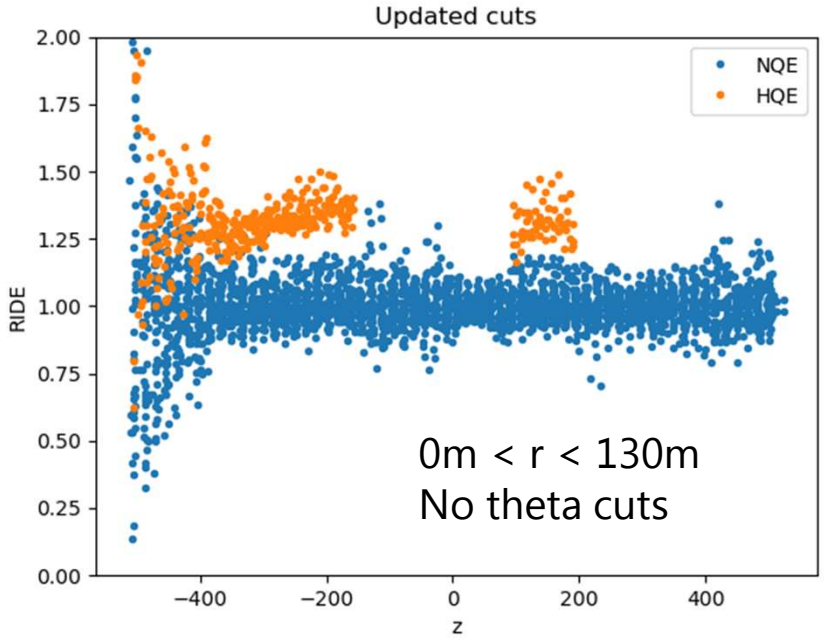
RIDE Update – 26-02-2021

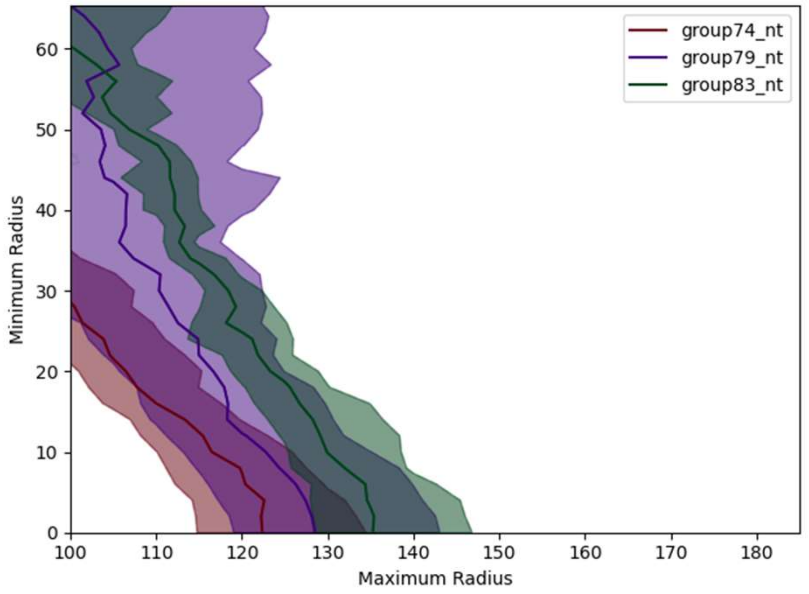
Sofus Stray

Weekly NBI Meeting

Last time

- Showed 2012 data
