

**APPLICATIONS OF MICROWAVE RADAR TO IMPROVING
AVIATION SAFETY AND EFFICIENCY**

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Reliable real time hazardous weather (especially low altitude wind shear) warnings at major airports with frequent thunderstorm activity and reduced delays due to adverse weather are a critical need for the aviation system. This paper describes some key elements of the Federal Aviation Administration (FAA)'s microwave Terminal Doppler Weather Radar (TDWR) that is now providing fully automated Doppler radar based detection of microbursts and gust fronts and 20 minute warning of wind shifts which could effect runway usage at many of the nation's major airports. Current

work is underway to use the TDWR to reduce delays at major airports. The TDWR also could be used to provide improved roadway information at many major metropolitan areas. The use of C-band has permitted high spatial resolution beam patterns for clutter suppression and storm feature resolution, but has lead to some difficult challenges in range/Doppler ambiguities. The paper concludes with a discussion of possible microwave system improvements to support the next generation of weather sensing radars.