



Temporal fluctuations of the Sea Surface Temperature and Chlorophyll-a along of coral reef systems located on the Western coastal zone of the Gulf of Mexico

José de Jesús Salas Pérez, Angel Ocaña Valencia, and Carlos González Gandara
Facultad de Ciencias Biologicas y Agropecuarias, Tuxpan-Veracruz, México (jsalasp39@yahoo.es)

On the coastal zone of the western Gulf of Mexico (GM), there are a variety of coral reef systems which are influenced by river discharge and macro-scale circulation of the GM. The goal of this study is determine if the main fluctuations of the chlorophyll-a and sea surface temperature values (measured from monthly satellite images of sensors Aqua Modis and NOAA-AVHRR in the period of 2008-2011) in coral reef systems, are determined by river discharges or macro-scale circulation of the basin. Moreover determine if the temporal fluctuations of those parameters are correlated between them and thus asses the relationship between them. The most norther coral reef system (Lobos) is classified as mesotrophic-eutrophic. The middle coral reef system (Tuxpan) is ranked as oligotrophic-mesotrophic. Toward the southern region of the western littoral of the GM the coral reefs systems (PNSAV and Coatzacoalcos) are classified as eutrophic. Regarding to Sea Surface Temperature (SST) fluctuations, all coral reef systems showed an almost similar behavior, winter is the season with cool waters (19-23°C). Then in spring, the temperature values increases to about 25°C. Summer season have warm waters (29-30°C). Slightly different, fall decrease their water temperatures to 28°C. The northern coral reef systems (Lobos-Tuxpan) are colder than that the coral reef systems of the southern region (PNSAV-Coatzacoalcos). Those fluctuations, in chlorophyll-a and SST are induced by cyclonic and anticyclonic gyres generated in the Loop current, which impact in the northern region, while the southern region is influenced by river discharge and the presence of a cyclonic gyre of the Campeche bay. But northern and southern coral reef systems are mainly affected by waters of the northern GM advected by winds blowing from the north, mainly in winter.