



Evidence of thunderstorm modulation over the continental U.S. by the solar cycle

T. Chronis

NASA/MSFC Global Hydrology and Climate Center

Lightning observations taken from the U.S. National Lightning Detection Network (NLDN) and data representative of the past 1-1/2 solar cycles (1990-2005) support the coupling between cosmic rays and the Earth's climate. Global infrared satellite observations collected during the past two decades suggest that cosmic radiation promotes low cloud formation, especially over maritime environments. Studies have also shown that the low cloud – cosmic ray coupling of a specific negative trend is observed over the continental U.S. This study documents a statistically significant, positive trend between monthly lightning activity over the continental U.S. and solar-controlled incoming cosmic rays, for the period 1990-1994.