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Recent advances in near-surface moisture monitoring using commercial microwave links in Tel-Aviv University

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The propagation of electromagnetic radiation in the lower atmosphere, at centimeter wavelengths, is impaired by atmospheric conditions. Absorption and scattering of the radiation, at frequencies of tens of GHz, are directly related to the atmospheric phenomena, primarily precipitation, oxygen, mist, fog and water vapor.
As was recently shown, wireless communication networks supply high resolution precipitation measurements at ground level while often being situated in flood prone areas, covering large parts of these hazardous regions. On the other hand, at present, there are no satisfactory real time flash flood warning facilities found to cope well with this phenomenon. I will exemplify the flash flood warning potential of the commercial wireless communication system for two different semi-arid region cases when floods occurred in the Judean desert and in the northern Negev in Israel.
In addition, I will review our recent improvements in monitoring rainfall as well as other-than-rain phenomena like, atmospheric moisture. Special focus on fog monitoring potential will be highlighted.
References:
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