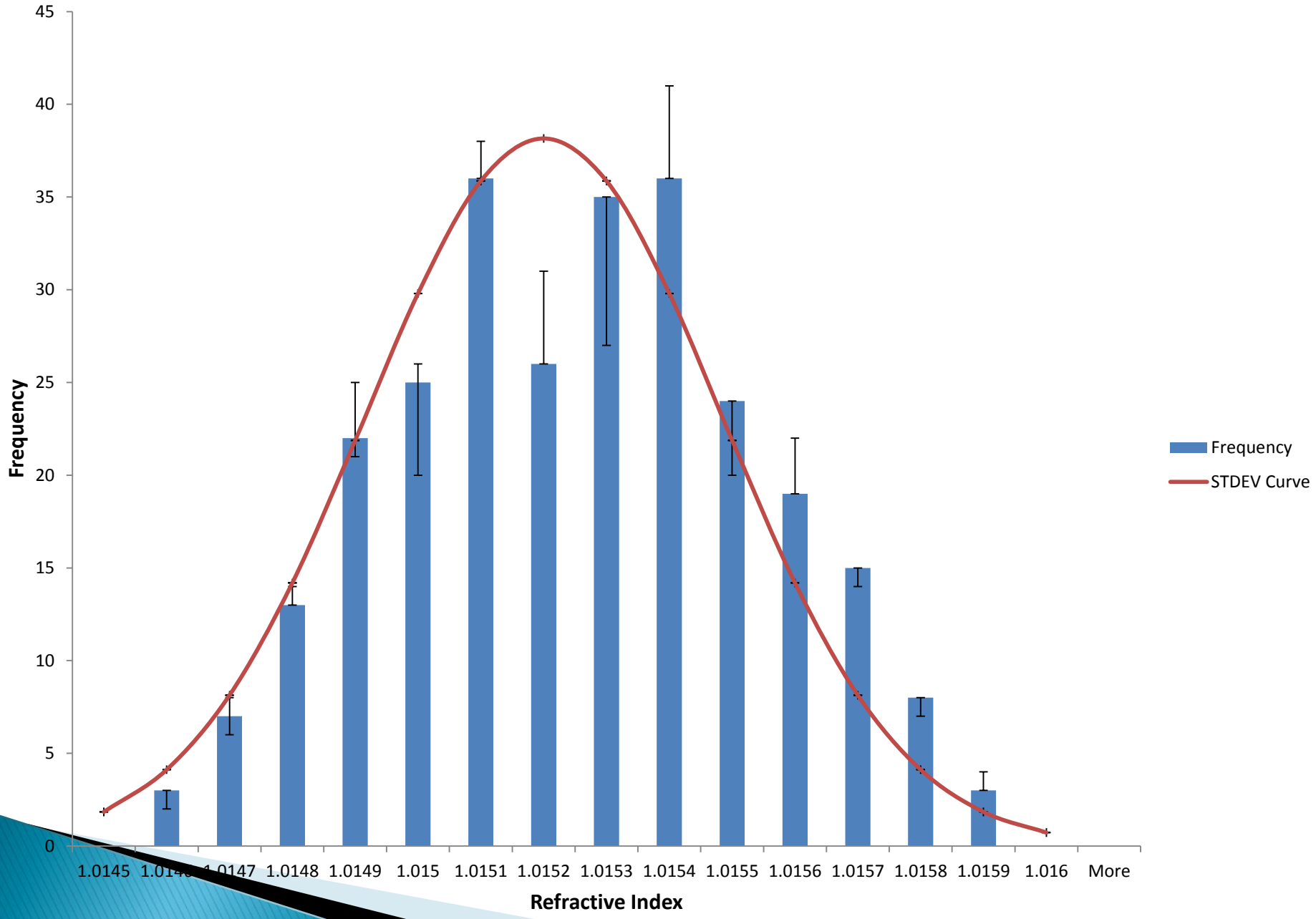
Aerogel

7/25/2013

Uncertainty

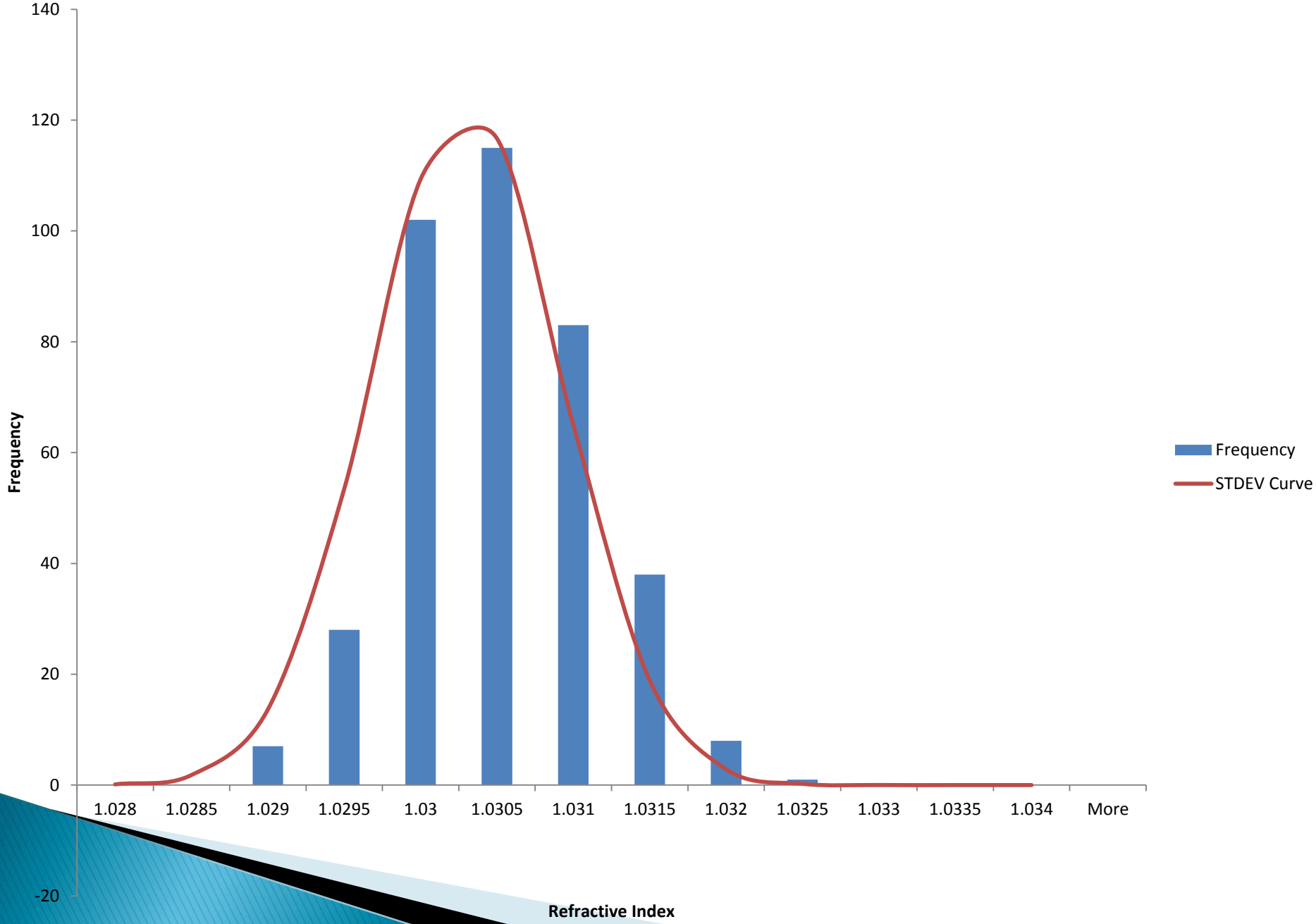
- Assumed the systematic uncertainty to be .01
- Found how many tiles would either leave or come into each bin if the uncertainty was take into account
- Made the number of tiles that changed bins the error bars for each bin
  - The uncertainty changed for each bin
  - Dr. Horn suggested we review uncertainty with her later in the summer


Refractive Index 1.015
45
40
35
30
25
20
15
10
5
0
Frequency
1.0145
1.0147
1.0148
1.0149
1.015
1.0151
1.0152
1.0153
1.0154
1.0155
1.0156
1.0157
1.0158
1.0159
1.016
More
Refractive Index
Frequency
STDEV Curve

SP-30 Refractive Index

- We have measured 191 SP-30 tiles
  - Starting to measure SP-20s
- We found that the SP-30s tended to disperse the light more than SP-15s (creating a spot or pattern rather than a beam)
- This is an edited graph of the data:
  - Refractive indices of 1.033 to 1.039 removed
  - One tile was ~2 mm thinner on one end than the others and the other tile was very chipped and cloudy

Refractve Index SP-30



Humidity

Tile Number	Refractive Index Before	Refractive Index After	Difference
15.022B	1.0152 +/- .01	1.015 +/- .01	- .0002
15.112B	1.0158 +/- .01	1.0156 +/- .01	- .0002
15.122 B	1.0153 +/- .01	1.0153 +/- .01	0
15.127B	1.0149 +/- .01	1.0151 +/- .01	+ .0002
Constants			
15.022T	1.0151 +/- .01	1.0151 +/- .01	0
15.127T	1.0154 +/- .01	1.0153 +/- .01	- .0001