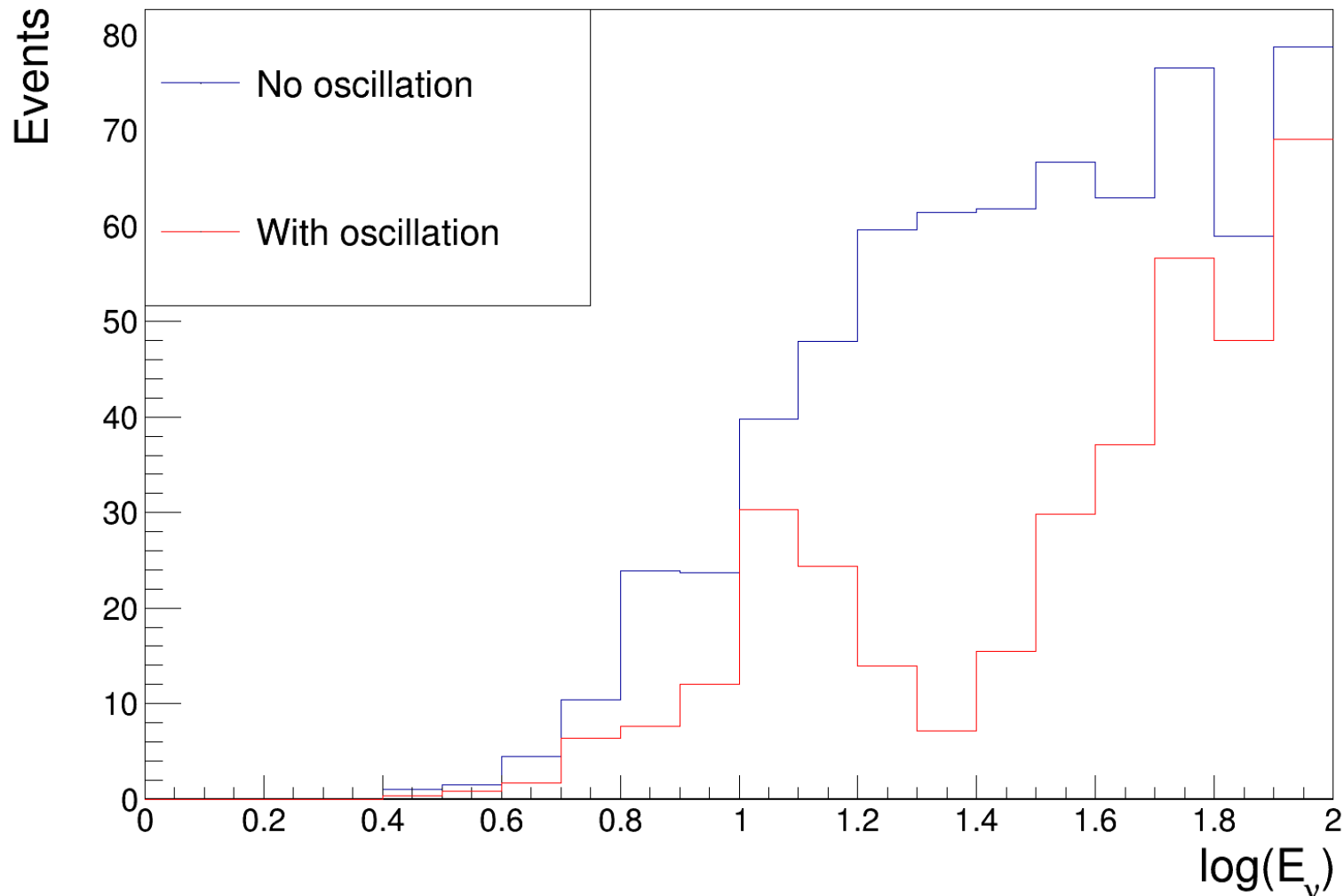