Milagro Simulations

Not much new.

Absolute time has been added to event header (no MC have been thown yet with this feature.

Look on /data/montecarlo/sim/*

What do we have?

Standard protons 0.05 – 100 TeV

Standard gammas 0.1-100 TeV

Standard low energy gammas

low energy gammas thrown over a large throw area.

  -important to low trigger threshold/scalers study.

Helium (awkwardly split in two places...)

Alternatives

- Protons and gammas with no total internal reflection.
- Protons with 20 meter scattering length water.
- Protons with different baffle reflectivities.
- Protons with HDPM hadron model.
- Protons with different cover reflectivities.

Conclusion was that we are very sensitive to scattering/reflections both in the water and off surfaces. In general however our sensitivity at a fixed trigger rate varies by ~<20% for a simple analysis with no background rejection (i.e. a grb analysis).

Comparing data to MC

We looked at comparing the location of muon peak, this tests the pe scale at ~30 pes. They appeared to differ by ~30%. It is very hard to disentangle calibration from MC issues.
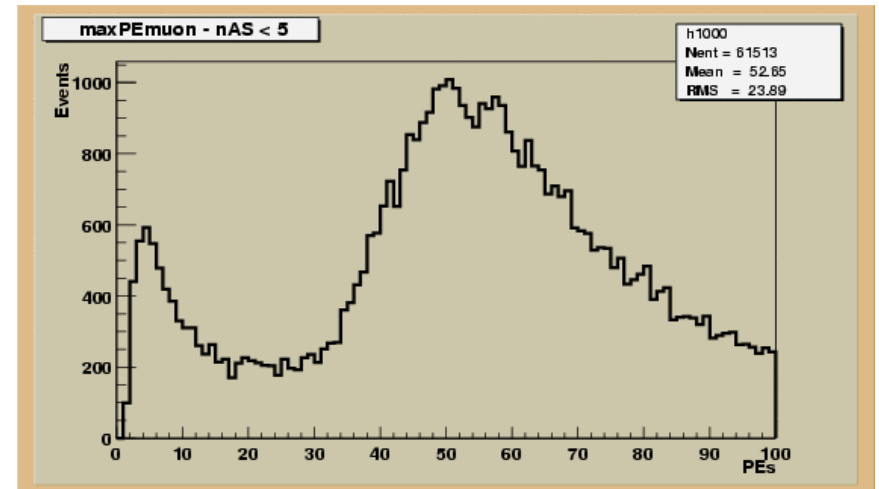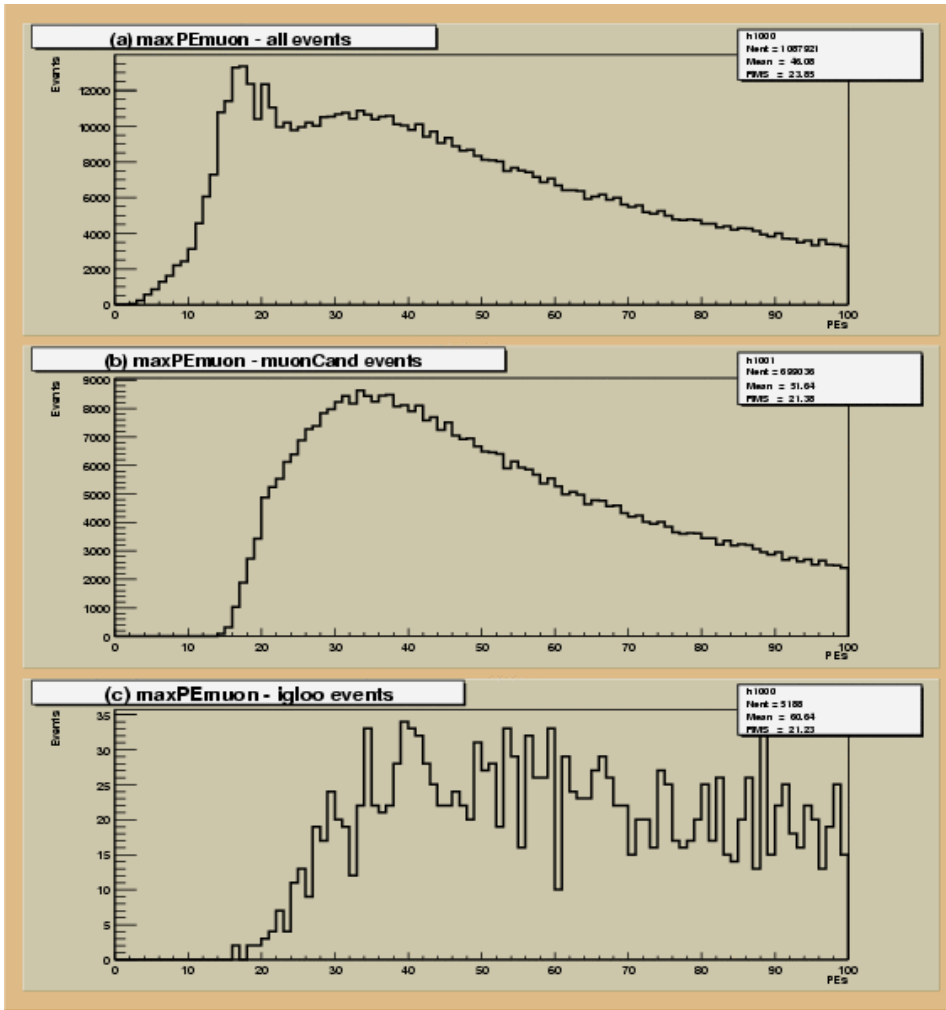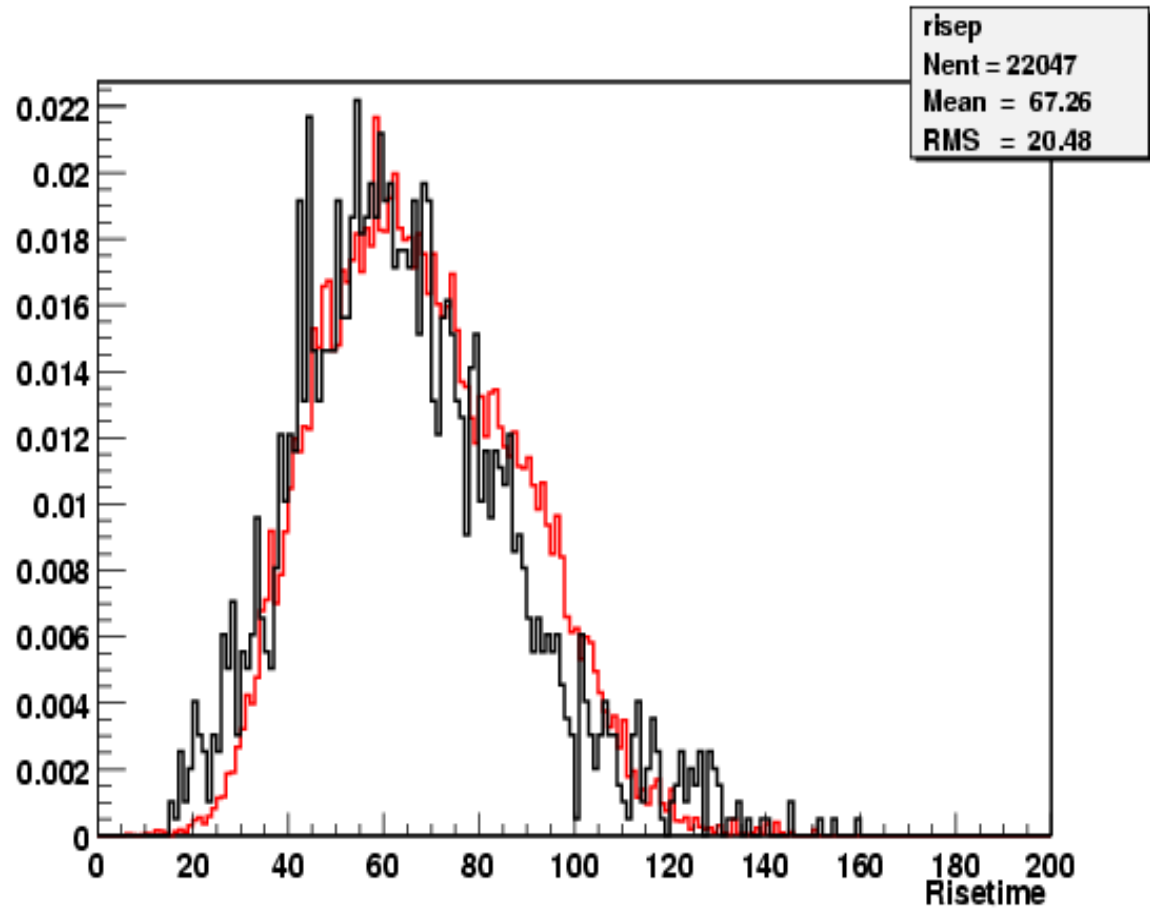
This can fix things...
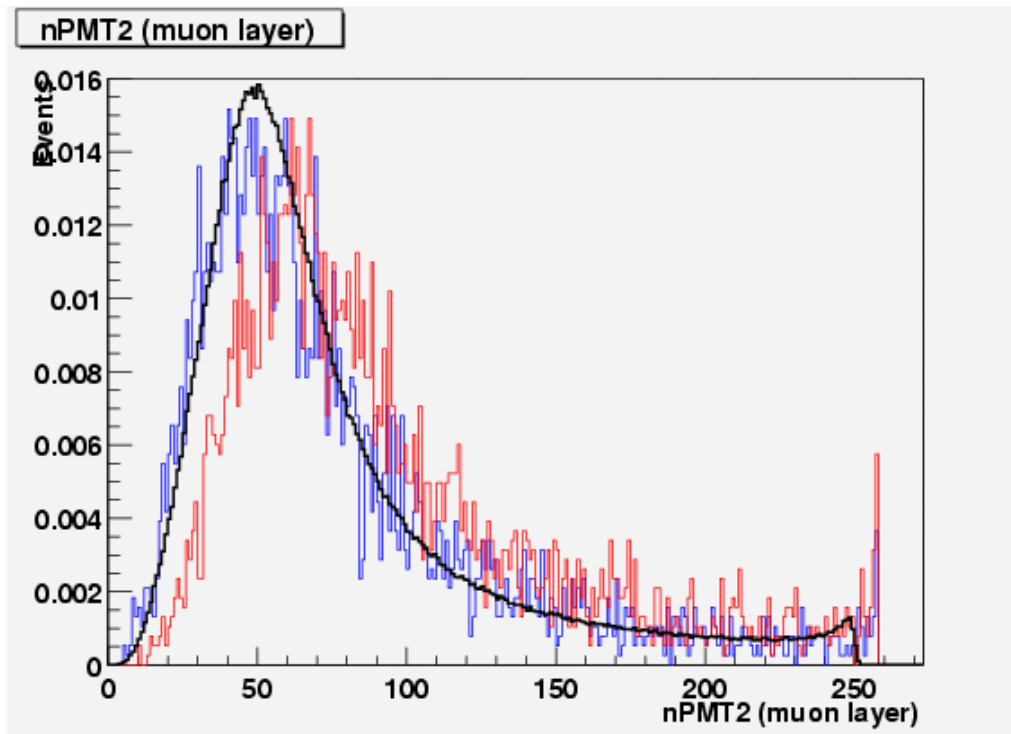
Black: data
red   : MC
blue : MC with pes scaled by 30%

