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Combined use of radar, raingauges and a microwave link to reconstruct an extreme rainfall event over the Hupsel Brook experimental catchment

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On 26 August 2010 the eastern part of The Netherlands and the bordering part of Germany were struck by a series of very heavy rainfall events lasting for more than a day. Over an area of 740 square km more than 120 mm of rainfall was observed in 24 h. This extreme event resulted in local flooding of city centres, highways and agricultural fields, and considerable financial loss.

We present a detailed hydrometeorological analysis of this extreme rainfall event, focusing on its space-time rainfall dynamics as observed with rain gauges, weather radar and a microwave link. At the Hupsel Brook catchment 159.5 mm of rainfall was observed in 24 h, corresponding to an estimated return period in the order of 6000 years. The combined use of radar, raingauges and a microwave link allowed a complete reconstruction of this extreme rainfall event over the Hupsel Brook experimental catchment.