



Recent findings with rainfall monitoring by cellular communication systems

P. Alpert (1), A. Rayitsfeld (1), N. David (1), O. Goldshtein (2), H. Messer (2), and A. Zinevich (3)

(1) Dept. of Geophysics & Planetary Sciences, Tel Aviv Univ., 69978 Tel-Aviv, ISRAEL [pinhas@cyclone.tau.ac.il], (2) School of Electrical Engineering, Tel Aviv Univ., 69978 Tel Aviv, ISRAEL, (3) Porter School of Environmental Studies, Tel-Aviv Univ., 69978 Tel Aviv, ISRAEL

We will demonstrate how 19 rainfall storms from recent two full winter seasons over south Israel are analyzed with high-resolution (1 minute time interval) data from a cellular network. New insight into the hydrological applications from this new source on rainfall, including flood warning, is given by this source of data and compared to classical methods based on rain-gauges and radar. One case of flooding in 2008 over the Judea Desert, central Israel, will be analyzed. Global spread of wireless networks brings a great opportunity for their use in environmental studies. Weather, atmospheric conditions and constituents cause propagation impairments on radio links. As such, wireless communication systems provide built-in monitoring capabilities, and can be considered as a widespread distributed, high-resolution atmospheric observation network, operating in real time, with minimum supervision and with almost no additional cost. Here, we demonstrate how standard measurements of the received signal level, made in a cellular network, provide reliable measurements for surface rainfall. We compare the estimated rainfall intensity with the radar and rain gauge measurements.