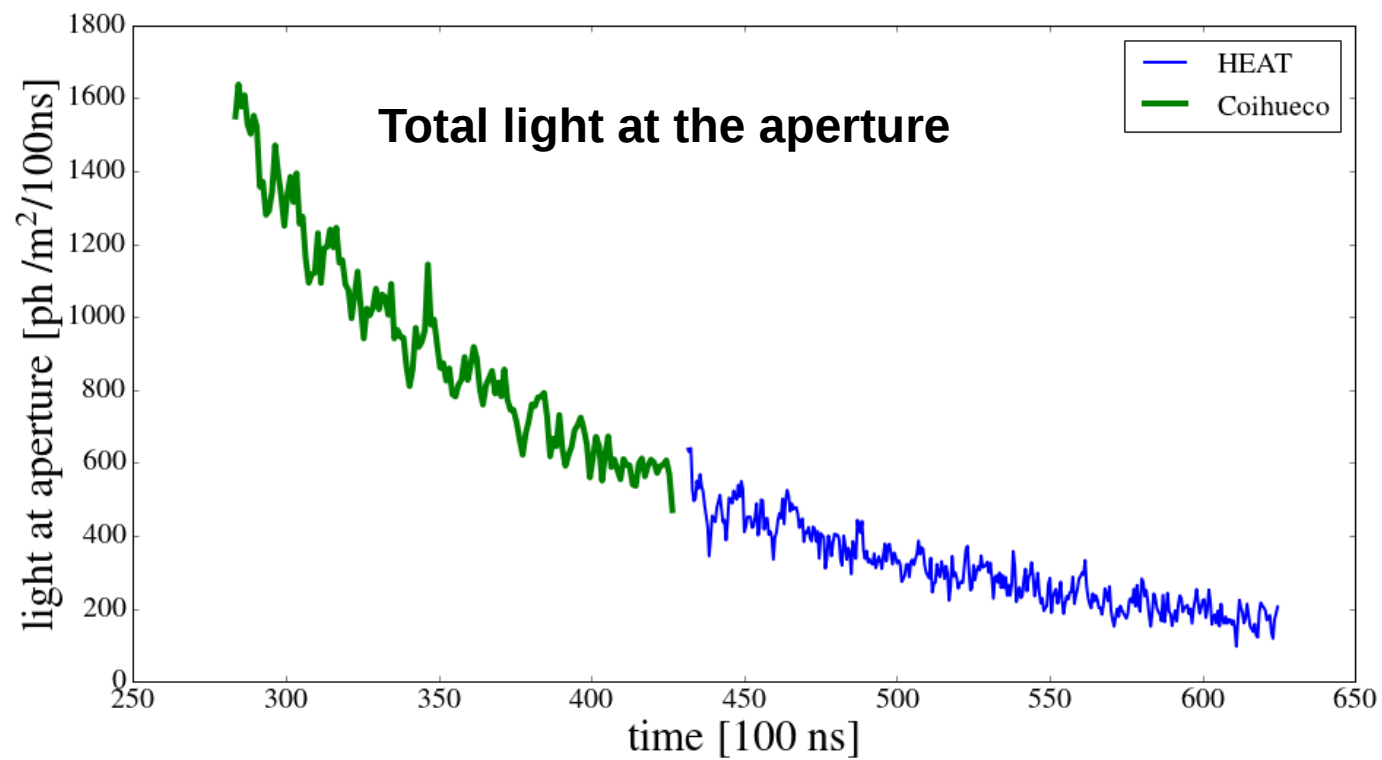
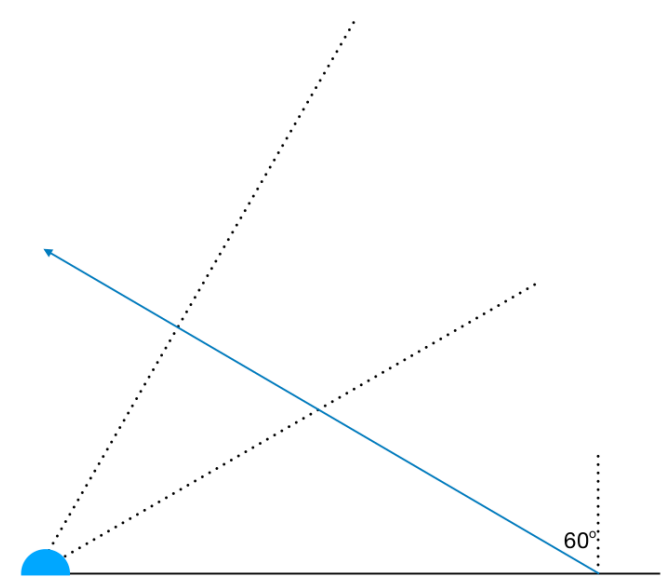
