

Relationship Between Solar Parameters and Typhoon/Thunderstorm Occurrences with One-Month Periodicity

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It has been pointed out that atmospheric activity has ~27-day periodicity, which implies the connections between solar activity and the Earth's climate since the rotation period of the sun near its equator is 27 days. However, the spatial extent of such variations and the relationship between the different areas in global scale were unclear. We show a close relationship between globally synchronized thunderstorm/cloud activities in the tropical latitudinal range and solar parameters with ~one-month periodicity for a certain half year, using lightning data, a proxy of thunderstorm activity, obtained by the global radio wave network and a proxy of cloud amount, Outgoing Longwave Radiation. It is reported that the thunderstorm activity in Asia Maritime Continent (AMC) shows a seesaw correlation with the cloud in Western Pacific Warm Pool (WPWP). This variation is also obviously synchronized with intensity variation of cosmic ray. It is also confirmed that these cloud increases in WPWP well coincide with minimum pressure of typhoons or tropical storms in focused WPWP area (130-145 deg E), according to Typhoon Index provided by Joint Typhoon Warning Center (JTWC) of the US Navy. Such relationships cannot be explained by simple existing theories or phenomena, such as Madden Julian Oscillation, and may require the consideration of solar effect on the climate.