ASSESSING THE IMPACTS OF EL NIÑO EVENTS ON THE ECUADORIAN TERRITORY: A COMPUTATIONAL ANALYSIS OF CLIMATOLOGIES, ANOMALIES, AND DEPRIVATION INDEX.

The World Meteorological Organization declared in early July 2023 the onset of El Niño conditions. Strong El Niño events have caused damage in many countries worldwide, including Ecuador. This study aims to find insights to characterize El Niño events over vulnerable locations in Ecuador and be prepared for their impact on the country's economy. First, through the Climate Data Store (CDS) Toolbox of the Copernicus Climate Change Service, four critical climate variables: temperature, precipitation, relative humidity, and soil moisture, were selected to establish a relationship with the Global Gridded Relative Deprivation Index, Version 1 (GRDIV1) over Ecuador. This exploration helped us identify regions of interest related to each meteorological variable. Also, we use different correlation methods to analyze the relationship between the anomalies and the Oceanic Niño Index (ONI), a key indicator for monitoring and identifying El Niño events. Furthermore, we used Convergent Cross Mapping (CCM) to identify causality between the anomalies and El Niño events. Preliminary results show statistically significant correlations between specific climate anomalies and the ONI, as well as potential causal links. We hope that the results from this analysis might contribute to developing effective disaster planning, mitigation strategies, and climate resilience measures in the country.

Keywords: El Niño 2023, Ecuador, Climatology, Anomalies, Deprivation.