- Tried to find minimum and maximum radius for group overlap



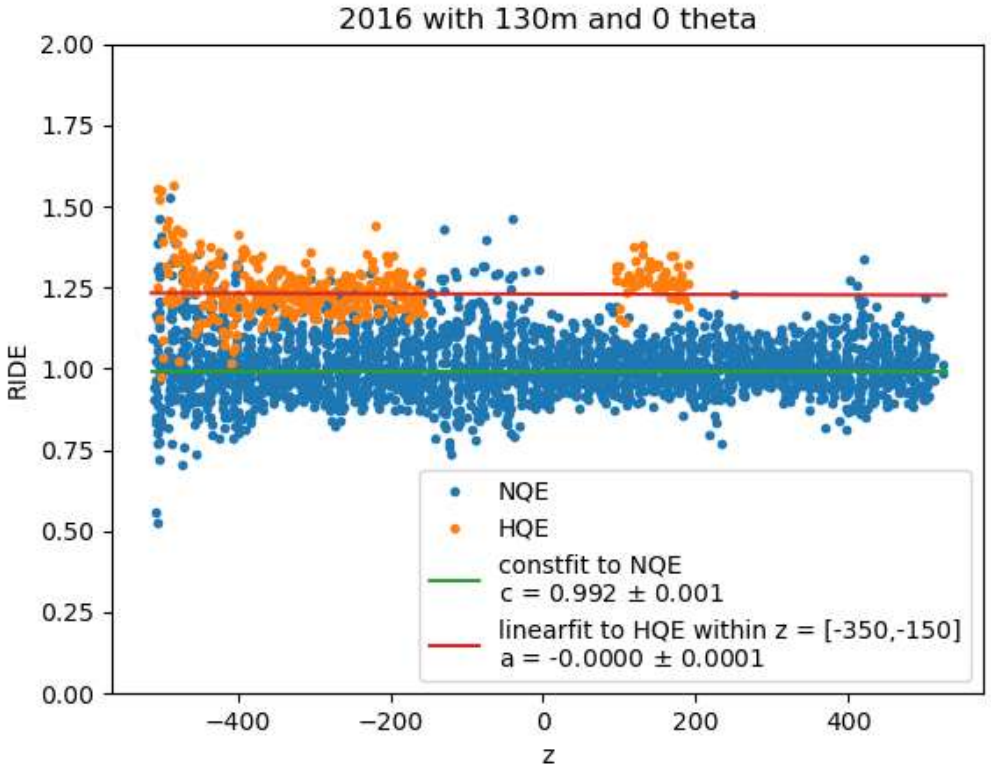


This time

- Updated to 2016 data
- Did the same analysis as before
- Try to find optimal radius and theta cuts

