

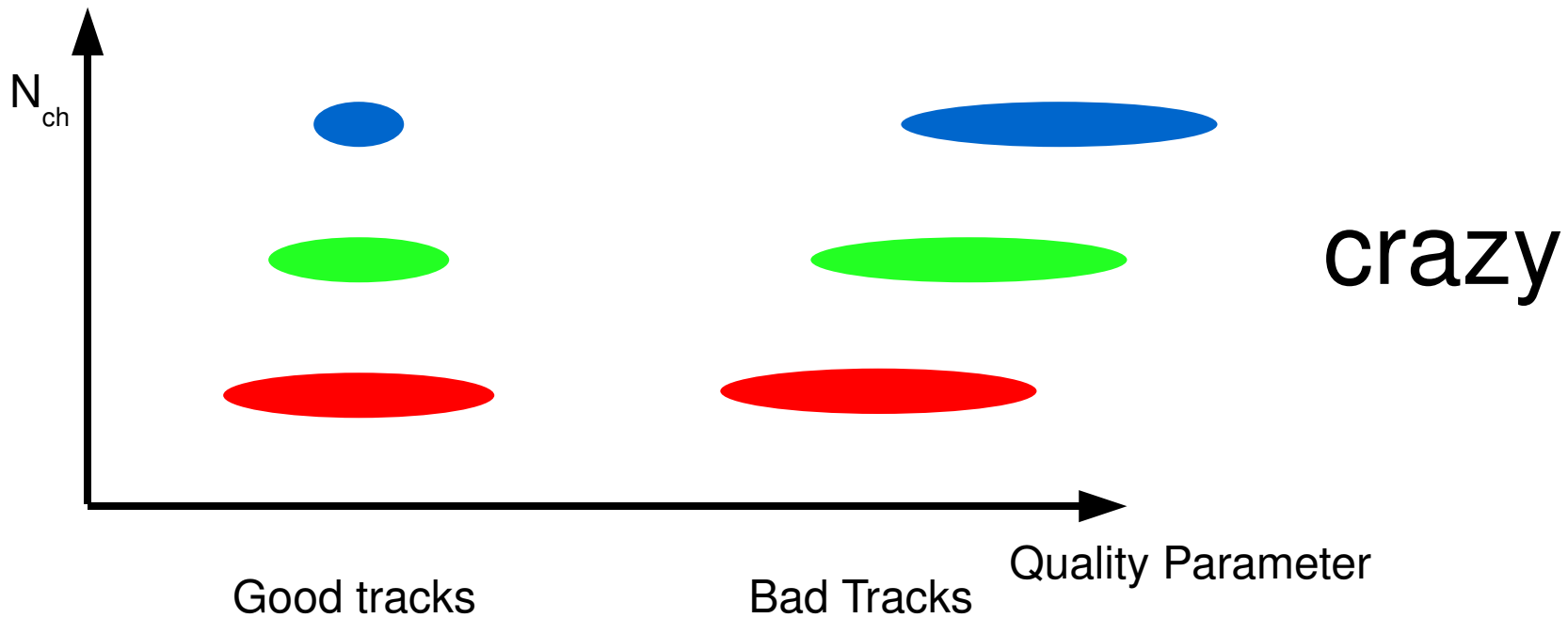
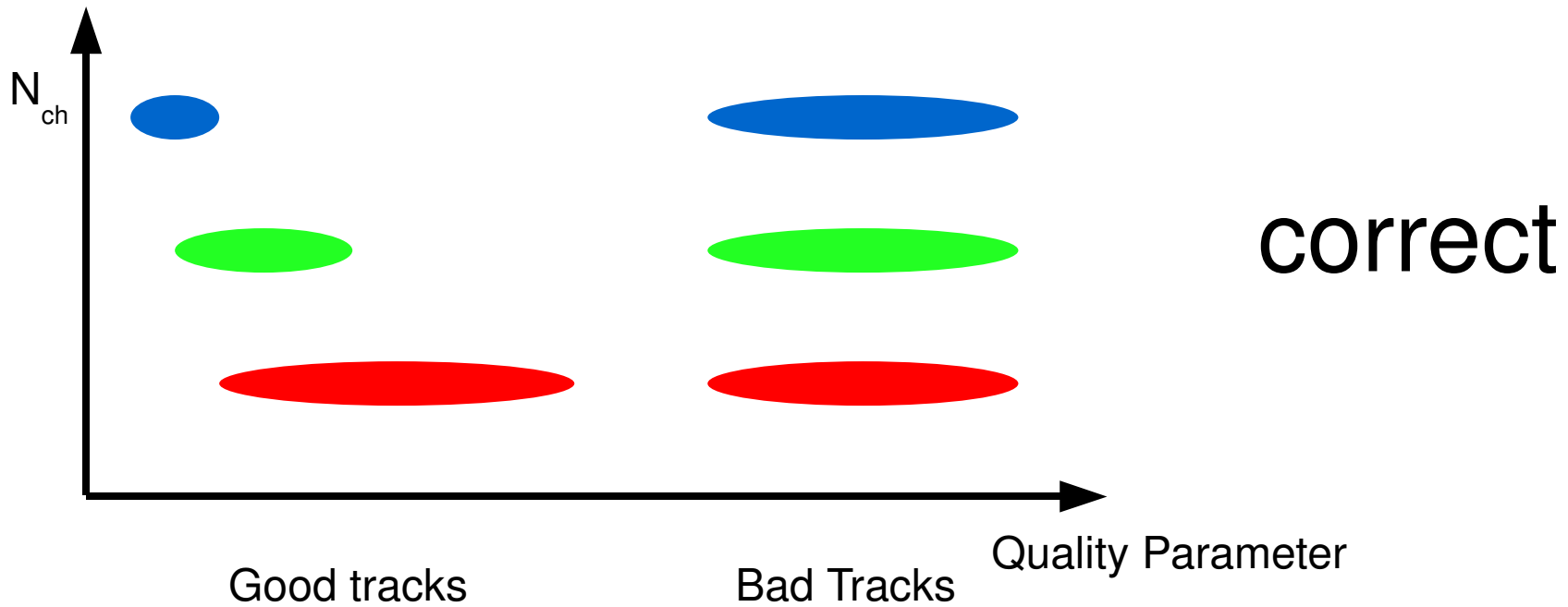
All I Told You Last Time Was Wrong

Patrick Berghaus

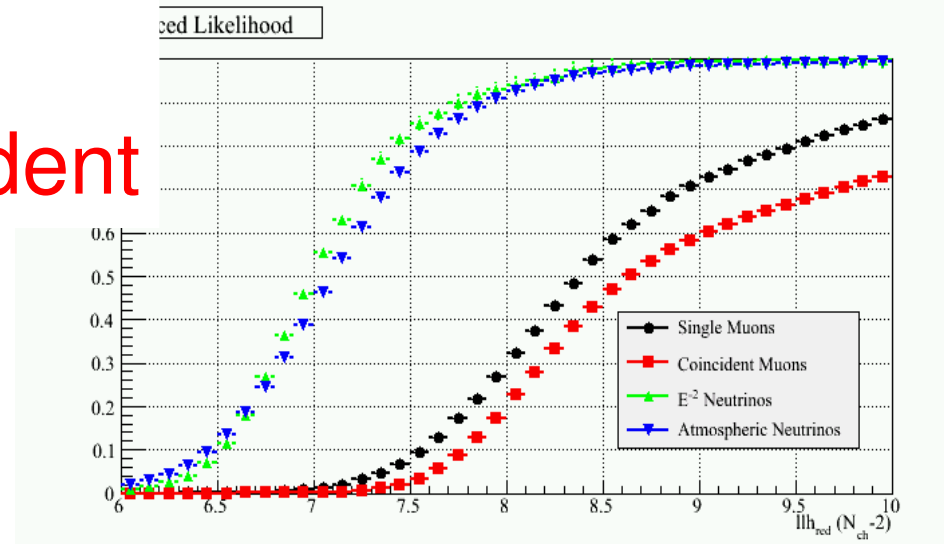
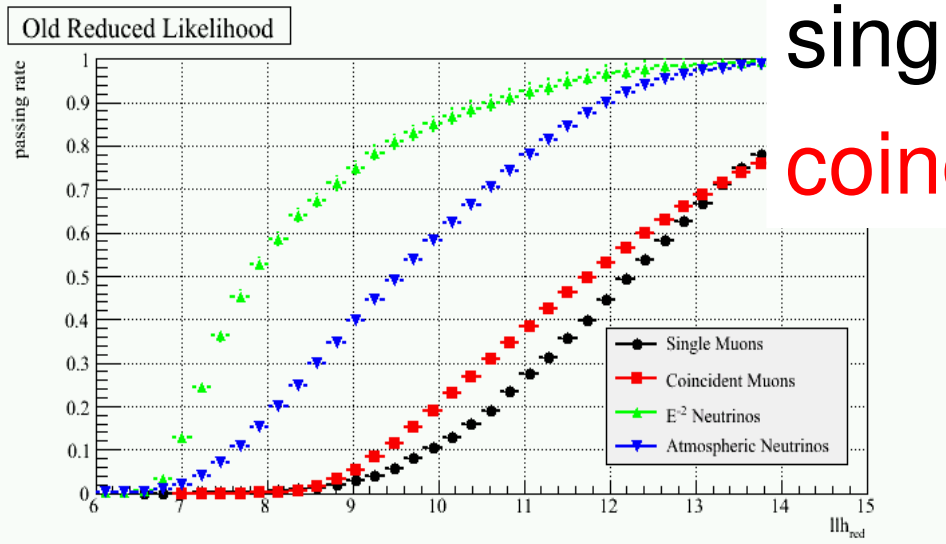
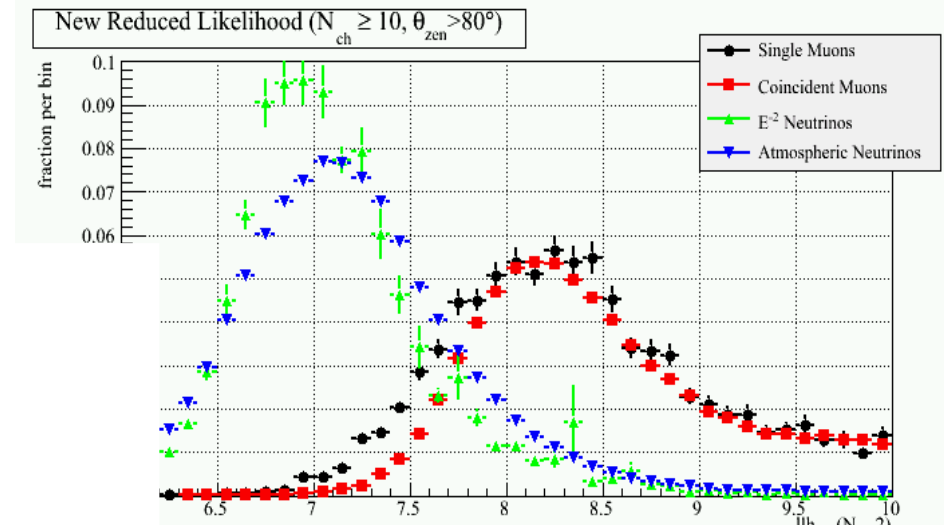
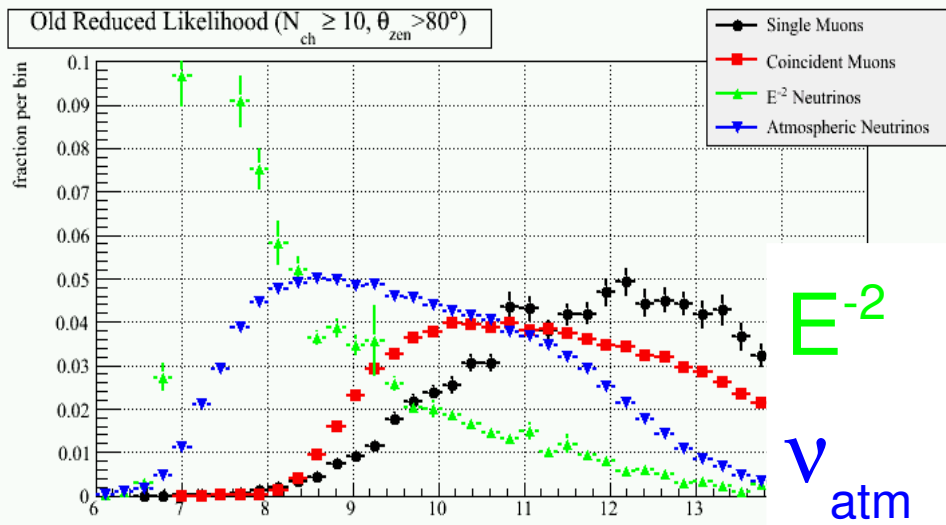
IceCube Group Meeting UW

Except for this:

The .i3 format is going to kill IceCube.

