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Hurricanes occurrence in the Gulf of Mexico and Caribbean Sea and its relationship with sunspots

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We present the results of the time series analysis of occurrence of hurricanes and sunspots from 1749 to 2012. Exploratory analysis shows that hurricane numbers is declining in total number by year. This decline in the number of hurricanes is related to an increase in the sunspots activity. Spectral analysis shows a relationship between the hurricanes oscillation periods and the sunspot cycles. Several sunspot cycles were identified from the hurricanes time series spectral analysis the most conspicuous being the 4, 11, 22, 60 and 80 year's cycles; and a 30-year that is related to cosmic rays cycle. The relationship between hurricanes and sunspot is both direct and inverse; the combination of the observed cycles produces seasons in which the number of hurricanes are in phase with sunspots and others which are out of phase.

Biography

Berenice Rojo-Garibaldi finished her Master's degree in 2015 at the Institute of Marine Sciences and Limnology from National Autonomous University of Mexico, under the minor on Physical Oceanography. Actually she belongs to the PhD program in the same institution working on the paleo-climatic topics, in particular in the non linear analysis on time series. She is also experienced in sport and caves diving with the certificate of 3 star FMAS which is the Mexican federation on underwater. Her professional interests include the ocean-atmosphere interaction and its effects in the climate variability in long and short terms in different time and special scales.

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