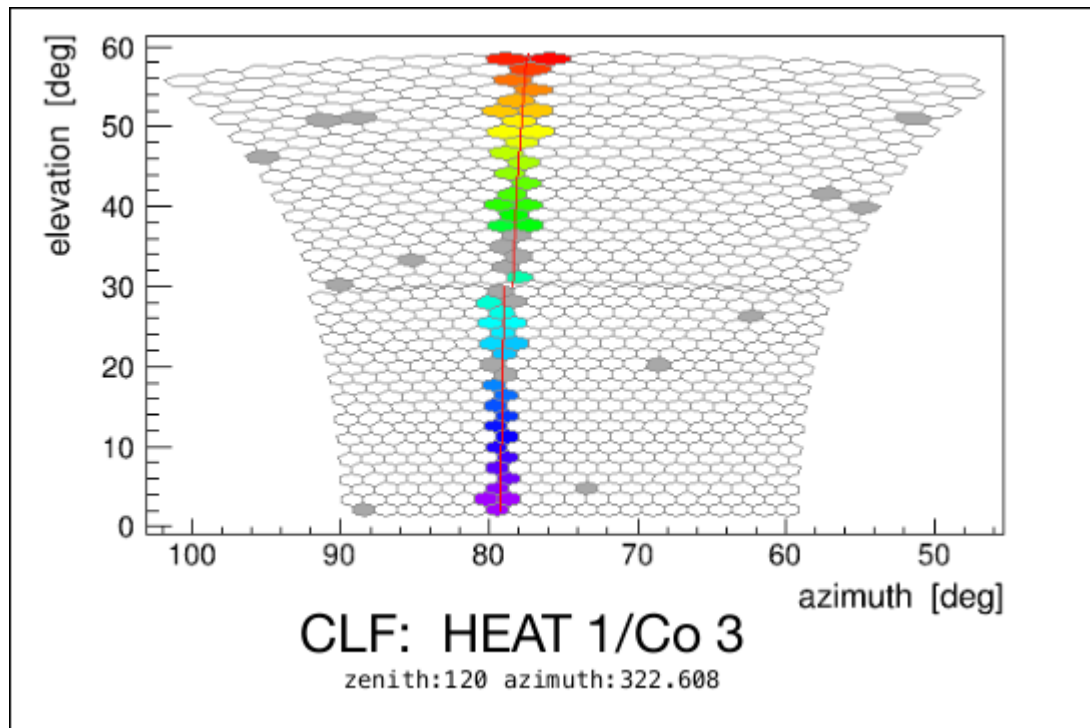
Simulation of inclined lasers

