Relation between the Flux of Galactic Cosmic Rays and the Occurrence of Tropical Cyclones in the Caribbean

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The purpose of this investigation is to relate the flow of Galactic Cosmic Rays (GCR) in the occurrence of Tropical Cyclones (TC) through the formation of clouds in the lower atmosphere. Galactic Cosmic Rays (GCR) are highly energized particles, similar to protons which originate in our galaxy. A tropical cyclone is a gyratory system organized by clouds in the tropic. The hypothesis presented was if there is a relationship between the GCR's and the occurrence of TC through the formation of cumulonimbus clouds. Data was gathered at the Arecibo Ionospheric Radio Telescope from 38 neutron monitors that exist around the world. The data was stored in an electronic memory to be graphed by the "Golden Grapher 4" program. Then the f10.7 effect and kp are subtracted when graphing each station. The slope of each graph was determined and was graphed with the geomagnetic latitudes to the variability in the concentration of GCR flow. A list with all of the TC in the Caribbean from 1958 to 2012 was prepared. Graphs were prepared with the f10.7 and the occurrence of each kind of TC. Other graphs were prepared with the Kp and the occurrence of each kind of TC. An analysis of graphs b.a and c.a evidenced an increase in the occurrence of tropical depressions with an increase on the GCR flux. Graphs c.b and c.c demonstrated a decrease in the occurrence of tropical storms and hurricanes. These results evidenced that GCR flux affects the occurrence of TC in the Caribbean.

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