نظام الإنذار من الحرائق

PROPOSED EARLY LIGHTNING & THUNDERSTORM DETECTION WARNINGS SYSTEM IN MAKKAH AND SURROUNDINGS

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Abstract

Usually, Lightning is accompanied with thunderstorms; lighting is very spectacular and hazard phenomena, which need to be investigated before it happens. Recent global meteorological and climatologically changes have been taken through out the world due to many phenomena as well human actions. These metrological changes have led to the development of many thunderstorms over Saudi Arabia in general and in specific to the areas that were known with low Isokeraunic level (number of thunderstorms days per year) such as the western portion of the Kingdom.

Worldwide, lightning thunderstorms accounts for most of the power supply interruptions in power lines. In the U.S.A. alone, an estimated 30% of all electric power outages related to lightning every year, with total costs approaching one billion dollars. This includes equipment damaged, loss of lives etc… during thunderstorms. In most area of the world, an indication of lightning activity may be obtained from Iskruanic data (thunderstorm days per year) Maps.

KACST have supported the development of new annual thunder day maps for Saudi Arabia through a grant to EE department KFUPM. Based on these maps, the distribution and frequency of thunderstorms over the country analyzed. Thunderstorm days (TD) in different areas of Saudi Arabia specifically those where lightning strikes are more likely to occur has been determined. The Presidency of Metrology and Environment (PME) base the results of what established in this paper on data and records available on lightning incidence in Saudi Arabia.

The recent heavy thunderstorms development come about during the 1425 Hajj season, need to be carefully evaluated and assessed for many reasons, mainly for the safety of pilgrimages. The Hajj season proscribed by the lunar system, which makes it happen in different climate season, which is based on Gregorian calendar.

Presidency of Metrology and Environment (PME), which has been established since 1951 do make records and data, bases of different climatology and metrology parameters for weather and environment in Saudi Arabia. Only weather information can be observed on-line at many locations of the Kingdom. The PME has no on-line thunderstorms and lighting detection network, by which it can predict the development and characteristics of lightning as well as send warning to surrounding inhabitable places about the approaching of severe lighting thunderstorms.

This paper presents using Arc View GIS software new developed maps to indicate the thunderstorm days distribution all over the Kingdom, it also presents layout early warning for thunderstorms on-line detection network system that may assist pilgrimages during the Hajj and Umrah periods for more lives safety, and other safety warnings.

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