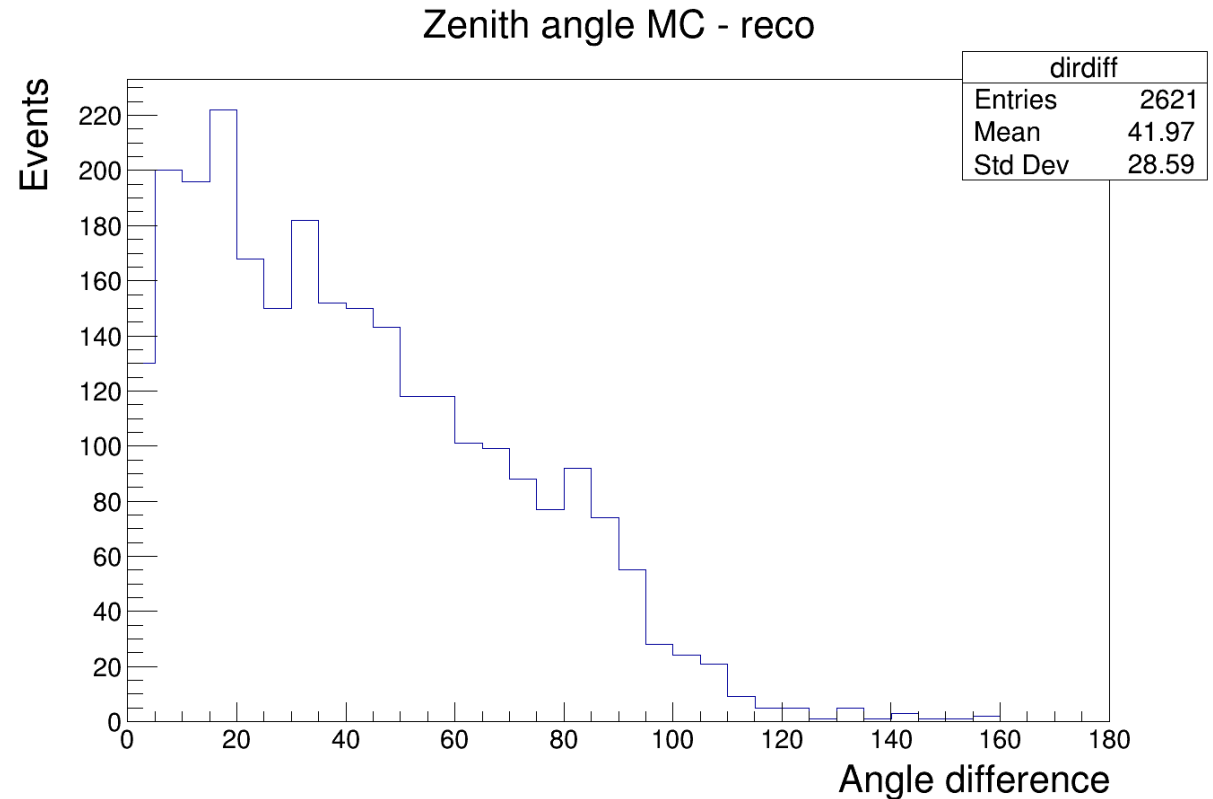# Oscillation study with 1 line

