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Study of cooperative weather radar system for radio resource enhancement

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Localized heavy rain, and some other weather disasters in urban area have raised social issues in recent years. To observe these phenomena whose time-space scale is small, X-band weather radar networks are developed in these days. The importance of multi-parameter radar network will be increased. It takes several minutes (about 10 minutes) for conventional (mechanical drive beam steering) radars to get 3D rainfall distribution. We, National Institute of Information and Communications Technology, have developed a 1D phased array weather radar to increase the time resolution. This radar can retrieve 3D rainfall distribution within 10 seconds, and is expected to reveal small time-scale phenomena such as localized heavy rain.

A new research has started to develop the next generation weather radar system. In this system, radars have the function of 2D digital beam forming (DBF). Plural radars and receivers are synchronized and cooperated to realize multi-static observations. In this presentation, preliminary results of consideration for location of radars and cooperative beam steering method.

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Keywords: weather radar, observation system