(average aerosol VAOD of 0.04)



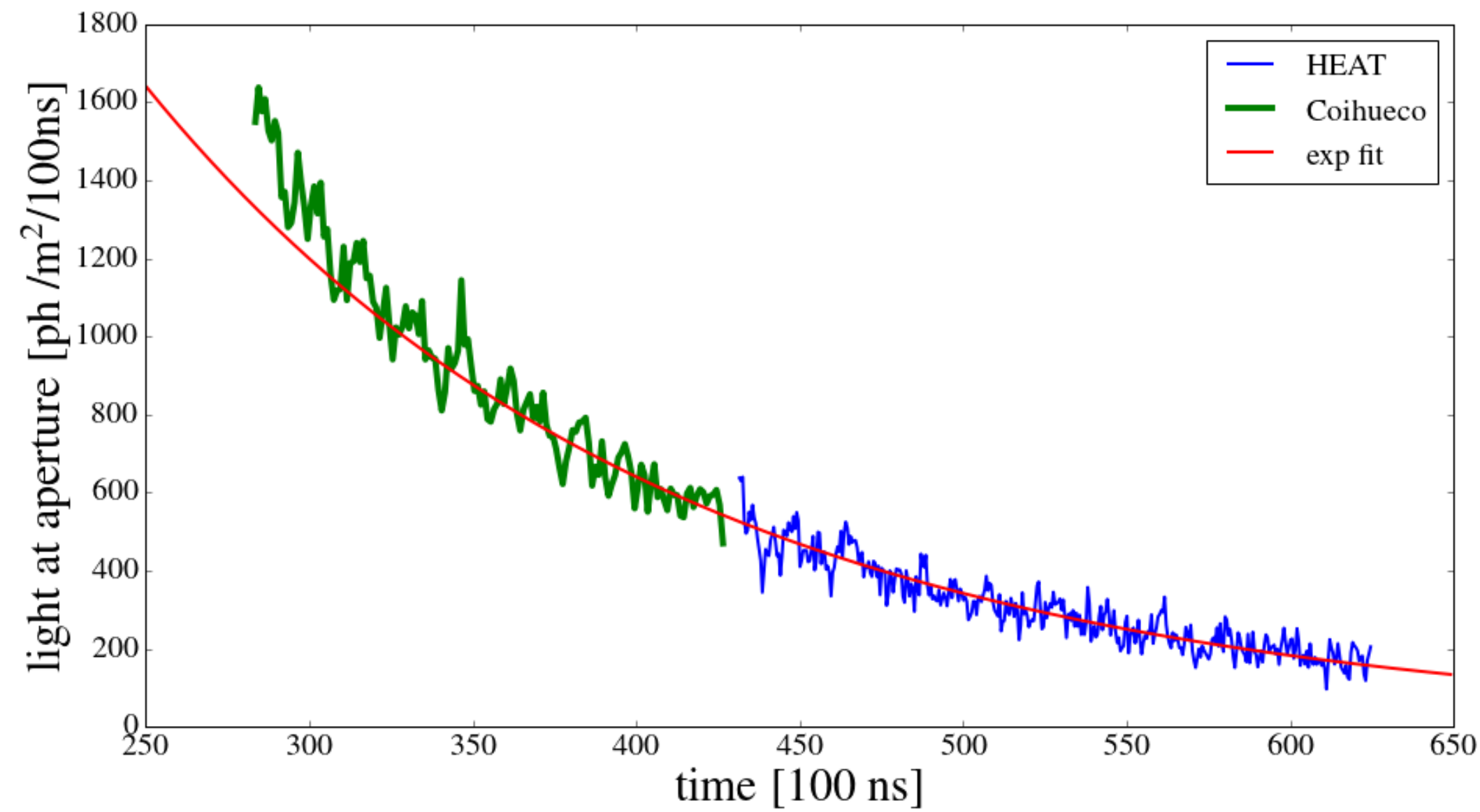






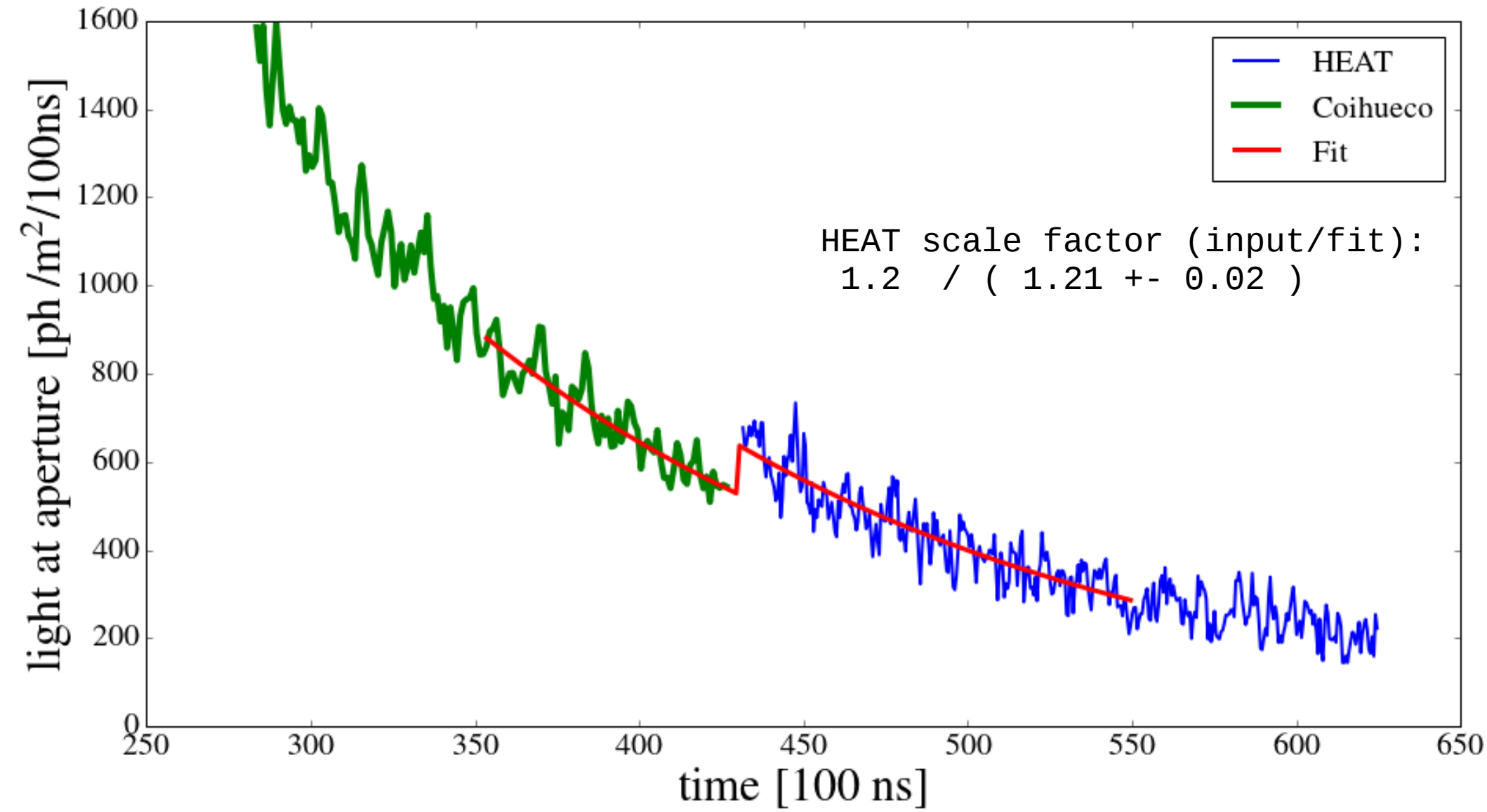
Exponential fit

Excluding the first 30 bins from the fit



Exponential fit

Excluding the first 70 and last 150 bins from the fit



The exponential slope is included in the fit.

