Detection of Mesoscale Convective Systems in the Mediterranean Basin using Meteosat -8 imagery and Lightning Data.

S. Kolios and H. Feidas

University of the Aegean, Department of Geography, Mytilene, Greece
(stavroskolios@yahoo.gr / Phone: 22510-36446)

Lightning data combined with the high temporal and spatial resolution of Meteosat-8 image products can lead to an objective way of discriminating convective clouds. This study is an attempt to find the appropriate criterion for identifying mesoscale convective systems (MCS's) in the Meteosat-8 multispectral imagery using lightning activity as reference data. Firstly, the two datasets were correlated in time and space and afterwards a multispectral analysis was conducted focusing on the identification of the suitable threshold values in brightness temperature and band differences in the Meteosat-8 data that characterize convective activity based on the presence of lightnings. The study examined 35 days of 2005 with intense lighting activity over the Mediterranean region. Results, in general, show an increase of lightning activity with decreasing cloud top brightness temperature. It was found that convective activity is well correlated with brightness temperatures less than 230K. Additional thresholds in band differences were also applied in order to adjust the MCS's detection procedure.