### 2.0.1   Portland Harbor tide gauge

The Portland Harbor tide gauge likely gives the closest approximation to the nearshore environment where CBASS seining is conducted. We were previously using 2003-2023 as the reference period and found that 2014/ 2015/ 2017-2019 had negative mean annual anomalies. The remaining years in our 2014-2023 time series had positive mean annual anomalies. It seemed intuitive to therefore categorize years with negative mean annual anomalies as "colder" and those with positive anomalies as "warmer."

Unfortunately, the tide gauge has only collected surface water temperature data since 1997. Data are extremely spotty and unreliable until early 2002. Therefore, the closest we can get to matching the warming report's CRP is 2002-2020. I have pulled and cleaned the raw data for this period. I also slightly improved the fit of the model of daily anomalous temperatures by more carefully cleaning out invalid temperatures (caused by equipment malfunctions). I also slightly changed the model structure of the GAM that models daily anomalous temperatures by specifying cubic spline regression smooths with penalized shrinkage (`bs='cs'`) and REML fitting.

Despite this change in reference period, data cleaning, and model structure, we get the same results. 2014/2015/2017-2019 all have negative annual anomalies and the remaining years have positive. The years even fall in the same order when ordering from most negative to most positive anomaly. This order differs slightly from the warming report, but this can be attributed to both the different reference periods and the enormously different spatial scales. These spatially-variable differences could spark some cool conversation about how the cumulative exposure of larvae/ migratory fishes to detrimental warming offshore impacts our inshore communities, even if inshore conditions are about average.

All this to say: I think we keep this approach to qualifying temperature anomalies. I recognize that calling years flatly "hot" or "cold" can be misleading. We can shift the language to something more like "5 hottest/ 5 coldest years of the time series". The warming report does a similar ranking that gets updated both annually and seasonally.
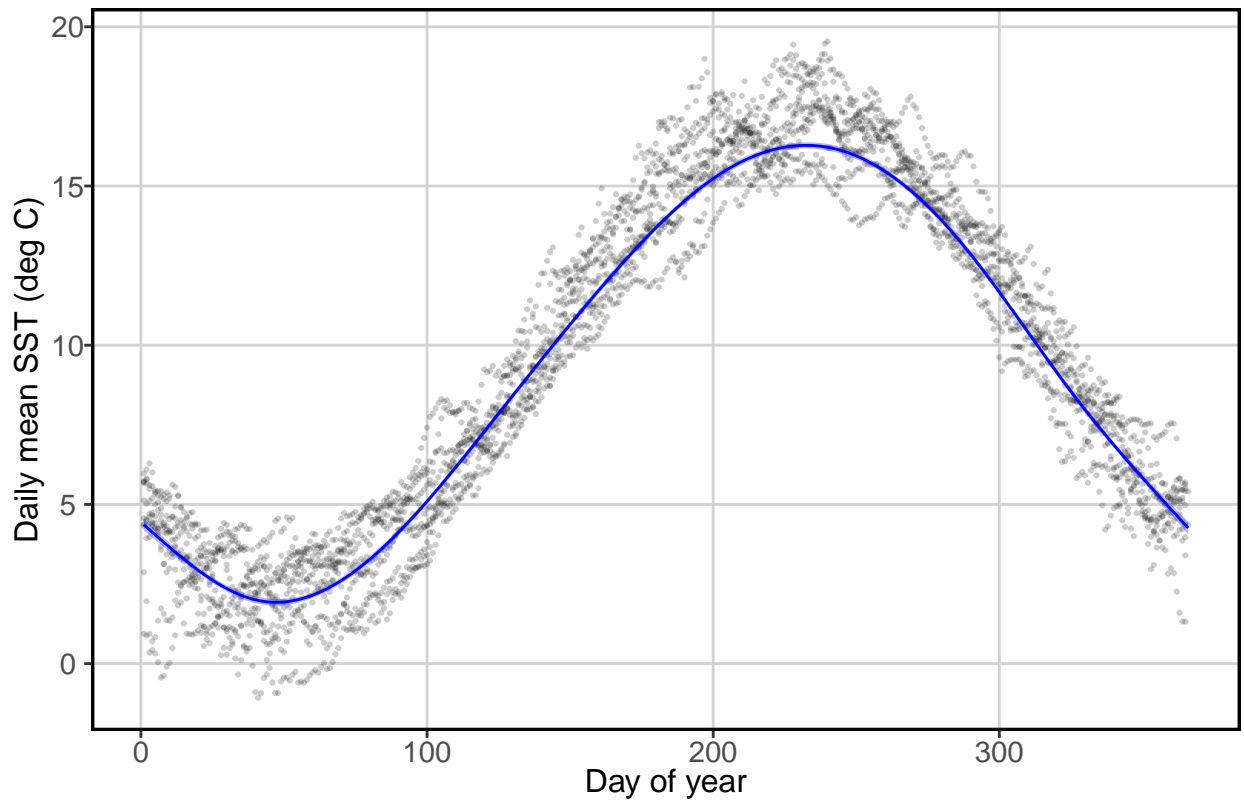
Year	Gauge anomaly (deg C)	OISST anomaly (deg C)
2014	-0.62	1.02
2015	-0.27	0.99
2016	0.58	1.52
2017	-0.44	1.02
2018	-0.12	1.36
2019	-0.26	NA
2020	0.72	1.38
2021	1.33	2.31
2022	0.92	2.07
2023	1.14	NA