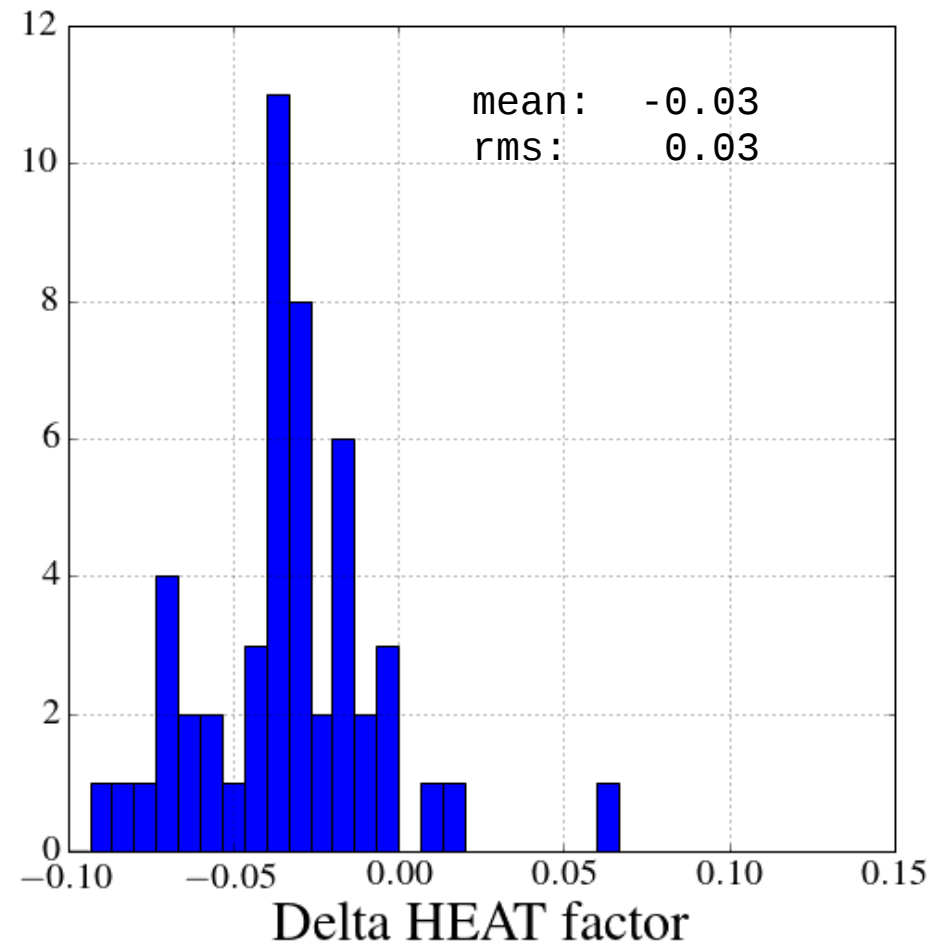
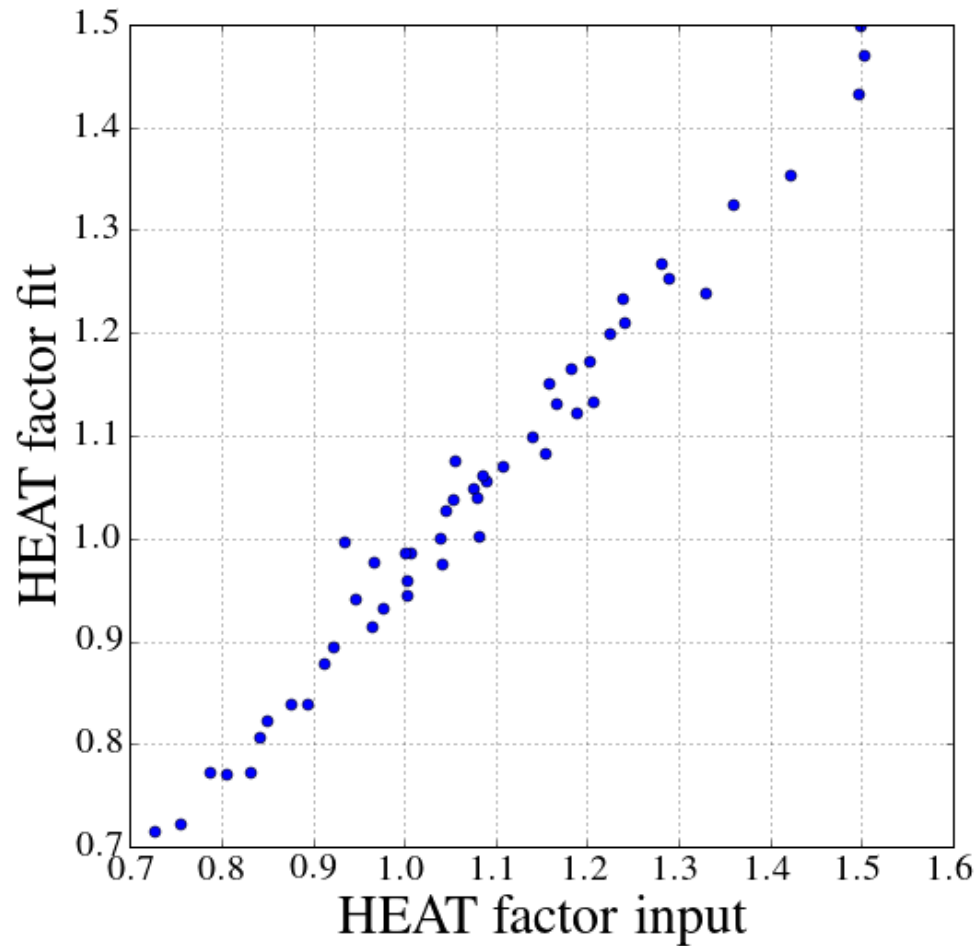
Evaluating 50 laser simulations

