Alice Ren

Data I

October 5, 2017

1 Statistics of surface temperature

1. The temperature ranges from about 12-24 °C. The maximum temperature is from July to August. The month with the minimum average temperature looks to be around February, but the minimum temperatures are in April through the end of June. From July through October, the temperature is generally above 20 °C, but from January to May, the temperature does not reach to 20 °C.
2. The temperature mean was 18.2 °C and standard deviation was 3.0 °C. The environment around Scripps Pier has high variation in temperature; the standard deviation is around 17% of the mean value. Also, a 6 degree spread of temperature spans what is considered a normal value.
3. It looks multi-modal, with a few peaks, so it is not Gaussian.

2. There is a seasonal cycle each year. The warmest values are around late summer. The year 2017 does not look particularly different from the previous years. The empirical PDF has a shape that looks more like a Rayleigh distribution, but is skewed to temperatures from 14-16 °C. The mean is 17.8 °C and the standard deviation 2.8 °C. The values are both slightly smaller than those for just 2017. However, the data for 2017 only extended until October, including the warm months of August and excluding November and December. In addition, the months of larger variability were overrepresented compared to a full year. In my quick inspection of the data, the sharp change in temperature in August is within what could be expected based on previous years.

Note: According to the methods of Scripps Pier (see URL below) the precision until 2008 was 0.1 °C. After December 2008, the precision of the thermometers became 0.01 °C, but measurements are still rounded to the nearest tenth of a degree. I rounded the mean and standard deviation to the nearest tenth of a degree value. I am open to other methods to determine the significant figures – please let me know.

(<https://scripps.ucsd.edu/programs/shorestations/methods/>)