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Stochastic reconstruction of precipitation fields using commercial microwave link information

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The difficulty when using path-averaged rain rates derived from commercial microwave links (CMLs) is, that they give non-linear constrains for the precipitation field. To address this challenge, we apply Random Mixing to stochastically simulate precipitation fields. We generate precipitation fields as linear combinations of unconditional spatial random fields, where the spatial dependence structure is described by copulas. The weights of the linear combination are optimized in such a way, that the observations and their spatial structure are reproduced. Random Mixing allows to simulate precipitation field ensembles of any size, where each ensemble member is in concordance with the underlying observations.

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