Assesments of Some Environment Variables on Fisheries at Two Levels: Global and Fao Major Fishing Areas

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Abstract : Climate change influences very widely and in various ways ocean ecosystem functioning. The consequences of climate change on marine ecosystems are an increase in temperature and irregular behavior of some solute concentrations. These changes would affect fisheries catches in several ways. Our aim is to assess the quantitative contribution change of fishery catches along the time and express them through four environment variables: Sea Surface Temperature (SST4) and the concentrations of Chlorophyll (CHL), Particulate Inorganic Carbon (PIC) and Particulate Organic Carbon (POC) at two spatial scales: Global and the nineteen FAO Major Fishing Areas divisions. Data collection was based on the FAO FishStatJ 2014 database as well as MODIS Aqua satellite observations from 2002 to 2012. Some data had to be corrected and interpolated using some existing methods. As the results, a multivariable regression model for average Global fisheries captures contained temporal mean of SST4, standard deviation of SST4, standard deviation of CHL and standard deviation of PIC. Global vector auto-regressive (VAR) model showed that SST4 was a statistical cause of global fishery capture. To accommodate varying conditions in fishery condition and influence of climate change variables, a model was constructed for each FAO major fishing area. From the management perspective it should be recognized some limitations of the FAO marine areas division that opens to possibility to the discussion of the subdivision of the areas into smaller units. Furthermore, it should be treated that the contribution changes of fishery species and the possible environment factor for specific species at various scale levels.