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Quantitative Rainfall Forecasting Using Radiosonde, Automatic Weather Station Data and Artificial Neural Networks

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Accurate quantitative rainfall forecasting remains as one of the most elusive challenges in operational hydrology. The purpose of this study was to develop a quantitative rainfall forecasting(QRF) model using data from radiosonde and rain gauge network and artificial neural networks. The primary hypothesis is that if we can consider the moving direction of the rain generating weather system in forecasting rainfall, we can get more accurate results. We assume that the moving direction of the rain generating weather system is same as the wind direction at 700mb which is measured at radiosonde networks. The methodology adopted to develop the QRF model consists of using neural networks to combine information from the state of the atmosphere and its recent evolution along with standard hydrometeorological data to issue rainfall forecasts. Neural networks are consisted of 8 different modules according to 8 different wind directions.