EMS Annual Meeting Abstracts
Vol. 11, EMS2014-36, 2014
14th EMS / 10th ECAC

Waterspout cloud top detection using MSG SEVIRI Infrared brightness temperature over north Ionian Sea

Kyriakoula Papachristopoulou (1,2), Ioannis T. Matsangouras (2), and Panagiotis T. Nastos (2)

(1) Department of Environmental Physics and Meteorology, Faculty of Physics, National and Kapodestria University of Athens, Panepistimiopolis GR-15784 Athens, Greece (kpapachr@phys.uoa.gr), (2) Laboratory of Climatology and Atmospheric Environment, Faculty of Geology and Geoenvironment, National and Kapodestrian University of Athens, Panepistimiopolis GR-15784 Athens, Greece

Waterspouts (WS) pose a significant threat for coastal areas and maritime activities and structures and thus their study is essential. They are frequently occurring in the Mediterranean Sea and particularly in the northern coasts. A vulnerable area of waterspout formation is the Ionian Sea according to recent research. A vulnerable area of WS development is the Ionian Sea and especially the water body around Corfu Island, according to recent literature.

Laboratory of Climatology and Atmospheric Environment of the University of Athens has set up a detailed database of waterspout events, providing additional information such as location and time of these events, valuable information for the methodology followed. The aim of this study is to investigate the temporal evolution of brightness temperature on tops of cumuliform clouds (parent cloud) that triggered the formation of single or multiple waterspout events, based on the aforementioned database. The cloud top temperature was assessed by using channel at 10.8 micrometers MSG SEVIRI Level 1.5 Image Data product. The minimum brightness temperature of the cloud top around the WS location for four different examined radiuses was estimated with respect to 60 minute prior and after the WS formation. The time period of this study begins with the operational start of MSG SEVIRI in early 2004 until the end of 2013.

Our findings reveal a seasonal distribution of the cloud top height reached the waterspout parent cloud formations and the presence of an updraft environment, which is necessary of WS development, as well.

Acknowledgments “This study was completed as part of the postgraduate program “Environmental Physics” co-funded by the Action “State Scholarships Foundation (SSF/IKY) program with an individualized evaluation process of the academic year 2011-2012” from resources of the operational program “Education and Lifelong Learning” of the European Social Fund(ESF) and of the National Strategic Reference Framework (NSRF), 2007-2013.”