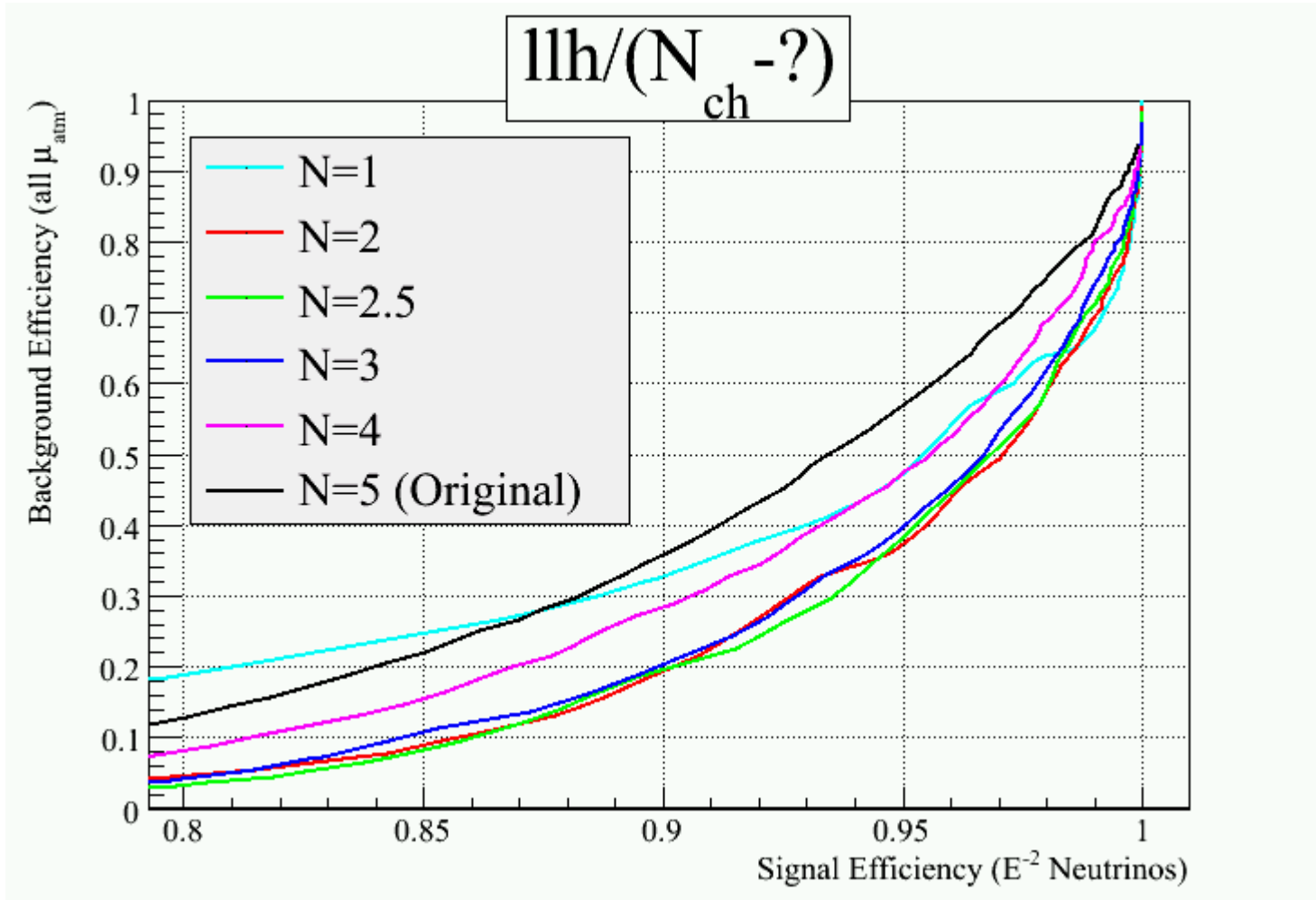


Correct (see IC56 μ -Filter Proposal)



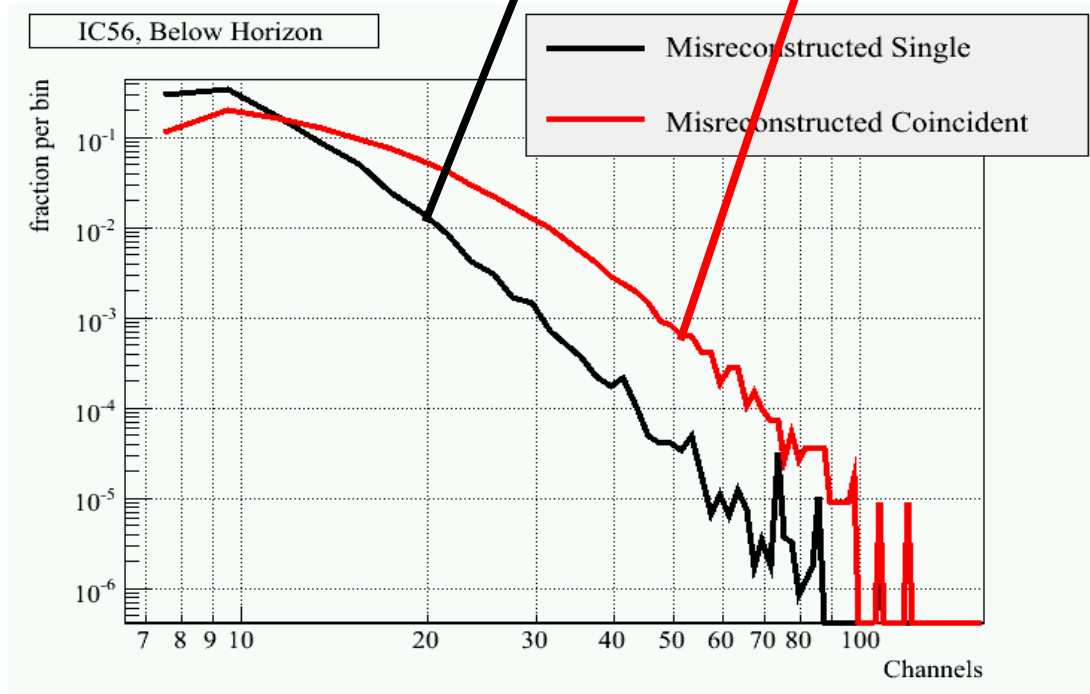
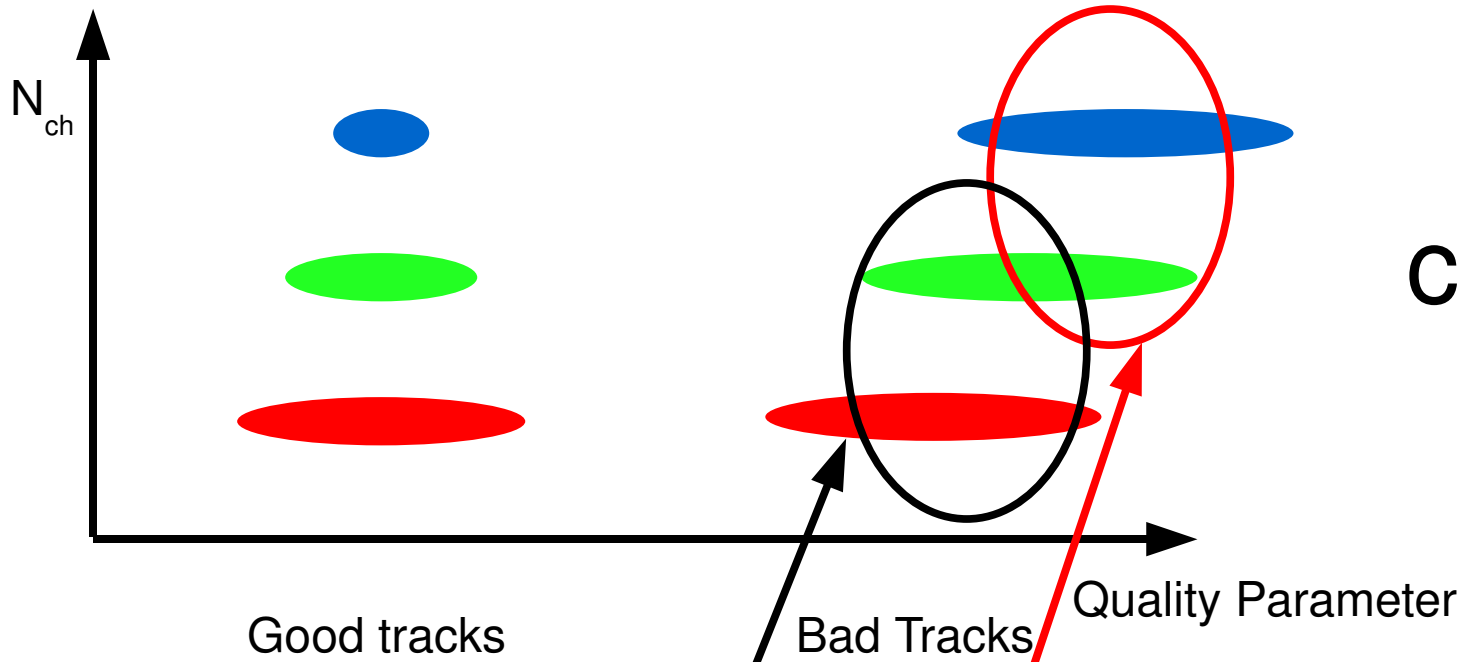
Old: $llh / (N_{ch} - 5)$

