



Novel Meteorological Applications using Microwave Communication Networks & New emerging avenues in atmospheric research

P. Alpert, R. Samuels, and N. David

Tel-Aviv University, Geophysics Atmospheric and Planetary Sciences, Tel-Aviv, Israel (pinhas@cyclone.tau.ac.il)

First, I will present the potential of performing a long-term rainfall monitoring and analysis employing Commercial Cellular Communication Networks (CCCN). Two different methodologies for calculating instantaneous rainfall utilizing CCCN will be compared.

The test site, located in central Israel, includes up to 70 commercial microwave links while 7 rain gauges are installed in the vicinity of these. The examination of 19 rainstorm events over a 2- year period will be presented.

Emerging new avenues in atmospheric research will be reviewed and discussed with a few preliminary examples for fog and water vapor monitoring as well as short-term warning for flash floods. These will include the following topics.

Mesoscale modeling with data assimilation of surface moisture derived from links; fog monitoring potential as demonstrated through a dense fog event that took place in central Israel during November 2010. CCCN measurements were translated into liquid water content measurements from which visibility estimations were derived and were found to be between 50 to 10 meters during the heavy fog episode. Examples for real-time flood warning in semi-arid area where coverage by rain gauges and/or radar is very limited will be presented. An advanced time for potential warning of about a few minutes to one hour will be shown to exist.

Other future potential avenues for atmospheric research to be discussed and partly exemplified are rainfall climatology over semi-arid to arid zones; urban rainfall; mountain rainfall, the potential of monitoring vegetation and dew detection based on CCCN data

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