

Advantages of using composite analysis for predicting seasonal rainfall in the Andean and Caribbean natural regions of Colombia by impact of ENSO phenomenon

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In order to improve seasonal forecasts of rainfall in Colombia, set out to make a complete review of the work of many researchers for the Caribbean and Andean natural regions of Colombia, and through the composite analysis methodology was determined with contingency tables of three by three categories, which of the twelve trimesters of the year are most affected by the El Niño-Southern Oscillation (to one, two or zero lags trimester of occurrence), according to some of the atmospheric and oceanic indices provided by the international centers for monitoring the phenomenon, observed historical series for surface weather stations and the software Jaziku 0.5.2 [1] developed by IDEAM (Institute of Hydrology, Meteorology and Environmental Studies of Colombia) for this purpose. With this information and seasonal forecasts of occurrence of the phenomenon provided by the IRI (International Research Institute for Climate and Society [2]) from the set of 24 statistical and physics models, but without adjustment to any probability distribution for risk analysis [3], it was determined the ability of the methodology for forecasting seasonal rainfall by categories. Finally, it present case studies of episodes of 2009-2010 (El Niño - Warm) and 2010-2011 (La Niña - Frio), that show the relevance of this type of analysis for decision making in two of the most recent events and of most impact on the economy of Colombia.

All together these results led to the conclusion that it would be useful to extend the analysis to more than three categories (even seven) in order to obtain results more extreme values and even deterministic, that this style applications are useful for other variables as surface temperature and that decadal climate predictions at least for the study areas, it is very important to have adequate reproduction of the ENSO phenomenon impact.

Keywords: Composite Analysis, tertile categories, ENSO, precipitation, seasonal forecast

References

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