New: $llh / (N_{ch} - 2)$

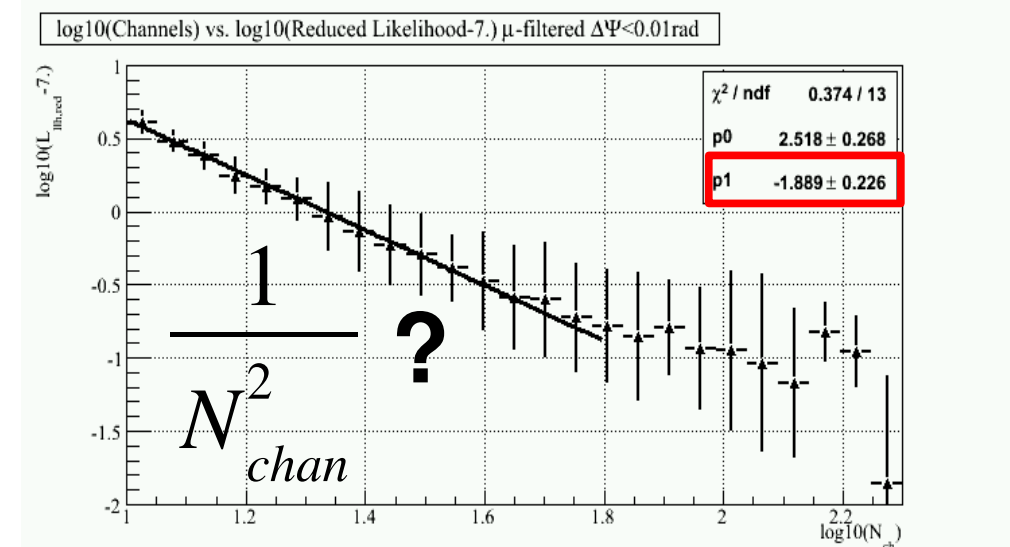
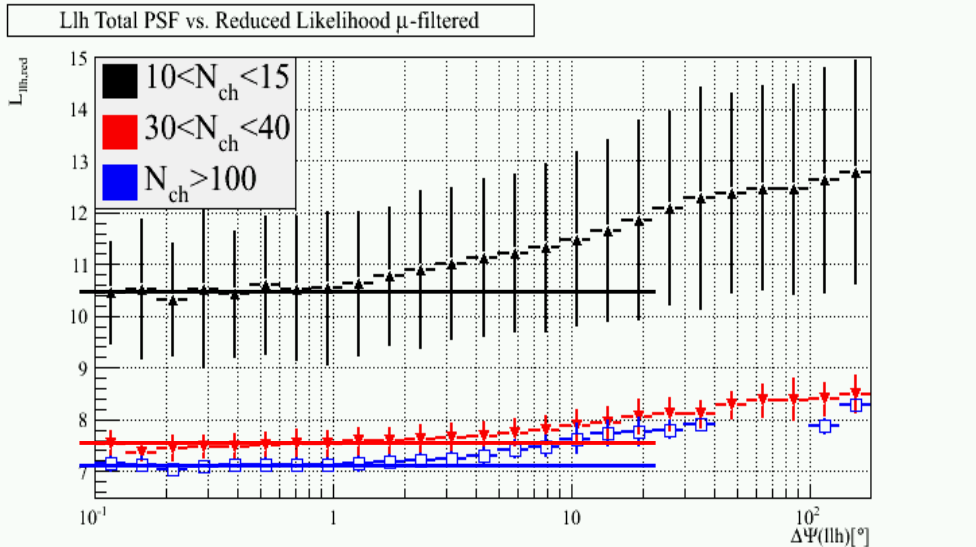
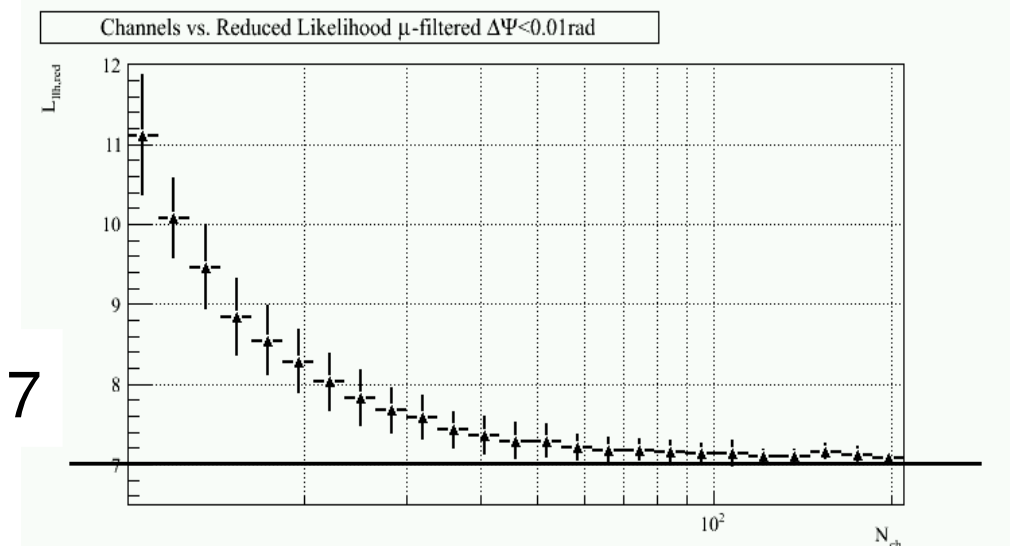
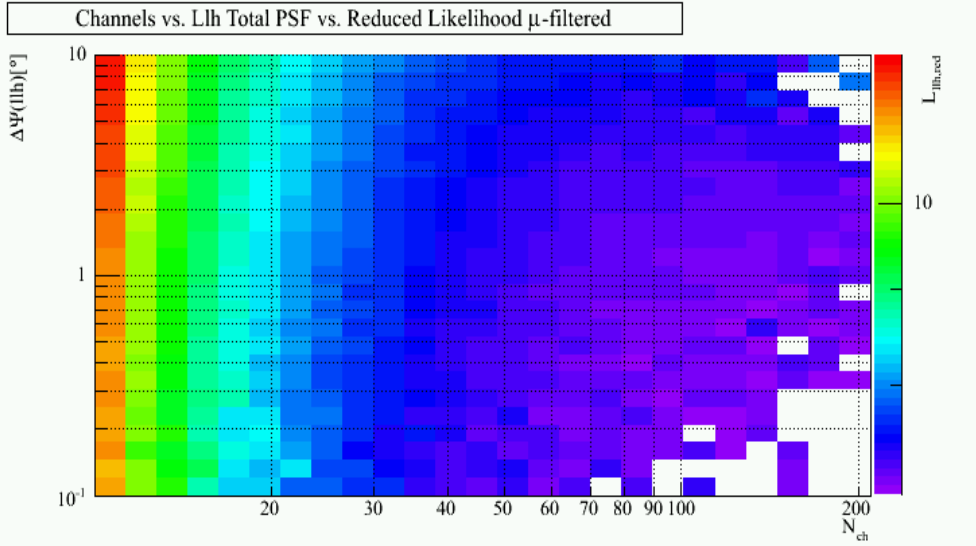


In Proposal: **2!**

Now: **2.5?**

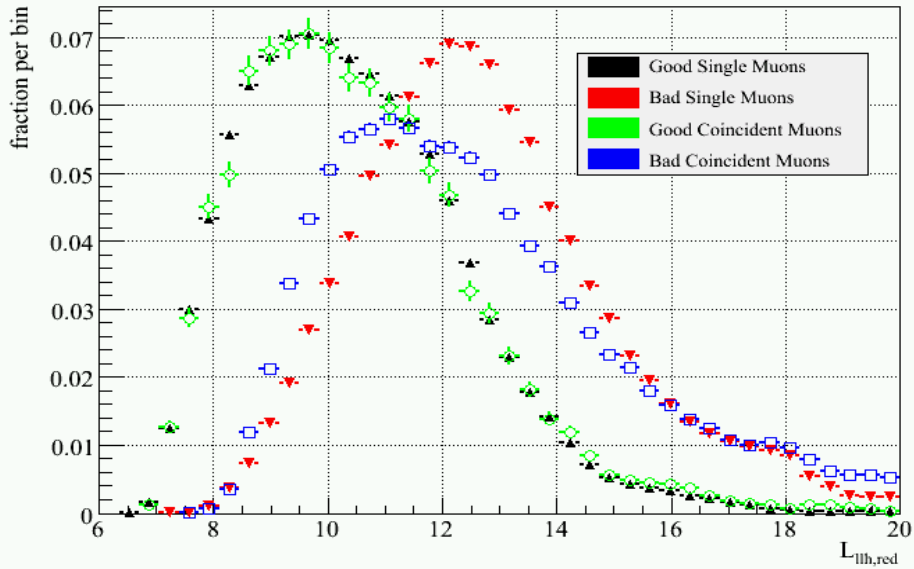


$$L_{\text{red}}(\text{crazy}) = \log_{10} \frac{N_{\text{ch}}}{2} \left(L_{\text{red}} - 7.1 - \frac{10^{2.576}}{N_{\text{ch}}^{1.94}} \right)$$



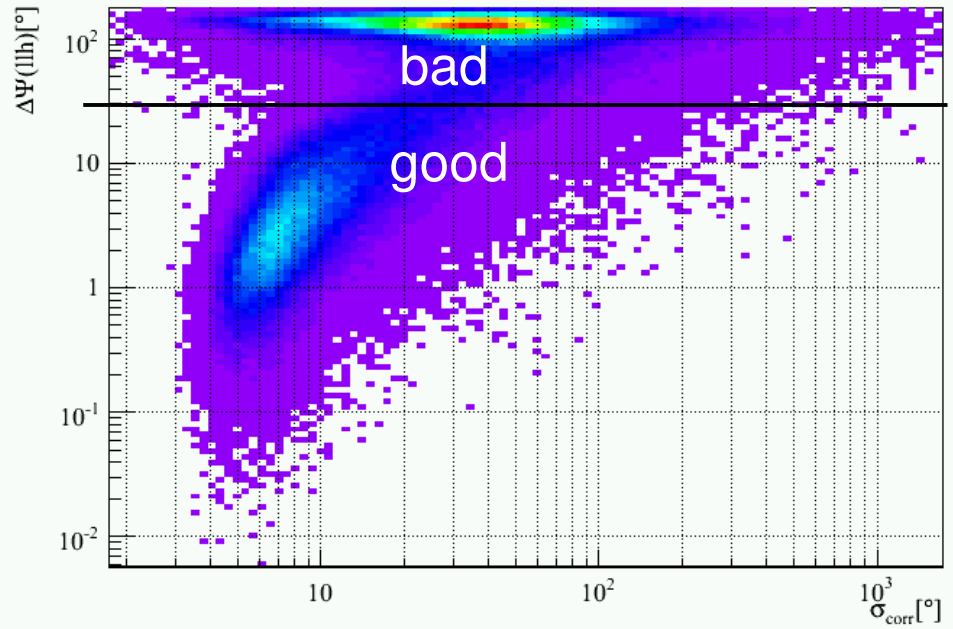
Limit of Good Track Resolution

L_{red} (old)

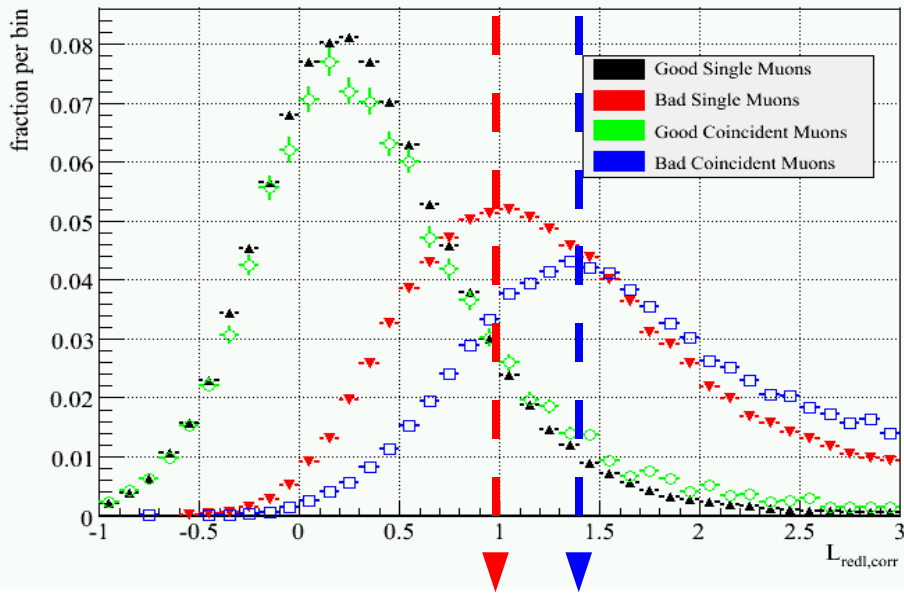


CRAZY

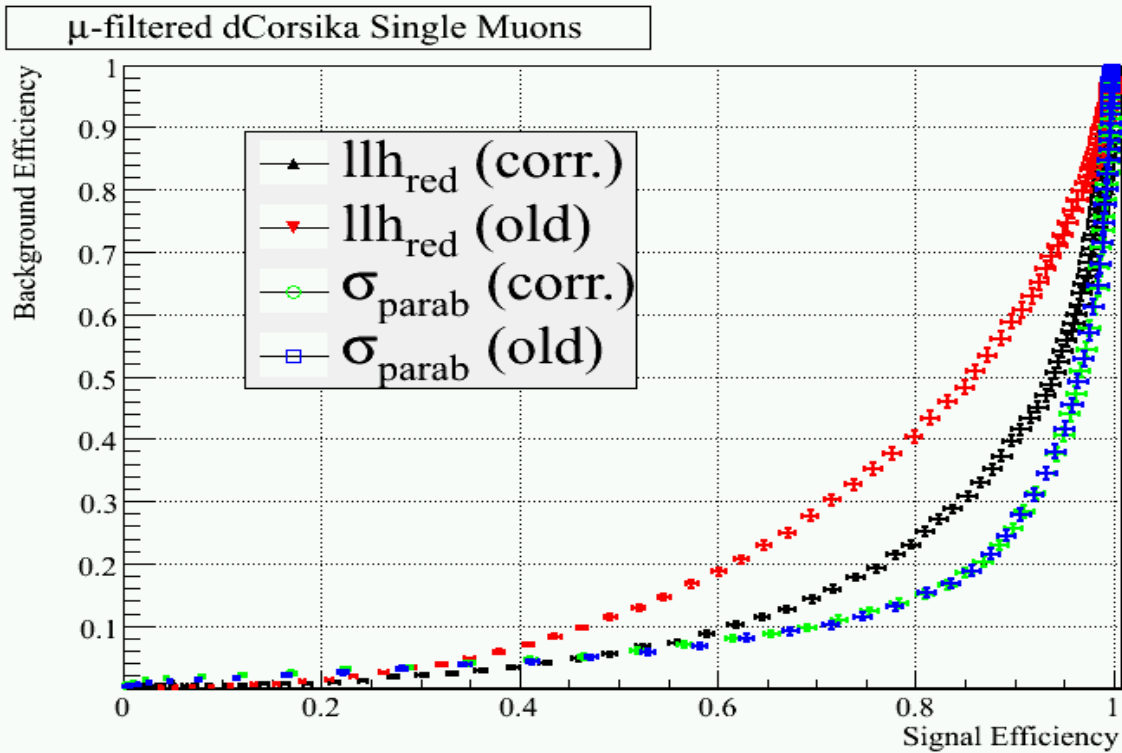
Sigma (corr.) vs. Ψ_{llh}



L_{red} (corr.)