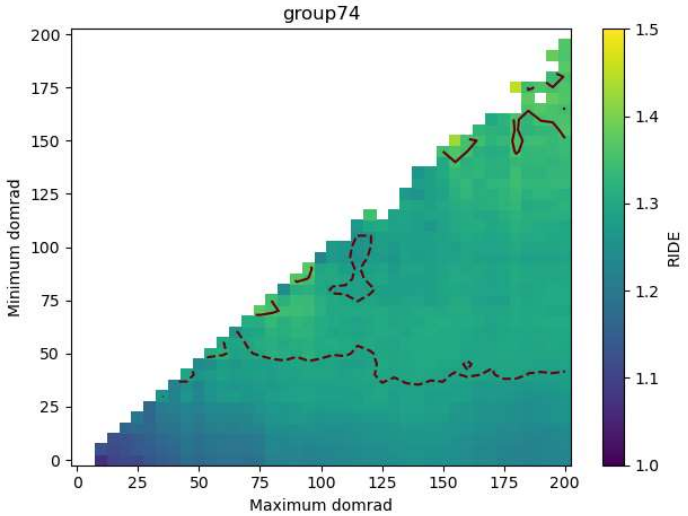
Initial results

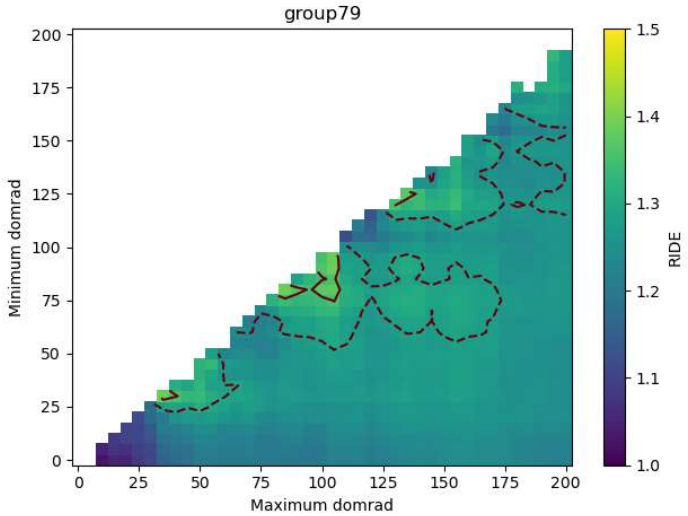
- Do the same cuts as before
  - 130m maximum, no mimum, no theta cuts
- See no gradient
- HQEs very bundled up with NQEs

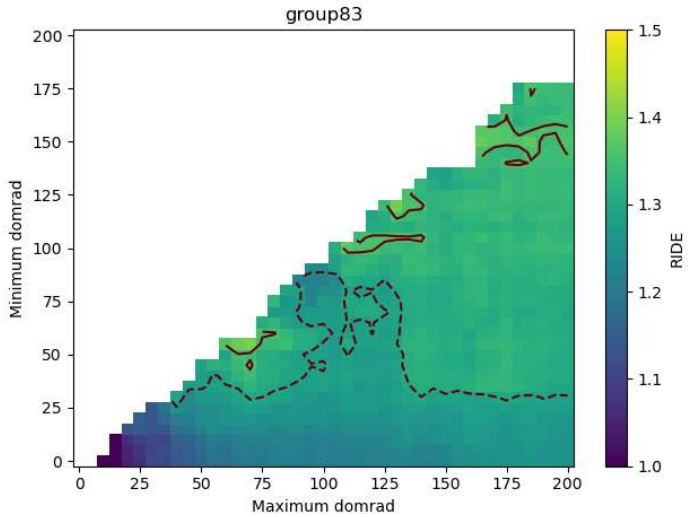


Test minimum/maximum radius

- Look at groups 74, 79, and 83 again
- <10% stat uncertainty, <15% stddev
- Can we find agreement?
- No