Quick look

Expected events with and without oscillation with 1 ORCA line (ideal energy resolution)

rate/yr/DU (5 trigdoms)

What sort of angle resolution can one expect?

- Run track reco chain on ORCA 1 DU MC

- Event selection: closer than 40m in XY

- >= 4 DOMs in trigger

- < 45 deg from up

Zenith angle MC - reco

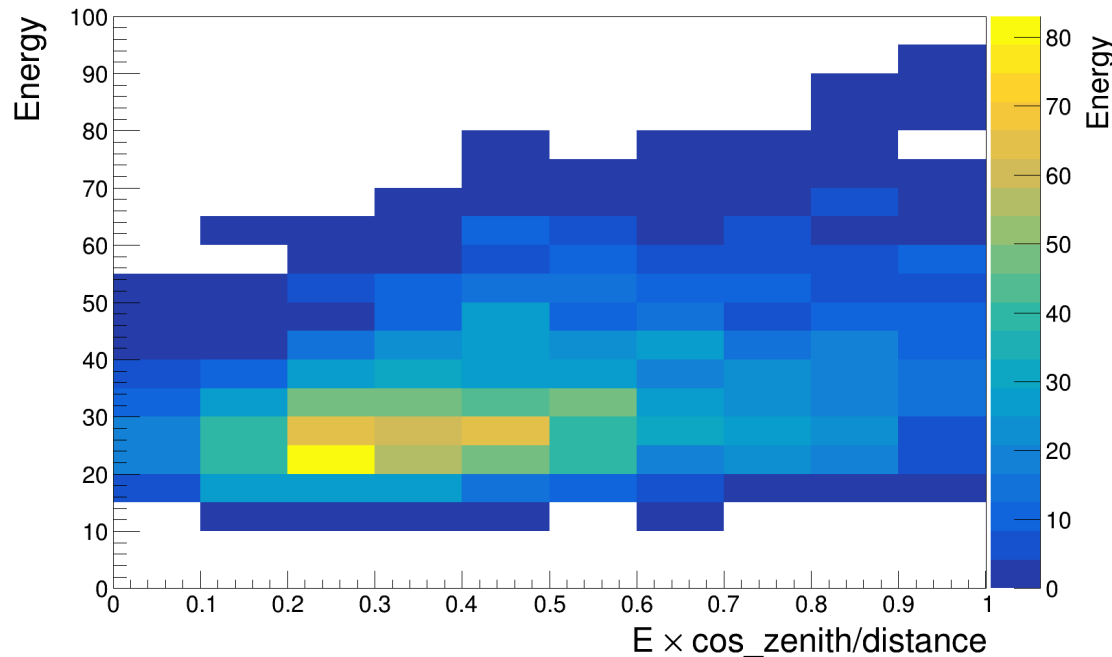| dirdiff	
Entries	2621
Mean	41.97
Std Dev	28.59

Events

Angle difference

Can the energy be estimated with one line?

- Nothing from the track reco (Jenergy, Jstart). Possibly wrong input parameters?