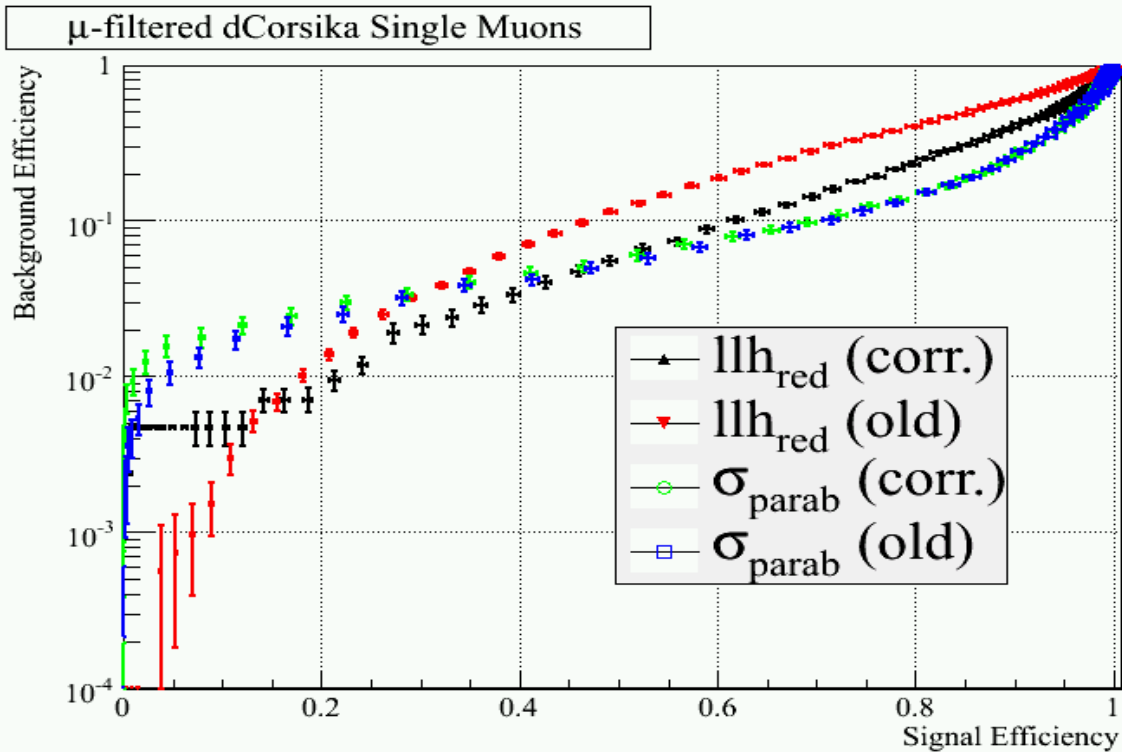


distinct peaks for **single** and **coincident** muons!



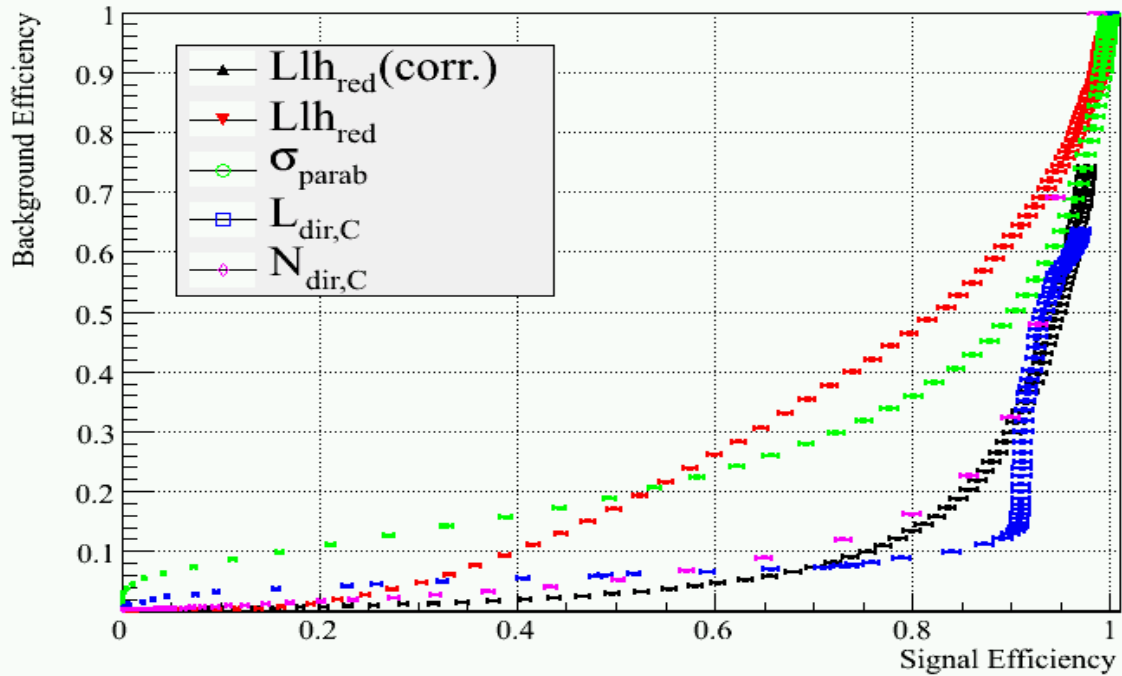
Atmospheric Muons
 $\theta > 70^\circ$
 Signal: $\Psi < 30^\circ$
 Background: $\Psi > 30^\circ$

Single Muon Cut:
 Improvement by up to
 Factor 2



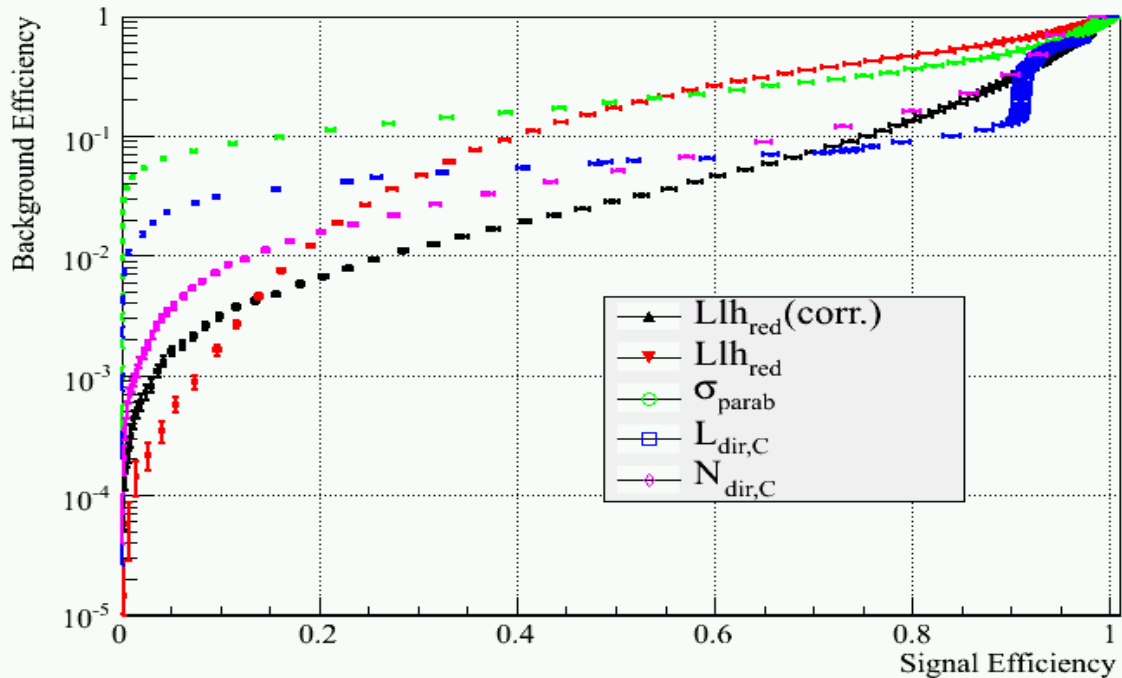
correct
 \approx
 crazy

μ -filtered coincident MC



Coincident Muon Cut:
New Best Variable

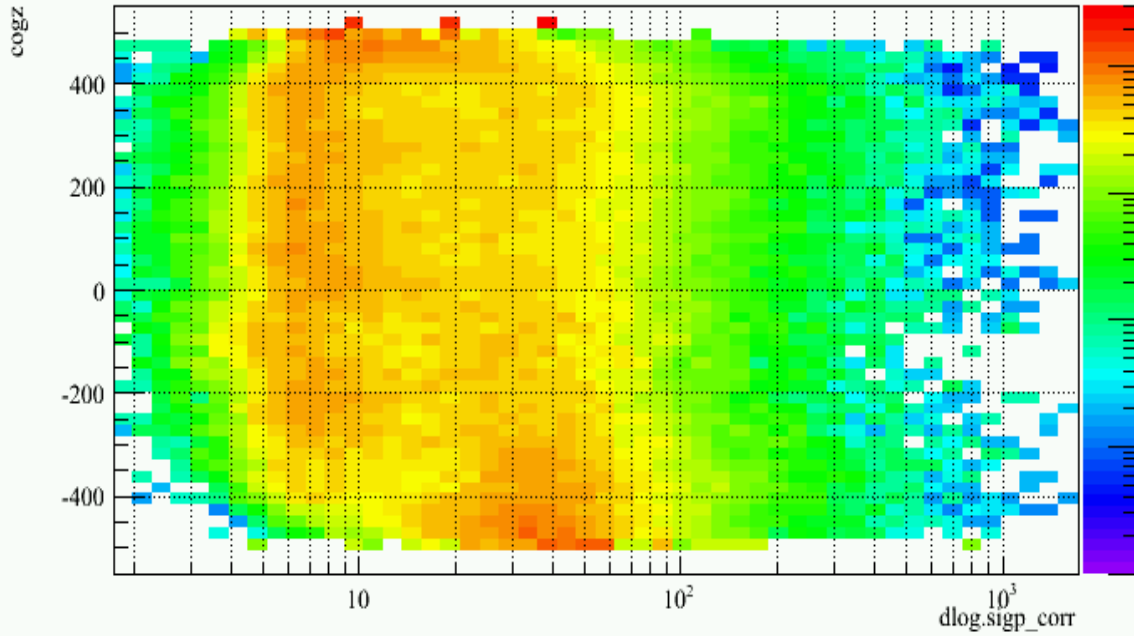
μ -filtered coincident MC



correct
 \approx
crazy

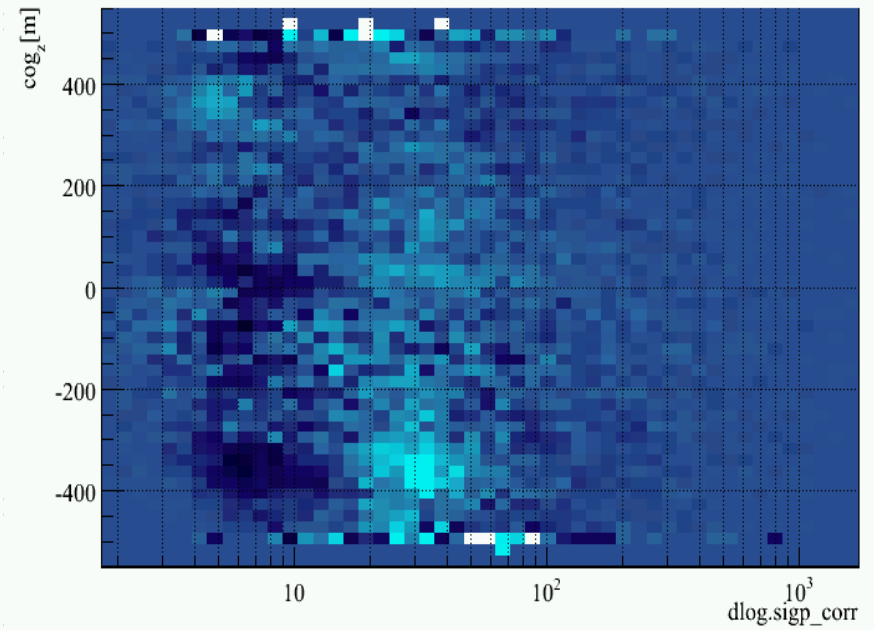
IC22 Trigger Level μ -Filtered Data Below 70°

CORSIKA

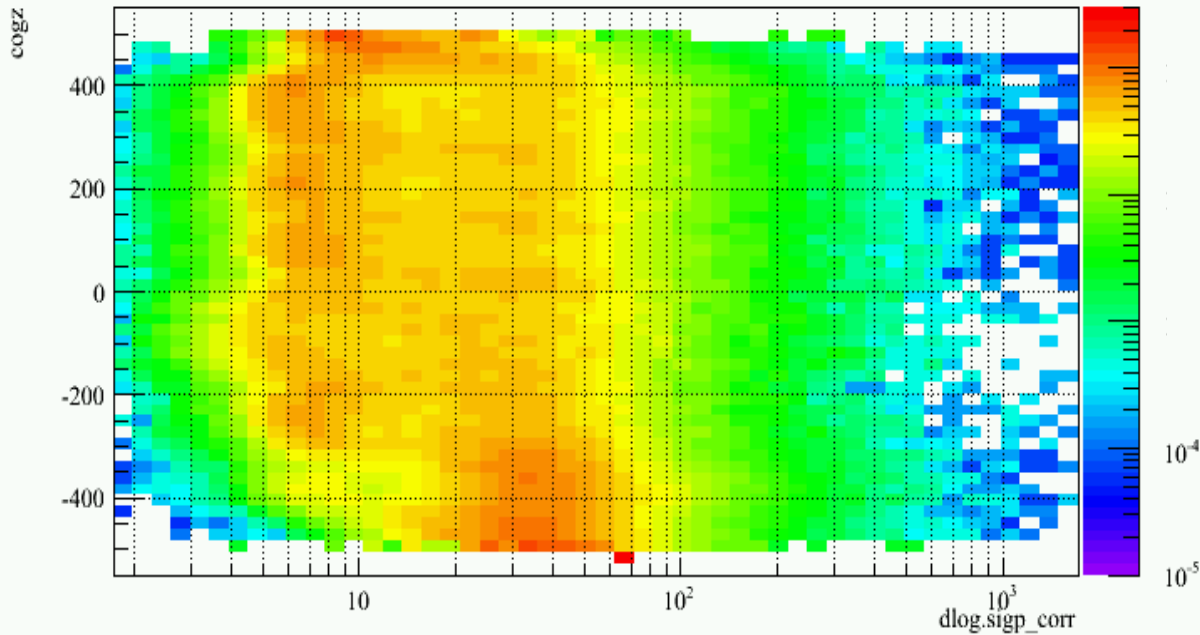


Distributions normalized to equal rates in cog_z!

