



## **First case of Thunderstorm Asthma in Israel**

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The strong downdrafts during the mature and decay stages of severe thunderstorms are often accompanied by cold outflows, that upon reaching the ground can eject large concentration of pollen and dust particles into the air, releasing allergens in the size range  $< 2.5$  micrometers. These particles can be inhaled into the respiratory system of humans and cause irritation and an acute allergic response. If occurring during the flowering season of specific plants, such events may result in "Thunderstorm Asthma" epidemics (Wardman et al., 2002; Dales et al., 2003; D'Amato et al., 2016; 2017), which are expressed as severe respiratory problems, especially in sensitive populations (infants, senior citizens and people with prior allergic susceptibility). We report on the first recorded case of thunderstorm asthma in Israel, that occurred during an exceptionally strong Eastern Mediterranean super-cell thunderstorm on October 25th 2015. The storms were accompanied by intensive lightning activity, severe hail, downbursts and strong winds followed by intense rain. The hospital admission records from two hospitals – one in the direct route of the storm (Meir Medical Center in Kfar-Saba) and the other just south of its ground track (Rambam Medical Center in Haifa) showed that the amount of admissions of patients with respiratory problems in the hours following the storm increased significantly compared with the average numbers in the days before. Following the passage of the gust front and the ensuing increase in particle concentrations, within several hours there was a noticeable increase in the number of patients with respiratory problems, in line with the pattern reported by Thien et al., (2018) for the massive epidemic in Perth, Australia. This increase in patient presentation to the ER persisted for 48-72 hours before going back to normal values, indicating that the event was related to the super-cell outflow. We will discuss how the likelihood of incidence of such public-health events associated with thunderstorms will be affected by global trends of population growth, urbanization and climate change.