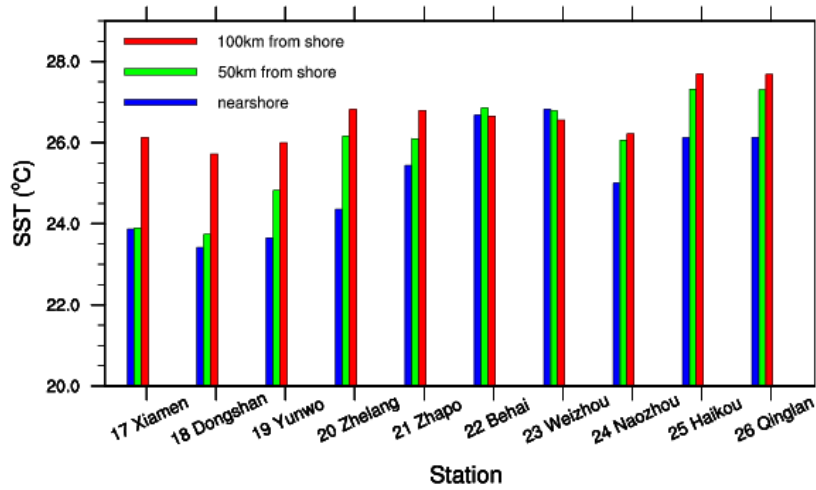
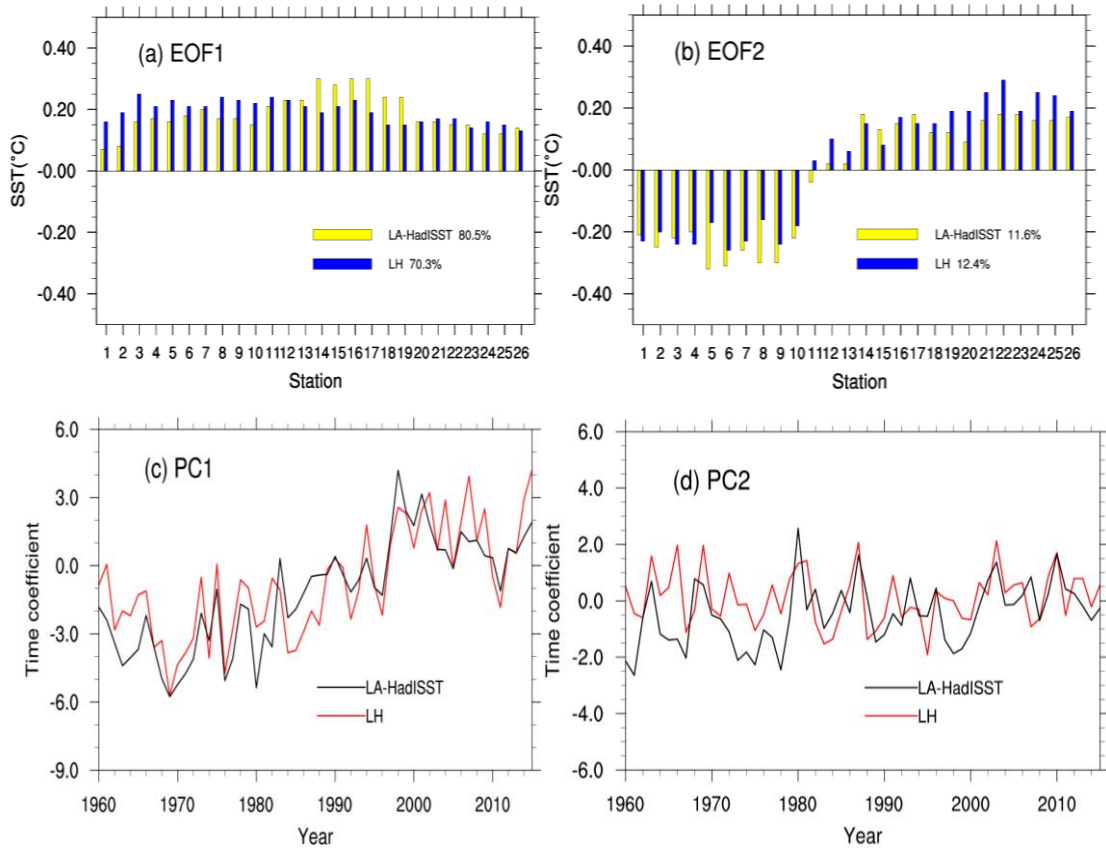


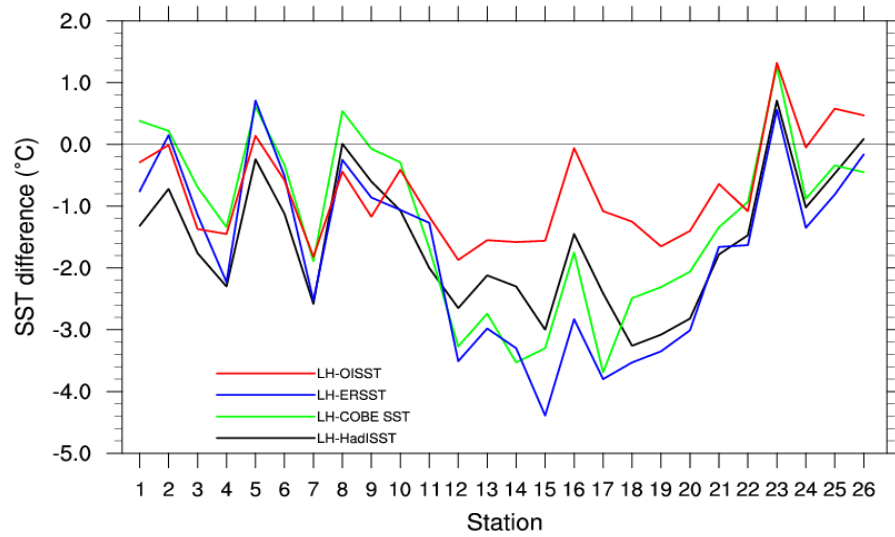
**Figure 1.** Study area and locations of 26 coastal sites (a), for which continuous monthly SST recordings are available and corrected by eliminating inhomogeneities. The identified breakpoints in individual SST stations from 1960-2015 (b). Results from Li et al. 2018. Black circle represents 26 coastal sites and blue arrow represents coastal upwelling.



**Figure 2.** Simulated SSTs at different distances from each coastal hydrological station in SCS.



**Figure 3.** Comparison of the EOF1 and EOF2 derived from the LH data set of local SST at 26 sites (blue bars; red lines), and derived from the localized analysis data LA-HadISST (yellow bars; black lines). Top: EOF spatial patterns, bottom: principal components (time coefficients).



**Figure 7.** The mean SST differences at the 26 locations between LH and LA-OISST (1982-2015; red line), LH and LA-ERSST (1960-2015; blue line), LH and LA-COBE SST (1960-2015; green line) and LH and LA-HadISST (1960-2015; black line)