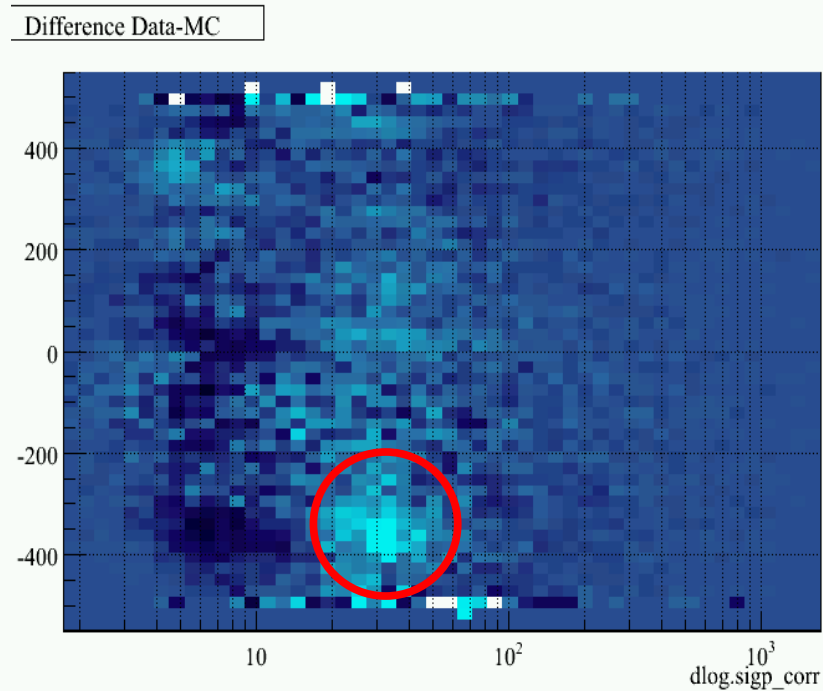
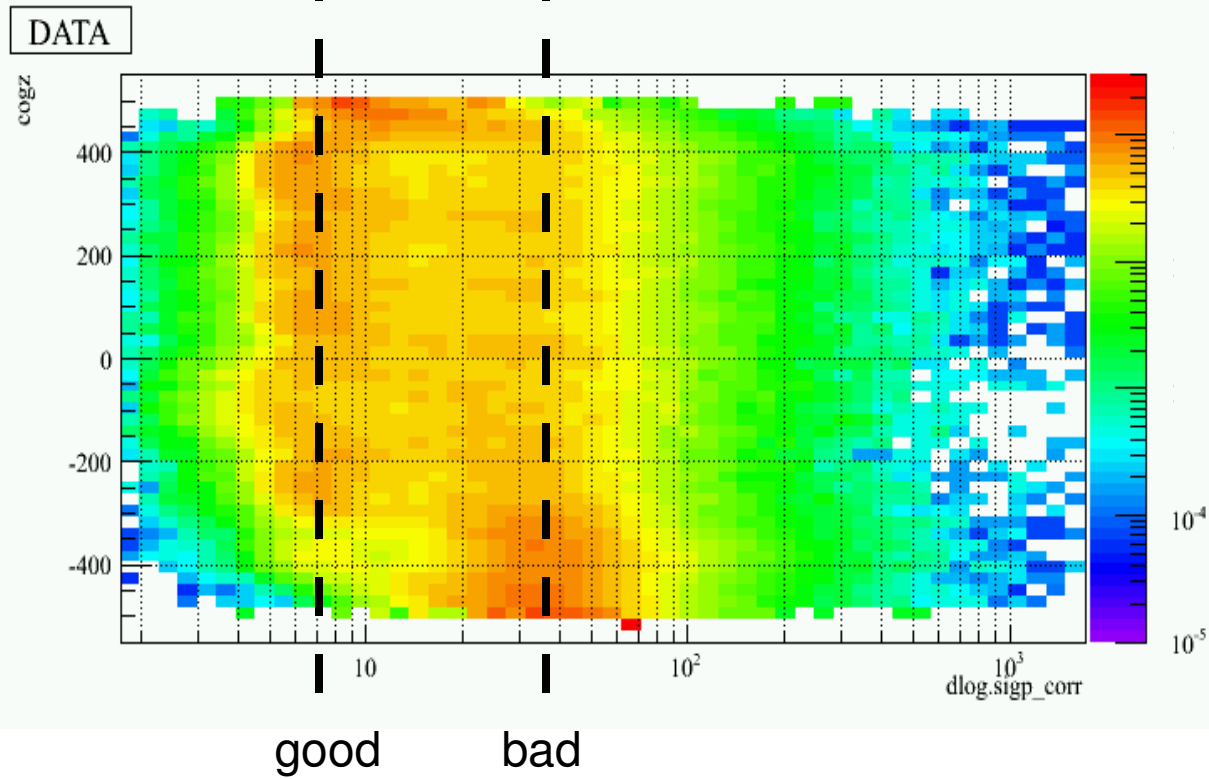
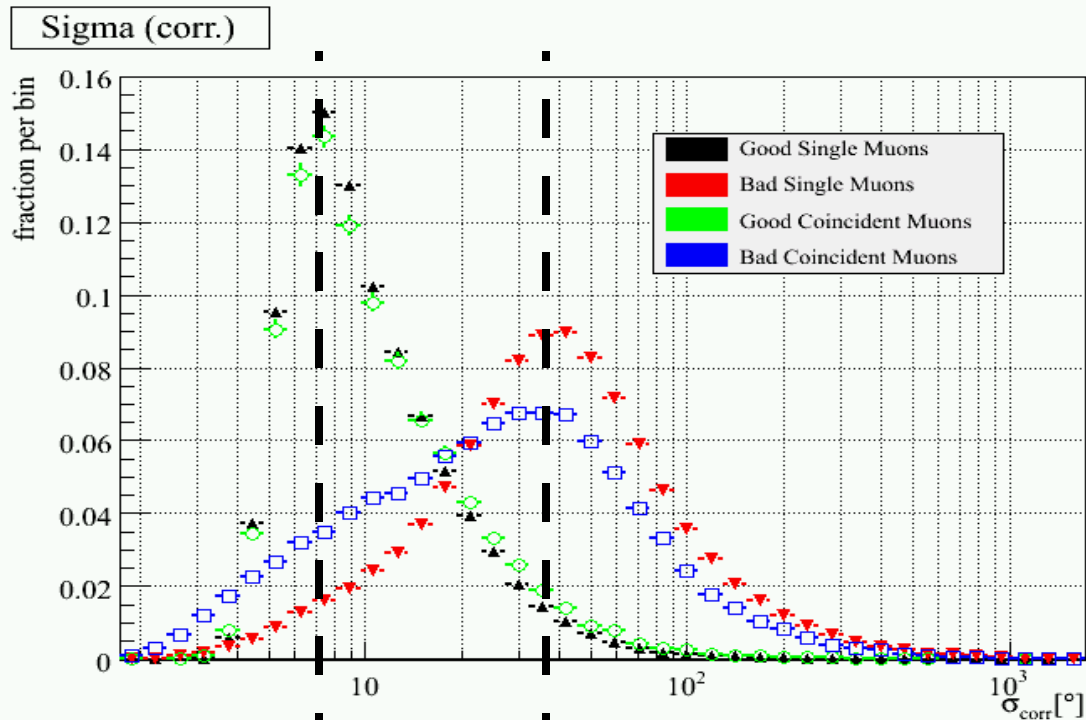
Difference Data-MC