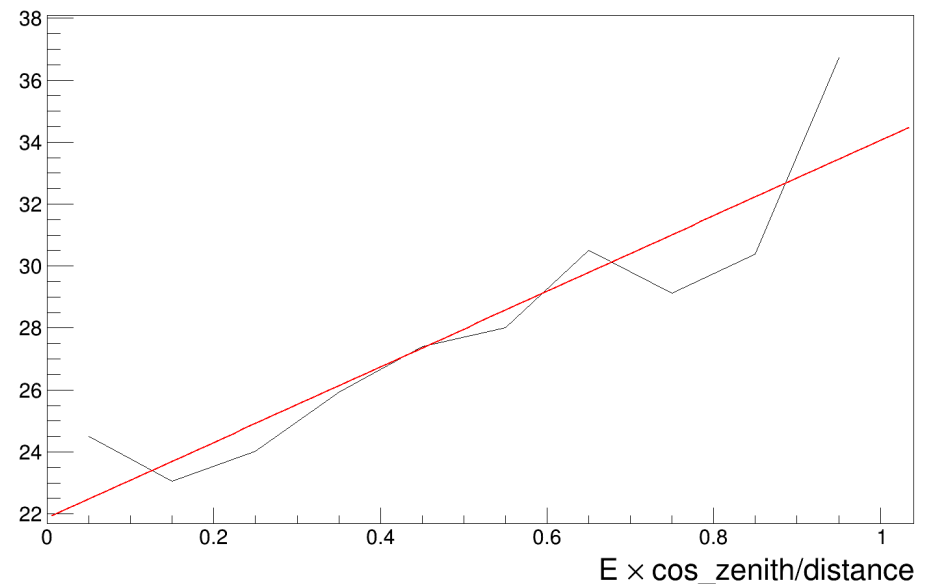- Alternative: correlation

$$n\_hits \sim E * cos\_zenith/distance$$

Nhits ~ E * cos_zenith/distance, MC data

- Energy from MC

- Zenith from MC

- Distance from MC

Repeat this with zenith and position from reconstruction
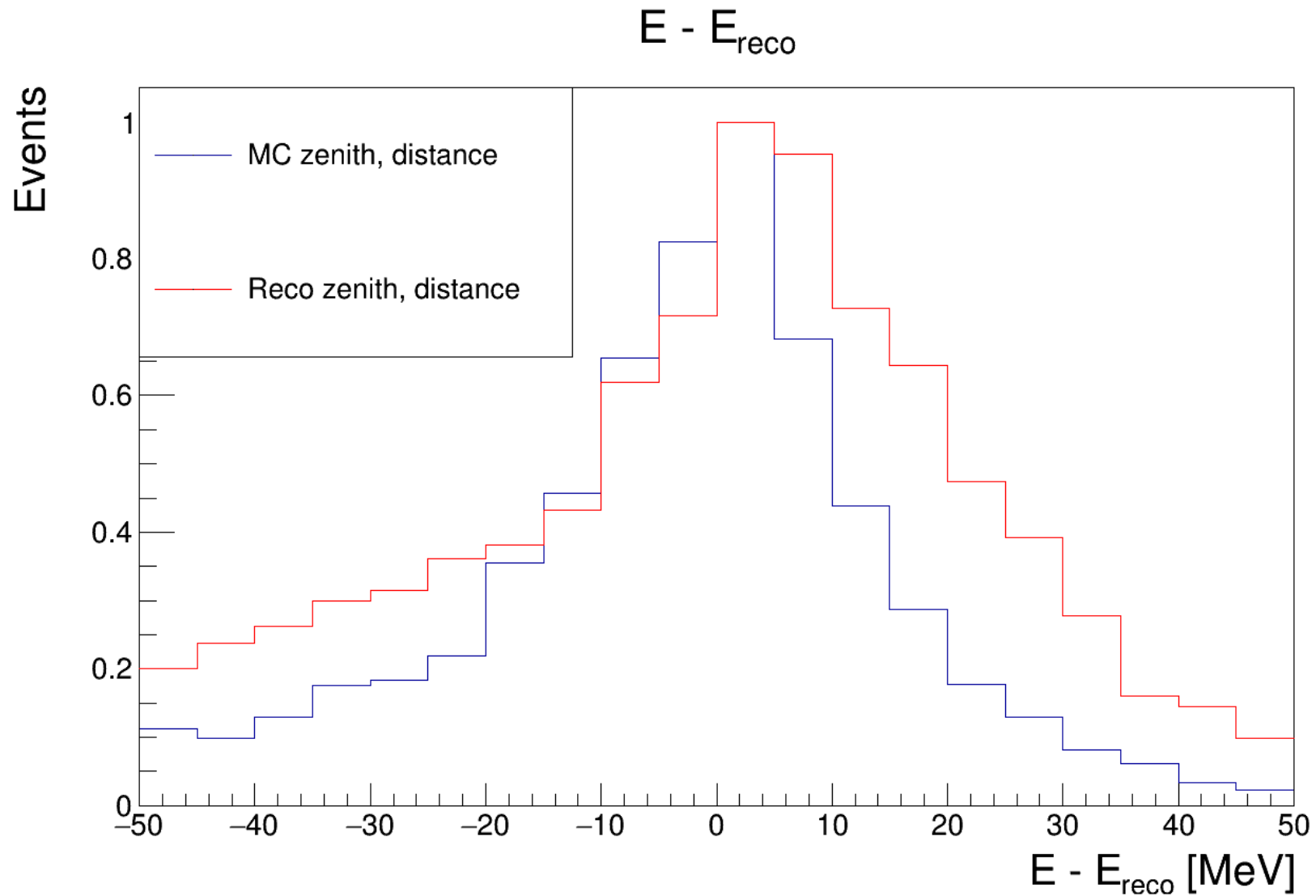
Conclusions/discussion

- A very approximate energy can be obtained

- Can the angle resolution be improved?

- Is there a better way to estimate the energy?

- Might be easier to integrate over energy/angle and only do muon counting.