Average fitted HEAT scale as a function of different input HEAT factors

Mean Heat fit scale:	0.79	RMS:	0.02	input factor:	0.8
Mean Heat fit scale:	0.83	RMS:	0.02	input factor:	0.85
Mean Heat fit scale:	0.88	RMS:	0.03	input factor:	0.9
Mean Heat fit scale:	0.93	RMS:	0.03	input factor:	0.95
Mean Heat fit scale:	0.98	RMS:	0.03	input factor:	1.0
Mean Heat fit scale:	1.03	RMS:	0.03	input factor:	1.05
Mean Heat fit scale:	1.08	RMS:	0.03	input factor:	1.1
Mean Heat fit scale:	1.12	RMS:	0.03	input factor:	1.15

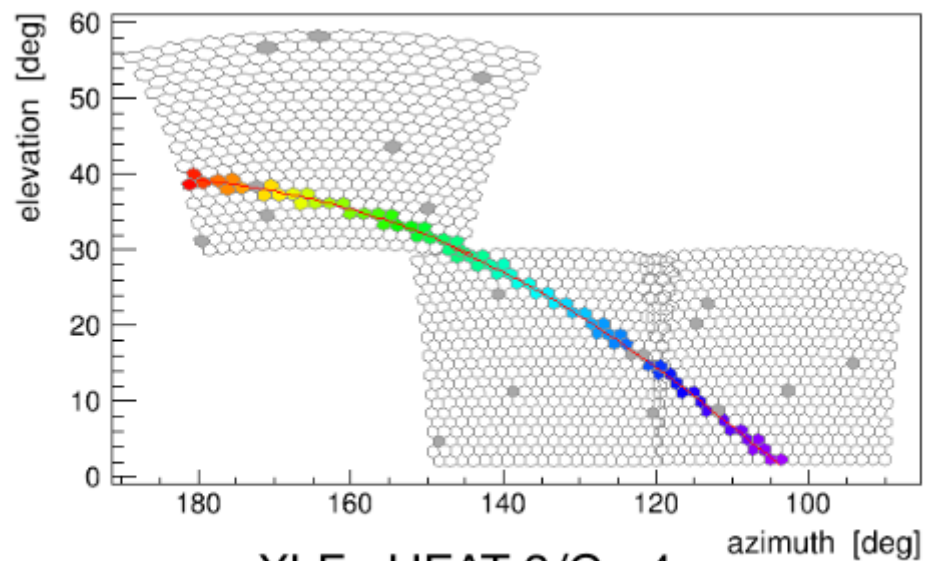
Statistical uncertainty: 2%
Systematic uncertainty: ~2%

