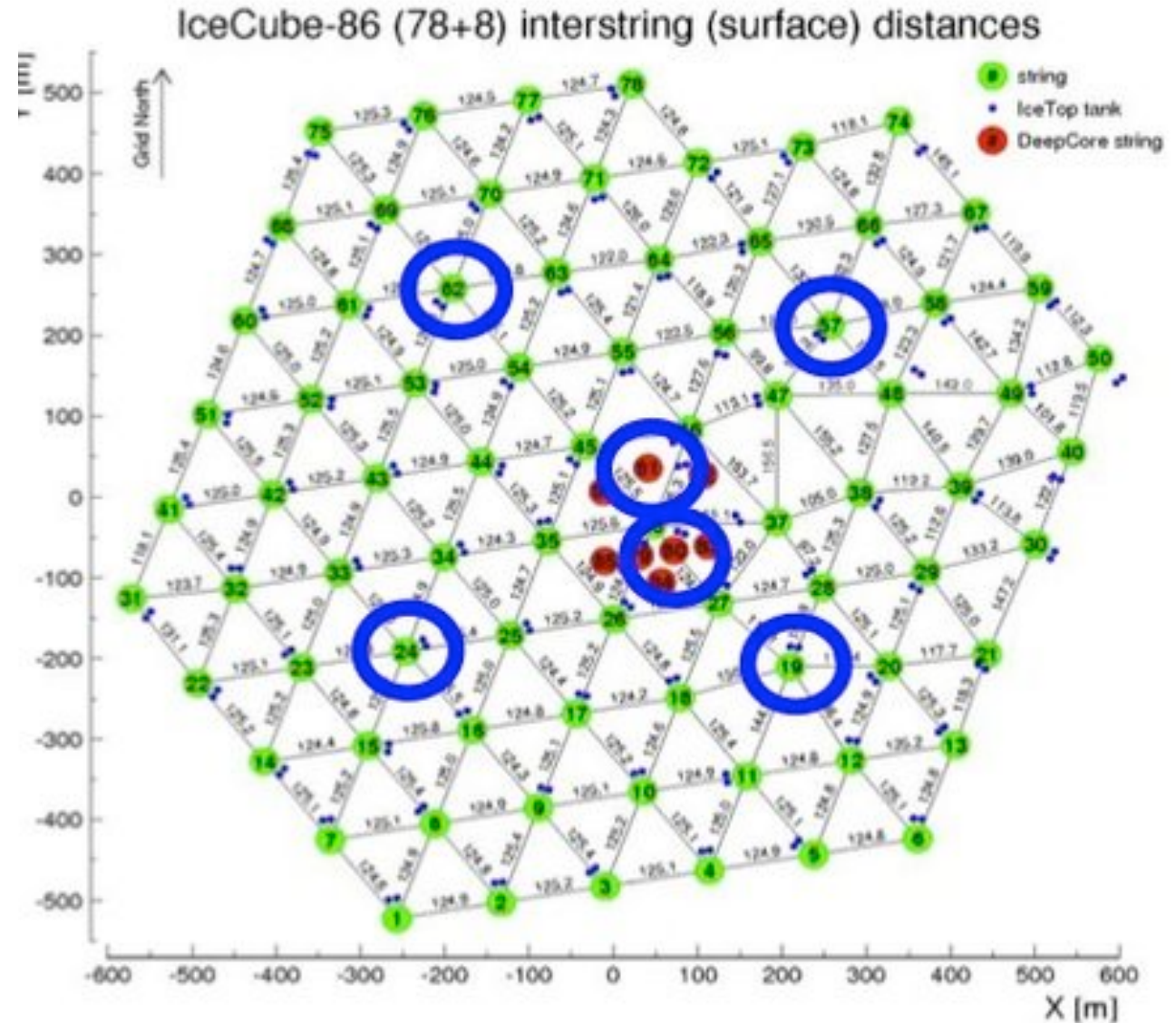# Azimuthal Orientation of Well-Surrounded DOMs
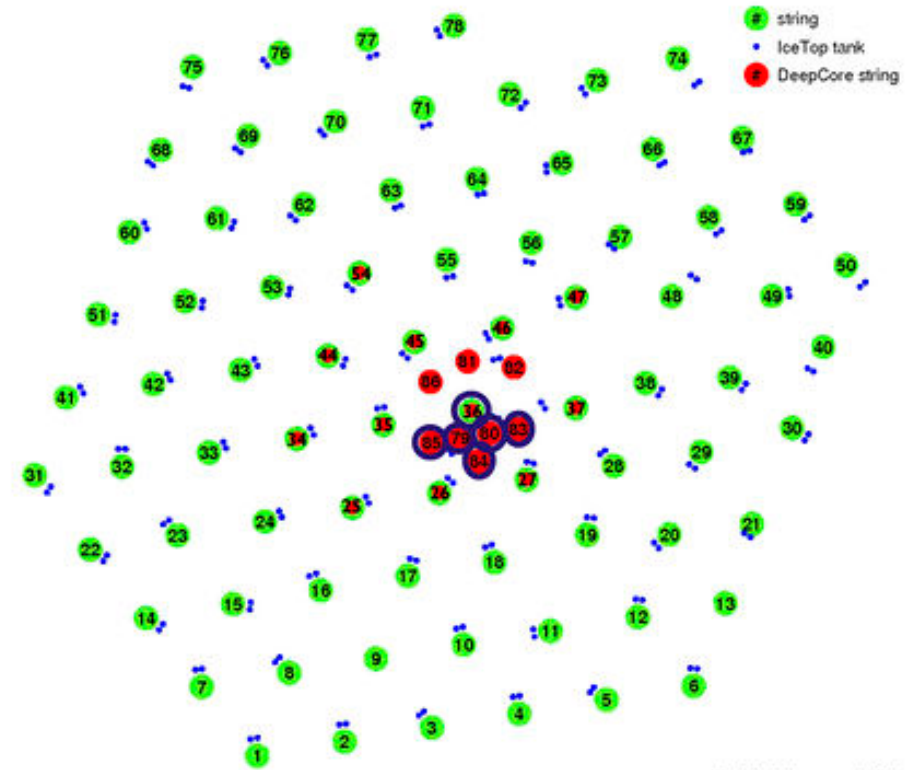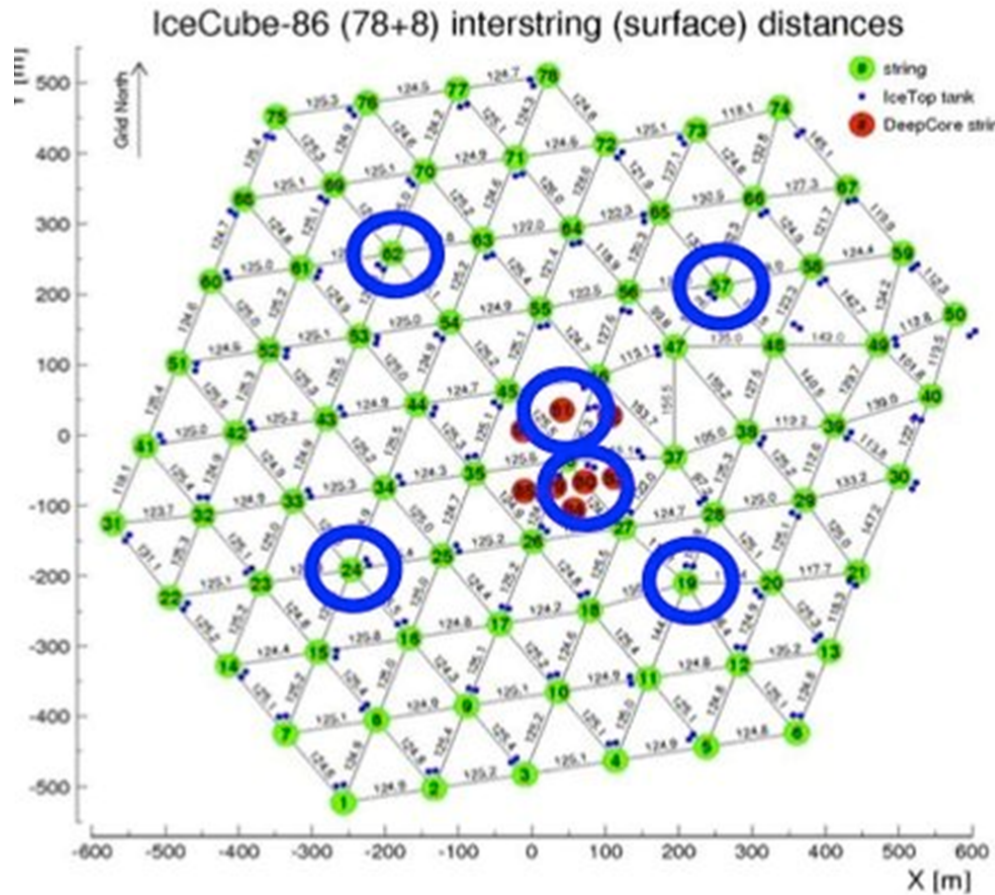
Zach Way

