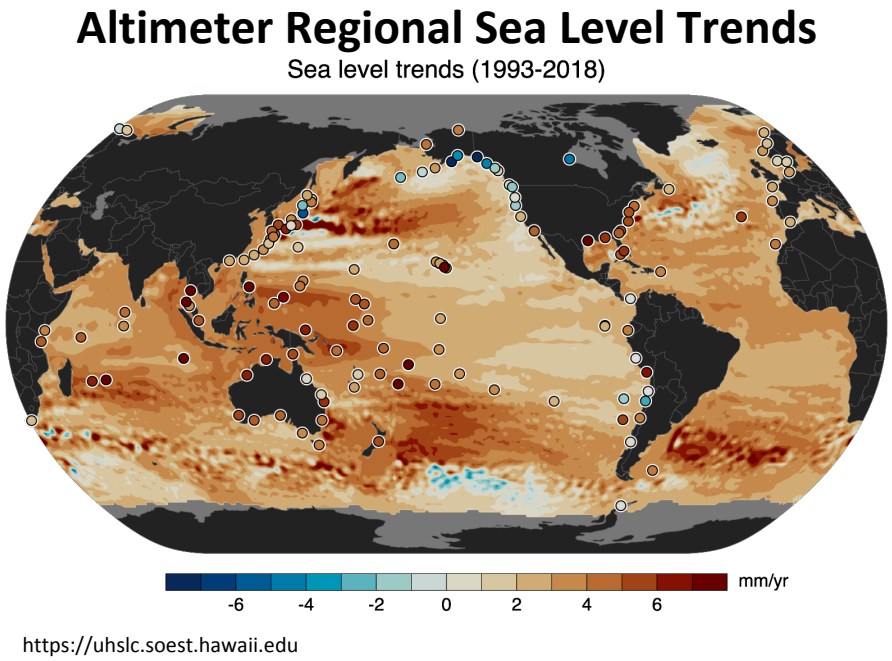
Homework 2: Sea level variability in the Pacific Due November 3, 2020



1) Load the file ALT_Pacific.mat, which contains the sea level anomaly for the Pacific from multiple satellite missions (data source: http://marine.copernicus.eu/services-portfolio/access-to-products/). The data are contained in "ALT" a structure array. Type ALTreadme" for a description of the variables.

2) Load the file TGdata.mat which contains sea level from tide gauge data at San Diego, Honolulu, and Mera, Japan. The data are contained in "'TG" a structure array. Type TGreadme for a description of the variables.

3) Fit a linear trend, mean, and seasonal cycle from each ALT and TG time series using *regress.m*. Plot maps (using imagesc or pcolor) of ALT sea level trends and the standard deviation of the seasonal cycle.

4) Form sea level anomalies by removing the trend, mean, and seasonal cycle from each ALT and TG time series.

5) For each TG station, compute the correlation with every ocean grid point in the ALT array. Plot a map of the correlation coefficients.

6) Estimate integral time scales for each of the TG stations. Base on these time scales, identify correlations on your map that are significant at the 95% level.

7) For each TG station, compute the regression (ALT = b * TG) with every ocean grid point in the ALT array. Plot a map of the regression coefficients.

8) Describe dominant patterns in the correlation and regression maps.