HEAT factor fit for different VAOD values and different input HEAT factors



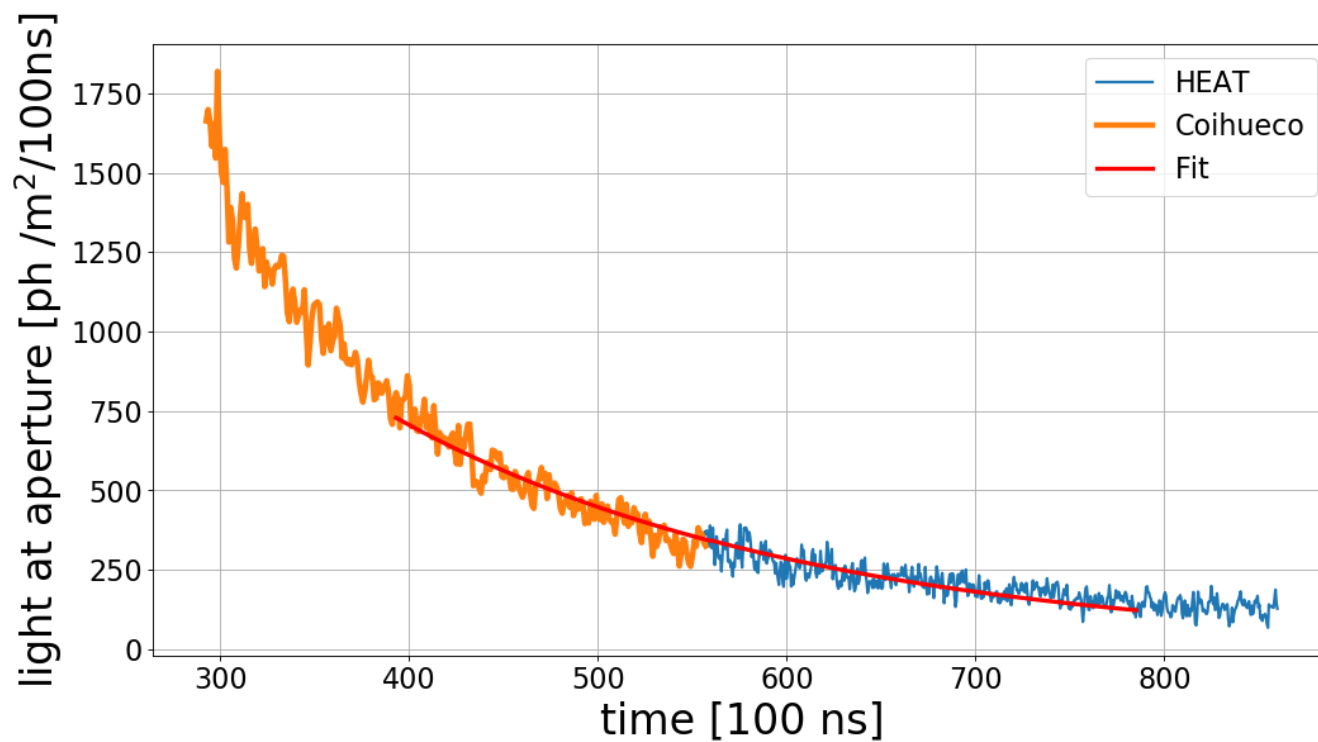
The following slides show the suggested XLF laser geometries to monitor the energy scale in HEAT 1 , 2 and 3 telescopes

