It is constructed by taking the ratio of quantile-quantile plots: therefore, in our case, when the quantile-ratio exceeds one, it indicates that.

We want to ZOOM IN to the high tail of the distribution, because the most severe storms usually have extremely large CAPE -- i.e., we care.

The codes that accomplishes it is:

```python
# overploting quantile-quantile scatters
plt.plot(xbins, myodr.output.beta[0]*xbins+myodr.output.beta[1],'k-',label='Ortho. dist. reg. 
 y =

cb1
```
NameError
Traceback (most recent call last)
<ipython-input-2-6ca211c68d9a>
in
<module>
1
### Density plot for number of points in each bin (Calibration Figure)
----> 2
fig = plt.figure(1, figsize=(12, 6*nrow))
3
plt.subplots_adjust(wspace=0.3)
4
my_levels = np.linspace(color_vmin, color_vmax, 9)
cmap_mean, norm = from_levels_and_colors(levels=my_levels, colors=['#f7fbff', '#deebf7', '#c6dbef', '#9ecae1', '#6baed6', '#4292c6', '#2171b5', '#084594'])
NameError: name 'nrow' is not defined

Summary
Coding
In summary, the coding skills applied here are:

- Using Pandas to manipulate datasets, including merging two different DataFrames, subsetting the merged DataFrame.
- Using matplotlib to plot a publication-ready figure. One thing I have learnt is that, to make one publication-ready figure, you will need to iterate hundreds and thousands of times on one figure, and make progress step by step.

Note that what I showed is only one segment in one project. The same set of coding skills shown above could be applied to solve various problems.

Two examples of my other projects include:

- Comparing climate model and observed climate variables.
- Evaluating social impacts of convective extremes, by merging geospatial data (reanalysis dataset) and socioeconomic data (damage caused by severe thunderstorms).

Research
If you are interested, the single take-away point for the thunderstorm story is:

- It is expected that the thunderstorms will become more intense with warming.

A few other comments are:

- As the last figure showed, a simple enough synthetic future (constructed with only three mean changes) could readily reproduce the distributional shift of CAPE between climate states. This simple model that can further our understanding of the projection of thunderstorms.
- The metric we use (CAPE) is also part of a covariate that is used for thunderstorm occurrence, but given that we are not directly evaluating this covariate, I won't make any over-claim.