Development of the lightning location mapping system using fuzzy logic technique

ABSTRACT

The extremely high current produced from the lightning strike causes damages to the structures and fatalities to the human and live stock. Information regarding the lightning strikes and the location where it strikes is very useful for the utilities and building developers to select the best location of the project and the most suitable protection scheme for their system. The objective of this paper is to develop a Graphical User Interface (GUI) which can classify the lightning parameters of Peninsular Malaysia into three characteristics: region, level of current and type of lightning. The lightning strike parameters were obtained from the Global Lightning Network (GLN) of WSI Corporation, USA. Fuzzy logic method is used to classify the Peninsular Malaysia into eight regions with the use of ôIF ruleô to determine the level of current and type of lightning strikes. The lightning parameters are classified into three levels of current: Low, Medium and High current with three different types of lightning: positive lightning, flash and negative lightning. The GUI of desired system is implemented using Microsoft Visual Basic which able to display the characterization process, statistical values, graphs and also the characteristics mapping for the corresponding regions.

Keyword: Lightning; Lightning parameters; Global lightning Network; Fuzzy method