DATA



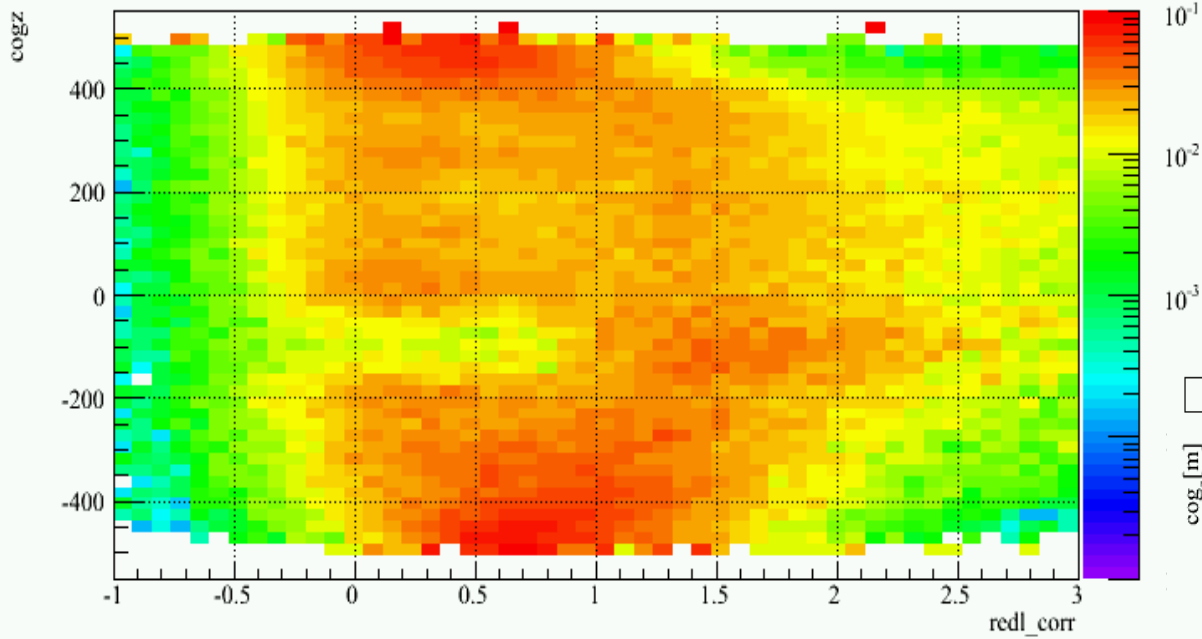
σ paraboloid



Excess in Data

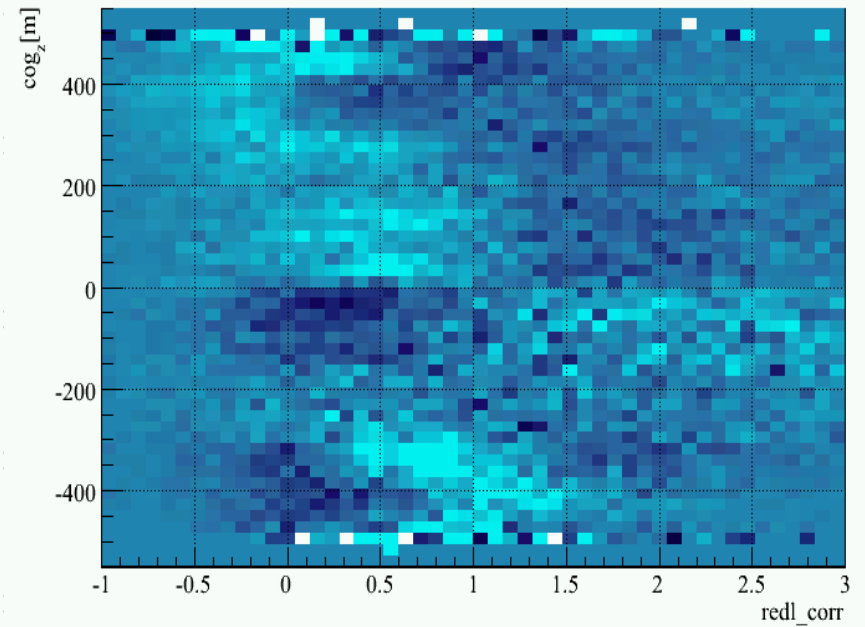
σ
paraboloid

CORSIKA

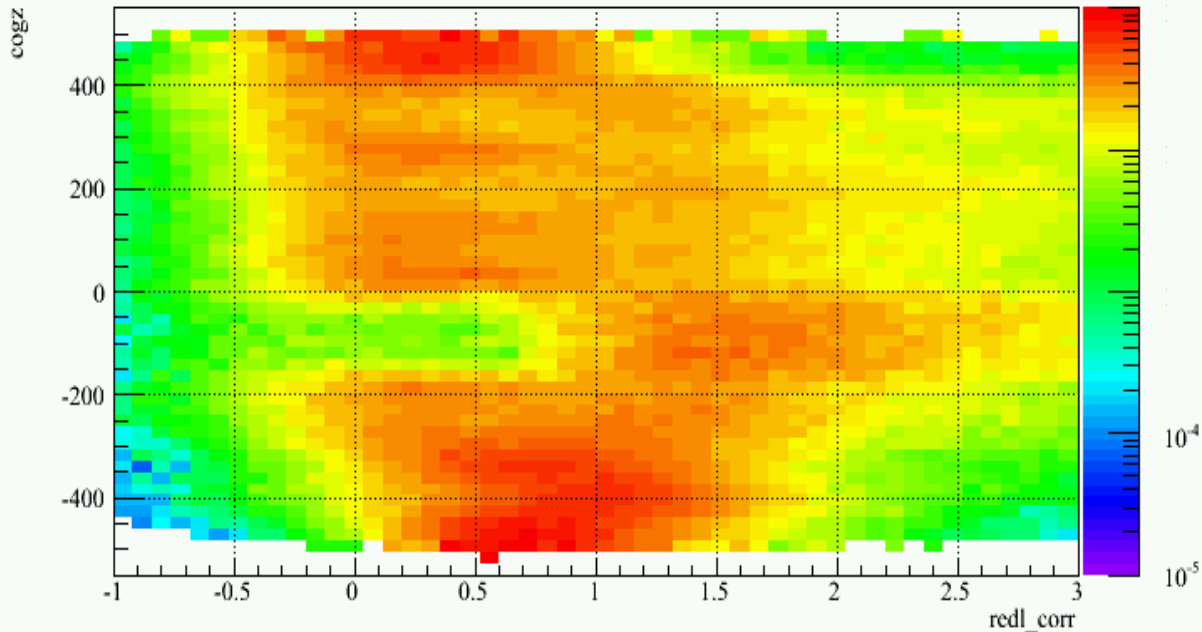


Distributions normalized to equal rates in cog_z !

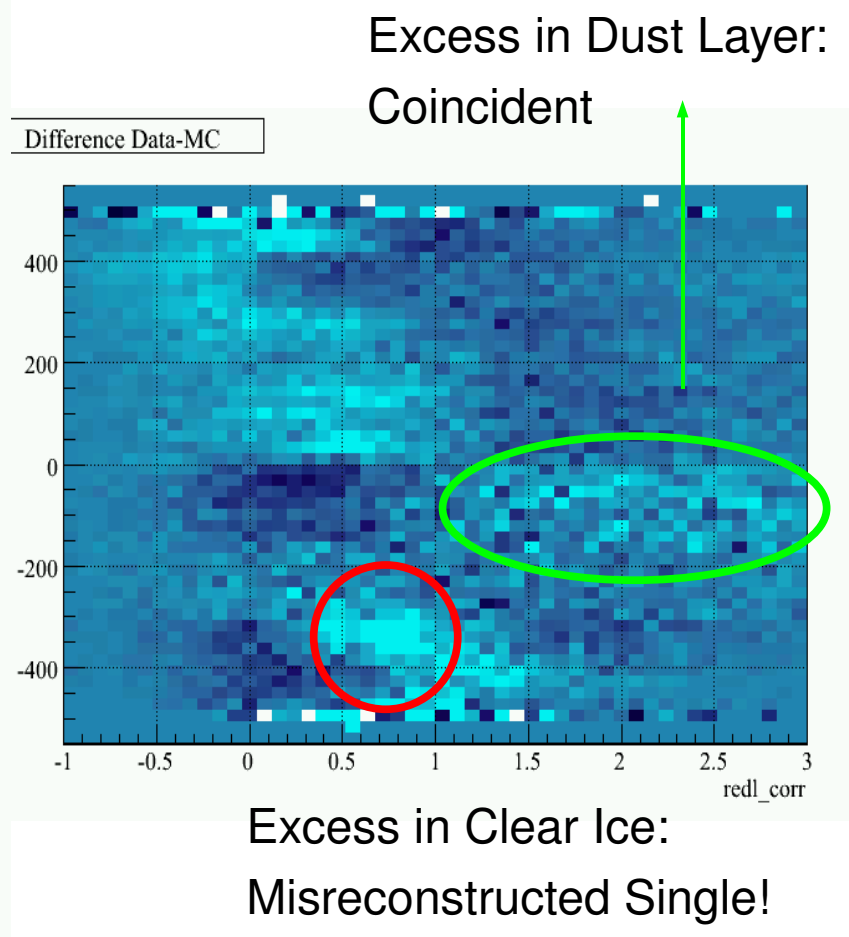
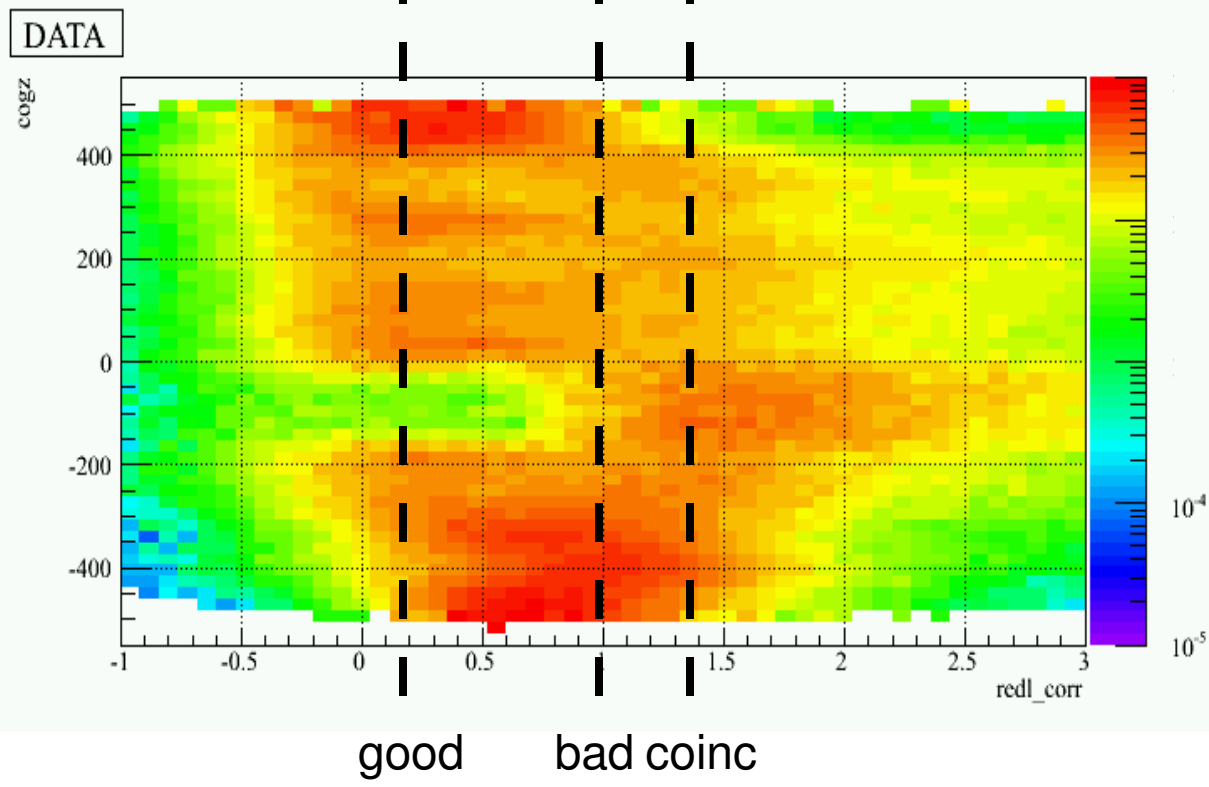
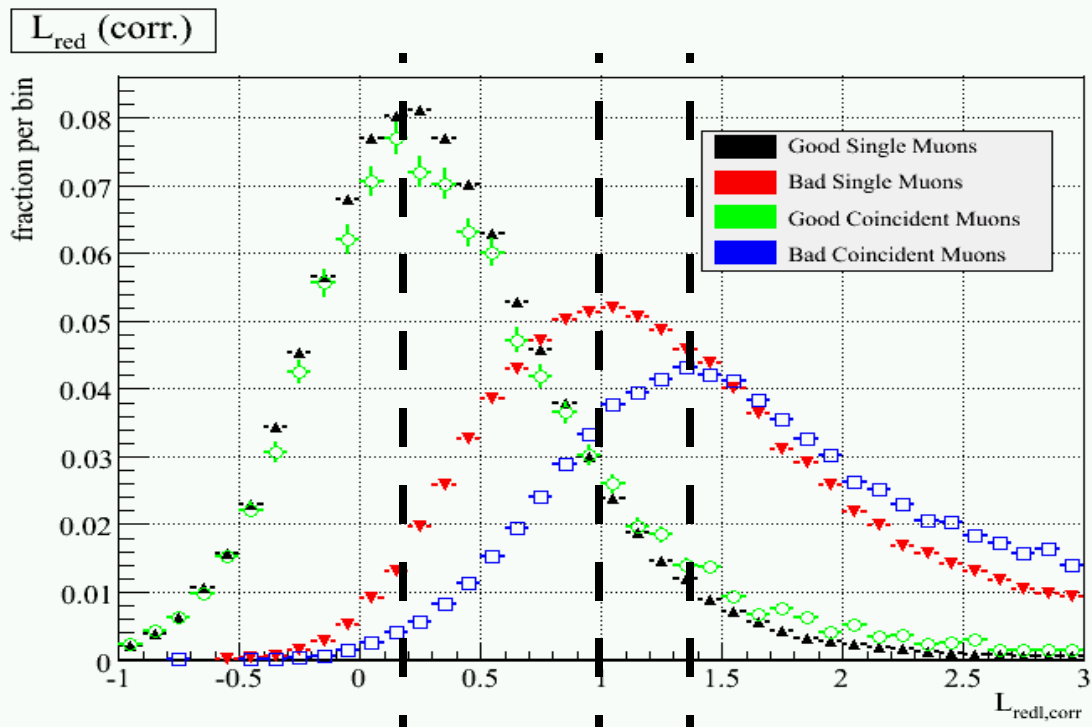
Difference Data-MC