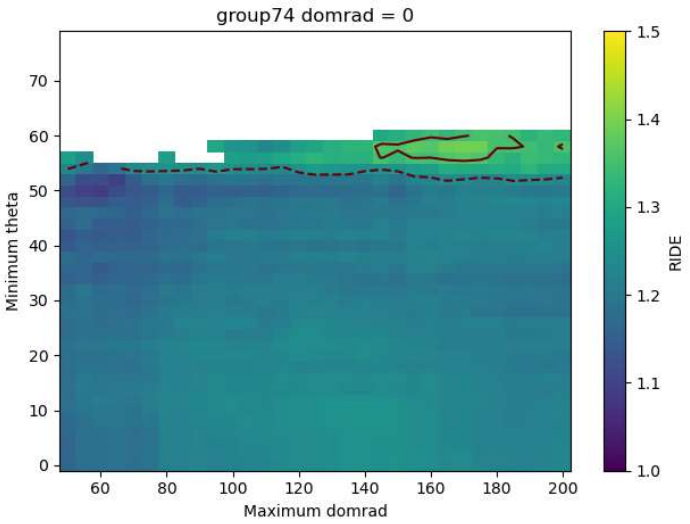


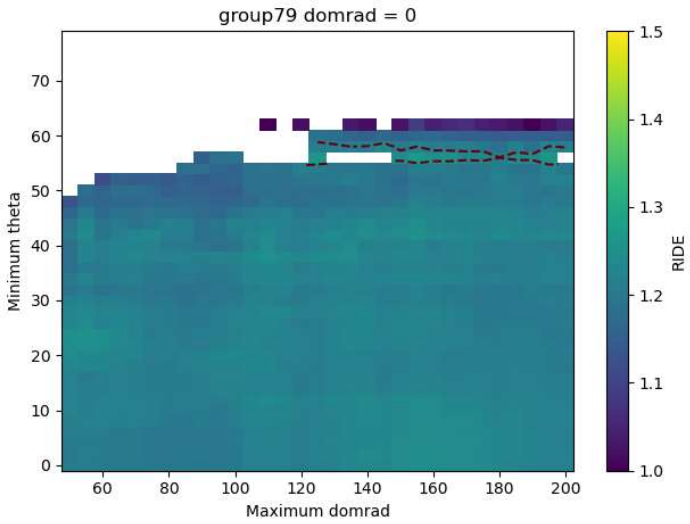


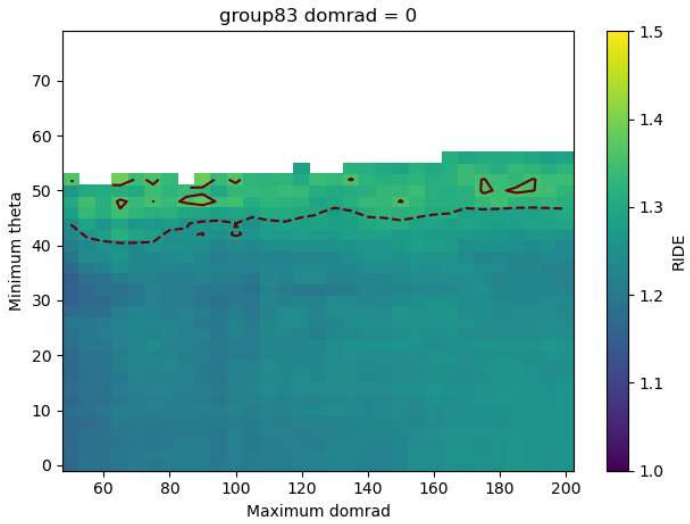


Test theta and maximum radius

- Maximum theta = 80 degrees
- Small agreement in large minimum theta

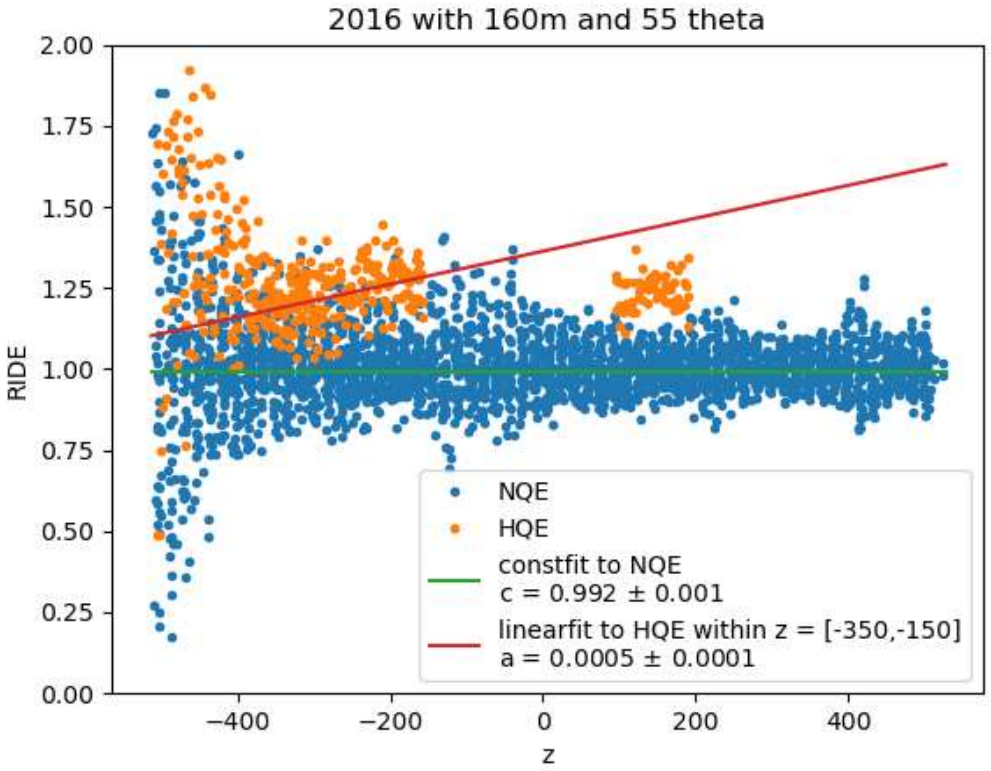