XLF geometry to monitor HEAT 3

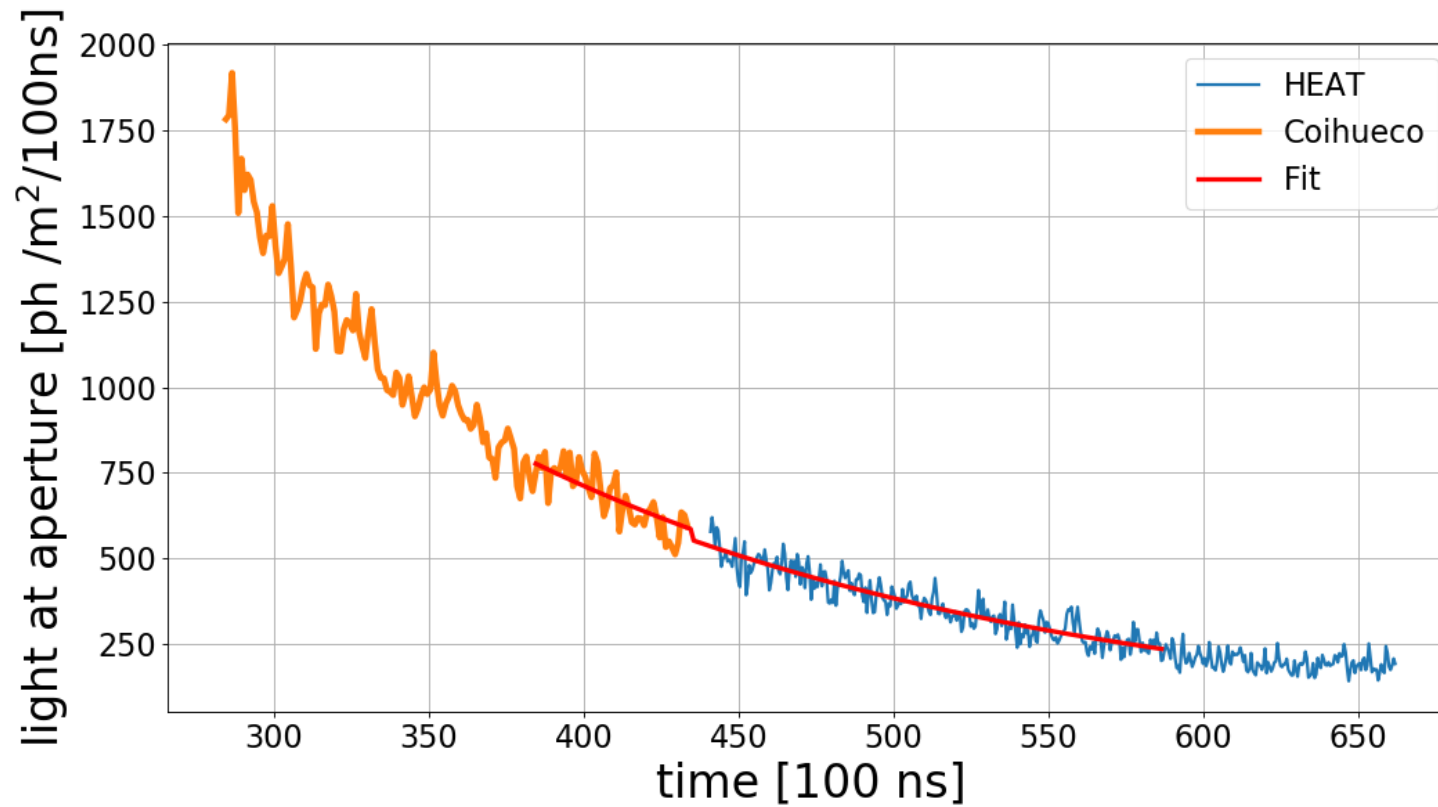
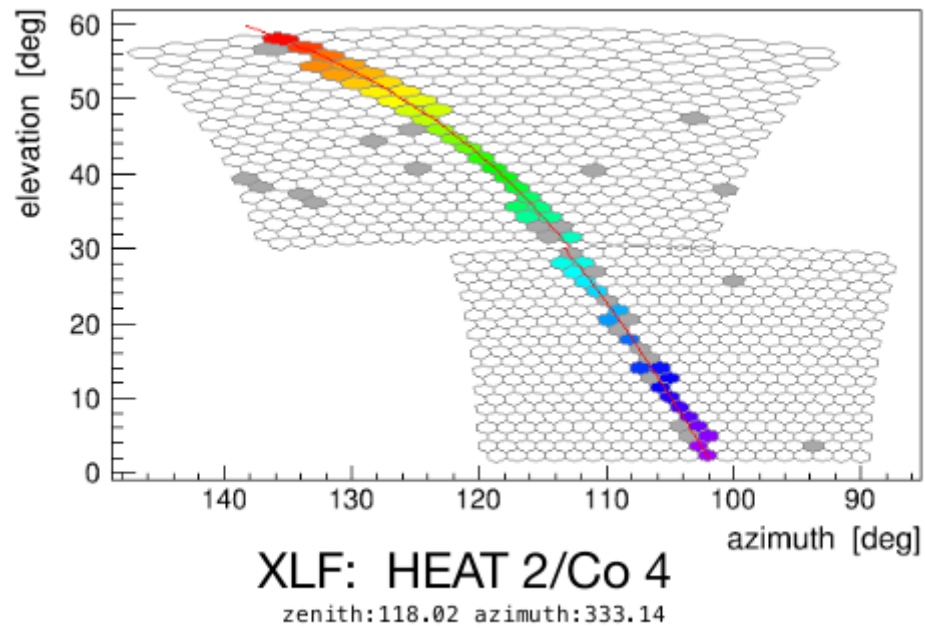


XLF: HEAT 3/Co 4

zenith:108.75 azimuth:320.45



XLF geometry to monitor HEAT 2



XLF geometry to monitor HEAT 1