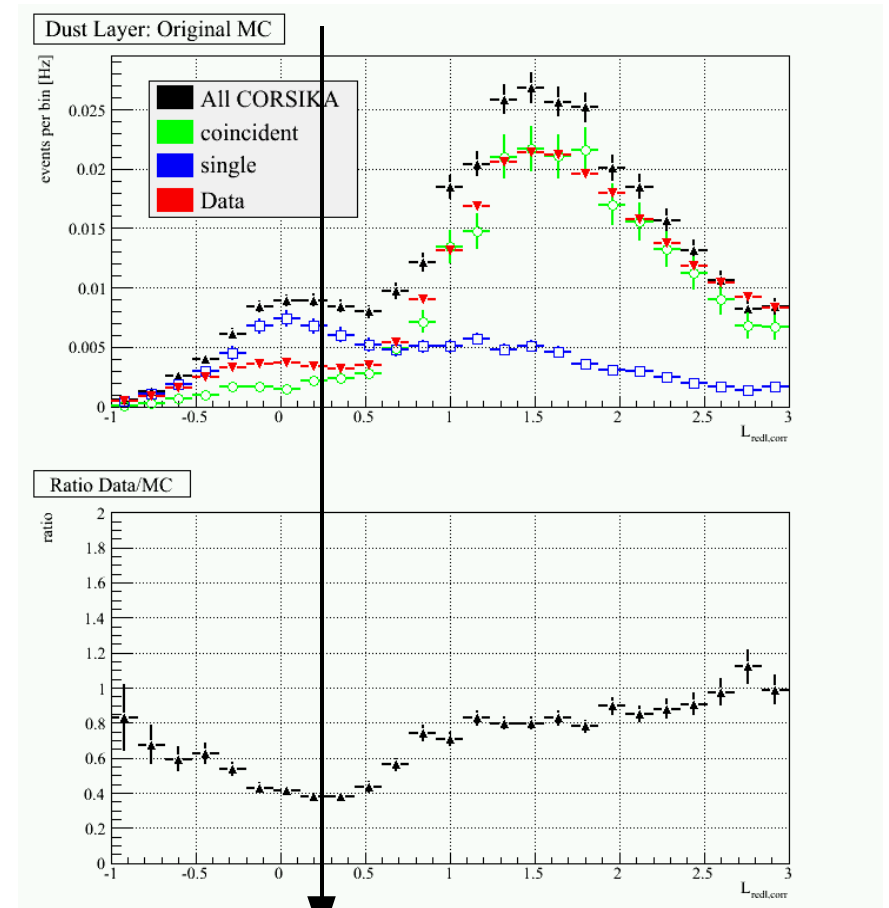
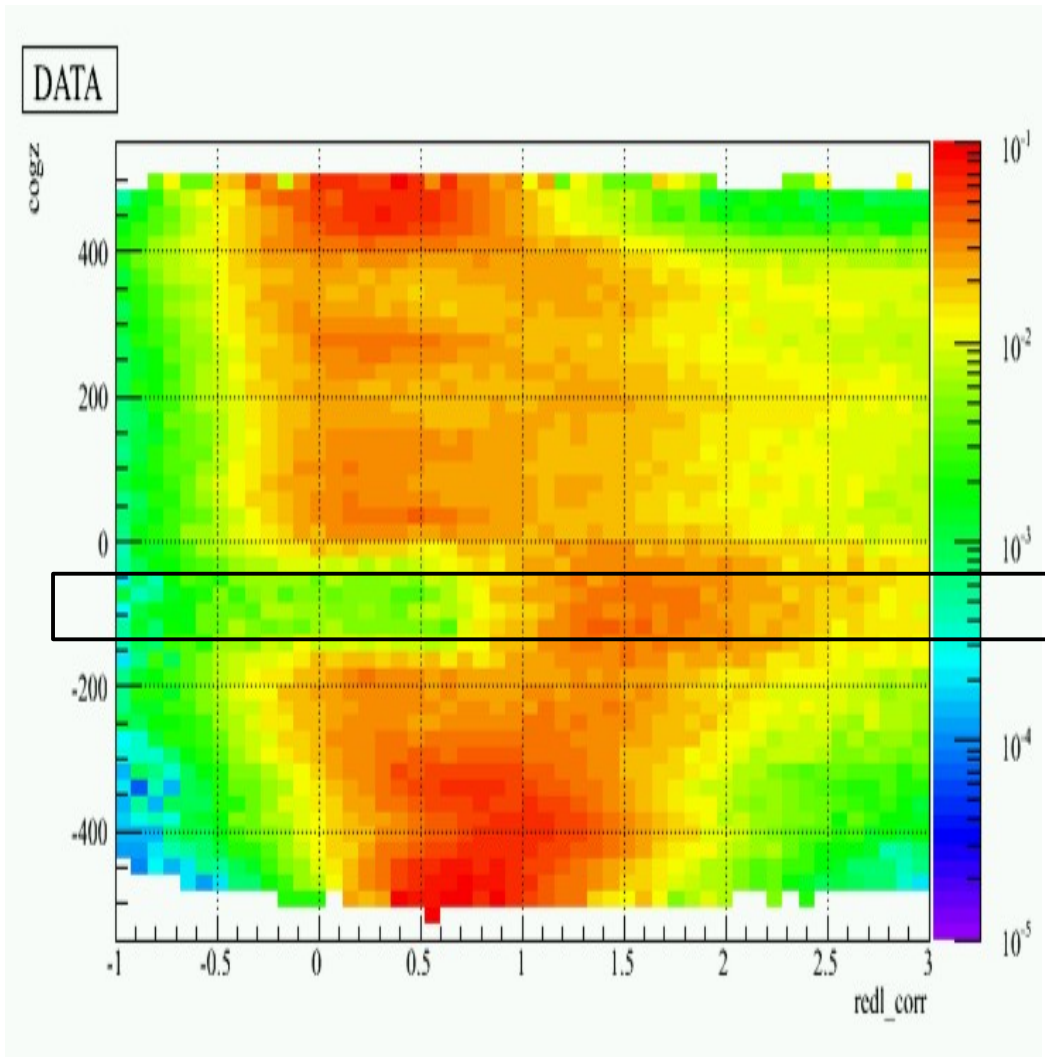
DATA



$\text{I}h_{\text{red}}$ (crazy)

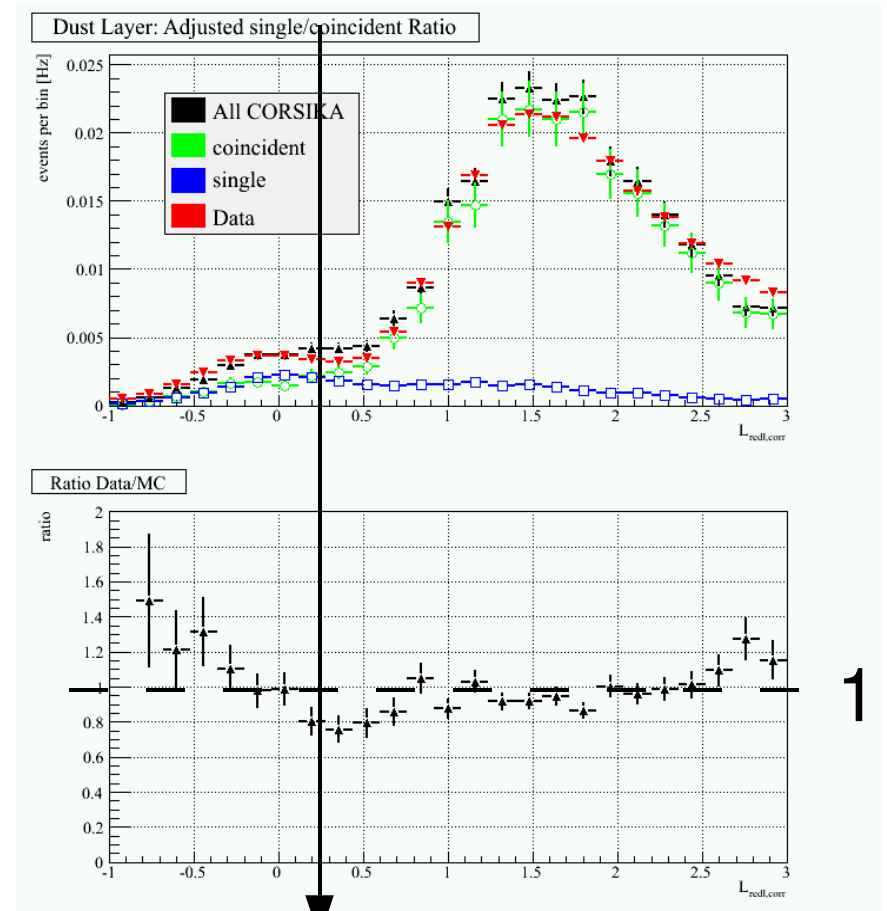
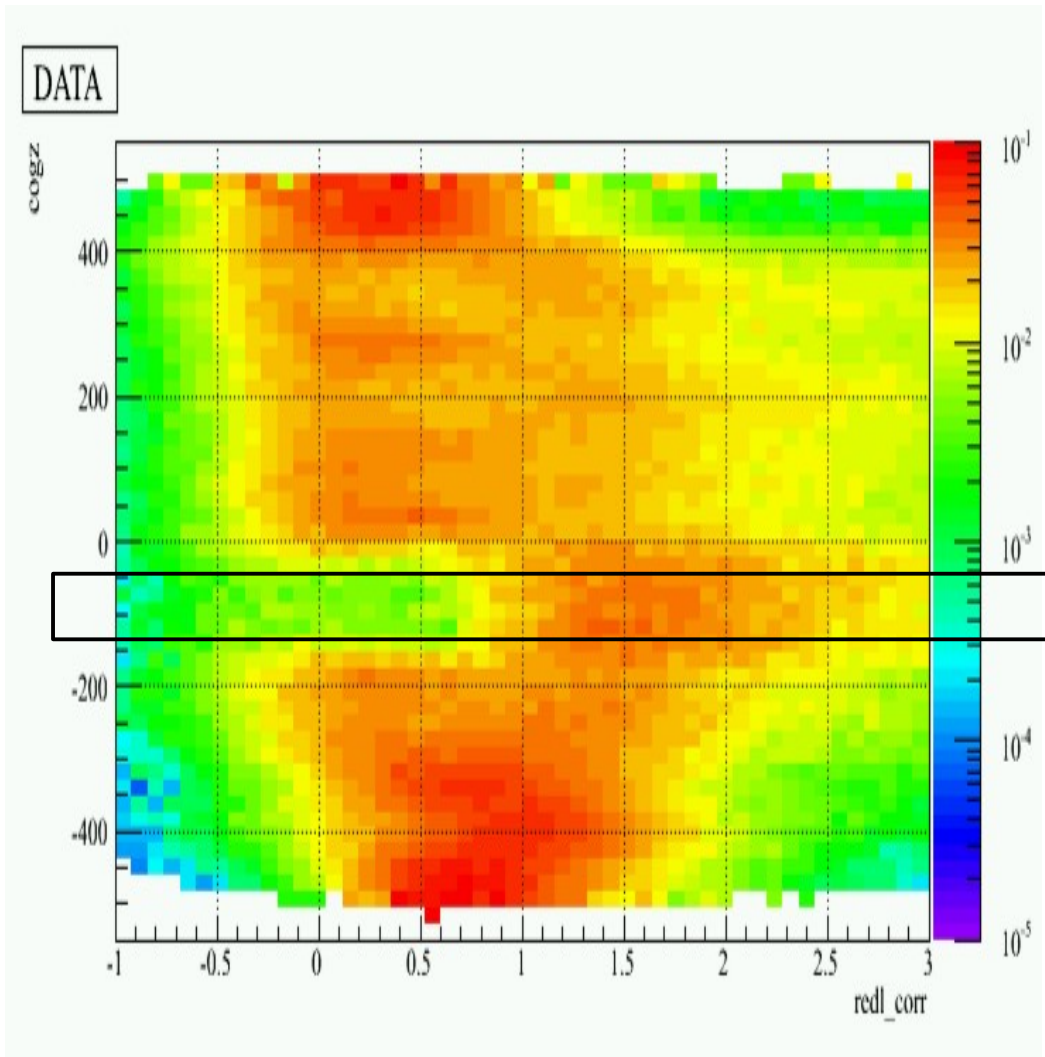


Dust Layer: -50m to -150m (2000m-2100m)