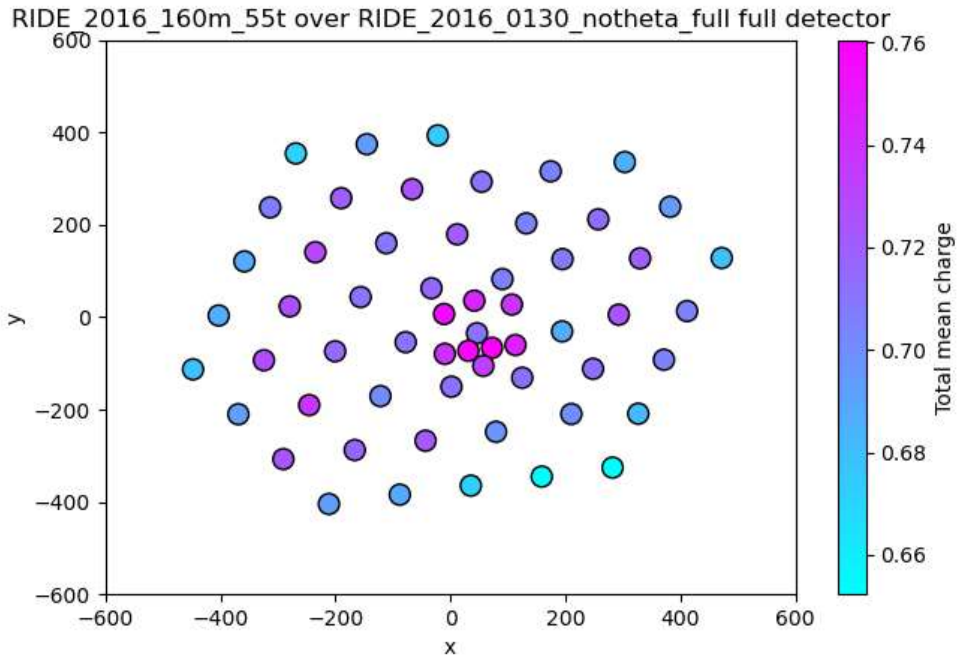
Updated results

- Increase maximum radius to 160m, theta cut to 55m
- Gradient is back
- HQEs still very bundled
- Bad idea



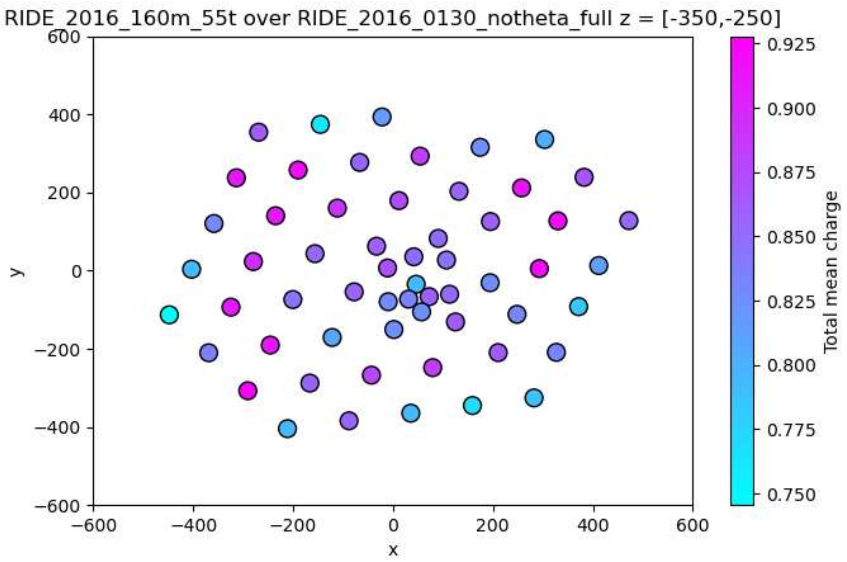
Why theta dependence?