However, simply rescaling by 30% is not the only way to bring agreement between the location of the muon peaks.
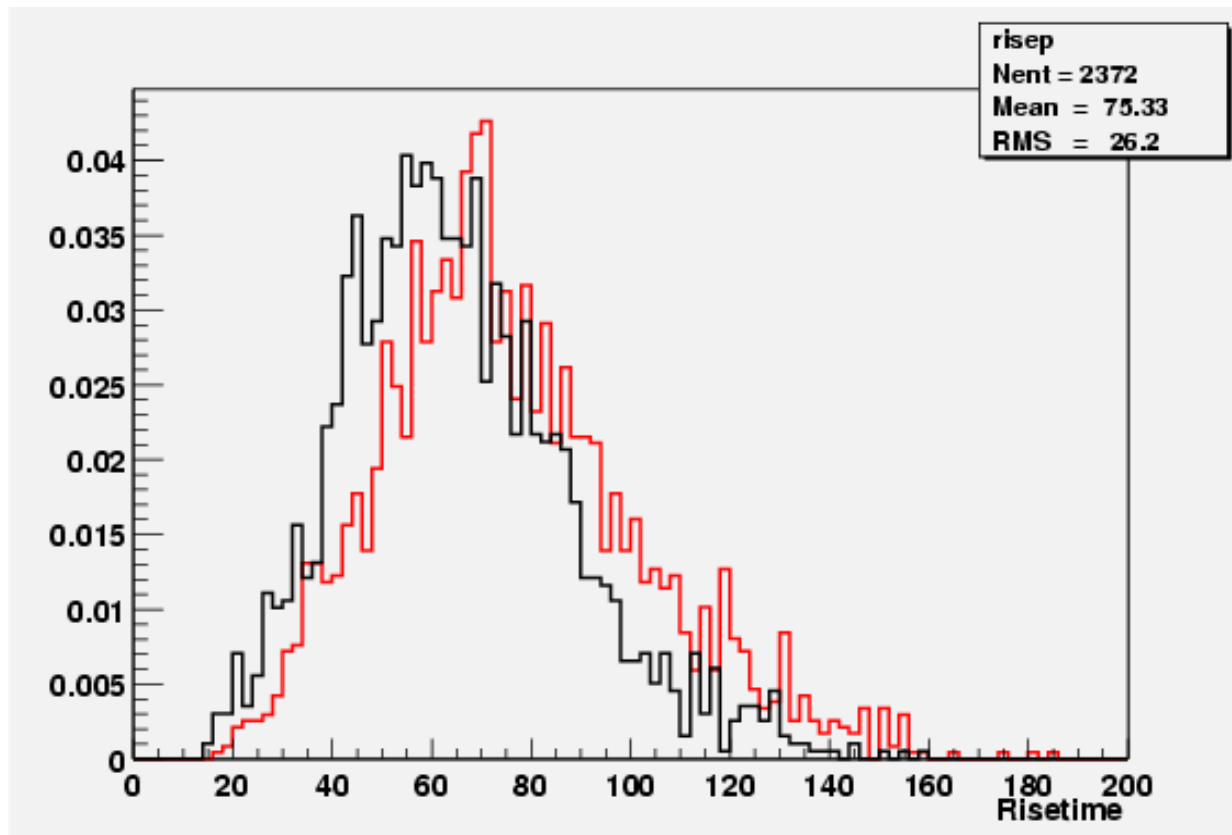
Risetime distributions

risep
Nent = 22047
Mean = 67.26
RMS = 20.48

Theta (fit) < 30 degrees
nas(cal) >80

Black: data
Red   : MC

Data is fairly variable

Before (red) and after (black) a rainstorm.

Things to do

We have not checked that the parameter space chosen for use with the old trigger is still valid for the new trigger.
- energy range
- throw area

Outrigger geometry is over simplified (assumes that they all lie on a flat plane)

We need to check MC vs data for the outriggers.

We don't have any proton simulations suitable for scaler (i.e. Solar) studies.

Make a webpage to describe the contents and location of the MC data.

More detailed treatment of electronics, noise etc.

Start running/generating MC again.