

AN ANALYSIS OF LIGHTNING RELATED PARAMETERS USING NASA GHRC DATASETS

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The relationship between lightning occurrences and other weather parameters, especially the static and dynamic electric fields is explored based on weather datasets provided by NASA. The Global Hydrology Research Centre (GHRC) and the Kennedy Space Centre (KSC), NASA provides datasets of observed atmospheric parameters associated with natural disasters like lightning, hurricanes etc.

The lightning occurrence data is collected from LDAR (Lightning Detection and Ranging) datasets from GHRC and KSC and CGSLSS (Cloud-to-Ground Lightning Surveillance System) from KSC. Static electric field measurements are obtained with Electric Field Mills (EFM) from the AGBFM (Advanced Ground Based Field Mills) datasets. Dynamic Electric field measurements are also made using dipole and capacitive antennas, and data made available in the form of K-changes. This data, which is available along with timestamps and co-ordinates, are analysed for interrelationships and coincident occurrences. Changes in other weather parameters associated with lightning are also observed. Finally, the feasibility of using these parameters for lightning prediction and detection is examined.

Keywords: lightning, electric field, datasets, electric field mills, lightning detection and ranging