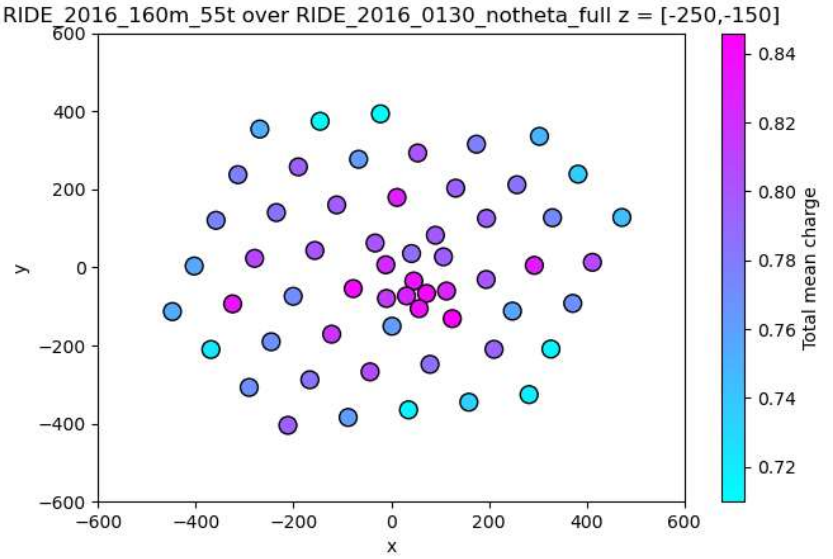
- Compare average charge of every string in the two RIDE datasets
- See if any strings have high value of RIDE



Why theta dependence?

- Look at specific depths
- Bias towards edge/center of detector
- Might suppress RIDE values?
- Not fully analyzed yet



