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Optical and microwave links as path-average rain gauges

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Optical scintillometers are widely used in boundary layer meteorology and hydrology to infer turbulent sensible heat fluxes. Recent research has demonstrated that, under certain conditions, such optical links can be used as path-average rain gauges.

Moreover, microwave scintillometers are used in boundary layer meteorology and hydrology to infer turbulent latent heat fluxes. Recent research has demonstrated that, under certain conditions, such microwave links can be used as path-average rain gauges.

Finally, networks of microwave links are used in mobile telecommunication for wireless transmission and reception of information. Recent research has demonstrated that, under certain conditions, such networks of microwave links can be used for areal rainfall estimation.

We provide examples of rainfall estimation at hydrologically relevant scales using all three types of instruments mentioned above.