Simultaneous optical and electrical signals detection and location system of lightning

LI Peng[1], ZHENG Yi[1], FAN Jiang-bing[1] XIANG Zhen[2]

(1. State key laboratory of NBC protection for civilian, Research institute on Chemical Defense, Beijing 102205, China,

2. State Key Laboratory of Modern Optical Instrument, Zhejiang University, Hangzhou 310027, China)

Simultaneous optical and electrical signals detection and location system of lightning was developed to detect and locate the lightning events. The system was consisted with 4 sub-stations and 1 information center. The sub-station was mainly consisted of optical detector module, electrical detector module, data process module and GPS module. It can record the lightning optical and electrical signals simultaneously. The information centre can wireless receive data from the 4 sub-stations by GPRS DTU mode of wireless communication technology and locate lightning events by TOA methods. The system was employed to monitor lightning signals in Hangzhou, during the summer of 2009 and 2011. More than 5000 data were measured and included confirmed and located 586 lightning events. The system is valuable in scientific research and lightning protection.