Background

- In 2012 we took flasher data for every combination of LEDs. We did this on well surrounded strings.

- From this we use the single led flashes

- Modified scripts written by Dawn Williams, Marcel Usner, Danica Alvarez, and Renee Skinner

2012 vs. 2017 Flasher data

Previous results

- This has been done before
  - https://wiki.icecube.wisc.edu/index.php/LED_Azimuthal_Orientation
  - Scripts used C++ modules that identified flashers and their LED mask
- Reviving old scripts
  - Icetray = IC2015-L2_V15-04-07
    - Compiles flasher-fill V04-01-00
    - Made for L2 processing
  - Align-waveform was an old module that had some compiling issues
    - Align-waveform = /home/trwood/align-waveform_back_toobigSNV-2017
      - http://code.icecube.wisc.edu/svn/sandbox/dawnwill/align-waveform/

Script Modification

- From here modified the sorting script exp_master.py to loop through a larger directory with all flasher runs

- Modify scripts and set them in a structured output

- Right now the scripts take a long time to run

- Change fitazimuth to act on the output structure

Results and Comparisons

DOM	Old Azimuthal Measure (2012 data)	Redone Azimuthal in present (2012 data)	New Azimuthal (2017 data)
String-80 DOM-04	114=degrees, .73=3σ	114=degrees, .73=3σ	118=degrees, 2.55=3σ
String-19 DOM-01	294=degrees, 2.58=3σ	294=degrees,2.58 =3σ	
String-19 DOM-02	35=degrees, 1.62=3σ	35=degrees, 1.62=3σ	
String-19 DOM-03	288=degrees, 2.84=3σ	288=degrees, 2.84=3σ	
String-19 DOM-04	47=degrees, 3.42=3σ	47=degrees, 3.42=3σ	