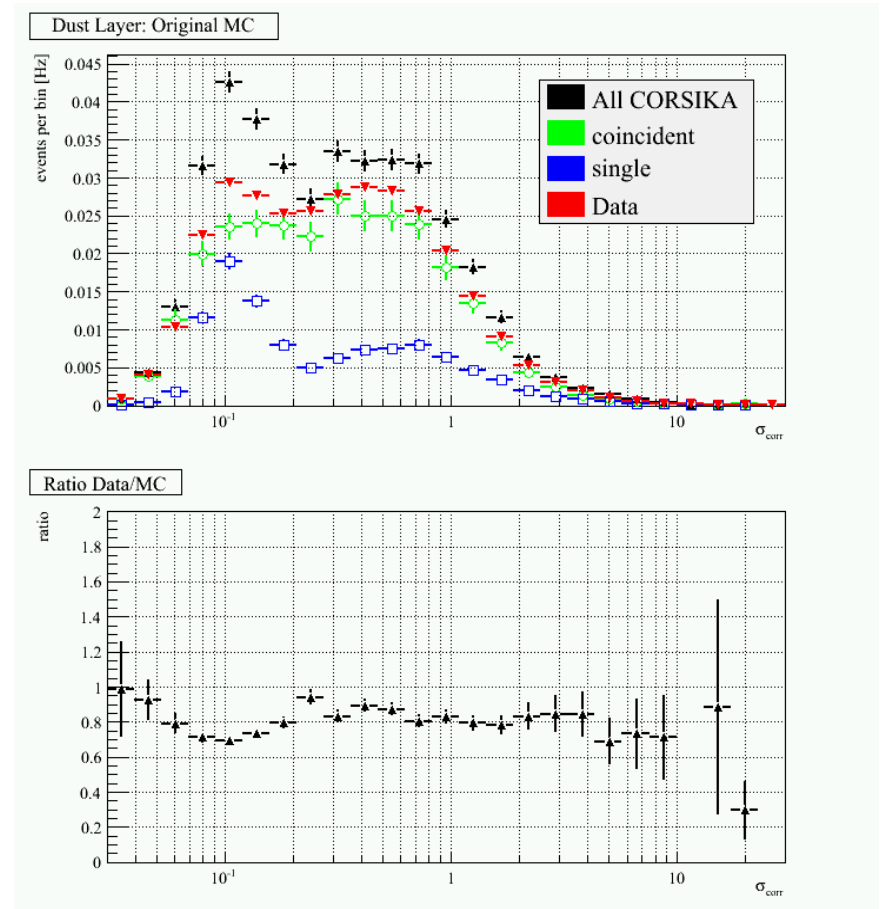
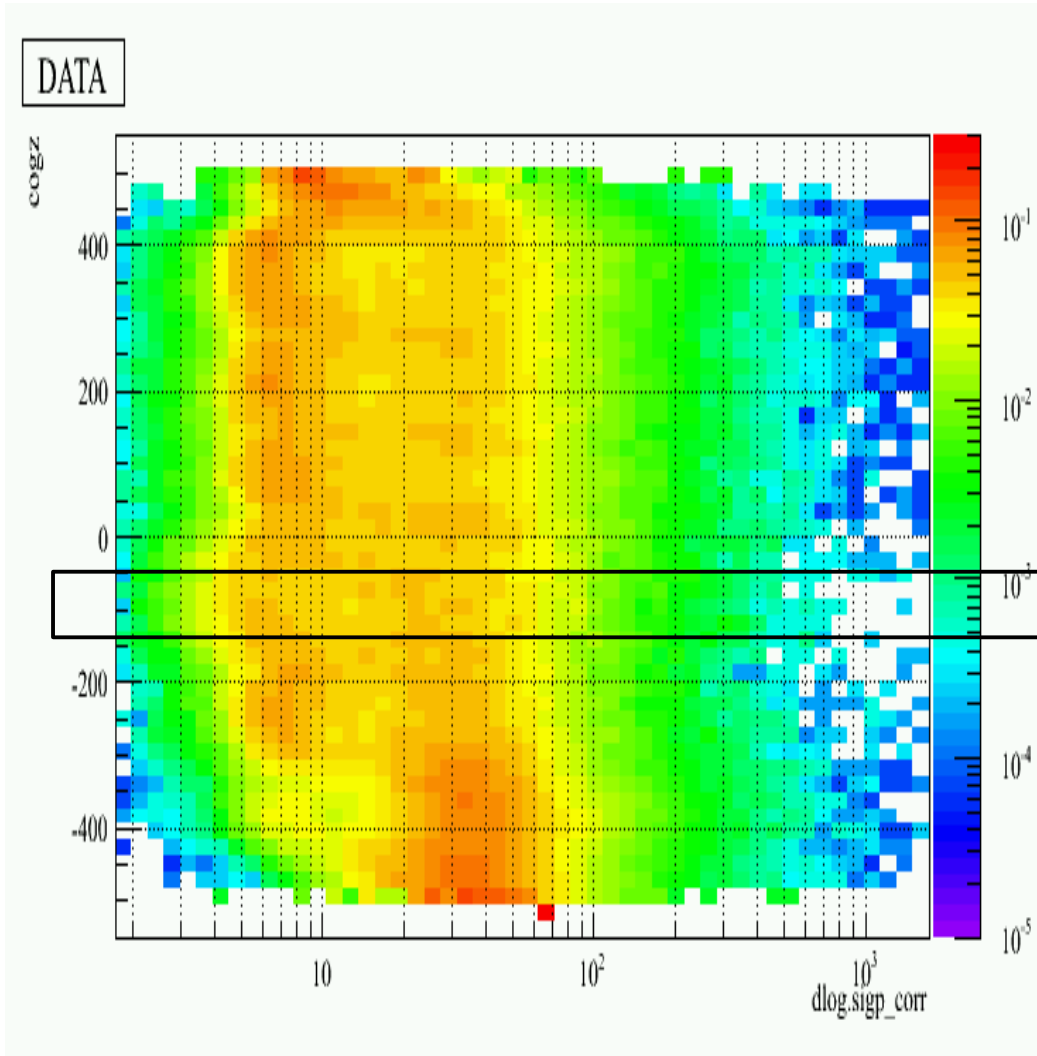
Too much MC overall,
especially at low L_{red} values

Dust Layer: -50m to -150m (2000m-2100m)



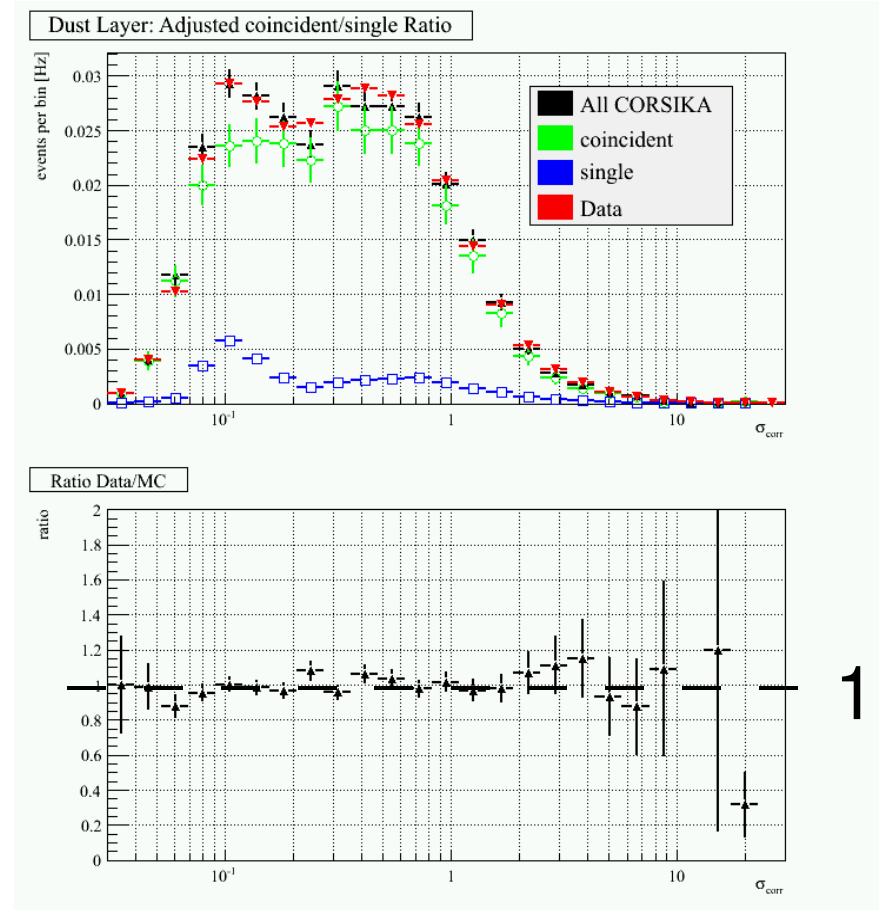
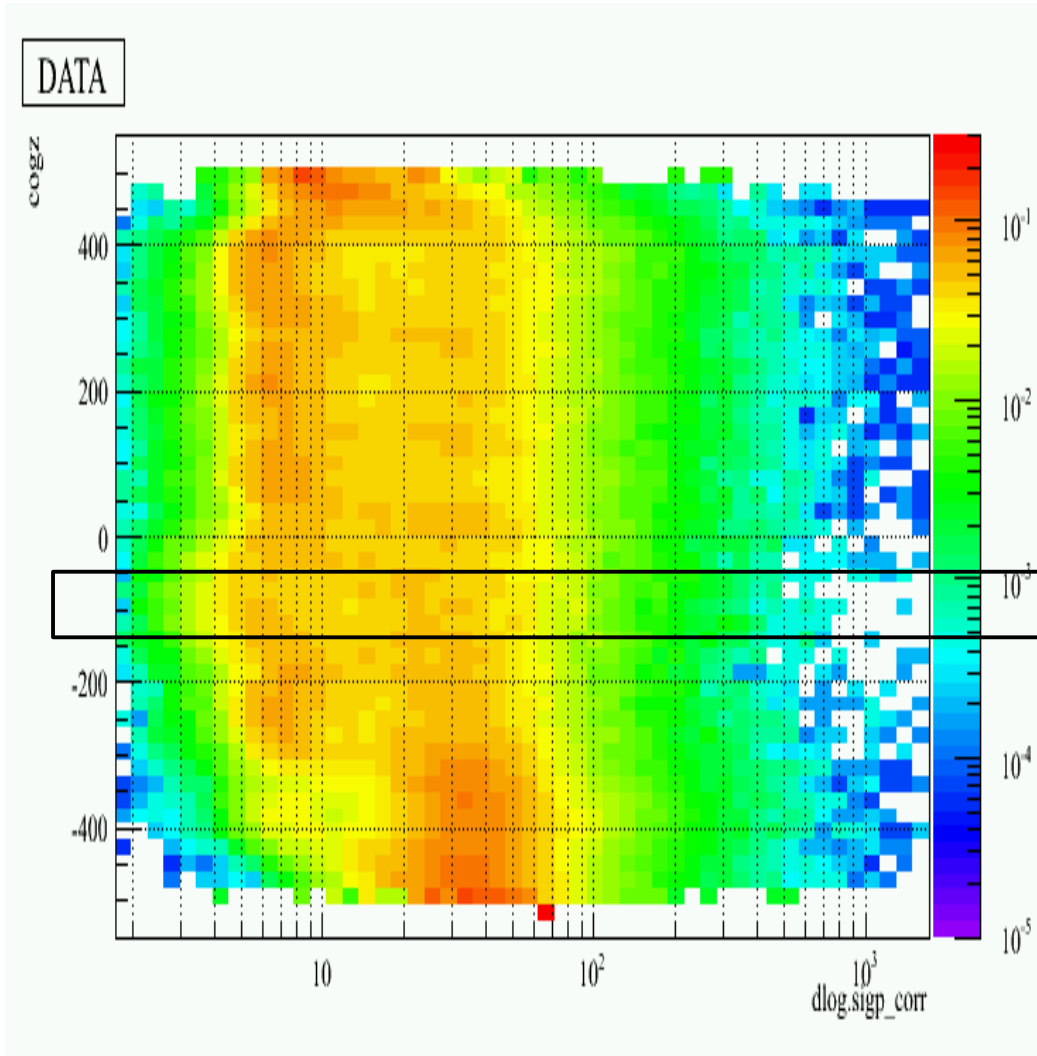
Adjusted MC:
same coincident
30% of original single

Dust Layer: -50m to -150m (2000m-2100m)



Same for sigma: Original...

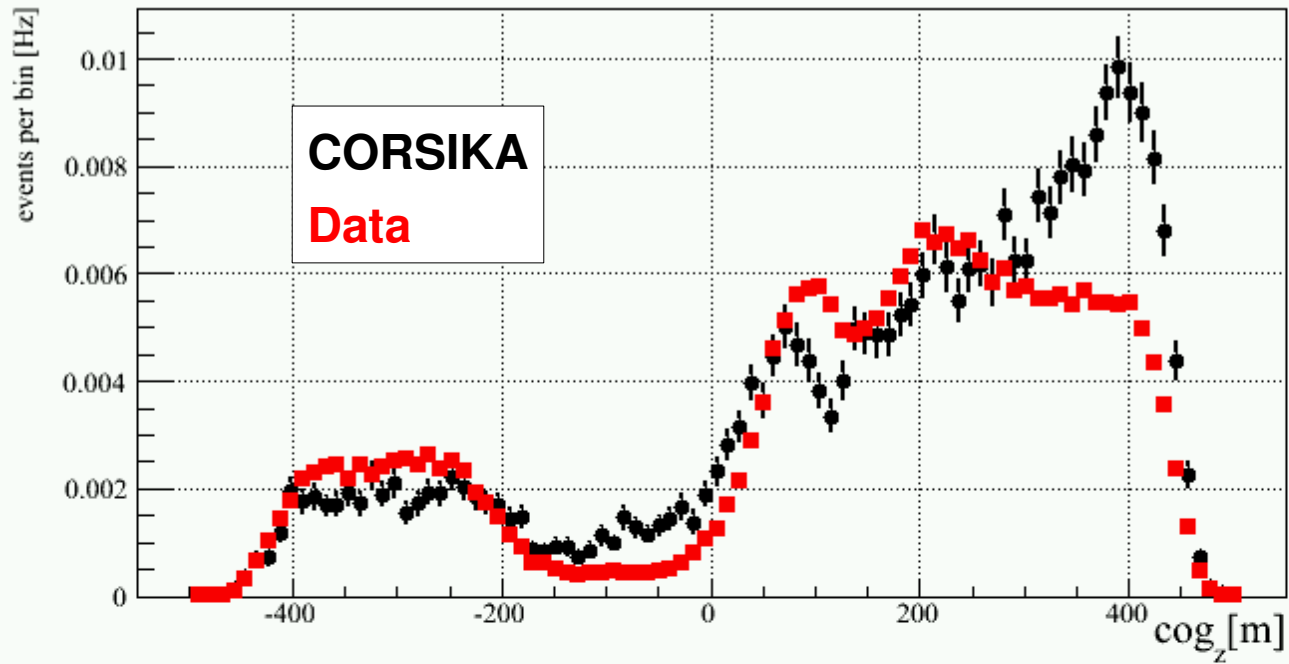
Dust Layer: -50m to -150m (2000m-2100m)



...and adjusted distribution.

And after a very restrictive quality cut...

IC22 $\theta > 70^\circ$ (Very Hard Cut)



Ratio Data/MC

