A Study of Solar Variability and Its Effects On Earth's Climate Dorothy Museo Mwanzia

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Abstract

The Sun provides nearly all of the energy that drives the Earth's climate system. Although understanding the effects of solar variability on Earth's climate change remains one of the most puzzling questions that has continued to attract attention of scientists. The Sun has been observed to vary on all time-scales and there is an increasing evidence that this variation may have an influence on the Earth's climate. Scientists have been trying to get a hand on how much solar energy illuminates the Earth and what happens to the energy once it penetrates the atmosphere. The climate response to these variations can be on a global scale but understanding the regional climate effects is more difficult. In this project research, we study the correlation between solar variability and the climate change over the last 17 years. We make use of solar data from Solar Radiation and Climate Experiments (SORCE) and climate data from Climate Research Unit (CRU). In order to observe how these changes have occurred, analysis of the data was done using GNU-plot and python to show the trend. As an outcome, from the results we explore for the possible correlation linking the solar variability and the Earth's climate change over the 17 years period. Our results show a linkage in the change of the climate factors which can be attributed to, but not completely to the solar variability. Further advances in understanding of the solar variability and its effect on climate is recommended from the ongoing acquisition of high-quality measurements of climate and solar variables. This knowledge is of importance as it can be used to in estimating the past and the future of solar behavior and climate response.

Key words: Solar irradiance, Earth's climate, solar variability