

Influence of sea surface temperature in rocky sub-tidal communities in the Galapagos Marine Reserve: Bioindicators for identifying climate change?

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With the use of multivariate techniques we analyzed the relationship between in situ sea temperature and differences in abundance of mobile macro-invertebrates, fish and sessile coverage. The biotic records were taken during the cold and warm seasons (2004 - 2005) in sites of the west region of the Galapagos Islands. Significant relationships described two thermal boundaries: one vertical, related to the latitudinal gradient of temperature and observed in the northern site of study; and one horizontal, corresponding to the thermocline. There were also differences in the relationship parameter for each type of organism. Sessile and macro-invertebrates were associated to minimum and average temperature 30 days previous to the monitoring and the abundance of fishes was explained by the variable of temperature ratio between 30 and 60 days. Details of the species with clearest patterns and their replications in time are presented and related empirically to seasonal and inter-annual thermal fluctuations observed in remote-sensed records for the region. The results suggest the possibility of identifying bioindicators that can be used to assess the impact of Sea Surface Temperature changes due to Climate Change and El Niño Southern Oscillation ENSO- like events.