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Rainfall estimation from microwave links in São Paulo, Brazil.

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Rainfall estimation from microwave link networks has been successfully demonstrated in countries such as the Netherlands, Israel and Germany. The path-averaged rainfall intensity can be computed from the signal attenuation between cell phone towers. Although this technique is still in development, it offers great opportunities to retrieve rainfall rates at high spatiotemporal resolutions very close to the ground surface. High spatiotemporal resolutions and closer-to-ground measurements are highly appreciated, especially in urban catchments where high-impact events such as flash-floods develop in short time scales.
We evaluate here this rainfall measurement technique for a tropical climate, something that has hardly been done previously. This is highly relevant since many countries with few surface rainfall observations are located in the tropics. The test-bed is the Brazilian city of São Paulo. The performance of 16 microwave links was evaluated, from a network of $\sim$200 links, for the last 3 months of 2014. The open software package RAINLINK was employed to obtain link rainfall estimates. The evaluation was done through a dense automatic gauge network. Results are promising and encouraging, especially for short links for which a high correlation (> 0.9) and a low bias ($< 5\%$) were obtained.