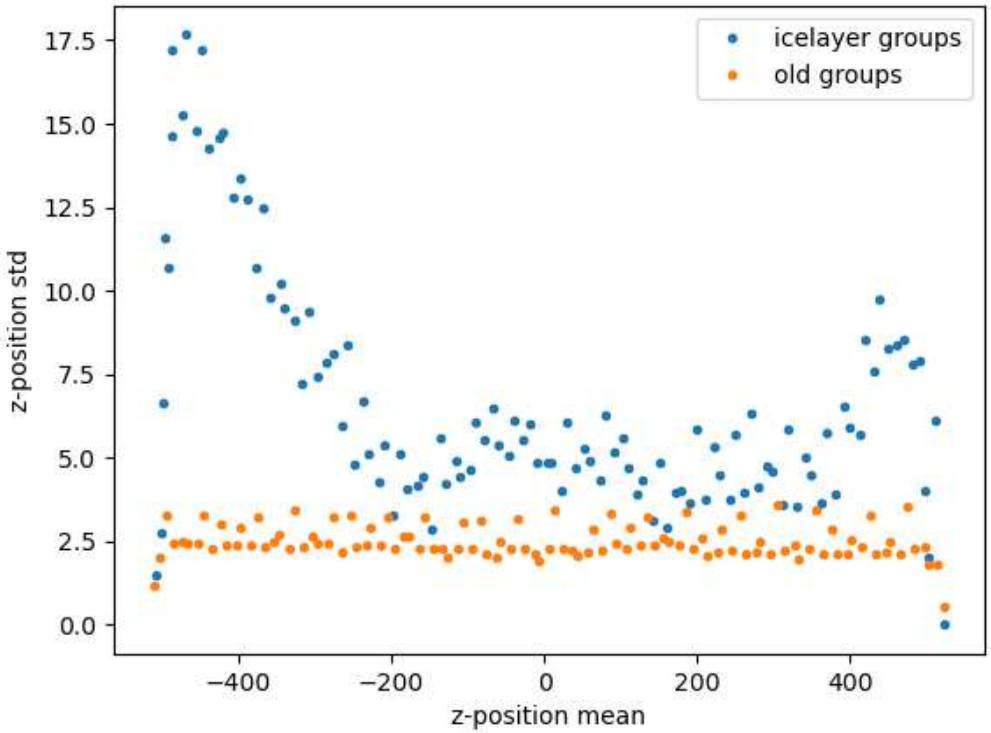


Icelayer groups

- Forget about theta for now
- Redefine group based on Icelayer
- Data from Dima
- Look through groups to find optimal RIDE radius values

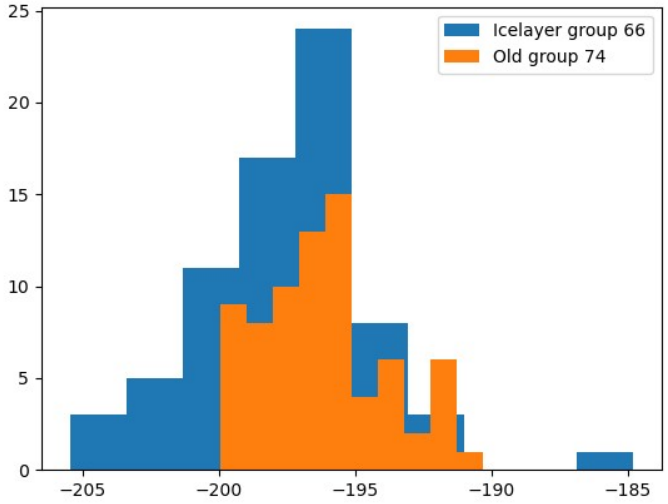
Icelayer-group and old-group

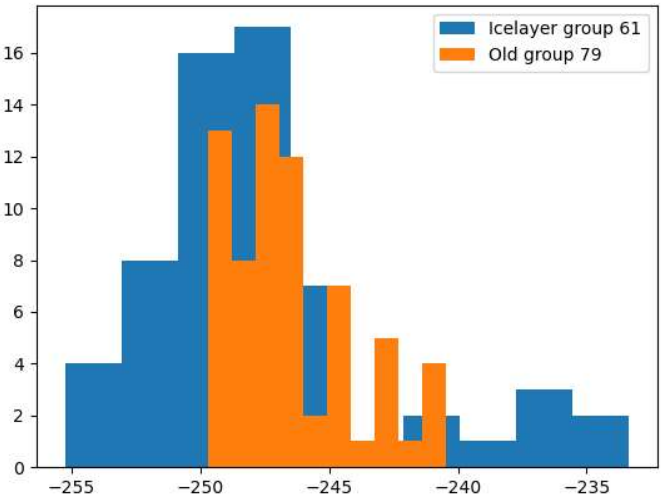
- Icelayer is not only dependent on z-value
- Larger variance in z as a result

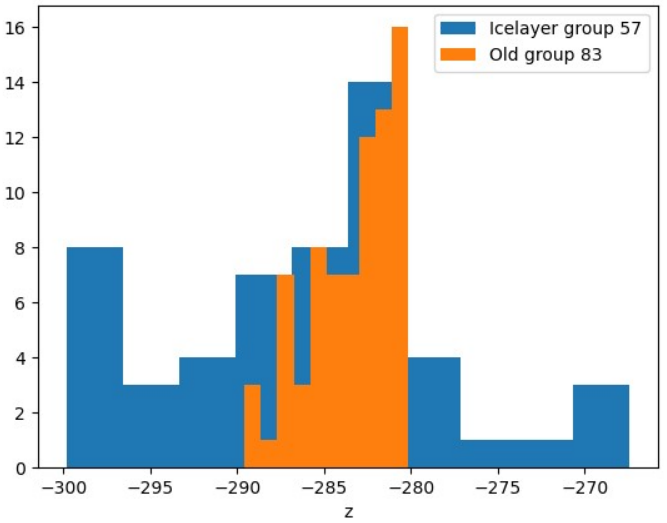


Icelayer-group and old-group

- Icelayer groups don't correspond exactly
- Refer to mean z-position instead of group from now on

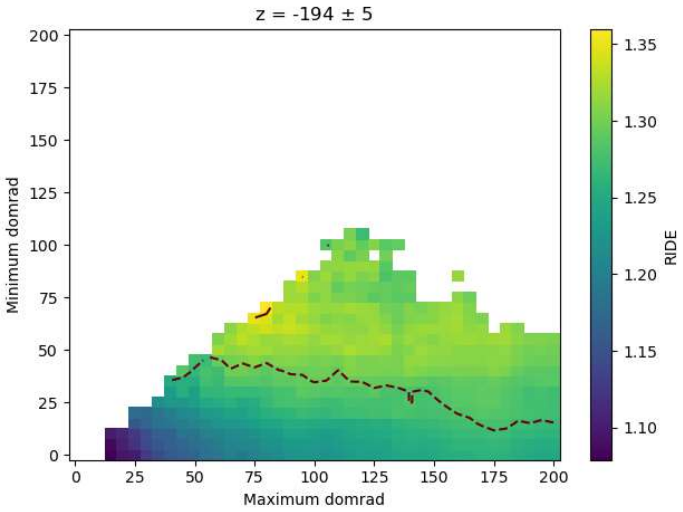


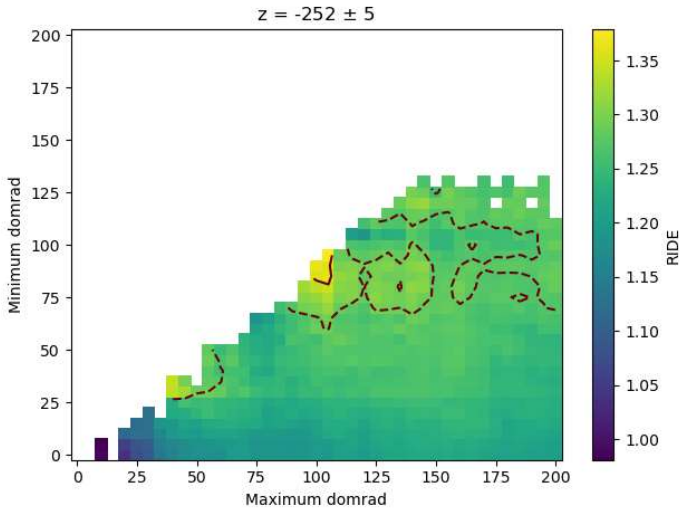


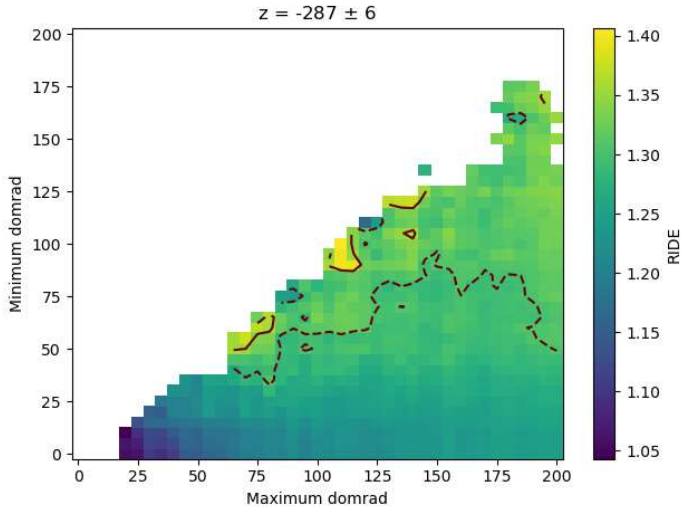


Icelayer groups analysis

- <10% stat uncertainty, <10% stddev
- Still no real good agreement







Next time

- Reintroduce the last-200-meters muon criteria
- Look through different group definitions